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In the shadow of cars

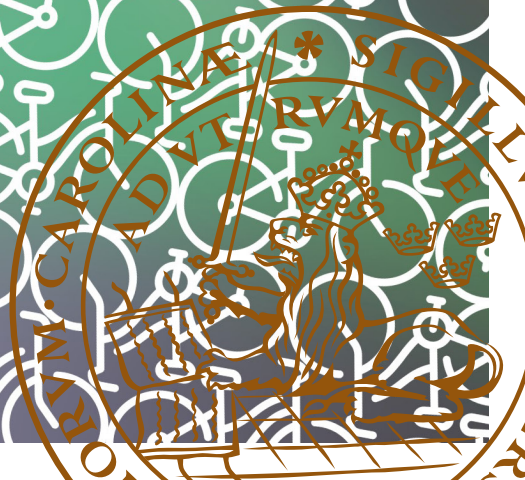Vélomobility as a political project

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In the shadow of cars

Vélomobility as a political project

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Title and subtitle: In the shadow of cars: Vélomobility as a political project

Abstract

Sustainability and sustainable mobility have become important political goals and have left their mark as important discourses in national policies and programs. Against expectations, cycling has barely benefited from this sustainability boom. Looking back over the shoulder at the significance of cycling over the last few decades and looking forward to suggested implications in the future give no reason for joy, at least not at a national level. The most recent monitoring report of the national bicycle council even suggests a negative cycling trend, despite some cities being very successful in improving cycling conditions. For the future, national transport policies in many countries, including Sweden, envision a future mobility that is dominated by the electrification and automation of motorised vehicles, and shared mobility. None of these solutions fundamentally question automobility, while this is one of the largest contributors to the problems that the solutions claim to solve. The hegemonic (normalised and normative) character of automobility seem to prevent challenging it.

This thesis aims to find windows of opportunity for rearticulating mobility and cycling in national policy and planning—understood as discourse—in such a way that the hegemony of automobility is challenged and cycling is embraced. It does that by studying what is included and excluded in taken-for-granted concepts and problematisations in policy and planning. The results show that the hegemony of automobility is reproduced in a range of dominating meanings in transport-related policy and planning. Cycling does either not find a place in this discourse or is tried to be co-opted in the discourse of economic growth. This risks cycling policy reproducing the inequalities inherent in the system of automobility. The thesis identifies several possibilities for rearticulating mobility and cycling in policy and planning.

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Signature   Date 2024-10-17

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In loving memory of Egbert

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Almost 34 years after obtaining my master's degree in Social Geography, I have finished my doctoral thesis. I am overjoyed it did not take me 34 years to complete it; seven years was quite enough. This does not mean that I have not fully enjoyed working on it. I have learned so much. Put simply: I started off with the idea that I could walk but ended up spending seven years trying to learn to walk. I also learned you have to keep dreaming and sometimes big; "If your dreams don't scare you, they aren't big enough" (said Muhammed Ali). One day, there might be need for those dreams.

I would like to thank the people who have contributed substantially to the contents of this thesis, or without whom I never would have fulfilled this journey, or without whom it just would have been boring.

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Janet van der Meulen

Lund, October 2024

Abstract

Sustainability and sustainable mobility have become important political goals and have left their mark as important discourses in national policies and programs. Against expectations, cycling has barely benefited from this. Looking back over the shoulder at the significance of cycling over the last few decades and looking forward to suggested implications in the future give no reason for joy, at least not at a national level. The most recent monitoring report of the national bicycle council even suggests a negative cycling trend (Brodén & Pettersson, 2024), despite some cities being very successful in improving cycling conditions. For the future, national transport policies in many countries, including Sweden, envision a future mobility that is dominated by the electrification of cars, the automation of motorised vehicles and shared mobility. None of these fundamentally question automobility, yet it is one of the largest contributors to the problems that these solutions claim to solve. The hegemonic (normalised and normative) character of automobility seem to prevent challenging it.

The car and the dominant and normalised system of automobility are extensively studied within the field of mobilities research. Car use is here seen in a broader context of a system of 'automobility' which has changed our conceptions of time and space and reconfigured social life. This system is entangled with systems of consumption and production and is unequally striated by gender, race, class, age, and ability. It is also entangled with emotion and has profoundly affected our perception of freedom (Beckmann, 2001; Cox, 2022; Paterson, 2007; Rajan, 2006; Sheller, 2004; Sheller & Urry, 2000; Spinney, 2021; Urry, 2004). To be performed it requires relatively fixed materialities such as asphalt, multiple parking spots per car, and petrol or charging stations, but also roadside assistance, traffic rules, education, social norms, etc. (Adey, 2006). This system of automobility has made all other forms be understood as inconvenient. This all contributes to sedimentation and path-dependency, making change seem unimaginable. How can we change something that seems unchangeable and 'break' this hegemony of automobility?

This thesis follows Ernesto Laclau & Chantal Mouffe (Laclau & Mouffe, [1985] 2014) and understand this system of automobility as hegemonic. This understanding presumes that meaning-giving is a discursive process; there is nothing essential that determines meaning. Meaning is given to a range of elements, which can be concepts, identities, roles, objects, values, and materialities. This process is called 'articulation' and results in a discourse. It is done in a context of 'conflict' and some meanings will have be excluded. This context of conflict and excluding of meanings is always 'political', which explains the subtitle of the thesis. However, this hegemony of automobility—as a sort of

discursive structure—is never closed. It has no predefined centre and there are always articulations—which earlier were excluded—that can 'attack' from the 'outside'. This means that this hegemony of automobility is always vulnerable and its meanings must be reproduced again and again to ascertain its continued existence.

This thesis aims to find windows of opportunity for rearticulating mobility and cycling in national policy and planning—understood as discourse—in such a way that the hegemony of automobility is challenged and cycling is embraced. It does that by studying—with the help of different theoretical approaches—how this hegemony of automobility is reproduced in policy and planning.

The results of the analyses shows that the hegemony of automobility is reproduced in a range of dominating meanings in transport-related policy and planning. Cycling does either not find a place in this discourse or is tried to be co-opted in it, for example, the discourse of economic growth. The thesis identified several starting point for rearticulating mobility and cycling in policy and planning.

Populärvetenskaplig sammanfattning

Hållbarhet och hållbar mobilitet har blivit viktiga mål i national politik och policy. Cykling har dock inte kunnat dra nytta av detta. Om man betraktar cyklingens betydelse under de senaste decennierna, och dess förväntade betydelse i framtiden, finns emellertid få anledningar till optimism, åtminstone inte på nationell och övergripande nivå; cykeln befinner sig fortfarande i skuggan av bilen. Det senaste nationella cykelbokslutet visar även på en minskning av cykelns andel av resandet på nationell nivå. Trots att mål om att förbättra förutsättningarna för cykling har funnits i många år har detta inte lett till beslutsamma åtgärder på nationell nivå. Cykling har befunnit sig i bilens skugga i många år och ser ut att förbli där även i framtiden.

För framtiden satsar Sverige, såsom många länder, framför allt på elektrifiering och automatisering av bilflottan och delade mobilitetslösningar, utan att ifrågasätta bilismen och bilberoende som orsakar många av de problem som dessa lösningar förväntas lösa. Forskningen ifrågasätter samtidigt alltmer om de föreslagna lösningar - elektrifiering, automatisering och delad plattformsbaserad mobilitet - räcker för att uppnå en socialt och ekologiskt hållbar mobilitet och efterfrågar nya tankesätt och andra föreställningar om en framtida mobilitet för att komma bort från bilismen och bilberoende.

