

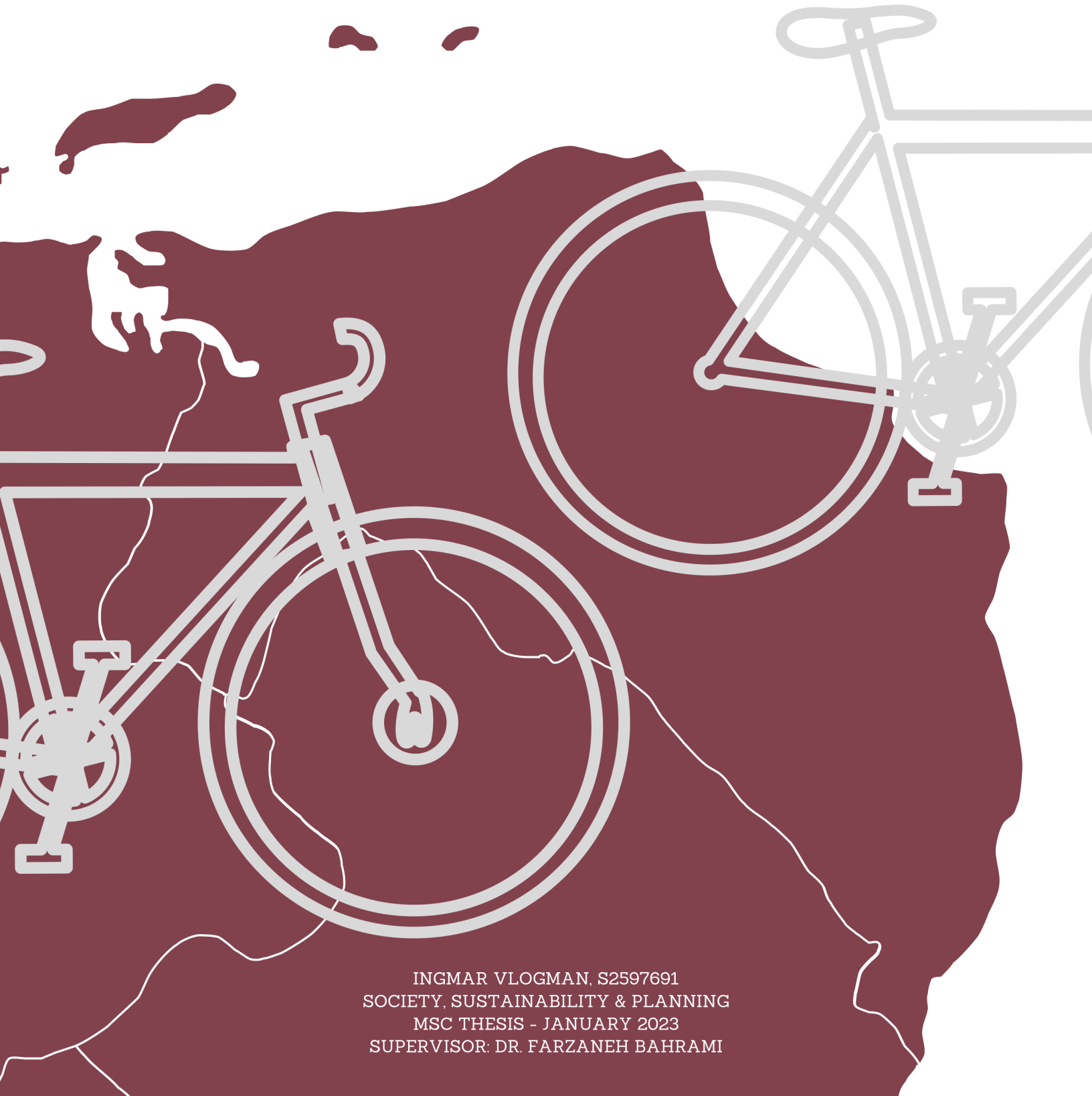


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CYCLING THE PROVINCE

AN INQUIRY INTO THE SOCIAL
 CONSTRUCTION OF THE FUTURE



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Abstract

Cycling is 'booming', but does not seem to be replacing car trips in the Netherlands, meaning there may be much to gain still in terms of the transition to more sustainable mobilities. Using the concept of the imaginary, the aim of this study is to investigate how cycling policy makers in Groningen see cycling futures, with particular attention to if and how 'smart' cycling technologies, or smart velomobilities, are a part of these futures. To accomplish this, a case study has been conducted using a qualitative research design that employs semi-structured interviews, a policy document analysis and a participatory research session. The results indicate that policy makers are trying to get people out of cars and onto bikes, but are not sure why this is not happening already. Other results indicate difficulty balancing between the city and the province in conceiving cycling policy. In terms of velomobility, there are three main uses of smart technology, as articulated by policy makers in the Groninger cycling imaginary: the e-bike, mobility hubs and data collection. While only the e-bike specifically pertains to cycling, its effects on policy have been transformative, making it a change agent in itself. Other findings can be summarised by multiple dichotomies: urban and rural, car and bike, innovation or tradition. The bike navigates through all these tensions and offers something on both sides of each contradiction, showcasing its versatility and agency as both an object and as a practice.

Table of Contents

Introduction	3
1.1 Background pg. 3	
1.2 Academic and society relevance pg. 4	
1.3 Research aim pg. 4	
1.4 Reading guide pg. 5	
Literature review	6
1.5 2.1 Social imaginaries pg. 6	
1.6 2.2 Politics of automobility pg. 8	
1.7 2.3 Sustainability transitions pg. 8	
1.8 2.4 Smart cities pg. 9	
Methods	13
3.1 Research design pg. 13	
3.2 Case selection and description pg. 13	
3.3 Operationalisation pg. 14	
3.4 Data collection pg. 15	
3.5 Data analysis pg. 18	
3.6 Ethical considerations pg. 18	
Results	19
4.1 The codebook pg. 21	
4.2 Setting the stage: cycling governance pg. 21	
4.3 Position of the bicycle pg. 22	
4.4 Cycling and the car pg. 24	
4.5 The city and the rural pg. 27	
4.6 Types of cycling pg. 30	
4.7 Smart (velo)mobility and the role of data pg. 32	
Conclusion	35
Discussion & Reflection	37
Acknowledgements	40
References	41
Appendices	48

Introduction

1.1 Background

With the increasingly more urgent need to address the effects of climate change, transitioning to low- or no-carbon mobility forms is more poignant than ever. Many scholars and practitioners advocate for this, yet the values and meanings of mobilities are seldom questioned. A focus on quantitative research in mobility studies remains dominant (Adey et al, 2021) and consequently, policy is often made on the basis of the results of this 'hard' data. Of course quantitative data has its place, but a tunnel vision on numbers can obscure the complexity or even feign validity of a given intervention. Similarly, the dominant socio-technical lines of thinking that invite techno-managerial solutions do not question underlying problems or ask necessary questions (Kaika, 2017). In planning and geography, multi-level perspective approaches are often used as tools of analysis in transition studies (Nikolaeva et al, 2018), which largely ignore political issues and power dynamics (Affolderbach & Schulz, 2016).

Yet it is precisely these political issues that are highly relevant in mobility, as mobility is inherently political due to its embeddedness in existing governance structures and power relations (Nikolaeva et al, 2018). As mobility is intrinsically linked to public space, it can also be seen as an arena of contention for pedestrians, residents, cyclists, and motor vehicles. Yet in neoliberal states focused primarily on economic growth, this contention is essentially solved before it starts, as high-speed mobility will generally win out in favour of its low-speed alternatives, resulting in streets dominated by cars and other motor vehicles. Moreover, while car sharing, electric cars and other 'sustainable' car trends are prevalent in the media, fossil fuel powered SUVs and crossovers are driving the most sales in Europe, with a market share that has increased from 8% in 2008 to 45% in 2021 (Gibbs, 2017; Carlier, 2022). There has been more debate on car-centric planning in the last few years, but car-oriented policy remains the status quo. Questioning the "continuing production of a system of automobility" (Sheller & Urry, 2000, pg. 752) is often disregarded as radical, meaning the matter is essentially depoliticised.

One way of asking the necessary questions is to engage in a discursive process with those that have the power and means to change the future. Using the notion of the imaginary, I have inquired into the articulation of cycling futures by mobility policy makers in Groningen. Transitions can start from unrefined ideas in the minds of change agents, but as they are articulated they become visions that may draw a wider following and support (Hodson & Marvin, 2009; Sengers, 2017). The vocalisation and articulation of imagined futures is also relevant because they can be performative through the language used. This language does not just reflect reality, it also shapes the choices that make some future realities more feasible than others, filtering and limiting the realm of future possibilities by describing or not describing them (Frank & Forrester, 1993; Sengers, 2017). Exploring articulations of desired futures, or imaginaries, allows for a suspension of the status quo, a discourse without path dependencies and a moment of reflection.

1.2 Academic and societal relevance

Academic relevance

There are many scholars who have suggested we are in a crisis of imagination when it comes to the capacities in thinking about alternative societies (see for some examples: Graeber, 2011; Harvey, 2000; Kiersey, 2013; Unger, 1987). Correspondingly, recent academic interest in social futures can be seen as a reaction to the dominant lines of futures thinking that tend to lie on the macro level and mostly ignore the contextual and the social (López Galviz & Spiers, 2021). I aim to contribute to a rekindling of the imagination through the employment of the social imaginary. When the imaginary is conceptualised socially, it stops being 'just' a depiction of something and becomes a creation of stories and images (Taylor, 2002), gaining a collective and impartial potency from which articulations of society can surface (Castoriadis, 1975). Furthermore, by making cycling in the province of Groningen the subject of investigation this thesis builds upon the literature that presents solutions to reducing car use through cycling, which is currently primarily focussed on urban cycling and can therefore be supplemented with research on non-urban cycling.

Societal relevance

While cycling is receiving more and more attention in Dutch policy and there does seem to be an increase in cyclists and cycling trips in the Netherlands, these extra cycling trips do not seem to replace car trips. Since more than 90% of consumer cars are still powered by engines running on fossil fuels (CBS, 2021), this is limiting the transition to more sustainable mobilities. Taking this and the increasing use of technologies in our societies as a starting point, I have aimed to set up and conduct research which can also contribute to a discursive process outside of academia. Referring to geographical 'imaginings', Cresswell (2006) contends that imaginaries are more than mental maps of ideas, rather they are active participants in themselves, emancipating from 'just' individual aspirations and becoming social, and thereby political. Interpreting and making sense of the social imaginary can be a conversation starter for further thinking about possible futures. In other words, the social imaginary has agency in instigating change. Applied to this thesis, this means that by engaging in a research process that aims to grasp the futures of cycling in Groningen, the research is also making a contribution to shaping that future through the conversations with cycling policy makers, and by writing and presenting my results and conclusions afterwards.

1.3 Research aim

Using the concept of the imaginary, my aim for this research is to investigate how cycling policy makers in Groningen see (smart) cycling futures and how they see cycling in the present. Thinking about where we are (not) going in the future requires determining where we are departing from, allowing for more critical reflection on whether smart cycling futures are desirable and if they cater to what we need cycling to be, without those futures simply happening to us.

This leads to the following research question:

What does the cycling imaginary among mobility policy makers in Groningen look like and how does it include elements of 'smart' (velo)mobility?

The expectation is not necessarily that the imaginaries I have depicted produce new cycling policy or a radical decoupling from ‘smart’ mobility altogether, but rather to gain some sort of networked imaginary of the future that can inject cycling discourse with new material, asking questions of what we need our future cities to be rather than what is the current trend. The imaginary as a concept may be mobilised to articulate the potential similarities and/or disparities between popular cycling discourse on smart mobilities and what cycling should be in the eyes of experts, keeping in mind that technology is not an end in itself, but a means towards a more sustainable and just society.

To help guide me to an answer to the main research question, the following sub-questions have been drafted:

1. What is the imaginary and how is it formed, specifically in terms of cycling futures?
2. What smart city elements are relevant for cycling?
3. What do cycling policy makers envision the future of cycling to be in Groningen?
4. What smart city elements are in the future visions of cycling policy makers?