Det kan verka oöverstigligt att bryta dessa dominerande tankesätt och förståelser. Men genom att praxis, processer, lagar och regler, roller, infrastruktur och utformning ständigt behöver reproduceras ges också oändliga öppningar till att förändring. Genom att belysa hur cyklingen underordnats, kan man också ta itu med denna underordning. Avhandlingen undersöker, med hjälp av kritisk mobilitetsforskning och olika teoretiska tillvägagångssätt på vilka sätt cykling blir underordnat i politik, policy och planering. Avhandlingen visar på behovet att förändra spelplanen för att cyklingen ska kunna hitta sin plats och föreslår ett antal sätt att göra det.

List of publications and author contributions

Paper I

Paper II

Paper III

Paper IV

Author contributions

Paper 1:
JvdM: Theoretical framework (50%), Literature study (100%), Data collection (100%), Analysis (100%), Writing (50%), Corresponding author. DML: Theoretical framework (50%), writing (50%)

Paper 2 : Single author

Paper 3:
JvdM: Theoretical framework (33%), Literature study (100%), Data collection (100%), Analysis (100%), Writing (80%), Corresponding author.
DML: Theoretical framework (33%), Writing (20%)
TK: Theoretical framework (33%), Reviewing

Paper 4
JvdM: Theoretical framework (33%), Literature study (50%), Data collection (100%), Analysis (100%), Writing (33%), Corresponding author.
DB: Theoretical framework (33%), Literature study (50%), Writing (33%)
DML: Theoretical framework (33%), Writing (33%)

*Where light traffic knits a community together,
heavy traffic rips it apart* (Donald Appleyard)

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Introduction

To get straight to the point: looking back over one's left shoulder at the significance of cycling over the last few decades and looking forward to its suggested implications in the future give no reason for joy, at least not at a national level. Cycling has remained rather stable in Europe and seldomly increases (Schepers et al., 2021). Sweden—a medium cycling country (Ibid.)—follows this pattern with a share of around 10% in the number of trips with, however, a decrease in cycling among children. The most recent monitoring report of the national bicycle council even suggests a negative cycling trend (Brodén & Pettersson, 2024). For the future, national transport policies[1] in many countries (REF), including Sweden, predominantly bet on electrification, automation and shared mobility as the fast track to move from unsustainable to sustainable mobility (Cohen et al., 2020; Cugurullo et al., 2020; Emory et al., 2022; Stilgoe & Mladenović, 2022). This suggests a strong likelihood that cycling will continue to exist in the shadow of cars. This wouldn't be a large problem—if it couldn't be seen as a symptom of more serious problems (summarised as the ecological and social effects of our ever growing use of energy).The thesis uses cycling as a tool to study transport-related policy and planning, and to—hopefully—show that cycling can also be a guide towards change.

In this introduction I will delve deeper into the position of cycling. I will show that this disappointing past and uncertain future of cycling is related to a system of automobility being normalised and normative, and being constantly reproduced in meanings, identities, practices, and processes. To achieve change, it is important to unpack the mechanisms of this reproduction. This task guides the aim and research question of the thesis.

The following section describes my personal involvement in the subject of this thesis. Being a researcher and practitioner at the same time offers opportunities but also sets limitations. The topics I chose, the methods and even the outcomes are heavily influenced by my frames of reference—and of course by the theoretical perspectives— from which I have studied and interacted with my subject of investigation. I don't believe

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[1] I do not make a special distinction between politics, policy and planning; this will be explained in a later chapter.

in the existence of the researcher standing behind a camera with an unfiltered lens, which makes a reflexive examination of my own position necessary (see also Rose, 1997). My frames of reference are an important condition for this research. In this section I start by describing my encounter with cycling in the Swedish Transport Administration—my employer—and then I will describe my search for the right angle in my research.

Research process of a practitioner

My employer—the Swedish Transport Administration—is the largest agency within transport with ten thousand employees. It is responsible for the long-term planning of the transport system; for all types of traffic; and as for building, operating and maintaining national and regional public roads and railways[2]. It has a budget of 799 billion Swedish kronor (SEK) for a 12-year period (2022-2033), around 67 billion kronor per year if it were split evenly [3]. In 2022 this was almost 6% of the total national expenditure[4]. This can be related to a yearly investment in national and regional bicycle infrastructure of 73 Swedish kronor per person (approximately 6,5 euros) (Brodén & Pettersson, 2024), including money from the regional governments. Part of this money comes from regional governments.

At the ministerial level, a bicycle strategy was drawn up in 2017. It resulted in a number of research assignments made to different agencies and the establishment of a bicycle knowledge centre[5] hosted by the Swedish National Road and Transport Research Institute (VTI). One of the assignments was to propose a goal for cycling, which VTI did in 2022. They suggested aiming to double the bicycle share in number of trips to 26% in 2035 (Eriksson et al., 2022). This proposal has not yet been brought up to a decision. At this moment, the objective is that in 2025, 25% of travelled kilometres are made up by walking, cycling or public transport. Other type of actions have, in contrast to for example the UK (see Spinney, 2022) been a limited part of national policy. Non-infrastructural measures to support cycling are mostly delegated to non-governmental organisations, which can apply for state subsidies—paid out and evaluated by the national administration—to finance their work.

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[2] www.trafikverket.se

[3] Trafikverket.se

[4] Central government budget in figures - Government.se

[5] En - Cykelcentrum (vti.se)

Research shows that the national role in amplifying and improving conditions for cycling is not in line with expectations from other actors, who express that a larger national coordinating role is required in a lot of issues as are clearer goals (Alm & Koglin, 2022; Alm et al., 2023). This fits in well with a recent assignment given by the government to the national administration to assume responsibility for national collaboration regarding active mobility (Nilsson & Mickelsson, 2023). How exactly this task will be implemented has yet to be designed.

Despite an awareness of cycling existing in the shadows in Swedish policy and planning, I did not have the tools to do anything with this perception at the start of my research journey. I started with a quite naïve conception of how policy and planning assess and use new knowledge. I wondered why on earth the knowledge about the positive effects of cycling is not linked to more actions. A first automatic reaction was the thought that, obviously, there is still not enough knowledge (about why we should support cycling and how we can facilitate it). The first intention when I started my research therefore was to gather more knowledge about this and address the omissions.

In my literature research I encountered an overwhelming amount of quantitative cycling research. This often lacked context while context is pivotal for cycling, both in my own experience and also argued in research (Oosterhuis, 2016, 2019; Rietveld & Daniel, 2004). In most transport research, the context only plays a role in the sense that the same quantitative research needs to be repeated in different contexts (often different geographical locations) to be able to draw general conclusions, which is the goal. Why differences occur is often underexposed. *Why?* or the *under what circumstances?* questions are seldom asked. Research often idealises the separated infrastructure that exist in the Netherlands (my home country) but it is so much more than separate infrastructure which makes cycling conditions different; and in fact, it is not seldom the lack of dedicated infrastructure that makes cycling more convenient and convivial. This lack of context and the emphasis on quantitative research is in line with the observed dominance of economic and technological knowledge in transport (Ryghaug et al., 2023, p. 2). Much of the research also reflects a blind faith in policy goals and intentions (the fine words) and focuses on finding tools to implement policy, without digging into commitment to these goals and intentions (the link to actions).

The limitations present in much of the research inspired me to find and explore theoretical approaches that paid more attention to aspects that I understood to be missing in this research. A mobilities perspective, combined with a poststructuralist point of departure and including critical theory perspectives enabled me to formulate my questions. These perspectives each have their own critical project (which will be explored in a later chapter) and have given me the tools to critically scrutinise a part of national transport and bicycle policy and planning and our own—the transport

administration's—actions and processes on their effects on cycling. My views on knowledge and conception of politics have drastically changed over the past few years. The approaches have also helped me be consistently aware of my frames of reference.