1.4 Reading guide

I have structured this thesis as follows: chapter 2 is a review of the existing literature and theories on concepts relevant to my research. In chapter 3, I walk the reader through my research design and methodology used to answer my research questions. That is followed by the results in chapter 4, in which I present my findings on the cycling imaginary of Groningen. Chapter 5 is my conclusion, focussing primarily on drawing empirical conclusions based on my results and answering my research question. Chapter 6 is twofold, and contains a discussion of my results and conclusions as well as a reflection on the research process and other matters I deemed to be necessary. All consulted literature can be found in the references list at the end of the last chapter, which is followed by an appendix containing my interview guide and consent forms for the interviewees. I hope to provide something interesting or thought-provoking for you, the reader who has taken the time to read my work, and that both this thesis and much of the captivating work it was inspired by can spark the imagination in thinking about the future.

Literature review

In this chapter, I provide a concise review of the literature on key concepts of my research. Considering the relative novelty of the subject of my research, I have chosen to adopt a mostly inductive orientation in my methodology. This is most fitting in an open inquiry into the imaginary, a concept that has social constructionist roots. For this chapter, the implications are that I have only discussed those theories and concepts that are necessary to be able to follow this text, to shape my initial questions for my interviewees, and to produce a meaningful discussion of my findings and draw connections. I have also purposefully ignored the creation of a conceptual model, as I do not wish to implicitly communicate a hypothesis or concrete expectations of my results, seeing as I only aim to understand the data I have collected, not to explain it. As a consequence, the term theoretical *framework* is not entirely accurate for the text that follows this paragraph, and I prefer to call it a literature review.

2.1 Social imaginaries

As a noun, the word ‘imaginary’ is not often used in non-academic contexts. Even in particular niches of social sciences and philosophy, the imaginary has only been the subject of study for a few decades, instigated by the work of Castoriadis (1975). According to Soja (2000), the imaginary takes shape as “interpretive grids through which we think about, experience, evaluate, and decide to act in the places, spaces and communities in which we live” (Soja, 2000, pg. 324). Taylor (2002) views the imaginary as socially constructed through shared understandings of the social environment, legitimising some practices and delegitimising others. In Mlynar et al.’s (2022) paper on the imagined futures of artificial intelligence, the imaginary is conceived as a network of ideas, stories and practices that together form a constellation, shaping the imaginary of a given social group. Further building on the concept, Jasanoff & Kim (2009) see the imaginary as future oriented and can be observed through the propagation of technological projects, coming to the term ‘socio-technical’ imaginaries, where technology is as much an actor in a network as the social and co-produce one another (Latour, 1990; 2005).

The agency of the imaginary

It is when the imaginary is conceptualised socially, i.e. the social imaginary, that it stops being ‘just’ a depiction of something and becomes a creation of stories and images (Taylor, 2002), gaining a collective and impartial potency from which articulations of society can surface (Castoriadis, 1975). Ricoeur (2005) refers to social imaginaries as collective representations and draws comparisons to the term *Weltanschauung*, a concept that, somewhat crudely, translates to worldview. First developed by Immanuel Kant, *Weltanschauungen* are broadly informed by ideologies and perspectives. The term was later adapted and popularised by Hegel, whose use of the term puts the ideal alongside the actual (Dilthey, 1911). In other words, idealism resides in the real world and is not suspended above it. Seemingly channelling this Hegelian *Weltanschauung*, Ricoeur’s focus is on the relationship between representation and social practice, which inform social capacities and capabilities (Ricoeur, 2005). This means the social imaginary is related to the spatio-temporal attachments of a society, spawning notions of the imaginary that are geographically informed among some scholars. Critically, this means that considerations of the future are often reflecting not so much on *space* in general, but on a specific *place* (Dunn, 2021).

This geographic imaginary is a contributor to spatial conceptions, perceptions and practices (Bahrami, 2017; Debarbieux, 2013). Further building on the imaginary as a change agent, Cresswell (2006) contends that imaginaries are more than mental maps of ideas, they are rather active participants in themselves, emancipating from ‘just’ individual aspirations and becoming social, and thereby political.

Sengers (2017) defines imaginaries, though in an urban context, as “shared understandings of what constitutes a desirable future city” (pg. 2764). As a conceptual tool, these imaginaries can increase our knowledge of how these shared understandings may affect and influence sustainable transition processes, seeing the imaginary as a start and result of a discursive process that leads to a more sustainable set of mobility policies. As a networked set of ideas of the future, the imaginary naturally draws comparisons to utopias, not necessarily what *the* utopia may be but how utopian thinking can be employed. Allowing ourselves to reflect on utopias further stimulates the discursive process and may uncover path-dependencies and lock-ins that were previously unnoticed (López-Galviz et al., 2020). Other neighbouring concepts and theories of the social imaginary include ideas from the social futures literature, as well as its derivatives ‘futuring’ and future-making. Notably, the positing of collaborative future-making as simultaneously a theory and a practice (Lindström et al., 2021) captures the relational aspects of the social imaginary, and the central position of values when thinking about the futures from the social (López Galviz & Spiers, 2021) relates to the anchoring of the imaginary in a society. Storytelling and narrative thinking are similarly connected to this anchoring, as an analysis of narratives can explore the heuristic patterns of a society or social group that influence the way the future is conceived (Liveley et al., 2021; López Galviz & Spiers, 2021). Another term seen in the literature is vision, and its derivative ‘visioning’. Generally, it refers to the making visible of ideas as a means to think about futures. Visualisation and visioning have potential for elaborating on and making comprehensible of ideas of the future (Ache, 2017), and Pollastri et al. (2018) argue that the process of envisioning urban futures can resemble a conversation among actors, resulting in an articulation of multiple perspectives rather than presenting concrete solutions.

Cycling as a social imaginary

The choice of cycling as the subject of a thesis about the imaginary in this research is informed primarily by the growing consensus that cycling engenders both social and ecological sustainability (Te Brömmelstroet et al., 2020). Cycling can be an alternative to the car, especially on shorter trips, as several scholars have pointed out (see for example Berger et al., 2014; La Rocca, 2010). Conceptualised as a “socio-technical system in transition” (Rotmans et al., 2001; Geels, 2002; Shove, 2012; Gössling, 2013; Te Brömmelstroet et al., 2020), cycling is not just a material object and mode of transport but its practices are socially embedded, making it an interesting subject of an inquiry into the social imaginary.

Sengers (2017) has conducted a study on cycling imaginaries in Thailand, a country with a drastically different cycling climate than the Netherlands and Groningen. He concluded that, while his subjects offered profound and articulate insights on the future of cycling, cycling is still rather insignificant in terms of modal share in Thailand and that the brave cycling campaigners of his analysis may be alone in their unrelenting cycling optimism, at least in the near future. (Sengers, 2017). Kim Nolan, in the 90s, proclaimed “riding your bike is punk” (Nolan, 1994; quoted in Furness, 2010, pg. 140), and while the quote may still hold up in Thailand, its sentiment

has lost some of its zing in the contemporary Netherlands. As the subject of much attention from policy-makers and academics alike, we can hardly still see cycling as a radical, unexplored alternative to the car in Groningen. At the same time, much of spatial planning and societal discourse is still car-centric, where automobility marginalises other modes of transport such as the bicycle.

2.2 Politics of automobility

A productive discussion or written contribution about cycling (still) cannot be done without mentioning the car. Mobility has evolved to be more or less synonymous with car-based movements. Urry & Sheller (2000) use the term ‘automobility’, first conceived by Burnham (1961), for this phenomenon, where auto is a conjunction of both the human self and the automatising of machines, suggesting that the car and driver assemble and morph into one. Illustrative for the embeddedness of automobiles in our societies and even ourselves, automobility forms a complex system (Urry, 2004), the tentacles of which are far-reaching into all sorts of sectors, notably renewable and nonrenewable energy industries. Not to mention the giant auto industry itself, which of course demands the designing, construction, maintenance and distribution of cars (Urry, 2004). Corroborating Urry’s argument, Banister (2008) too sees connections of automobility with almost every other sector, arguing that travel is a derived demand and that cars allow individuals to minimise travel costs and especially travel time. This in addition to the values often associated with driving, such as freedom and flexibility, has led to a car-dominant mobility that has not been significantly challenged since the initial popular introduction of the automobile.

In a car-dominant world that is planned through a car-centric imaginary, other forms of mobility such as walking and cycling are subordinated (Urry, 2004), making people more and more car-dependent and vice-versa; car-dependency results in more car-centric planning (Banister, 2008; Wiersma et al, 2017). Further strengthening this vicious circle of car-dependency, the spatial characteristics that automobility demands, with its spatially intensive infrastructural needs such as roads and parking spaces, require further dispersal of all sorts of activities and destinations, necessitating car use rather than having it as an available option (Wiersma et al, 2016). Putting it differently, the spatial conditions of a car-dominant mobility are the cause of car-dependency, not the changing requirements of ‘modern’ societies (Wiersma et al, 2016). More conceptually, the unprecedented flexibility that the automobile provides for its users is a double-edged sword. Seeing as the car forces complex and multidimensional mobilities across large distances, it splits different functions geographically and by extension social realms (i.e. home/leisure, home/work, home/family) and atomises people in their iron cages on congested roads (Urry, 2000). While the physical reach of the individual has seen profound expansion in car-dominant mobilities, it divides in its expansion.

2.3 Sustainability transitions

In the eyes of Runhaar et al. (2020), sustainability transitions require structural and radical changes to existing systems, such as (auto)mobility. A sustainability transition is then not just a few alterations to the existing systems, but a more profound transformation into a new system. Meadowcroft (2009) defines these sustainability transitions as “processes of structural change in

major societal subsystems” (pg. 324). The word transformation is sometimes used interchangeably with transition, but it would be more accurate to consider transition studies a particular framing of transformations (Blythe et al., 2018). Definitions of transformations vary slightly from each other, but the common denominator is that they are made up of significant changes that challenge existing structures to form something new (Braun 2015; O’Brien 2012; Pelling 2010, Blythe et al., 2018).

While transition approaches seem to have gained the most popularity in academic discourse concerning transformations, Blythe et al. (2018) use papers by Feola (2015) and Patterson et al. (2016) to identify three other general framings of transformations that address some of the shortcomings of transition approaches: *social-ecological transformations*, *sustainability pathways* and *transformative adaptation*. While not especially relevant for this research, these other interpretations of the word transformation as an academic concept point us toward an issue that this thesis too needs to address. Now that the word transformation is increasingly showing up in prominent policy reports and well known sustainability platforms, it evolves from a concept used to make sense of and describe social-ecological interactions into a tool that can be used to prescribe actions in practice (Blythe et al., 2018). The danger in this lies in the ambiguity that this creates, as misinterpretation and manipulation of the term become easier, potentially empowering policy makers to use it to justify ill-advised interventions (Star, 2010).

In transition studies, multi-level perspectives, first championed by Geels (2002), are often used as a framework to understand transitions, where three interacting but distinct levels form the basis of analysis: the socio-technical landscape, the socio-technical regimes and technological niches (Runhaar et al., 2020). A transition as understood through a multi-level perspective can be seen as the changing of one socio-technical regime into another, driven by pressure from below through technological innovations, or ‘niches’, and from above through changes in the landscape, which impose the need for changes through large-scale problems like climate change. Changes in the landscape can also provide more fertile ground for innovations. Such innovations aren’t limited to technological advancements, but include all sorts of activities, experiments and actions that actively steer the urban development process (Loorbach, 2010). Rauws (2016) calls such initiatives self-governance, which differs from self-organisation in its active steering component but also on the presence of coordination and collective intent, making them more than an aggregate of many independent actions, or more than the sum of its parts (Rauws, de Roo & Zhang, 2016). For this thesis, I am interested especially in this socio-technical ‘landscape’, particularly the innovations that have shaped and reshaped it. More specifically, those relevant to cycling, and how they affect the social imaginary of policy makers in Groningen. The articulation of visions and expectations on new innovations and technologies makes them more tangible (Loorbach, 2007; Schot & Geels, 2008), and subsequently brings these visions together, providing them with a common horizon and legitimising their views (Sengers, 2017).

2.4 Smart cities

In the past two decades, information and communication technologies have become synonymous with contemporary societies. Their effects and influence on urban infrastructure and management are particularly visible in cities that have embraced ICT as part of their development strategies (Kitchin, 2013), described by academics through an eclectic array of labels. To provide some

examples of the nomenclature, some of the terms used are ‘cyber cities’ (Graham & Marvin, 1999), ‘digital cities’ (Ishida & Isbister, 2000), ‘intelligent cities’ (Komninos, 2002), ‘sentient cities’ (Shepard, 2011), ‘virtual cities’ (Willis & Aurigi, 2017); and what is most common now, ‘smart cities’ (Hollands, 2008). Seeing as the term ‘smart’ cities is most prevalent, also among practitioners, I use that term in this thesis.

While each particular term for smart cities represents the author’s specific conceptualisation of the relationship between ICT and cities, what almost all labels have in common is a shared focus on the effects of ICT on the city, its processes and its ways of living. Kitchin (2013) sees two main categories of understanding of smart cities, where one school of thought sees ‘smart’ as the degree to which what Greenfield (2006) calls ‘everyware’, which is all the computation and digital instruments embedded directly in the urban fabric (i.e. internet and telecom networks, camera networks, digitally controlled utility services; but also data collected by smartphones by citizens themselves (Kitchin, 2013)). Proponents of this sort of smart city see the integration and analysis of this networked data system as conducive to a better understanding of the city, enhancing efficiency and sustainability (Hancke et al., 2013; Townsend, 2013). The other understanding of the smart city is more broad, where the term smart city is more generally used, almost as a synonym for the knowledge economy, but in an urban context. ICT is seen as vital to fostering this knowledge economy, but the embedding of ICT in the urban fabric is not in itself seen to make a smart city (Hollands, 2008). In other words, one understanding of smart cities is more technocratic and viewed through a technological lens, almost as if ICT is an end in itself, while the other views ICT more as an enhancement to facilitate innovation and all kinds of development (Kitchin, 2013), more as if ICT is the means.

Unsurprisingly then, some of the most fanatic supporters of smart cities are large businesses, since what the two understandings of smart cities share is a devotion to data collection and the underlying neoliberal worldview where lots of headroom for the market and technology are seen as the best way to govern the city. Garnering popularity among policy makers as well, smart cities are seen to offer substantial socio-economic benefits in the form of safer, more sustainable, functional and liveable cities; positioning the city as a site of innovation, not unlike the creative city as conceptualised by Richard Florida (2004). While the desirability of these benefits is of course hard to contest, though you may still question who exactly benefits, the data collection to inform the policies meant to achieve them is often viewed as free from ideology, as objective and neutral information. A critical perspective on what data is being collected and produced and how it is being used by businesses, governments and citizens seems required then.

As Townsend (2013) and Greenfield (2013) argue, smart cities of the future without critical examination are likely to reflect visions of the state and the corporate sector, leaving little room for the desires of the wider people. Smart city discourse tends to take on a technocratic, information-driven conception of problem-solving, focussed more on data than on interpretative capacity, resulting in apolitical framing of urban problems (Söderström et al., 2014). Zooming in more specifically on mobility in the smart city, smart and shared mobility is currently reshaping cities. While this can engender new business opportunities and offer more alternatives to the car, many administrations are struggling to organise and manage shared and smart mobility into what might serve the greater good (Creutzig, 2021). Technological advancements are rapid and are

difficult for policy makers and practitioners to keep up with, let alone think about how desirable or dangerous they are. It is reasonable to assume that evolving mobility technology will lay an increasingly greater claim on public spaces, making it affect spatial politics, especially on which modes of transport are prioritised and who assigns these priorities (Henderson, 2018). For example, Mobility as a Service (hereafter referred to as MaaS) and broader shared mobility providers are only effective in transitioning to low-carbon mobility when they are specifically and effectively designed to replace car trips, and not replacing but complementing public transport (Creutzig, 2021). But this effectiveness can sometimes be neglected, as cities are ranked on their degree of 'smartness', with funding being allocated based on how 'smart' a city is, rather in what that smartness accomplishes (Söderström et al., 2014). This puts an emphasis on economic valuation of the degree of smartness (Boltanski & Thévenot, 2006), instead of what cities use those smart technologies for.

Cycling in the smart city

With the large growth in literature on smart cities in the last thirty years, there is a more recent small but growing body of research on smart cycling technologies. Cycling is increasingly conceived as in tandem with smart technologies, or 'smart' cycling technologies (Nikolaeva et al., 2019). This is an amusing contradiction from a mechanical perspective, since a bicycle is a relatively simple machine that operates with just a few components, but more importantly, cycling was primarily seen as an 'offline activity' just a few years ago (Behrendt, 2016). The increasing academic interest in smart mobilities generally seems to have also infiltrated scholarly work on cycling specifically. This may be best encapsulated by Behrendt's (2016) coining of the term 'smart velomobility', which integrates velomobilities (research on practices, systems and technologies of cycling) with smart mobilities (research on data mobilities and its practices, systems and technologies). Cycling is a practice and activity characterised by its interactivity, both with the bike and one's environment, which makes inquiries into how it is experienced and understood especially pertinent when compared to other modalities (Nikolaeva et al., 2019; Larsen, 2014; Te Brömmelstroet et al., 2017). In this context, I am interested if this academic attention has seeped into policy making as well, especially considering the rise of the e-bike, which can help overcome some of the barriers the traditional cyclist faces when trading their car for a bike (Rérat, 2021).

The smart city in the village

The reader may have noticed that I have so far almost exclusively used the word 'city' in conjunction with 'smart', and this is for the simple reason that almost all of the existing literature on 'smart' technologies relevant to planning and geography focuses on urban contexts. This is not entirely surprising, since arguably the most essential element of the smart city is data collection, and cities simply contain many more people to collect data on, as well as many more potential users of that data. As Shuldiner (2020) puts it: "...the typical village is already smart: collectively, it understands enough about what happens within its environs to be able to optimise that activity according to the values held most dear by its inhabitants" (pg. 83). While this passage reads a bit like a 21st century version of Georg Simmel's (1903) essay *The Metropolis and Mental Life*, its main message is not that the anonymity associated with cities takes a toll on the well-being of its citizens, but rather that information gathering to 'optimise activities' is a response to a given city's main challenges, which tend to lie on the population level (Shuldiner, 2020). The contrast between city and village is then the contrast between information-seeking on the aggregate and

the individual. However, in non-urban regions that are closely intertwined with a larger city, such as the province of Groningen with its city of the same name, this contrast may lose some of its edge. More than fifty years ago, Henri Lefebvre (1970) proclaimed that society has become completely urbanised, not necessarily referring to people living in cities but primarily to the urban dynamics which have taken shape due to industrialisation taking precedence over agricultural production. One of the main inspirations for much of the planetary urbanisation literature, Lefebvre's hypothesis may have been premature at the time, but the following decades have hardly proven him wrong. While there is no room to extensively discuss the body of work on planetary urbanisation, and its critiques, in this thesis, we can say that the city-rural distinction is not so clear anymore in much of the world. The conceptualisation of the city as a self-contained system no longer exists from an analytical perspective (Wachsmuth, 2015), and the infrastructure and ideas of urbanisation have spread out beyond the city (Gandy, 2015). For this reason, I see no issue in including literature on smart *cities* in this thesis. In fact, it may be interesting especially because issues such as accessibility of and distance to the city remain relevant issues in mobilities even when the boundaries between urban and non-urban dynamics are blurred.

Methods

In this chapter I have outlined the research design of this thesis. The choice for a case study and its consequences are discussed, after which I describe the case of Groningen briefly. I then explain how I operationalised the concept of the imaginary in this study. Following this, I delve into the particulars of how the data was collected, organised and analysed. The reader can also find overviews of interview respondents and the policy documents that have been analysed.

3.1 Research design

The aim of my thesis is to encapsulate the ideas and conceptions of cycling among cycling policy makers in the province and city of Groningen. Correspondingly, a qualitative research design is required in order to gain a deeper understanding of what the challenges and urgencies of cycling are and will be in the future. Since the subject of investigation is complex and inherently place-bound, and the ideologies and norms that inform the imaginary cannot be seen independently from the place they are derived from, a case study is required. Guided by the research objective, I have used a combination of a literature review and empirical research. The literature review is used to answer sub-questions 1 and 2 and the empirical portion of the thesis is used to answer sub-questions 3 and 4, with the secondary data providing contextual support and background information.

Throughout the research process, the iterative element common in grounded theory approaches is used, where every interview or observation can build on the previous points of data and experiences potentially calls for adjustments to the next interview. This enables the discovery of more detail in the results, reflexive capacity during the course of the research process and on its preliminary results (though this reflexivity is mainly limited to what Nicholls (2010) calls self-reflexivity), a more sensitive and self-conscious approach to the research subject, and it allows findings through serendipity (Bryant, 2019; Charmaz, 2014). In practical terms: while I have outlined a body of literature in the previous chapter to shape my initial interview questions and answer my first two sub-questions implicitly, during the research process I have taken findings from earlier interviews, my participatory research and analysed policy documents when relevant, and used them as a springboard for new questions or follow-up questions in interviews.

3.2 Case selection and description

The choice for a case study was a fairly straightforward one, as case studies are at their most useful when attempting to answer *how* or *why* questions, and can offer a way to make sense of highly contextual areas of inquiry (Yin, 2014), which policy and practices certainly are. Of interest to this research too is the facilitating function a case study offers in exploring a particular phenomenon or concept within a certain context (Baxter & Jack, 2015), making them useful when operationalising a complex term such as the imaginary and allowing for reflexivity during, after, and on the research process.

Groningen is a province in the very north of the Netherlands with a population of almost 600.000 people. It is made up of ten municipalities, the largest of which shares the same name as the province and biggest city, Groningen. About a third of the population of the province resides in

the city of Groningen, making it the only big city in the region. Approximately a quarter of the city's residents is a student. The large student population and the relative compactness of the city makes it a cycling haven. Nowhere else on earth do people bike more relative to the population than in Groningen, according to the cycling promotion platform ran by the municipality (Groningen Fietsstad, 2022). It is hard to imagine a more suitable case when inquiring into cycling futures, considering that with high cycling ambitions we can reasonably expect more from the imagination that has contributed to it. However, the province of Groningen is also interesting to include in this study, as it has close relations with the city and by extension its mobilities. While commuters into and out of the city are cycling more often to work, about 15% of commuters who live within 15 kilometres from their work still choose to travel there by car (Groningen Bereikbaar, 2022). Including the province in this study may illustrate or uncover interesting similarities and differences between the province and the city, and can provide us with new information to persuade these low-distance car users to take their bicycles instead.

Further illustrating Groningen's cycling capacities, it is situated within The Netherlands, a country that contains more bicycles than humans (Fietsersbond, 2019) While the figure of bicycles to people is a bit misleading as not every person is a cyclist, some people own *a lot* of bikes to skew the average, in Groningen 95% of those surveyed indicate they take at least one trip by bicycle per week (P-2). Assuming this sample generally holds up for the entire population, we might actually say that around 95% of Groningers are cyclists. This means a few things that make the province of Groningen an interesting case: first, with so many cyclists, cycling policy affects almost everyone who lives in the province, making an inquiry into it highly relevant for just about anyone; second, with so many people being cyclists and both the country and the province having mature cycling policy climates, this allows for what I will call 'luxury' policies and policy thinking (for this research I am particularly interested in the luxury policies concerning smart (velo)mobility), making it interesting to study through the perspective of the social imaginary. In a less 'developed' cycling policy climate, the focus may necessarily be primarily on essential prerequisites for cycling (more bike paths, matters of safety, etc.). Dutch people sometimes have a tendency to flaunt their cycling capital, but they should be reminded that the Netherlands is one of the flattest countries on the planet, making its geography, at least at first, a primary enabler of cycling, rather than their inventiveness, toughness, or whatever character quality they wish to ascribe to their cycling prowess. Regardless, for the purposes of studying the cycling imaginary it is highly suitable.