Critical perspectives have opened up my eyes to the fact that I, through using prevailing values—even if reluctantly—have contributed to reproducing unsustainable and unjust norms and practices. Applying these norms to cycling means contributing to the reproduction of an automobility norm—instead of fighting it, as I intended—and to the shaping of a certain image of cycling and the cyclist while at the same time excluding others (Cox, 2022; Spinney, 2022). I do not mean that bicycle highways are not good or that we should not work with tourism or not emphasise the health effects of cycling; rather the diversity of cycling and cyclists must be supported and invited. When the focus lies on only one form of cycling, "it distracts from the diversity of meanings and practices of cycling" (den Hoed, 2024, p. 2). It is never completely possible to escape prevailing norms but—in order to transform the current mobility system—it is necessary to continuously questioning them. Of course, I was not alone; cycling advocacy also produces—with good intentions—sometimes a simple one-sided picture of cycling which results in sustaining precisely those values and assumptions that have caused cycling to be subsumed by the shadow of cars (Cupples & Ridley, 2008).

A final comment concerns being a researcher amidst colleagues. The documents that I used for the papers were sometimes co-written by colleagues, which of course brought up uncomfortable feelings, probably on both sides. I have tried to minimise being too enmeshed in researching my own organisation by not interviewing colleagues in the last paper. Of course, I never had the intention to critique colleagues but rather the assumptions that are underlying their and my own work in the administration.

The following section can be read as an introduction to the first two papers in the thesis—which look back and focus on how we ended up where we are— and the next as introduction to the last two papers, which more explicitly take a look into the future.

Decades spent in the shadow of cars

Sustainability and sustainable mobility have become important political goals and have left their mark as important discourses[6] in national policies and programs. However,

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[6] The concept of discourse will be extensively discussed later on but for here it suffices to understand it as some kind of shared understanding (see Dryzek, 2013). This thesis applies a broader understanding, as will be explained in a later chapter.

scholars argue that the necessary shift to sustainability in transport is slow going, that there is too great an emphasis on new technology (Ryghaug et al., 2023) and that social and global dimensions of a sustainability transition are insufficiently addressed (Schwanen, 2021; Sheller, 2018). There is also a concern that sustainability has weakened as a concept and is rather reproducing prevailing paradigms instead of challenging them (Brown, 2016; Holden et al., 2019). The impression is created that the transformation to sustainability does not require a fundamental change in lifestyles, values and assumptions.

As far as cycling is concerned, it has barely benefited from the sustainability boom—despite extensive praise in the academic literature. Transport researchers advocate cycling for its potential contribution to sustainability and its ability to offer a solution to many problems, such as air pollution in cities and a general lack of physical activity (see Brand et al., 2021; Götschi et al., 2016; Johansson et al., 2017; Koska & Rudolph, 2016; Ma & Ye, 2022; Whitelegg, 2020). Others articulate cycling as an excellent tool for rethinking automobility or delivering on the promises of automobility—such as freedom and independence—while at the same time dissolving its antagonisms—such as congestion, traffic danger, pollution, emissions and congestion (Böhm et al., 2006; Fincham, 2006; Furness, 2007, p. 317 ; Hagman, 2006). Yet, cycling has not been pulled out of the shadow of cars at national levels—where it has been positioned since the 1960s—certainly not in Sweden. This is a problem, because its marginal existence keeps cycling from fulfilling its sustainability promises, which, in its turn, makes achieving sustainable mobility— in all its dimensions—a lot more difficult.

The lack of growth in cycling and in particular the lack of decisive actions evoke frustration among advocates and researchers, and *knowledge* and *politics* are raised as central issues when trying to explain cycling's continuous position in the shadow of cars. It is argued that the problem is not "rational or logical" but rather "political and emotional" (Darnton, 2016, p. 164), and that facilitating cycling does not require more planning knowledge but "merely the political will to do so" (Nello-Deakin, 2020, p. 2). However, it also argued that the kind of knowledge that is collected and produced is too limited (Castañeda, 2021). This resonates with an argument in a recent paper of a large group of social scientists who tackle the dominance of economics, engineering and psychology in transport and the poor representation of other disciplines, such as sociology, geography, political sciences, anthropology and cultural studies (Ryghaug et al., 2023, p. 2). The role of knowledge and the meaning and significance of—what is here called—'political will' (but is in fact much broader than that) are central in this thesis and will be scrutinised in the coming chapters.

The political context is also brought to fore by cycling experts in Sweden, with whom I spoke in spring 2022. Several of them expressed that the way politicians and

decisionmakers on all governmental levels are talking about cycling has enormously changed over the last 20 years; from something that was rather discouraged towards something that is seen as positive and is encouraged. However, they also complain that concrete actions and a proportionate share of transport and innovation budgets are lagging behind and that Sweden as a country is unable to match the ambitions and actions of many other European countries. It is criticised that a financial regulation that supported municipalities and regions in building cycling infrastructure ('stadsmiljöavtalet' in Swedish) has recently been abolished by the government. There is also disappointment that repeated calls in the last decade and a half for more bicycle-friendly traffic rules and planning legislation have largely been swept aside after investigations, despite research supporting them (Tait et al., 2023). A positive action, however, is the recent adoption of the European Declaration on Cycling[7] by the EU council of Ministers, also representing Sweden; this signals some form of political commitment from Sweden. However, it remains to be seen which impact the declaration will have; the call to develop it in 2023 was not supported by Sweden.This does not alter the fact that there are several cities and regions in the country which have been very successful in their efforts to facilitate and support cycling and that there are many people working at all governmental levels who do their utmost to improve cycling conditions.

Research concludes, boldly, that Swedish transport policy and planning form a barrier for cycling (Balkmar, 2020; Koglin, 2021b). The elephant in the room—not only in Sweden—is (still) the car (Böhm et al., 2006; Sheller & Urry, 2000; Zuev et al., 2021). Emanuel sketches how Sweden from the 1950s—coming undamaged out of the Second World War—was able to use its resources to bolster consumption and embrace and stimulate private car use, which transformed the country into a modernist car paradise with "the highest car density in Europe" (Emanuel, 2012, p. 70). Sweden's large automotive industry has no doubt been an important contributing factor. Cycling was pushed aside more and more and increasingly framed as a safety issue (Ibid.). It is argued that the Swedish national bicycle policy still does not succeed in challenging this deep-rooted automobility norm (Balkmar, 2020) and that the techno-rational discourse in transport planning continues to deliver knowledge and infrastructure that privileges car traffic and does not favour cycling (Koglin, 2021b).

This history shows the close relationship between the normalisation and normativity of car-based mobility—or what is also called the 'automobility system' (Urry, 2004)—and that of economic growth in transport (Cox, 2022; Paterson, 2007; Spinney, 2021; Urry, 2004). The car seemed—albeit after an elitist start—to produce precisely the

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[7] <u>EUR-Lex - 32024C02377 - EN - EUR-Lex (europa.eu)</u>. It is a joint document of the European Council, Commission and Parliament.

consumptive lifestyle that was necessary to achieve economic accumulation (Manderscheid, 2016b; Rajan, 2006). Quantitative methods for assessing economic benefits of infrastructure investments often show large economic benefits when reducing travel times for motorised traffic, which contributed to active promotion by states as a regime of accumulation (Böhm et al., 2006; Manderscheid, 2016b; Paterson, 2007). However, research shows that the association between transport infrastructure and economic growth is ambiguous, particular in countries with already well-developed infrastructure (e.g. Banister, 2012; Farhadi, 2015; Meersman & Nazemzadeh, 2017). Also, travel times seem to remain fairly constant and do not diminish after infrastructure measures aimed to decrease them (Stopher et al., 2017). The growth paradigm—exemplified by using cost-benefit to assess transport investments—is increasingly criticised (Eriksson et al., 2024) but very strong and it still privileges car traffic at the expense of slower modes.

The car and this system of 'automobility' is extensively studied within the field of mobilities research. Car use is here seen as an historically constituted embodied practice, entangled with systems of consumption and production. It has profoundly changed our everyday lives and our use of space. It has coerced us into suburban life and has reconfigured social life through changing conceptions of time and space. It is unequally striated by gender, race, class, age, and ability and filled with meaning and emotion; for some people the car and driving are important parts of their identity (Beckmann, 2001; Rajan, 2006; Sheller, 2004; Sheller & Urry, 2000; Urry, 2004). It has changed perceptions of freedom and ideas of 'the good life' (Cox, 2022; Paterson, 2007; Ravensbergen et al., 2022; Spinney, 2021; Urry, 2004). To be performed it requires relatively fixed materialities such as asphalt, multiple parking spots per car, and petrol or charging stations, but also roadside assistance, traffic rules, education, social norms, etc. (Adey, 2006). This all contributes to sedimentation and path-dependency, making change seem unimaginable.

This description makes it obvious that automobility must be seen as much more than driving, and much more than driving from A to B; mobility is much more than just only transport; it includes besides movement (and non-movement) also meanings, practices and infrastructures in a broad sense of meaning (Cresswell, 2006, 2010; Sheller, 2018). The domination of automobility cannot be understood as the consequences of individual (rational) choices, as is believed in transport-economic research, but rather as systemic, due to processes of normalisation and normativity (Böhm et al., 2006; Davidson, 2021, p. 31). Its normalisation (i.e. of certain interpretations of distance, of time, of convenience, of bodily comfort, of danger and accidents, etc.) is recognised as a large barrier to cycling, since all other forms of transport besides driving have become understood (and framed as) inconvenient and constrained (Behrendt, 2018; Urry,

2007). This section has briefly sketched out how automobility has become dominant, normalised and normative. The next section looks forward into the future.

A blind spot in visions of future mobility

Innovation and imaginaries are tools to form the future, which make them tokens for hope and change. Imaginaries play an important role because they feed innovation and are significant in the allocation of research investments. Scholars (Cohen et al., 2020; Cugurullo et al., 2020; Emory et al., 2022; Stilgoe & Mladenović, 2022) have already noted that many countries, including Sweden, envision a mobility future of electrification and automation (predominantly of motorised vehicles), and sharing (platformisation) to move from unsustainable to sustainable transport. The dominant narrative mediates that an excess of climate emissions is the problem to tackle, that technology will provide the solution and that the market will lead the way, ascertaining a continuation of our (western) lifestyle. Cycling plays a minor role in this story. The impression given in the European Green Deal is not very different[8]. Massive governmental support for the electrification and automation of motorised vehicles in Sweden (Eriksson et al., 2021) dwarfs all efforts to facilitate, support and diffuse cycling.

It seems that the dominance and normativity of the system of automobility obstructs envisioning a future mobility that is not based on the car (Cox, 2022). In particular electrification and automation of cars—two important building stones of imagined future mobility—barely challenge underlying foundations of the current unsustainable transport system (Isaksson, 2014). The car industry seems to join forces with the digitisation industry (Urry, 2016) to co-opt collective and non-motorised alternatives, visible for example in a vision where self-driving cars take over the first and last mile[9]. Imagining possible future mobilities seems to a large extent to centre around the question of how to apply and utilise new technology, such as digitisation, big data, automation, platformisation, AI, etcetera. Answering this question primarily requires technical expert knowledge. Transport planning has long been understood as a technical exercise, and history seems to reproduce itself, with the risk of repeating old mistakes[10]. The

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[8] EUR-Lex - 52020DC0789 - EN - EUR-Lex (europa.eu)

[9] https://www.youtube.com/watch?v=WmYsWYDQxuI

[10] Such as for example, the creation of direct, indirect, economy-wide or induction rebound effects, which not seldomly result in effects being opposite of those one is aiming at (Lange et al. 2023; Malmaeus et al. 2023).

conception of knowledge and which kind of knowledge is given primacy, seems, once again, essential in determining which solutions will end up in the spotlights. The complex system of automobility has a large effect on what is seen as relevant knowledge that will be linked to decisive national action. Knowledge that is produced under different assumptions risks to become neglected.

There are also concerns about the dimension of justice related to electrification, automation and platformisation (e.g. Bissell et al., 2020; Israel et al., 2023; Roig-Costa et al., 2023; Singh, 2020; Sovacool et al., 2019). Research shows that bikeshare services are primarily used by and designed for young, male, white people with higher incomes (Curl et al., 2024), commuters, tourists (Koglin & Mukhtar-Landgren, 2021), and inner-city residents (Nixon & Schwanen, 2019). Systems are often build for 'average bodies', not providing access to a heterogeneous group of people (Ibid.).

It is noted that planning for cycling seems to increasingly adhere to values and assumptions that reproduce current inequalities (Cox, 2022), creating its own inequalities. Germany is one of the few European countries in which cycling increased; however, as Hudde (2022) shows, this growth has been highly uneven. Coming from a situation in the nineties with small differences between groups and geographies, cycling has increasingly become an activity for people with higher incomes living in cities. This shows that cycling, like all phenomena, cannot escape (to reproduce) that what it is embedded in; it is not inherently sustainable (Cunha & Silva, 2022; Lam, 2022; Scott, 2020; Spinney, 2021). Historiographic research in different countries shows that cycling is not immune to existing power relations and is co-opted into existing gendered, individualised, economised, racialised, ableist, ageist and spatial narratives (Cox, 2022; Davidson, 2021; Ravensbergen et al., 2019). When cycling is planned according to the same values that caused cycling to be subsumed in the shadow of cars, without questioning underlying assumptions of the current hegemonic system, the same injustices persist.

Many scholars call for different narratives and more diverse imaginations of mobility futures (e.g. Bertolini, 2023; Brömmelstroet et al., 2022; Cass & Manderscheid, 2019). Mobility scholars explore abandoning the idea that the car is a given and problematise the fact that imagined future mobilities often envision changing the car-based mobility system into another car-based mobility system (Manderscheid & Cass, 2022).

This section sketched out how this dominant system of automobility continues to be reproduced in the future. It introduced the last two papers which have a forward looking character.

Hegemony and discourse, in short

This introduction emphasises the dominance, normalisation, and normativity of the automobility system as a central contributing factor to both disappointing developments in cycling the last decades and low expectations for the future. Following Laclau & Mouffe ([1985] 2014), in this thesis the automobility system is understood as a hegemony. I will briefly introduce this concept here and explain it more in detail later. Laclau & Mouffe see hegemony as the result of a practice of *articulation*. Articulation is a meaning-making process that establishes relations between different elements in a way that they seem to form a coherent totality, a *discourse*. The elements can be concepts, practices, processes, roles, or materials (Ibid., pp. 91-95); hence, discourse does not only refer to language, as in some other discursive approaches. Automobility is a discourse consisting of objects (car, roads, petrol stations, railways), practices (driving, education), identities, concepts or values (freedom, convenience), and much more. This ('political') process of articulation implies that choices have to made between conflicting alternatives; some meanings are included and some excluded. When all included meanings have become normalised and common sense, one can speak of *hegemony* (Laclau & Mouffe, [1985] 2014, p. x). Hegemonic articulations aim to achieve normalisation and counter-hegemonic articulations want to break a hegemony and build a new one.