3.3 Operationalisation

'Measuring' a fuzzy concept such as the imaginary requires operationalisation. To make the concept *imaginary* operational in this thesis, I employ the conceptualisation of the imaginary as a network, as described in various literature (e.g. Castoriadis, 1997; Taylor, 2002; Mlynar et al., 2022). This way of understanding the imaginary supposes it to be a network of different topics, or in other words it contains a selection of topics that may or may not be linked to one another in the views of the research participants. These topics then become the codes of the conducted interviews and consulted policy documents. The network of topics derived from the data collection are then aggregated and connected when applicable, effectively forming the collective imaginary of the interviewed policy makers and the organisations behind the policy documents.

Attempting to capture and make sense of a constellation of futures demands taking an ontological position. In this thesis, I am interested not only in the collective cycling imaginary, but also in the practices that are informing it. After all, it is these practices and technological advancements that are probable drivers of the cycling imaginary and I see them as (research) subjects in their own right, drawing on Latour's (1990, 2005) actor-network theory. Practices are the matter, or what is being done, in this research. Keeping this in mind, the studying of practices is turned operational by coding present and future-oriented policy documents the same way as the articulations found in the interview part of this research. The matter is then compared and potentially connected to the articulations of the cycling future. The observational data collected is also seen as practice, as the Fietscommunity event I attended, and explain in the next section, is quite literally the actualisation and perhaps even realisation of imaginaries and desired futures.

3.4 Data collection

Literature review

In chapter 2 I have outlined the literature on cycling, sustainable and smart mobility and their futures, as well as other relevant concepts and theories. This has informed primarily the creation of the interview guide and the few deductive codes used in my data analysis. The literature consulted is a collection of primarily academic articles and books, but contains some grey literature as well. All sources were found either through academic databases or search engines such as SmartCat and Google Scholar, or by the snowball effect through references in articles already consulted.

Document and policy review

As a curated articulation of the imagined future, cycling and mobility policy documents of the prescriptive sort provide an excellent starting point to gain insight into how policy makers in Groningen see the future of cycling and, perhaps more interesting, how they present that future. How visions are communicated is in itself performative, directing the discourse towards some futures more than others, limiting the realm of future possibilities (Frank & Forrester, 1993). Therefore, analysing both the content of policy documents as well as their language can tell us more about the cycling imaginary. Documents outlining a desired future necessarily contain some sort of ideology. A careful and targeted reading of such documents helped answer my research questions, providing a governance picture of cycling futures through a systematic reading of what is being said. Notably, in addition to programmes about what the future should look like, programmes for the execution of cycling plans were a part of my document analysis, the latter contributing to the studying of practice that is part of my research. For a comprehensive list of the documents consulted, see the table below this paragraph, but the selection requirements of documents for analysis were that they presented some sort of articulated future and contained references to cycling and/or sustainable mobility. I have consulted documents on multiple governance levels, as Groningen obviously does not govern in a vacuum. Concretely, this means relevant policy documents and other sorts of written articulations came from the national, province and municipality levels. Documents were found on the websites of the relevant governing bodies, as well as sent to me from (potential) interview participants.

Table 1: Overview of analysed policy documents

Name of publication	Topic	Organisation	Time of publication
Fietsstrategie 2015-2025 (P-1)	Outline of the cycling policy ambitions and strategy between 2015-2025	Municipality of Groningen	May 2015
Fietsstrategie 2016-2025: Verbinden met de Fiets (P-2)	Outline of the cycling policy ambitions and strategy between 2016-2025	Province of Groningen	Medio 2016
Uitvoeringsprogramma Verbinden met de Fiets 2020-2023 (P-3)	Concrete and more actionable cycling policy strategy between 2020-2023	Province of Groningen	October 2020
Mobiliteitsvisie Groningen: Goed op Weg (P-4)	Outline of future mobility ambitions in the municipality of Groningen	Municipality of Groningen	December 2021
Nationaal Toekomstbeeld Fiets (P-5)	Outline of the national cycling ambitions	Tour de Force	July 2022

Semi-structured interviews

Guided by the research objective, I have designed and conducted semi-structured interviews with cycling policy makers, where I was interested both in their visions of cycling futures as members of their organisation (primarily the province of Groningen) as well as their personal visions of those futures. The main goal of these interviews was to discern what concerns and expectations these policy makers have about the future of cycling in Groningen. Interviews were an essential part of this research as they allow for a deeper understanding of the opinions and viewpoints of respondents, both of which inform their conceptions of the future. This type of data cannot be gathered from policy documents alone, as they are much more curated and usually worked on by multiple people, making it more likely their idealism has been tempered through compromise. Interviews allow for more opinions, providing context to how the policy documents have been constructed and more importantly, gaining some insight into personal views in addition to official standpoints. Respondents were selected through purposive sampling, based on their expertise or affinity with cycling in combination with either or both of mobility policy and smart cities. Recruitment was done through cold emailing contributors to documents that have also been analysed in this project, as well as asking the organisers of a cycling community event I have attended as a participant-observer for an in-depth interview. All respondents' first language is Dutch. Correspondingly, each interview was conducted and transcribed in Dutch. I have translated all quotations from these interviews and the policy documents that I used in the results

as accurately as possible. Locations of interviews were either online through communication software (Google Meet or Microsoft Teams) or at the offices where the respondents work. For an overview of all interview respondents and the dates of the interviews, see the table below. Interviews were conducted in generally the same manner (semi-structured) with each participant, but I skipped some questions or asked extra follow-up questions on the fly, based on the expertise of the respondent as well as the informational density of their responses. The interview guide can be found in the appendix, but the main idea behind the script is to start with contemporary cycling and its challenges, and what is being done well, and moving towards the future of cycling, using smart technologies as a bridge to get there. This was helpful to set a starting point, allowing for more clarity on how the potential future might differ and what the role of technology is along the way and/or in that future.

Table 2: Overview of interview respondents

Respondent number	Occupation	Organisation of employment	Date of interview
Respondent 1	Fietsmakelaar (a sort of boundary spanner of intergovernmental cycling policy)	Province of Groningen	8/11/2022
Respondent 2	Mobility policy maker	Municipality of Hamburg (with affinity in Groningen)	10/11/2022
Respondent 3	Cycling policy maker	Province of Groningen	10/01/2023
Respondent 4	Mobility policy maker	Province of Groningen	10/01/2023

Participant observation

To enable the gathering of information into the practices of futuring, I have attended a ‘cycling community event’ as a sort of participant observer. An initiative by the province of Groningen and first conceived as an idea in *Uitvoeringsprogramma Verbinden met de Fiets 2020-2023*, the ‘Fietscommunity’ event was tried out in a sort of pilot setting in September 2022. After its apparent success, a second event was planned in early November 2022, and a third meeting has been planned for the end of January 2023. Via email, I asked to attend the sequel in November as a participant-researcher and was given the opportunity by the organisers to be there and participate. Almost as a real-time construction of the local and regional cycling imaginary, participating in this cycling community event allowed for a live witnessing of the practices of cycling policy making and cycling networking. This adds a practical, actualising component to the more carefully curated policy visions, those that have not made it past the stage of articulation, that have also been analysed as part of my research.

The session can be characterised as a sort of cycling networking event, with many different representatives of parties with interests or involvement in cycling in Groningen in attendance. Some examples include spatial planning consultancies, governmental organisations (primarily municipalities and the province), NGOs, other cycling organisations and start-ups and other businesses. The event kicked off with a welcoming speech and introduction by the organisers (two employees from the province of Groningen), after which two plenary keynote speakers took the stage with lots of time allocated for questions afterwards. Thereafter, breaking from the plenary, the attendees were split into seminar groups of their choosing. The topics of the seminars were partially predetermined, with a few being purposely left open to let the participants decide what to discuss about. For more details on the exact content of the event, as well as what this might mean in the context of the cycling imaginary, please see the results chapter.

3.5 Data analysis

Both the transcripts of the conducted interviews and the policy documents were coded using qualitative research software, specifically Atlas.ti. Serving mainly an organisational purpose, I have attached codes to notable passages of text. These codes were created primarily inductively during and after a close reading of the texts and transcripts, taking inspiration from grounded theory approaches where the aim is primarily to understand and not necessarily to explain (Charmaz, 2014), but a few codes are derived deductively from the literature. For a full list of the codes, please see Table 1 in chapter 4, the results.

3.6 Ethical considerations

By making use of interviews as part of my data collection, I have taken on the responsibility of protecting my respondents from any negative implications of their participation. Respondents have a right to privacy and confidentiality. In order to ensure they have and keep these rights, I have asked them to sign a consent form (see appendix), wherein they are reminded of these rights and state the voluntary nature of their participation, as well as give permission for me to use their responses in the results. I have also given them the option to have their likeness and/or their responses removed from this thesis should they desire this at a later time. Regardless, all recordings have been deleted upon completion of my written thesis. Both the transcripts and the recordings have been stored on a password-secured cloud service during the research process. One respondent asked to redact part of their transcript, which I have of course complied with immediately. This has little to no effect on the results, as the subject matter taken out of the data is not particularly relevant for this research anyway. The recording would have been deleted regardless.

Results

In this chapter I discuss the results of my research. On the next page, the reader can find the codebook I developed to organise and make sense of my data analysis. Following the codebook, I present my results in six interrelated themes with corresponding sub-headings.

Table 1: codebook derived from the literature, interviews, notes and policy documents

Code	Code description	Number of quotations (total: 276)
Cycling and the car	Reflections on the position of cycling in relation to the car	75
Smart (velo)mobility	Reflections on the role of technologies in cycling and mobility	69
The city versus the rural	Reflections on cycling in cities as compared to non-urban areas	55
Types of cycling	References to multiple types of bicycles or bicycle users	51
Cycling in relation to public transport	Reflections on the role of cycling in relation to public transport	49
Attitude towards cycling	Personal or ideological views of cycling in present or future	45
The role of data	Reflections on how we should use data in mobility	40
Spatial scarcity	References on the spatial issues and consequences of mobility choices	26
Safety	References to cycling safety	23
Equality	Reflections on mobility justice, includes matters of accessibility, sustainability, liveability	22
Governance	References to intergovernmental cooperation in cycling policy and/or bureaucratic/organisational inhibitors	22
Cycling benefits	References to the benefits of cycling that aren't directly related to this research (health, etc.)	19
Cycling and sustainability	References to specifically sustainability benefits of cycling	15
Economy	References to economy (funding, economic climates, etc.)	7

4.1 The codebook

Above the reader can find the codebook I developed to organise my data analysis. It was formed by an iterative reading of the transcriptions, my notes as a participant-researcher, and the policy documents, from which I have extracted relevant concepts, ideas, and topics. After finding common themes, these became the codes in the codebook. I then looked for connections between these topics and themes in the transcriptions, and have presented this in the form of a narrative following this paragraph. I have included the distribution of the codes I applied to the data for the sake of clarity, but I do not wish to put much weight on the frequency of each individual code, as codes were used as an organisational tool and not as a way to quantify qualitative information. While the frequency distribution of codes may tell us something about where the emphasis lies in the policy documents and responses of my interviewees, it was not intended as such and conclusions should not be drawn from this alone. Nonetheless, the sub-headings do mainly resemble the topics/codes most commonly quoted in the transcriptions, as this best communicates my findings as a whole. Other less commonly found topics have been integrated within these 'larger' topics, as they are often interrelated. It should be noted that the subheadings are primarily a storytelling device, rather than a futile, and perhaps even misleading, effort to establish hard categorisations. This is because, as will become clear, that these 'categories' are not necessarily so strictly distinct from one another in practice.

4.2 Setting the stage: cycling governance

As the governing organ responsible for building and maintaining roads and, more importantly, bike paths (1), the Dutch provinces enjoy a relatively autonomous and independent position in building their infrastructure networks. Groningen uses this autonomy to strengthen its position as a cycling province, culminating in ambitious plans such as the Fietsstrategie 2016-2025. Provinces also have a sort of supervisory and guiding function on the municipalities that lie within them. Municipalities, particularly the rural ones, can be difficult to persuade of provincial plans due to lower budgets than their provincial colleagues, meaning their attitudes are often necessarily more conservative and less innovative (R-1). This budget disparity between involved government levels is a challenge, but needs to be overcome to make meaningful interventions on the more local (municipal) scale, and the province seems willing and able to take this on.