How can a hegemony be cracked? The above shows that it seems impossible to imagine a mobility future without car dependency or even without the car. A central idea for Laclau & Mouffe is the openness of the social. There is no structure with a fixed centre and no structure that is immune for a discursive 'outside' that threatens the supposed stability of the structure. Both articulation and rearticulation of a hegemony is possible because processes of meaning-giving never stop (Ibid, 93). In that sense 'automobility' is not a fixed discourse, just like 'society' is not fixed (Ibid., 93-97). This is illustrated in the 'conflict' around the meaning of a relatively new concept in Swedish transport, 'transporteffektivitet'. Different groups want to fill it with different meanings, of which some challenge the dominance of automobility and others do not; some associate it for example with energy efficiency and others with economic efficiency. Later, when Laclau & Mouffe's theory is discussed, it will be explained what is required to establish counter-hegemonic articulations.

This conceptualisation of Laclau & Mouffe overarches the thesis. However, I will utilise some other approaches that can shine different lights on the reproduction of hegemony, in order to gain a broad perspective. I will use Foucault's discursive approach to focus on the role of knowledge and Rosa's critical theory to include the role of so-called totalising forces in the reproduction of hegemony.

Aim and research question

The aim of the thesis is to find possibilities, or seeds, for developing counter-hegemonic articulations that have the potential to crack the hegemony of automobility and give space to cycling instead. Not meaning to replace a domination of automobility with vélomobility (See Cox, 2022), but to replace it with a system that is based on other values and assumptions.

The hegemony of automobility, that is, the meanings that are associated with automobility, need constantly to be reproduced. This gives infinite possible for change. In other words, the aim is

Finding windows of opportunity for rearticulation of mobility and cycling in national policy and planning in such a way that cycling is embraced.

However, first is it necessary to uncover the mechanisms of these reproductions, in order to locate potential 'conflicts' or potential sites for rearticulation. This makes the overarching question:

How do national transport-related policy and planning contribute to reproducing the hegemony of automobility and how does this affect cycling?

Or in other words, what makes policy and planning that places cycling in the shadows possible? As mentioned, besides Laclau & Mouffe's discourse theory, two other approaches are used to help answering this question. This goes beyond concluding that, for example, the growth paradigm, or gendered norms reproduce the norm; I want to know *how* this done.

As this research is supported and financed by the Swedish Transport Administration it also aims to be an inspiration in their work to support cycling. It can offer a foundation for critically on the constitutive role of discourse (which is much more than language), and on how policy and planning practices and their material outcomes are never neutral. The thesis can help reveal the non-necessity of current visions, views and interpretations and help open up for paths other than the one that seems predestined. The thesis may also contribute to opening up an appreciation of a kind of knowledge that normally does not receive much attention in the transport sector.

Disposition

The next chapter starts with two issues that regularly are mentioned as related to the subordination of cycling: knowledge and politics. They are usually not related to hegemony or normalisation of automobility, but are in this thesis.

The chapter 'Situating the thesis in mobilities approach' starts by discussing how (vélo)mobilities research offers a critical point of departure for analysing the reproduction of dominant norms and assumptions in transport-related policy and planning; or in other words, for the reproduction of the hegemony of automobility. I also discuss adjacent fields, albeit briefly. The chapter ends with the thesis' contribution.

In the chapter 'Combining Laclau & Mouffe with Foucault and Rosa', I'll describe how to these approaches are combined in unpacking how policy and planning reproduce the hegemony of automobility. Effects on cycling are included. Discourse is my subject of analysis, the modus operandi of hegemony, and the glue that ties the approaches together.

The chapter 'Topics' introduces accessibility, road safety, innovation and future mobility as the topics that are explored in the four papers, and explains this choice. All of these topics already carry a sort of tension in them that asks to be explored.

The chapter 'Methodology' presents the research strategies and methods used in the papers. Documents and interviews are the main sources. How these are used will be explained in the chapter.

The chapter 'Findings' presents the results of the four papers. The first paper unpacks how the strong association with economic growth is reproduced in the understanding of accessibility and how this forms a barrier to cycling. The second paper uncovers how problematisations in road safety policy still commit to the automobility norm, and how this affects cycling. The third paper unpacks how the understanding of innovation reproduces the hegemony of automobility and makes cycling a blind spot in transport innovation policy and projects. The fourth paper identifies from a gender perspective how alternative articulations of everyday life and the use of space in future mobility can be potential counter-hegemonic.

In the last chapter, I'll discuss the thesis' conclusions and limitations.

Knowledge, the subject, and vélomobility as a political project

This chapter starts with two issues that regularly are mentioned as related to the subordination of cycling: knowledge and politics. They are usually not related to hegemony or normalisation of automobility but are in this thesis. In 'A political problem' I'll explain that this is another problem than literature usually has in mind. Here is it grounded in hegemony and articulation and not in political will. It also explains the subtitle of this thesis. The 'subject' is essential to understand with regard to my subject of analysis, which is discourse. What is the place of the individual, or better, the subject in this? 'Rearticulation' discusses when it is a good time to counter hegemony.

Revisiting knowledge

I'll start with returning to a small debate in the literature following a paper by Darnton, to which I referred in the introduction. He poses:

> Time and again, we address the same issues, which have not changed over the past 20 years: the economic case for cycling; the health benefits of cycling; the safety of cycling; the environmental advantages of urban trips by bike; and, of course, why it is so different in the Netherlands and Denmark! The truth is, I suspect, that we all **know** what to do. (Darnton, 2016, pp. 163, emphasis in original)

The idea that we know what to do—to get people cycling—but we don't do it is often related to the claim in research that the magic wand that turns motorists into cyclists has already been found (Buehler & Dill, 2016)—namely, designated cycling infrastructure—and that it is just a question of building it and the cyclist will come, just like they did in the Netherlands and Denmark. Apart from the flipside—it makes driving more attractive (see Koglin, 2021a)—this ignores the significance of social, cultural, physical and political contexts, as raised in historiographic,

anthropological/ethnographic and feminist inspired research (Castañeda, 2021; Joelsson & Scholten, 2019; Oldenziel & de la Bruhèze, 2011; Oosterhuis, 2019). It also downplays the heterogeneity of the 'cyclist'; who is the cyclist that will come? (Spinney, 2021). As Horton et al. rightfully recommend: "the bicycle and cycling need always and everywhere to be understood in relation to the societies in which they exist" (2007, p. 6). Social, cultural, physical, and political contexts condition the preparedness or receptivity for measures that are meant to improve cycling conditions, but also how they will be shaped, implemented, and understood.

In bicycle planning, there is a tendency to 'copy' successful measures from the Netherlands and Denmark, as a kind of best practice (see Mukhtar-Landgren & Fred, 2021). In cycling, 'building separated infrastructure' has long been seen as a best practice. However, as mentioned above, important context becomes obscured and ignored and meanings are transformed due to different understandings and embeddings. Copying is never a process of 'copy and paste'. Along the way both meanings and design are blurred, filtered, cropped and parts may be accidentally deleted. Best practice, in that sense, is not only a simple practical tool but surrounded by related practices and meanings, which are neglected. It is then clear that that what is successful in one place might not necessarily become so in another place. It also is the question if this solution still is the best, thinking of the problems we are facing now?

The complaint that 'evidence-based' knowledge does not result in a change of policy directions is not new and is not unique for cycling. Overland and Sovacool, for example, observe a "striking imbalance" between, on one hand growing knowledge about ecological thresholds and tipping points and what needs to be done, and on the other hand, a failure to mobilise citizens and politicians to take sufficient actions to either prevent further deterioration or to mitigate its effects (2020, p. 1). This suggests some kind of wall between that which science presents as evidence and the political and public conception of such; how to open the door between these two spaces is not evident.

Seeing knowledge 'as a simple mirror of reality' and believing that this knowledge will be plainly adopted and implemented by politicians and policymakers, is a very value-free conception of how knowledge is produced and processed (Rydin, 2007, pp. 75-76). Such a conception results in frustration for those who wish to see evidence disseminate and linked to action. Disagreeing with this conception—which I do in this thesis—does not mean a denial of the outcomes of expert knowledge or knowledge relativism but instead a realisation that the reception and production of knowledge both take place in a specific context that enables and constrains what is seen as knowledge, or 'truth' and what can be thought, said and done (Foucault, 1980; Rydin, 2005). Knowledge is embedded in 'regimes of truth'.

By understanding policy and planning, with all its concepts, practices, objects, representations, and roles, as discourse—which is possible when adopting Foucault's conception of discourse—makes clear that it produces its own 'truth' (Bacchi & Goodwin, 2016). In policy, an important means of producing knowledge is the shaping of some issues as problems—problematisations—and others as not-problems. That which is not seen as a problem will not call forth measures and solutions. A problem is not given; it is constantly reformulated in a sphere of conflict and negotiation. Policy categorises and divides people, objects, places, movement, etc. in order to produce knowledge, to gain knowledge and to represent problems (Bacchi, 2015). Besides delimiting problems, it also delimits which knowledge is considered necessary and leads to action (Foucault, [1978] 2007; Mukhtar-Landgren & Paulsson, 2021). In this way, it can reproduce hegemonic articulations.

Knowledge, in the sense of that what is accepted as truth, becomes power, exercised in discourse (Bacchi & Goodwin, 2016, p. 31). It is constitutive because it has real life direct and indirect consequences. With its own ideas of 'truth', policy also steers resources for external knowledge production in one direction rather than another. This production and reception of knowledge is all part of the context that determines how cycling is understood, governed, and used to govern.

If Laclau and Mouffe's discourse theory (I am anticipating a later chapter now) would be used to analyse the above reasoning, it would be seen as a—in transport—sedimented concept in which power relations can be traced. The prevailing understanding of knowledge is associated with being *expert, technical, objective, generalised* and *evidence*. This articulation is an act of power, it excludes other forms of knowledge.

Vélomobility as political project

An important part of the thesis is the understanding of 'political' or 'politics'. In most literature it refers to the will and ambitions of politicians or a political party. The lack of action to improve conditions for and facilitate cycling is—as we saw in the introduction—often framed as a political problem. This thesis also sees it as a political problem but not in the usual way, not in the sense of political will. Instead, it is linked to hegemonic articulation as power.

I build on Laclau& Mouffe's theory of discourse and hegemony and follow Mouffe (2005), who distinguishes between 'the political', 'politics', and 'the social'. The conceptualisation is sketched in figure 1.

'*The political'* is defined as the sphere where discursive power struggles take place over meanings and identities through inclusion and exclusion of meanings. The political is "a space of power, conflict and antagonism", which is constitutive of society (Mouffe, 2005, p. 9; 2013). It is the sphere where—in Laclau & Mouffe's terminology—a hegemonic order or discourse is trying to be articulated. Recall the understanding of discourse as a "structured totality resulting from an articulatory practice" (Laclau & Mouffe, [1985] 2014, p. 91) and articulation as the meaning-giving practice that establishes relations among elements in a discourse.

Meanings are instable or *contingent*—that is, they are possible but not necessary—and are never permanently fixed. There is always a choice and the possibility of change, an openness. The attempt to build a hegemonic discourse is not only about including and excluding meanings, but is also a struggle for the "hearts and minds" of people (Torfing, 2009, p. 117) in which emotions play a role. Mobilities researcher Sheller shows for example, how important emotion is in the hegemony of automobility (Sheller, 2004).

A condition for building a hegemonic discourse is that there must be a kind of conflict in the form of an antagonism (Laclau & Mouffe, [1985] 2014, pp. 111-113), or in other words, a clash of discourses (Mouffe, 2013, p. 74). Böhm (2006, pp. 9-13; see also Manderscheid, 2020, pp. 369-370) provides some examples of antagonisms related to automobility. Congestion, for example, clashes with the discourse of automobility as "stable, well-working machinery" (Ibid. , p. 10). Antagonisms emerge because discourses (orders) are constructed through the exclusion of a surplus of meaning. In order to fix or stabilise meaning, there will always be meanings that have to be excluded, hence there is a surplus of meanings. These meanings form the '*constitutive outside'*; they are necessary because otherwise meanings couldn't be fixed. However, they can fold back and become threatening to the discourse. In summation, the political is a sphere of discursive power struggles which require contingency and antagonistic 'conflicts'. *When formulating the lack of action taken to improve conditions for cycling as a political problem, it is this sphere where the problem is located and it is in this sphere where it has to be solved.*

'*Politics'* is defined by Mouffe as the institution of an order or a discourse that is provided by 'the political' (Mouffe, 2005, p. 9; 2013, pp. 2, 3). When a discourse is established, the meanings, institutions, practices, and roles but also objects (for example infrastructure, cars) that are part of the discourse, are made 'common sense'. Earlier power struggles have dissolved and the order seems to be in everyone's interest, as a kind of "collective will" (Mouffe, 2013, p. 74). Mouffe calls this institutionalised order '*the social'*, or "the realm of sedimented practices, which are practices that conceal the original acts of their institution and which are taken for granted (Mouffe, 2005, p. 17). Meanings have become temporarily fixed. There are, of course, a large number of meanings that

are almost permanently fixed, because it is not possible and desirable to question all meanings.

Mouffe's point is that every order—even the social—is political, hence, always based on some form of exclusion, which however is often concealed and not recognised (Mouffe, 2005, p. 18). From the above it can be derived that discursive power struggles are most visible in the political sphere, but leave traces in politics and in the social (in the form of power relations). Traces of the political in politics and the social can become reactivated; or in other words, brought back into the political sphere, which makes the border of the political fluid. In Mouffe's words, "any order is always the expression of a particular configuration of power relations" (2013, p. 2)(the privileging of driving and the subordination of cycling is a power relation)

This conceptualisation also makes clear that one can study ongoing power struggles, but also trace them in processes of institutionalisation as well as in sedimented meanings in any realm of the social. These struggles are not reserved for politicians despite the word suggesting this; in this thesis there is a focus on power struggles related to national policy and planning. This explanation of the political, of politics and of the social also explain why my focus is broad, since power struggles and their traces are everywhere. In politics, policy and planning, there are ongoing discursive power struggles of which the results (the hegemonic articulation) have real-life effects.
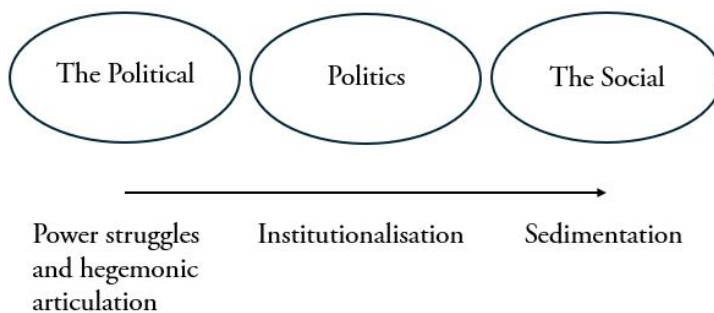
Figure 1 The political, politics, and the social, after Mouffe (2005)