“... and what we do very well is that we simply have a very ambitious programme in place. With budget, that is important too. And we try to take municipalities with us in this ambition, working towards a fully covering cycling network in the province, across municipalities.” (R-1)

Adding to the governmental mix, the ambition of the province transcends international borders as well:

“Our colleague works across the border too, connecting nodes to each other. We are looking at that. But also in terms of public transport, such as the train connections, so we are working with Germany on seeing how we might improve that.” (R-3)

While sometimes difficult to convince, municipalities generally do follow national guidelines, and tend to be thorough in their execution of these guidelines. But national guidelines are, at least

until recently, still a bit more “car-minded” than the province wants to be (R-1). This interplay between governance levels of course makes them dependent on each other, making cooperation between the various government levels essential to realising truly progressive cycling and mobility policy. This is especially relevant because the city of Groningen (and the corresponding municipality) has a strong regional function in the province, with many trips made to and from other municipalities in the province. This makes the municipal cycling policies intrinsically linked to their provincial counterparts not just in terms of governance, but also in the experiences of their residents. At the same time, tensions may arise in catering to quite a different set of needs and ideals. This cycling manifestation of the rural-urban divide is a recurring trope in both the interviews and the policy documents, as the reader will find in the section of this chapter dedicated to this subject.

Of course the cycling imaginary is not formed by governing organs alone; non-governmental organisations, businesses and academics can also be involved. The Fietscommunity Event brought all these people together. When asked about the usefulness of such a cycling networking event, a respondent from the province, who also attended the Fietscommunity event, said the following:

“I truly believe (cycling) projects will take off faster through these initiatives. That you can say “Oh are you working on that? Me too, shall we join forces?”. That a sort of cross-pollination occurs. Maybe also an exchange between the academic field and practice. Yes, that all would be pure progress. I do think it is still early and difficult to imagine what it might concretely get us though.” (R-1)

I too noticed this cross-pollination in action while at the event, primarily due to being able to discuss many different cycling projects and topics in one session with many actors. The barrier of communication was very low, and the spontaneity with which you could approach someone that might be of interest to you or your organisation allowed for an instantaneous professional connection. I even overheard someone elated by being able to talk to people they otherwise would not have noticed in their perpetually overflowing inbox. While this simple observation may not be particularly revelatory, at least in Groningen a cycling networking event had not been tried before this initiative by the province. What was especially interesting and I might even say pleasant, was the lack, or at least temporary suspension of hierarchy. Other attendees seemed just as interested in me as a humble master’s student, who has comparatively little to offer, as in those in prominent positions at well-known organisations. This suspension of hierarchy might be illustrative of the imaginative power of dedicated discussion events, showing that while traditional governance and power dynamics certainly do exist in the real world, an event specifically aimed at harbouring discussion allowed for the subversion of regular procedures.

4.3 Position of the bicycle

Unsurprisingly, one of the most obvious findings is the fact that cycling is not much of a point of contention in mobility planning in Groningen anymore. It has effectively become apolitical among mobility policy makers, meaning that generally everyone is in favour of more cycling infrastructure and more stimulation towards getting people to use their bikes. The *Nationaal Toekomstbeeld Fiets* report calls the bicycle “an essential element of the integral mobility system”

(P-5). Similar sentiments were communicated in all other interviews and all policy documents in this research, praising the bike's sustainability and health benefits, liveability, and spatial advantages. This was especially tangible at the Fietscommunity Event, where not a single participant questioned the essential role of the bicycle in future mobilities. Correspondingly, the two primary keynote presentations were not about the *if* or *why* of cycling, but rather spent time on the *how* through the themes of safety and mobility poverty, respectively. It seems, at least in Groningen, there is practically no opposition to the bicycle. *That* the bike is here to stay is clear, but in which directions?

I will discuss the keynotes of the event below, but when the session split into breakout groups afterwards one of those groups was dedicated to deciding on the “vision and name of the Fietscommunity” (cycling community). In other words, they were implicitly mapping out their own mini-cycling imaginary in real time. One of the most interesting topics of discussion was whether or not the name and lingua franca of the event should be Dutch or English, perhaps representing the geographical scale on which Groninger cycling should operate in the eyes of policy makers, as well as the scope of the ambitions. As a (student)-researcher, I, clearly biased towards a certain way of thinking, expected to hear big, conceptual ideas and normative standpoints in this session. Instead, ideas were very actionable, tangible and took place in the now and very-near future rather than a broader vision of what cycling should be in the slightly-farther future and beyond. Example ideas that arose out of this discussion included plans for closer collaboration between Groningen Bereikbaar (itself a collaborative organisation between municipality, province, ProRail, and Rijkswaterstaat) and Velodroom (a large bike shop), cycling stimulation projects at schools, and a dedicated “day of the bicycle” to happen in the near future, aimed at creating cycling safety awareness.

The main theme of the “day of the bicycle” being safety is perhaps illustrative of where the emphasis was during the Fietscommunity event too. Safety was a recurring topic throughout the afternoon, with the keynote on safety and accidents generating a lot of discussion afterwards. A surgeon and a neurologist from the University Medical Center Groningen were the speakers, and took a series of facts and figures as a starting point for which cycling safety issues were most pressing. The neurologist, perhaps obligated by their profession, advocated helmets, but seemed to already have accepted that their call for head protection fell mostly on deaf ears and only mentioned it in passing at the start. Instead, they noted that about half of cycling incidents are unilateral, meaning no other person was involved. Attributed to the rise of e-bikes and the increased speed, the neurologist saw many elderly people at the clinic who had trouble adjusting to this speed and misjudged corners, bumps in the road etc. This was corroborated by the surgeon, who mentioned that elderly on e-bikes have about eight times more chance to land in the intensive care unit than those on traditional bikes. Notably, the surgeon raised questions about the use of technology during cycling (and also driving, citing the almost comically large screens on the dashboards of some electric cars as a distraction for drivers). Some e-bikes too have fairly sizable screens containing lots of information that might be distracting for their riders, and the increasing use of personal fitness data that many sportive road cyclists can now display on their on-board computers might form a similar safety hazard.

It is not just medical professionals that are concerned with safety, and especially the consequences of the different speeds on bike paths due to e-bikes. In a survey by the province, 46% of Groningers indicated that these speed differences make them feel unsafe (P-3). Similar sentiments and statistics were mentioned in P-4, P-2, P-1 and by R-1 and R-4. In the *Nationaal Toekomstbeeld Fiets* (P-5) we can read that safety is, while still a goal, primarily a prerequisite for other cycling interventions, perhaps indicating that the province and municipalities in Groningen put more of an emphasis on safety than their national counterparts.

Providing a counterpoint to a cycling future where safety comes first, one respondent had more of a relativist perspective, worried that an overemphasis on safety might deter people from cycling and in turn actually having a negative impact on public health.

“It’s a similar discussion as the helmet, that people say it is much safer when everybody wears a helmet, but I think it needs to stay voluntary. Studies show that a helmet requirement causes a decrease in people cycling, that has a much bigger impact on health because people will move less. That they might not die due to hitting their head, but they might have heart problems because they don’t move enough.” (R-2)

Solutions offered were the wearing of helmets, but primarily accident prevention through higher quality cycling infrastructure such as the broadening of bike paths, smooth asphalt, less stopping and going etc. Interestingly, these solutions sounded a lot like building car infrastructure.

“It is primarily the speeds that are higher which means you need more space to turn the corner and foresee dangerous situations. So yes, that means you need better and safer bike paths through broadening, with clear signs. That speed has a lot of impact.” (R-1)

This ‘car logic’ in the forming of solutions to cycling issues tends to be frowned upon by critical urbanists, and this is not without reason. But following car principles is not all bad, we just need to think about how and where we apply them:

*“We now know that it (bike paths) doesn’t have to be the straightest line, we can allow some bending and meandering, something is allowed to happen on the way. So in that sense we don’t want it to look like car roads, but on safety we do. Car accidents have drastically gone down due to safer modern cars but also due to highways with smooth corners and more visibility. The bike (infrastructure) is behind in that sense, sometimes you run into situations there that don’t work with how busy it is and safely crossing and stuff. So in that sense maybe it should be more like the car. **But only in safety, not in experience.**”* (R-1)

4.4 Cycling and the car

As mentioned, the notion that the bike should keep and continue to grow its position in the mobility system is universal in Groningen. That mobility system is still car-dominant though, and it is therefore inevitable that the word car will fall in any discussion about cycling. Interestingly, words and phrases that were previously primarily used by academics and cycling activists are increasingly being used by policy makers, perhaps indicating a relatively recent shift in ideals. Some examples are the use of the phrase ‘car logic’, or comments in the interviews/passages of

policy documents where it is implied there is a change in this logic. I could find examples of this in all interviews and policy documents that were a part of this research. Here are some of the more interesting or colourful ones:

“The cyclist and pedestrian will literally and figuratively have more space. This is at the cost of space dedicated car infrastructure, departing from the car logic, which is what we call thinking in ways in which the car is self-evidently central.” (P-4)

“The more facilities in the proximity of residents and the more these facilities are reachable through walking, cycling and public transportation, the less cities are dependent on motorised traffic.” (P-5)

“There too is a world left to conquer if you take a few steps back with the car; lowering car speed limits, less space for the car, less parking spaces. I see more chances there for the bike, in the city but also in places like Delfzijl and Winschoten” (R-1)

You see that everything is still aimed at the car, with spatial design accordingly. But I do feel like there is a shift, but it’s long term. If you cycle from Bedum to the city (Groningen) you need to stop at roundabouts and those fucking cars can just keep moving! So we are still so tuned to the car and I think this is a pity.” (R-3)

Especially interesting is the willingness to use language we might even call hostile to automobility, something that was not so long ago exclusively the language of activists. The previously mentioned use of car logic implies a departure from this logic, reflecting back on a past mindset. But more subtly, stating that we need to become less ‘dependent’ on cars and that we can ‘conquer’ back space also implies an ideology informed by an awareness and subsequent discontent with the dominant system of automobility. The last quote, a personal anecdote, strengthened in emotional weight by an expletive, too indicates disenchantment with the status quo. Coming out against dominant systems of automobility does not seem to be a radical position to take in Groningen anymore. While this may not be too surprising for planning practitioners and scholars, these policy makers are also addressing the general population, meaning we shouldn’t underestimate the power their standpoints have.

While a car-centred ideology seems to no longer be in vogue, the fact remains that car use is still quite high in the Netherlands. During the interviews, I asked respondents if they had any idea why the number of trips by car are not decreasing while the number of cycling trips have been going up. Interestingly, their responses varied in how they interpreted my question on these seemingly contradictory developments, but the common denominator was that it remains somewhat of an enigma. Two respondents took a pragmatic route, setting aside explanation and turning to bicycle stimulation and behavioural change as a way to address the issue:

“We try to continually devote attention towards this issue, it is of course about making people conscious of it which is what you eventually want to turn into behavioural change. That is something for the long haul, through communication, interventions on bike paths, and rewarding cyclists. We are trying things with hubs, pilots to see what gets people out of the car. But it is very difficult.” (R-3)

“I think it comes down to comfort. You need to convince people to go by bike, there are always inhibitions like... It’s raining and this and that, but making bike paths as comfortable as possible would convince a large part (of the population)... You don’t need to convince everyone (to trade the car for the bike).” (R-2)

One respondent laughed through their answer, but the phenomenon was clearly a source of frustration:

“One moment we are looking at the data and see that people are cycling more and more, you also see it around you with how much busier it is on bike paths. But then we see the car numbers and how busy the roads are and it’s like aaaahhh! So it’s a frustrating and conflicting topic because we feel and see that there have never been so many bicycles sold, it’s absolutely booming but we see just as many traffic jams.” (R-1)

The most analytical answer drew the comparison to the fact/quasi-aphorism, at this point cliché in mobility and planning, that wider roads do not lead to less traffic jams:

“You hear of course that more asphalt does not necessarily mean less traffic jams. So maybe it’s just more people driving, more of that modality. It may not say much about a different distribution of all modalities. But that’s just an idea.” (R-4).