The subject

When discourse is the analytical object of investigation, it is necessary to explain the meaning of the subject. Laclau & Mouffe draw from Foucault's conceptualisation of the subject and I will briefly explain it here. A human being becomes a subject in three ways

(Foucault, 1982, pp. 777, 778): (i) through being objectified in science; for example as speaking subject in linguistics, or as productive subject in economics, etc; (ii) through dividing practices such as the divisions drawn between woman and man, the mad and the sane, the driver and the cyclist; (iii), through turning itself into a subject through identifying itself with different discourses (identities are always 'split') but at the same time, by also becoming subjugated by discourses. Saying that the subject is split, means simply that it doesn't have one identity but multiple. That is easy to understand if one realises that someone can be, at the same time, a football player, a musician, a mother etc. A subject is never located outside discourse (Foucault, 1978, pp. 95, Volume I). This must be related to hegemony and normalisation. In this light it can be understood that travel choices are made while being located inside discourses. Foucault argued that "slavery is not a power relationship when a man is in chains" (1982, p. 790), because the slave can, in this case, not resist. However, resistance (similar to critique) always comes from within since the subject is never outside discourse.

Critical policy studies based on Foucault's thoughts ask the question of how power is exercised in policy and what its effects are (Lövbrand & Stripple, 2015). They focus on uncovering under which conditions—through which inclusions, exclusions, divisions, limits—that which is said and done in national policy and planning acquires truth, how it becomes possible to say and do certain things (Rose, 1999, p8), and how it shapes and divides subjects.

Rearticulation (or countering hegemony)

It is not always a good time to bring counter-hegemonic articulations back to political sphere. There are two situations that have been identified as promising, and one could say that we are in the first situation, a situation of a so-called 'dislocation' (Laclau in: Butler et al., 2000; Marttila, 2015). A society or an identity is always dislocated, because incomplete (there is always a surplus of meanings), but in certain circumstances this comes to the fore. Dislocation can be triggered by an event through which the current hegemonic discourse is unable to grasp meanings, which can make the discourse unstable and receptive to rearticulation. Hence, dislocation makes antagonisms come to the fore. The proliferation of knowledge about ecological threats and humans part in these threats is a good example of this. Incorporating sustainability discourse is an attempt to restore the totality of the discourse. Sustainability has, despite its disappointing results, still been able to offer an alternative discourse. However, the weakening of the concept—as mentioned earlier—suggests a need for a reactivation of initial power struggles and a

renewed 'decision' regarding its meaning. Research about the correlation between cycling and health has also offered a different discourse. These alternative discourses have contributed to a rearticulation of cycling into something that should be more explicitly encouraged. Unfortunately, these discourses have gradually moved towards fitting in the growth paradigm, for example through emphasising the economic benefits of physical activity and not how it enhances wellbeing and happiness.

Another situation in which rearticulation might be successful is in situations of oppression. Laclau & Mouffe distinguish between relations of subordination, domination and oppression (Laclau & Mouffe, [1985] 2014, p. 137). Relations of subordination can be unproblematic—teacher and pupil, employer and employee, and, in some cultures, man and woman. They can, however, be seen as relations of domination from the viewpoint of an outsider (Howarth, 2010). Relations of domination can turn into relations of oppression when the discourse of subordination can be disrupted through another discourse by those who are involved; one that articulates the relations between elements in a different way. In that case, discursive struggles emerge. An example could be the 'me-too' movement, where victims themselves stood up *en masse*. A result is that power struggles around elements become reactivated and drawn (back) into 'the political' sphere. A new discourse is articulated which is for example partly institutionalised through making the appointment of sexual harassment committees mandatory. In our case, we cannot speak of oppression; we don't see massive protests from groups of cyclists; for most, their subordination is completely normalised. Neither is cycling in Sweden represented by *one* strong organisation; there are several non-governmental organisations trying to influence national policies.

That feelings of oppression play an important role in reactivating power struggles and rearticulating discourses, is illustrated by the—often referred to—demonstrations against the danger that car traffic imposed on children in Amsterdam in the 1970s[11], which have had substantial impact on national policy. People associated safety with better facilities for cycling, and less space and lower speeds for cars; the demand for higher safety corresponded with the demand for better cycling conditions and the demand for deprioritising the car in the city.

How to rearticulate meanings is with the help of different strategies, called the 'logic of equivalence' and the 'logic of difference' (Laclau & Mouffe, [1985] 2014, pp. 115-117). The first simplifies 'political' space by creating an antagonistic frontier, where meanings are united by placing them in contrast to what they are not, like a common enemy. The other logic expands the chain of meanings and makes the situation more

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[11] Amsterdam children fighting cars in 1972 – BICYCLE DUTCH (wordpress.com); How Amsterdam became the bicycle capital of the world | Cities | The Guardian

complex. If it expands enough the 'common enemy' disappears. I referred earlier to 'sustainability' as a concept of which the meanings has expanded, so far that the common enemy (unsustainability) almost disappears. These strategies will be discussed in the later chapter 'Combining Laclau & Mouffe, Foucault and Rosa'.

Summary

This chapter anticipated the coming chapters by briefly discussing the understanding of knowledge (in reproducing hegemony), by explaining why hegemony needs to be countered in discourse and how to understand the role and agency of the subject. The most important takes from this are that knowledge production is tied to a certain discourse and that changing a discourse is a 'political' project, in which subjects exert agency through rearticulation. The next chapter discusses earlier research with a focus on the body of literature to which this thesis contributes.

Situating this thesis in mobilities research: A critical approach

This thesis leans on different critical perspectives to uncover how transport-related policy and planning reproduce the hegemony of automobility. This is necessary to move towards the aim of finding windows of opportunity for change. In this chapter the critical approach of mobilities research is centred because it is my point of departure and the field to which I primarily contribute. The introduction already built on much of this research in describing how the subordination of cycling in the past and in imaginaries of the future are related to the dominant system of automobility. It is the source for many of the objections that I sketched out in the introduction, pertaining to views on research and knowledge as well as concerns for the hegemony of automobility, in the past and in the future. One of the founders of the research field, John Urry, passed away in 2016. In a special issue dedicated to him, the co-founder Mimi Sheller (2016) writes that one of the main questions that drove Urry towards this 'mobilities approach' was "what produces, reproduces, or disrupts social order?" This question is highly relevant for this thesis, which in its turn asks how policy and planning reproduce the hegemony of automobility and how this affects cycling. I delimit my discussion of mobilities research to the insights that are most relevant for this thesis. Which insights does mobilities research offer that can be used in answering my research question and approaching my aim?

However, critical transport research is not limited to mobilities research. I also give a short and selected overview of other research with a more or less critical perspective related to transport. It might be clear that critique can exist on different levels (see Davidson, 2021), from criticising single devices on the playground (aiming for change within the system) to aiming for a complete refurnishing of the playground itself (aiming to change the system itself). I'll conclude the chapter with my contribution to mobilities research and to the Swedish body of critical research.

In the next chapter I will further elaborate on how I put the critical lens of mobilities research in operation through the use of a poststructuralist approach and including critical theory perspectives.