Notably, none of the respondents mentioned an increased variation in the kinds of cyclists as an explanation, while, as the reader will see later, all respondents made some sort of reference to this during other parts of the interviews and all policy documents showed an awareness of this development as well.

Regardless of what the underlying causes of the issue are or what the respondents think they are, it became very clear that the car is becoming more and more of an unwanted visitor in public spaces. Citing a survey which claims more than half of car trips are shorter than 7.5 kilometres and more than 60% of inhabitants live within 15 kilometres of their work (KiM, 2020 in P-5), the Nationaal Toekomstbeeld Fiets sees plenty of chances to replace some of these trips with cycling (P-5). Speaking from personal opinion, rather than an official standpoint from the province, one respondent saw opportunities in these short distance trips, going beyond just cycling policy:

“I would like to see, speaking personally, if we could design our living environments more local, that we change the required travel distances. Now we are trying to get people to cross large distances on their (e-)bikes, but maybe we should approach it a different way. By truly evaluating what a particular area has to offer, maybe we could start some sort of collaboration where mobility is the means to an end (locally focussed development)” (R-4)

When asked if they meant a sort of compact city typology, they referred to the 15-minute city, but rural.

As expected from a progressive city with lots of young, car-less people, the municipality of Groningen goes farther than the province in their quest to reduce car use. Their policy vision of cycling is the most radical in terms of pro-cycling and anti-car policy aims. In their own words:

“In the integration of new spatial developments, we think from the beginning from the perspective of the bicycle. After all, the bike is the most important means of transportation in the city.” (P-1)

While this is quite strong language, if we read closer and further in the text we can see that the bike is primarily seen as the major means of transportation *within* the city centre. Outside of this centre, the municipality sees the bike more as a part of the ‘mobility chain’ (P-1). The car and bike are more difficult to separate in neighbourhoods, and this is also not deemed necessary, though the municipality wants to turn some of these streets into ‘cycling streets’ and prioritise ‘slow traffic’, meaning pedestrians and cyclists, and reduce speed limits to 30 kilometres per hour everywhere within the city (P-1). In addition, the aim is to integrate the bike more with public transport and P+R (park and ride) facilities, in an attempt to prevent people driving in the city. Specifically pertaining to cycling, the ambition is to create more bike-sharing facilities at these P+R hubs, through what the publication calls “park and bike” facilities (P-1). This synergises well with one of the ideal scenarios in the document, where the bike is used in the last part of the journey when coming to Groningen, or “to cycle onto the Grote Markt” (P-1).

This type of cycling future, where the bike is the dominant mode of transport in the city centre, obviously comes with extensive bike parking requirements. If not addressed, all the space recaptured from a system of automobility is lost due to parked bikes, some of which are what in Dutch is called ‘zwerffietsen’ or ‘weesfietsen’ (literally translated to orphan bikes, meaning bikes that have been abandoned in public space). The municipality intends to build, and already has built, large underground bike parking facilities to combat this issue. Under the Grote Markt and below the Groninger Forum these facilities have already been realised, with room for respectively 1500 and 1200 bicycles (Groningen Fietsstad, 2022; Discover Groningen, 2019), and there are plans for a similar bike parking construction near the Vismarkt. They also want this to remain free of charge (P-1). This all indicates that parked bikes in public spaces are seen as a major issue by the municipality, for good reason. But there is a hint of irony in that one of cycling’s biggest challenges in the city is its claim on scarce space, one of the major reasons that cars are undesired in cities in the first place.

4.5 The city and the rural

For the city, a primary reason to reduce car use, and replace it with cycling, is due to the spatially unsustainable system of automobility. In the rest of the province, this spatial issue is less of a concern. In fact, you might say that the abundance of space, in the form of distances to cover, is one of the major challenges of getting more people to use their bicycles. At the same time, a lot of Groningers work in the city and live outside of it, meaning they need to both cover a larger distance and take whichever mode of transportation they use into the city, whether that is a car, bike, or themselves. As the economic motor, or bike pedal, of the region, the city of Groningen has a close relationship with the province, but this translates to complex mobility requirements.

“... that makes the province so unique, that we have a city where everything concentrates in terms of jobs and studies. That creates a contradiction, which makes it difficult to tell just one story.” (R-1)

As we will see later, cycling in the province also demands different kinds of bikes. Regularly cycling large distances on a traditional Dutch bicycle requires a level of courage that not everyone has, or maybe even should have. This means that the cycling infrastructure is quite explicitly aimed at the type of bikes and their corresponding riders that can cover space more easily or more quickly, such as the e-bike and speed pedelec. The provincial cycling strategy already saw potential in this in 2016, where the e-bike was seen as one of the solutions to keep shrinking regions liveable (P-2). When provoked with the reductive question if we should design our bike infrastructure for the e-bike or the traditional bike, a respondent from the province calmly and without hesitation answered with the e-bike, (R-1). They followed up with:

*“Especially e-bikes and speed pedelecs can make a difference, because of those large distances. **The regular bike won’t make it in the province.** The e-bikes and speed pedelecs can make you think “oh that is attractive to try”.* (R-1)

A microcosm of the provincial cycling problem and the strategy meant to address it can be read in the ‘Doorfietsroutes’, which are bike paths designed for larger distances. They tend to be wider than regular bike paths, the cyclist is interrupted as little as possible with (almost) no traffic lights on the way, the asphalt is smooth and very well maintained, and they are even prioritised when winter weather dictates salting the roads. Essentially, they are the cycling equivalent of the freeway. The province has invested a lot of money in these Doorfietsroutes, and not without fruition. These fairly recent investments, in 2015 the municipality of Groningen states these routes do not yet have the desired quality (P-1), yet they also state that they have led to more cycling in the region and are being used intensively every day (P-4), though they do not provide numbers.

You might say that these Doorfietsroutes use car logic against itself. By making the cycling infrastructure as akin to car infrastructure as possible, you might convince some commuters to switch their car out for an e-bike (P-4), if it comes with an approximation of the same efficiency and comfort they associate with the car.

“It’s a great means and a challenge for us, because we focus on rural areas and have to deal with large distances. We are trying things out to see if we can make these larger distances less of a concern, to get people out of the car and onto the bike. For example, with e-bikes and speed pedelecs, we are letting people try them for free for a time to see if it’s for them. It doesn’t always work, but if we can get a few people to change their commute mode that would be a big win.” (R-3)

“From the ‘kernen’ (translates roughly to core commuter villages), we would really like people to come to the city by bike and that they can cross that distance as quickly as possible, making the car less attractive. Especially between Assen and Groningen, we really hope the bike path that we are developing there will help (reduce car traffic)” (R-4)

Another way of solving the distance problem is through what policy makers often refer to as 'ketenmobiliteit', which translates to mobility chain. Generally, this entails some sort of combination of modalities, for example driving to a park and ride facility and cycling into the city from there. Or better yet in terms of reducing car use and emissions, taking the bus or train in combination with the bike. Especially in rural areas, these mobility chains can be quite complex without a car, with multiple bus and/or train changes that do not line up well with one another. One of the most common trips in the Netherlands is the train and bike combination, but this is much easier in intercity travel where there are plenty of shared bikes and distances to cover are more easily bridged.

"We would like a smaller shuttle time. You can safely assume that when you come from your own village and cycle to the train station, take the train to the city and then you might do the last bit with a shared bike. But the other way around you can't assume there is a bike for you. On a few rural stations you might find one or two OV-fietsen (Dutch bike sharing system at train stations), but the limited amount and service level is much lower in the villages." (R-1)

The lack of availability of OV-fietsen at rural train stations is also self-reinforcing:

"The challenge is also that people are not aware... Imagine that it would be the norm that every single station offers OV-fietsen and that people can really trust that they would be there, that might have major implications on behaviour and the use of these bikes. In the current situation, people may not even think to use them or just assume a small station doesn't have them, even if they do. So it's complicated when you offer them at some stations and not at others, it's inconsistent and cannot be trusted by the users." (R-3)

The Province has conducted some trial experiments with OV-fietsen at smaller stations, citing the village and station of Zuidhorn as an example (R-4). They saw that the bikes were barely used, forcing them to reduce or stop the allocation of budget to these rural OV-fiets facilities, despite these bike sharing facilities being a perfect manifestation of their vision for more extensive and easier to use mobility chains, especially for the last mile (R-1). On the national level too, the ambition is to have bike sharing and bike facilities at every place that people might change modalities (P-5). The ambition for better mobility chains seems to be difficult to realise. Other attempts to stimulate the public transport-bike combination that have been/are being made are to allow train passengers to bring a shared bike on the train with no restrictions (P-3), something that is currently only allowed with personal bikes outside of peak hours; to improve the bike infrastructure and locations of bus stops (P-3), and to upgrade the facilities at park and ride places (from more shared bikes and a bike shop to even amenities such as wifi and a coffee shop) (R-4).

A systems level solution offered by respondents, and notably not in the policy publications, was to tackle the distance problem at the source. As alluded to earlier, one respondent's personal opinion was that we should focus our development more locally, to avoid having to travel large distances in the first place (R-4). Similar sentiments were communicated by others; that basic facilities and amenities should be accessible more locally to make it easier to use the bike for activities like groceries (R-1), and the more broad comment that design should be focussed more

locally (R-3). Even the national cycling vision speaks out in its desire to have amenities in villages within (e)cycling distance from one another (P-5).

4.6 Types of cycling

*“The **one** bike doesn’t exist.” (P-5)*

As I have shown in the previous section, the types of bikes and cyclists in the rural areas of the province are fundamentally different from those in the city, and while the city may have a larger diversity in people, the province is highly diverse in cyclists. To give a few examples of the types of bikes now on the bike paths and roads, as listed by the national vision on cycling: electric bikes, shared bikes, personal bikes, traditional bikes, mountain bikes, racing bikes, speed pedelecs, cargo bikes, and stint bikes (P-5). This is paired with a huge variety of cyclists: commuters, elderly, children going to school, students, delivery riders, sportive cyclists. In both the publications on cycling visions and the interviews this explosion of different kinds of bicycles came up.

There are advantages to this development. The bike becomes more than a mode of transport, as it is often seen especially in the Netherlands; it is also a low-barrier and well-used tool for exercise, as well as an object and activity to enjoy by itself. It offers, especially the e-bike, increased accessibility to amenities for those who do not own or cannot drive a car (P-5), making it a potential instrument in levelling social classes. Policy makers in Groningen see these advantages too, resulting in, somewhat contradictory to the bike freeways of earlier, policy attention to recreational cycling, aimed at the experience of cycling in itself. When asked about the car logic behind the Doorfietsroutes, a respondent reflected that they are not always the answer:

“We are hearing that cyclists do not always find this (cycling freeways) pleasant. It is not interesting to them, there is no fun experience in it. We hear people say that they are on the bike to relax and take in the environment. Cyclists don’t always want to be somewhere as quickly as possible. We notice that we are backpedalling a bit (on the cycling freeways), that we no longer think we need the straightest roads.” (R-1)

While it is conceptually quite interesting, perhaps even beautiful, that the bike has become a tool for an activity, the nature of which is only determined by the beholder, it poses significant challenges in terms of cycling infrastructure. The most fundamental question being: what kind of cyclist should you cater to?

“We are noticing two different worlds, two different desired experiences. We are trying to bring them together but... In an efficient network we want a wide bike path, enough space, safe crossing; but from a recreational point of view people might want coarse, loose materials instead of asphalt, thin and meandering tracks that make it more fun. But then we think it might be unsafe if two cyclists going opposite ways meet there. So it’s two different worlds, two different priorities.” (R-1)

As mentioned before, the e-bike, perhaps necessarily, takes precedence in the rural areas of the province, with e-bike friendly cycling infrastructure as the Doorfietsroutes as a consequence.

“We can no longer think about cycling without thinking about the e-bike. Once you have experienced the comfort of the e-bike, you won’t go back to the traditional bike. It’s becoming more ingrained into society I think, what the e-bike is.” (R-1)

Funnily enough, this respondent indicated earlier in the interview that they only own a regular bike. But as a policy maker, a focus on e-bikes may also simply be the most effective way to get people out of cars and onto bikes. Even with the increase in recreational cycling, most people don’t recreationally ride their bikes every day, making these kinds of cycling trips much less common than those on a commute (R-1). Policy targeted towards commuters may therefore have a bigger impact in reducing car use. But a too narrow focus on e-bikes may inhibit some more vulnerable groups to ride their bikes, due to the increased speed differences that lead to (perceived) unsafe situations (P-4), as the reader will remember from the first part of this chapter. Tunnelling on e-bike infrastructure may also exclude those unable to afford the still quite expensive purchase of an e-bike, contradicting the accessibility argument of earlier. Another concern on the e-bike, expressed in an interview, is its effects on health when it comes as a replacement for the traditional bike:

“I personally think it has gone a bit too far. And that a lot of people are using them (e-bikes) that do not necessarily need them, because they are not cheap. Especially kids, again I’m speaking personally, I’m curious what it does to their cardiovascular health, but also mental strength. Because it is becoming so easy, how will the next generation cope with that. So I’m curious about the physiological side, what it does to kids, and I hope there is research being done on that.” (R-3)

A counter argument when it comes to health:

“I think it is great that you can stimulate elderly to keep cycling (with the e-bike). And that they can be independent and mobile as long as possible through cycling. I think that is huge for that demographic.” (R-4)

What unites the policy makers, and the policy documents too, is that regardless of what they think about the e-bike as a replacement to the traditional bike, it is always positive when it is a replacement for a car trip. Gaining more detailed information about the matter is then essential for gaining a better picture to inform policy decisions (R-4).

“If we, through cycling stimulation and promotion, are only getting people on the e-bike instead of a traditional bike while car kilometres are not going down, we need to remain critical and change things so we can reduce those car kilometres. If we can replace those, we will have a real result.” (R-4)

4.7 Smart (velo)mobility and the role of data

Being the best example of an innovation that has become mainstream and “ingrained into society” (R-1), the e-bike is a major part of the Groninger cycling imaginary. But it is not the only possible use of new technology in cycling. I will use this section with an overview on what kinds of innovations the Groninger cycling imaginary contains, at first purposely ignoring the e-bike but I will come back to it later.

On first glance, the municipality seems to strongly believe in the power of innovation in cycling:

“Innovative solutions take precedence, think about the combination of ICT and cycling: Smart Cycling City. Innovation can take us a step further where traditional solutions may not be enough to reach our goals.” (P-1)

“A municipality where smart mobility solutions such as shared mobility are commonplace and where experiments and innovations receive warm welcomes.” (P-4)

But reading further into these particular documents, no real examples of these innovative solutions are given. There is another section in which “embracing” Mobility as a Service (hereafter referred to as MaaS) solutions is mentioned, specifically shared bikes, scooters and cars (P-4), but no other innovations or technologies are pointed out. The province is a bit more forthcoming in providing concrete possibilities in terms of cycling technology, citing examples such as the Van Gogh bike path in Eindhoven (a bike path meets art project with light projections), bike lockers that are operational with the OV-chip card, a bike path that acts as a solar panel, and the expansion of bike sharing facilities, as well as other MaaS solutions (P-2). Smart traffic lights were also cited (P-3), allowing for cyclist-friendly interventions such as a ‘green wave’ (R-2) of traffic lights. Without going into specifics, the Province also cited apps and innovations within the bicycle (P-3). On the national level, there are references to ‘smart bicycles’ in ‘smart cities’, neither of these terms receives elaboration on what it is that is meant exactly, that function similarly to self-driving cars, but in the same sentence it is stated that this is related to “technology that we can not yet foresee” (P-5). While this passage came from a section in which a scenario of cycling in 2040 is sketched, it’s not unreasonable to label this as techno-optimism, especially because it is unclear what exactly these innovations are and what they can get us.

What is more evident on all government levels is that data plays a role in the future of cycling in Groningen. Perhaps related to how funding for projects and interventions is allocated, the use of data to make informed decisions was a recurring theme in my analysis.

“Monitoring is extremely important. We need data to shape our policy and activities. After all, everything we do involves the behaviour of people. Gaining insight into who is currently cycling and how, and who is not but might, is vital.” (P-2)

While this is referring to behavioural data and may not be the type of big data typically associated with smart cities, it is still data of the aggregate. We can see some clearer reference to language often used in smart city discourse on the national level, where the aim is to “structurally collect anonymous, large-scale data on the use of the cycling network” in the future, using what they call

“connected bikes” (P-5). Corroborating the need for data in an apparently demand-based policy making strategy:

“And how do you find out if there is demand? Then you need that data. Ideally as in-depth as possible. And we have to figure out the potential cyclists somehow. There are people making the trip by car, but how do we find out how many and who? Where to begin?” (R-1)

A way to both collect and use ‘big’ data is through smartphone applications. The province is experimenting with a cycling app aimed at shared cycling, meaning some sort of MaaS system. They have done a trial, but the app needs to be further developed and they have said they are working on this (R-3, R-4). Most of the actual use cases attributed to smartphone apps in cycling were the providing and relaying of travel information, especially in terms of mobility chain hotspots, often deemed as ‘hubs’.

“Technology offers chances to use multiple modes of transportation in one journey. With a smartphone, someone who travels from A to B can easily plan their trip, reserve and use shared mobilities, and adapt their trajectory to the current situation. Digitalisation makes it easy to use, unlock and pay for shared cars, scooters and bicycles. This makes sharing user friendly and makes people less dependent on the ownership of a mode of transport.” (P-4)

A current problem with MaaS is that there are many different providers, either pooling these together into one app, only allowing a select few to continue, or coming up with a set of regulations are potential solutions. The municipality seems to lean towards the regulatory approach, citing the nuisance that is too many shared bikes and scooters on pavements as the main reason for intervening (P-4). While this may help avoid annoyance of residents, an interviewee saw more potential in pooling these apps into one:

“I think you need to make everything as easy as possible, that you don’t need six different apps. It’s the same with (electric car) charging points, that’s not MaaS of course, but you sometimes need different cards for different charging points. That can’t be the future, it needs to be easier.” (R-2)

One app with all MaaS providers might remove some of the barriers people have towards using shared bikes and scooters instead of a car. When I posed an example of such an app operated by a government, as has been implemented in Hamburg (R-2), to respondents from the province, they were quite interested, but it should be noted that this was not part of their own vision without me bringing it up. There are privacy concerns, especially when the government is the operator of such an app, but the Netherlands knows a relatively deep set of privacy legislation and the municipality and province have a good understanding of these laws (P-4). Anonymity is a prerequisite in any data collection by the government (P-5).

“The aspect of cycling that I find most beautiful is that it is so simple, that it is anonymous and has a low barrier of use.” (R-1)

In general terms, there were plenty of references to technology, smart elements and innovation in the policy documents, the interviews and even at the Fietscommunity event, but the only innovation that has made a real impact on policy thus far is the e-bike. As discussed in the previous section, it is by far the biggest change agent of all cycling technologies and it draws significant policy attention. With the data collected in this thesis, there are no indications that this will change in the near future.

Conclusion

In this chapter, I draw conclusions on the empirical part of my research and formulate an answer to my research question. For a discussion on the implications of my findings and the connections to the literature, please see the discussion chapter following this one.

In this thesis I have attempted to depict the imaginary of cycling policy makers in Groningen, and how it includes elements of smart (velo)mobility. A reminder of my main research question:

What does the cycling imaginary among mobility policy makers in Groningen look like and how does it include elements of 'smart' (velo)mobility?

The Groninger cycling imaginary is constructed around three major innovations and technologies, or elements of smart velomobility; first, the e-bike has already become mainstream and demands policy responses, both in terms of safety, the cycling experience and the types of people who are using them. It remains mostly unknown in Groningen whether the e-bike is replacing car trips, cycling trips, or is spawning new trips entirely. Future research should address this. This lack of information leads us to another use of technology in future Groninger cycling policy; large-scale data collection in an effort to gain answers to unknowns. Data collection is helped by a third major use of technology in my findings; a policy focus on mobility hubs, which are places where you can easily switch modalities to reach your destination through a combination of public transport, car parking facilities and Mobility as a Service products such as shared (e)-bikes and e-scooters. Smartphone applications give users of these hubs information to coordinate and plan their trips, and policy makers gain useful information to see what is being used and by whom. There are ethical and legal concerns of data collection, which policy makers are well aware of, so data collection is limited and fairly anonymous according to Dutch law.

Other interesting aspects of the Groninger cycling imaginary are not immediately related to smart city elements, but essential parts of that imaginary nonetheless. First, the interrelatedness between the city and the rest of the province; where cycling policy needs to work for two sometimes contrasting sets of cycling requirements and ideologies. The village is connected to the city through Doorfietsroutes, which is a network of what we might call cycling freeways in which the city of Groningen functions as the main node. While the e-bike has become the primary type of bike in the province, in the city it is not so clear cut, and the spatial requirements of the e-bike can cause more conflicts there.

Second, the move away from 'car logic' in the future is noticeable among Groninger policy makers through their own use of this particular term and design decisions in bike paths (i.e. they are allowed to be more fun than efficient sometimes). The articulations differ a bit from the realisations here, as the mentioned Doorfietsroutes can certainly be viewed as following car logic, though they are meant as an attractive alternative to that car. It should be noted that while my results indicate that the dominance of the car is no longer desired, policy makers do not seem to know why the large investments and ambitions of their cycling strategies are not reducing the numbers of short distance car trips.

Both the city and the province now know a plethora of different kinds of bikes, meaning we can no longer speak about *the* bike. This may be representative of the mature cycling climate in the Netherlands, where cycling's prevalence and the country's financial means allow specialty bikes to exist. While I feel fairly confident that the high variety in bikes is generalisable to the Netherlands as a whole, I am more hesitant to generalise my other findings. Groningen is not the only province with a city that has deep regional ties, but it is still bound in its own unique geographical context. More fundamentally, a qualitative case study such as this one does not have much offer in terms of generalisation, and that was never the goal. Instead, through my findings I hope to have sketched a story of dichotomies: urban and rural, car and bike, innovation and tradition. The bike navigates through all these tensions and offers something on both sides of each contradiction, showcasing its versatility and agency as both an object and as a practice.

Discussion and reflection

In this chapter I will first draw connections between my results and the literature, after which I explain how perhaps the most interesting part of this research project is not its particular findings, but the act of research itself.

Discussion

In terms of the tangible results I have shown in this thesis, my findings more or less corroborate Behrendt's (2019) argument that smart velomobility is not a substantial and independent part of smart city strategies (yet), at least in Groningen. Consequently, the critical perspective on smart cities I have taken in the literature review is not particularly explanatory when attempting to relate it to the empirical part of this research, with one notable exception: it was clear from the policy documents that 'smart' elements were used as a sort of branding. As mentioned in section 4.7 of my results chapter, I found claims that the city of the future is a "Smart Cycling City" where "innovation is commonplace". I noticed that these claims and their phrasing seemed to be stronger than the practices and actual plans towards this future, perhaps indicating that the municipality wants to profile themselves as 'smart', as smart cities tend to be valued based on the degree of smartness rather than what that smartness contributes to societal problems (Söderström et al., 2014; Boltanski & Thévenot, 2006).

While some parts of Groninger cycling policy fall into what we might label as smart city strategies (e.g. the collection of data, the focus on mobility hubs with Mobility as a Service), most often these are not specifically and exclusively related to cycling. Instead, cycling is part of a larger smart mobilities strategy in Groningen. The major exception is the e-bike, which has enabled its users to cross the larger distances required in the province, one of the barriers a traditional bike has historically faced (Rérat, 2021). While the e-bike is perhaps more of an innovation or novel technology than a part of a strategy (at first), it has had quite a transformative effect on cycling policy in Groningen, necessitating its inclusion in velomobility strategies of the future. It has warped the cycling imaginary in the Groninger province around the use of battery-powered bicycles, showing that practices and matter can shape the imaginary, just like articulations by human actors can. In other words, agency is not limited to humans, but can be found in objects too (Latour, 1990; 2005), and the object-actor that is the e-bike is a major player in the actor-network constellation of the Groninger cycling landscape.

The e-bike may also be viewed through the lens of transition theorists, in which the e-bike is a technological niche, putting pressure on the socio-technical regime to change (Runhaar et al., 2020). To me, theorisation of the imaginary and transition theory are not so different in some aspects; they can co-exist and even work together to help make sense of sustainable mobility transitions. The articulation of visions and expectations on new innovations and technologies makes them more 'real' (Loorbach, 2007; Schot & Geels, 2008). The discursive process that articulations of desired futures instigate subsequently brings these visions together, providing them with a common horizon and legitimising shared views (Sengers, 2017), expanding the scope of capabilities (Ricoeur, 2005), and forming another part of the imaginary. Utopian thinking is naturally invited in such a discursive process, enabling us to circumvent, or at least temporarily

suspend, path dependencies and lock-ins (López-Galviz et al., 2020). A prime example of this are my findings on a move away from ‘car logic’ in cycling policy, and that the car seems to be in the process of losing its dominant position. The car dependency in the decades-long dominance of a system of automobility has subordinated walking and cycling (Urry, 2004), creating lock-ins and path dependencies resulting in car-centric planning (Wiersma et al, 2017; Banister, 2008). But these path dependencies are apparently not locked in forever, as my results indicate a shift away from car-centric planning in Groningen to create more room for cyclists. The car will not be gone forever any time soon, and maybe it does not have to, but its unquestionable dominance seems to be coming to an end, at least in Groningen. It should be noted that a limitation of this study is that I have spoken only to cycling policy makers, meaning there is some degree of bias in the results, especially considering the discrepancy between my results and the large investments into car infrastructure such as the rework of the Southern ring road in Groningen (Aanpak Ring Zuid, 2022). It does not seem unreasonable to attribute both the increasing articulations of cycling futures, as we can see by the number of Groninger cycling strategy publications in the last few years, and innovations such as the e-bike to overcoming some of the path dependencies of automobility, but I have not shown this with this thesis and as such this is essentially speculation.

Reflection

I have shown hesitance in generalising my findings in the previous section, and that is for a few reasons. A simple one is that I don’t think anyone will find the content of my findings particularly surprising or novel, especially those well read in planning scholarship or practice. In addition, a single case study cannot truly offer generalisable results. The ‘best’ we can hope for is to understand a set of theories through a case or vice versa, and maybe more useful; to extract abstract ideas that are applicable to other situations (Yin, 2013). Even more fundamentally, I have taken inspiration from constructivist epistemologies and inductively depicted articulations of cycling futures. This was in an effort to understand and to interpret, but not so much to explain. Generalising an understanding or interpretation seems rather futile, not to mention rather pointless. Nonetheless, since Groningen is a leading cycling province within a leading cycling country, its value as a case study in discussing ambitious futures should be appreciated both in academia and practice.

Coming to my main point of this short reflection, what is perhaps more interesting than my empirical results is the process of gathering them, the research process itself. After I pressed stop on the recording during my interviews, every respondent mentioned something along the lines of that I had given them food for thought to discuss with colleagues or asked interesting, provoking questions. In that sense, not only was the research process an inquiry into the cycling imaginary of Groninger policy makers, it was also in itself a real-time construction of that imaginary. The research, and I am now giving it agency as opposed to me, had without necessarily intending it as such, a participatory and facilitative role, allowing for an open conversation that my interviewees seemed unable to have in their regular professional lives. I don’t want to overstate my own role in this, as I just asked a relatively simple set of questions, the real actor during this stage of research was the research itself. What is more important than the fact that it was me was that *somebody* asked these questions, somebody out of the daily professional lives of my interviewees, allowing for a temporary suspension of the path dependencies in their work and in their ways of thinking.

For me, this is part of what qualitative research should seek to accomplish, not necessarily in search of answers but looking for new ways of understanding, thinking, and interpreting.

That is not to say that my research design and process was flawless by any means. First of all, my results would have been significantly stronger, both in terms of offering novel findings and in terms of uncovering potential new ways of understanding, had my data set been more substantial. Part of this was due to the limited scope of a master's thesis, and part was due to unexpected setbacks. Should someone be inclined to take this subject further in a future research project, an increase both in volume and variety of interviewees and policy documents would be a great place to start. Other groups that would be interesting to speak to might include cycling activists, organisations, businesses, academics; and most of all, cyclists. Other future research projects should look into the question why car trips are not decreasing while cycling trips are increasing, where especially low-distance trips have potential for change. Policy makers have speculated on the reasons of this phenomenon and proposed some ideas to address it, but neither the causes nor the solutions are truly evident to them. In both research and practice, this knowledge gap persists.

I have alluded to the implications of this research for planning practice above when discussing the research process as a real-time construction of the imaginary. But I think the actual results of that process can also serve as the start of future conversations on cycling in Groningen. The imaginary I have mapped out as a sort of narrative might be used as a tool to start a discursive process, where policy makers can discuss and find common ground in their ideas of cycling futures, as well as positively channel opposing views through a Chantal Mouffe-inspired agonism. I have been asked to present my results to cycling practitioners at the next upcoming 'Fietscommunity'. I have sent an adapted version of this thesis to the organisers and hope they can find some use out of it in further thinking about the future of cycling, just as I hope you, the reader will have also found this thesis worth your time.

“The bike is a simple object but you can make it very complicated.” (R-2)

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At the risk of creating a disconnect between the importance of my work and the weight of my acknowledgements, I would like to thank just a few people who helped me complete the final project of this programme: all interviewees for their participation and interesting conversations, my mom for letting me use her computer to write most of this paper; Hanne, whose help in more ways than one helped keep me on course; and finally, my thanks to Dr. Farzaneh Bahrami, who I didn't speak enough with during my research process but who has remained seemingly unphased by my irregularity and given me a flexibility I probably did not deserve.

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Appendix (1): Interview guide

Interview guide

Introductie

Hallo, mijn naam is Ingmar Vlogman en ik ben in de afrondende fase van mijn Masterstudie van de studie Society, Sustainability and Planning, (Faculteit Ruimtelijke Wetenschappen) in Groningen. Allereerst wil ik u hartelijk bedanken voor uw tijd en medewerking aan dit onderzoeksproject. Daarnaast wil ik u vragen of u ermee akkoord gaat dat dit interview voor verwerkingsdoeleinden wordt opgenomen. Mocht u nog vragen en/of opmerkingen hebben, dan kunt u die gerust tussendoor stellen. Tot slot wil ik u verzekeren dat u het interview ten allen tijde kunt afbreken als u dat wenst.

Het doel van mijn onderzoek is om inzicht te krijgen in hoe verschillende soorten fietsexperts nadenken over de toekomst van de fiets in Groningen ten opzichte van 'smart' cities. Specifiek ben ik benieuwd naar uw visie op 'smart' cycling, hoe u de relatie tussen de fiets en de auto ziet, hoe u over deelmobiliteit denkt en hoe u naar e-bikes kijkt.

Heeft u van tevoren al vragen en/of opmerkingen?

Basisinformatie

1. Kunt u iets over uzelf vertellen? Wat is uw functie?
 - a. Wat is uw specialiteit op het gebied van mobiliteit en fietsen?
2. Wat voor rol speelt de fiets in uw eigen leven?

De fiets in het hier en nu

1. Wat zijn momenteel grote vraagstukken omtrent mobiliteit in Groningen?
2. Hoe ziet u de rol van de fiets in het hedendaagse mobiliteitsbeleid en praktijk?
3. Wat gaat goed in beleid in Groningen op het gebied van fietsen?
 - a. Wat maakt u enthousiast hierover/wat verrast u?
 - b. En minder goed? Waar loopt u tegenaan in uw werk?
 - i. Waar denkt u dat dit aan ligt?
 - c. Is dit specifiek aan Groningen/hoe verhoudt dit zich aan andere Nederlandse steden/provincies? En het buitenland?
4. Ondanks dat er steeds meer gefietst wordt, wordt er nog niet minder gereden in auto's. Waardoor denkt u dat dit komt en is dit een discussie die gevoerd wordt in uw werk?
 - a. Zo ja, moet daar iets aan gedaan worden en hoe denkt u dat dat kan?
 - b. Zo nee, denkt u dat dat zou moeten of waarom vindt u dat geen probleem?

Het 'smart' fietsen

1. Wat is uw ervaring met smart cities in mobiliteit in uw werkzaamheden?
2. Hoe ziet u fietsen in de context van 'smart' technologieën?
 - a. Wat zijn de kansen van smart technologieën voor fietsen?
 - b. Wat zijn de uitdagingen/gevaren?

3. Op welke manier wordt deelmobiliteit nu toegepast in Groningen?
 - a. Hoe denkt u over deelmobiliteit? En in verhouding tot de fiets?
 - b. Wat zijn voor u de problemen en kansen bij deelmobiliteit?
4. Wat denkt u over de steeds verdere opkomst van de e-bike?
 - a. Moeten we onze ruimte meer inrichten voor e-bikes of 'gewone' fietsen?
5. Hoe denkt u over het verzamelen en gebruiken van gebruikersdata door bijvoorbeeld deelmobiliteit (gedeelde e-bikes, etc.)?

De toekomst van de fiets

1. Wat voor rol ziet u voor de fiets in de toekomst van de mobiliteit in Groningen? Waarbij ik vooral doel op wat *uw* eigen visie is over de toekomst van fietsen.
 - a. Denkt u dat de fiets een onderdeel wordt van de 'smart' city? Welke onderdelen van smart city zitten in uw fiets toekomstbeeld en hoe?
 - b. Hoe ziet u deze toekomst in verband met de auto?
 - c. Wat is er nodig om dit te realiseren?
2. Hoe denkt u dat andere fietsexperts deze toekomst zien?
 - a. In hoeverre verschilt uw eigen visie met die van de stad en/of provincie Groningen?

Afsluitende vragen

1. Wilt u zelf nog iets toevoegen aan dit interview wat nog niet besproken is maar wel zou moeten volgens u?
2. Heeft u nog een idee wie ik verder nog kan benaderen voor een potentieel interview?
3. Heeft u nog andere vragen en op- of aanmerkingen?

Appendix (2): Consent form interviews

Toestemmingsformulier deelname interview

Onderzoeksproject: Master thesis Sustainability, Society & Planning
Rijksuniversiteit Groningen, Ruimtelijke Wetenschappen
Student/onderzoeker: Ingmar Vlogman
Onderzoeksonderwerp: De toekomst van fietsen in Groningen

Geachte deelnemer,

Ten eerste wil ik u bedanken dat u de tijd heeft genomen om mee te doen aan dit onderzoek. Het doel van mijn onderzoek is om inzicht te krijgen in hoe verschillende soorten fietsexperts nadenken over de toekomst van de fiets in Groningen ten opzichte van 'smart' cities. Specifiek ben ik benieuwd naar uw visie op 'smart' cycling, hoe u de relatie tussen de fiets en de auto ziet, hoe u over deelmobiliteit denkt en hoe u naar e-bikes kijkt.

Het interview zal naar verwachting ongeveer een half uur duren, afhankelijk van de lengte van de antwoorden en eventuele extra vragen die kunnen ontstaan op basis van uw antwoorden. Het gesprek zal worden opgenomen en getranscribeerd worden om de analyse ten goede te komen en om uiteindelijk mijn hoofdvraag te kunnen beantwoorden. Mocht u willen kunt u een kopie van het transcript ontvangen.

Voor verdere vragen kunt u contact opnemen met:

Ingmar Vlogman
i.j.j.vlogman@student.rug.nl
0646374389

Hierbij verklaar ik dat:

Ik vrijwillig bereid ben aan dit onderzoeksproject mee te doen	JA/NEE
De uitkomsten van dit interview verwerkt mogen worden in dit onderzoeksproject	JA/NEE
Toestemming geef om het interview op te laten nemen voor verwerking	JA/NEE
Toestemming geef om mijn naam te gebruiken in het onderzoek	JA/NEE
Wanneer NEE Een pseudoniem gebruikt kan worden (bijvoorbeeld respondent 1)	JA/NEE

Naam deelnemer interview

Email
(niet verplicht, mocht u het transcript willen ontvangen en/of op de hoogte gehouden wil worden van de resultaten van het onderzoek dat medio februari zal worden afgerond)

Datum

Handtekening