The critical lens of mobilities research

Urry's book *Sociology beyond Societies* (2000b) is generally seen as the take-off point for the new mobilities paradigm (Manderscheid, 2020; Sheller, 2018). In that book, Urry emphasises that (physical and non-physical) mobility is—besides being a geographical phenomenon—also a sociological phenomenon, until then hardly recognised in sociology. He shifts the sociological focus from 'society' towards 'mobility', to emphasise change and fluidity instead of stability. Society is linked to ideas of the nation state and to some kind of shared identity (Urry, 2000a), suggesting stability. However, in contrast to this discursive construction, societies are not as stable and held together by firm boundaries as it may seem, and as concept, its meaning is never fixed or closed (Urry, 2000b, p. 15). Instead, fluidity is constitutive of social life, with every move contingent on other moves (Sheller, 2014, 2018). This does not mean that everything is fluid; systems of mobility intersect through large systems of immobility and being mobile also means that others need to stay put (Sheller & Urry, 2006).

In a similar vein and around the same time, Cresswell (2002) places mobility at the forefront of geography. While sociology has been fixated on society, geography has been fixated on 'location'—referring to a meaningless spot in space— and 'place', associated with a kind of static identity, just like 'society' (Ibid.) He questions the supposed closedness of places in geographical discourse and argues that they "are never complete, finished or bounded but are always becoming—in process" (2002, p. 20), and tied to flow and movement. He places mobility—fluidity—at the fore without denying the significance of places, which can be seen as "intersections of flows and movements" (Ibid., p. 26). He also emphasises the differentiality of movement. Speed and control over movement are differentiated and speeding up for one means slowing down for others (Cresswell, 2006).

Questioning the general fixation on fixity and stasis almost at the same time in different social sciences, contributed to the so-called mobilities turn and the launch of a "new mobilities paradigm" in the beginning of this century (Hannam et al., 2006; Sheller & Urry, 2006). It did not come out of the blue, but was preceded and inspired by ideas originating from a diverse academic landscape—including sociology, geography anthropology, and anti-colonial and feminist theory (see e.g. Cresswell, 2002; Sheller, 2018; Sheller & Urry, 2000; Urry, 2000a, 2000b, 2005a). It draws from a variety of theoretical resources which are described in several publications (e.g. Sheller, 2014, 2016; Sheller & Urry, 2006; Urry, 2007). These are also constantly diversifying as a consequence of—in the words of Urry—the emergence of new forms of mobility, new forms of monitoring, new modes of inclusion and exclusion, and new forms of danger

and risk (2007, p. 16). Hence, it is not surprising that both theoretical key points and methodological stances are heterogenous (Faulconbridge & Hui, 2016; Manderscheid, 2016b; Merriman, 2016).

Despite its heterogeneity, the field has a common ground; mobilities research offers a critique of prevailing views on society and knowledge, but also a normative critique regarding the processes that shape (im)mobilities and "through which mobilities shape society" (Manderscheid, 2020; Söderström et al., 2013). I focus in this chapter on how mobilities research questions central assumptions in transport, such as those related to the *transport system*, the *autonomous rational subject* and the conception of *time*. Furthermore, the primacy of *positivistic transport research* and the assumptions of *neutrality* underlying transport policy and planning are questioned.

Transport system

In transport policy and planning, transport is still seen as 'conquering time and space' and the 'transport system' has a narrow and technical meaning; it often refers to the physical infrastructure, public transport, and its functionality and usability for different modes and different people. There is a focus on efficiency, cost minimisation and quality of service (Hrelja et al., 2024). Urry instead—inspired by complexity science (Sheller, 2016; Urry, 2005a, 2005b)—instead saw the world full of complex systems. These often emerged out of random events; create path dependency; are dynamic; intersect with each other; are adaptive; self-organising; unpredictable; hybrid; non-linear; and without clear relationships between cause and effect; and yet, are characterised by both stasis and change (Urry, 2005a).

The automobility system was one of the first issues mobilities scholars studied from that perspective (Sheller & Urry, 2000; Urry, 2004, 2006). In line with the idea that systems are adaptive and self-organising, Urry stated that "it is through automobility's restructurings of time and space that it generates the need for ever more cars to deal with what they both presuppose and call into existence" (Urry, 2004, p. 27). In order words, automobility creates its own necessity. Automobility defines how both drivers and non-drivers inhabit, behave in, and use public space (Urry, 2006, p. 21). This way of thinking also brings attention to how the car has become an extension of the body, including the senses, making the car-driver a hybrid constellation, culturally and emotionally attached to the car (Sheller, 2004; Urry, 2004)[12]. Drawing from science and technology studies, the mobilities paradigm emphasises underlying physical and material practices, infrastructures, objects, and their representations and cultural meanings (Cresswell,

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[12] This is not exclusively the case with cars, a bicycle-cyclist can also become a hybrid constellation (Urry, 2004)

2006; Sheller, 2014; Urry, 2007). In line with this complexity approach, Urry argued that the path-dependency of this system of automobility will certainly be interrupted, since nothing is stable (Urry, 2007). He also predicted that a large-scale change will be caused by many small-scale changes, adding up to a so called tipping-point (Urry, 2007, p. 279).

The first decade of the 21ˢᵗ century saw a substantial amount of literature focusing on this automobility system. This literature illustrates what alternative forms of mobility, such as cycling, are up against (Beckmann, 2001; Böhm et al., 2006; Edensor, 2004; Featherstone, 2004; Merriman, 2009; Paterson, 2007; Rajan, 2006; Sheller & Urry, 2000; Urry, 2004, 2006). Research on automobility continues in the present—we have not yet reached the tipping point Urry was predicting—but is shifting its focus more to interdependence and overlap with systems of digitisation, such as autonomous vehicles (e.g. Manderscheid, 2018; Mukhtar-Landgren & Paulsson, 2023; Urry, 2016).

The attention paid to cycling in the field has strongly increased from 2010 (e.g. Aldred, 2010, 2012; Aldred, 2015; Aldred & Jungnickel, 2014; Bonham & Bacchi, 2017; Bonham & Cox, 2010; Bonham et al., 2020; Horton et al., 2007; Koglin, 2015; Koglin & Rye, 2014; Oldenziel & de la Bruhèze, 2011). Cycling is often placed in opposition to and constrained by the dominating automobility system (Behrendt, 2018, p. 66). Mobility scholars often use the term 'vélomobilities' to emphasise that they understand cycling—just like driving—not as an individual choice but as shaped by and shaping unequal power relations (Scott, 2020, p. 1), embedded in a system of materialities, meanings, and practices.

Having a mobile ontology as basis—with its emphasis on mobilities and fluidity instead of static entities—also means that taken-for-granted categories need to be reconsidered (Sheller & Urry, 2006). Typical categories linked to this transport system, such as different modes, different kinds of infrastructures, different travel motives and different users need to be seen in their interrelation and interaction. A cyclist is never only a cyclist, and neither is a train passenger only a train passenger, just as a commuter is not only a commuter. Even commuting is not only commuting. These interrelations and interactions are challenging for transport policy and planning, which have for example difficulties grasping the complexity of multimodal trips. Such a holistic approach is also challenging for analytical research where different modes and geographical spaces—such as urban and rural—also are treated as contained concepts. Mobilities research cannot totally escape its own critique; it often studies cycling as primarily related to the urban context.

The autonomous subject

The new mobilities paradigm critiques ideas of an autonomous rational subject that makes rational individual decisions. Instead—as becomes clear from the discussion about the systemic character of automobility—it sees the subject[13] as situated in a social, cultural and physical context—systemic conditions—constituted by relations of power (Böhm et al., 2006; Davidson, 2021; Manderscheid, 2014). For example, it is argued that separated cycling infrastructure constructs the cyclist as a hazard and as something special that must be dealt with (Bonham & Cox, 2010; Bonham et al., 2020; Manderscheid, 2016c). At the same time, it constructs the road as a space for cars. All these constructions form part of the social embedding of mobility choices.

In national transport planning, where cost-benefit analysis is an important basis for decision, the assumption of the autonomous subject is strong. Individual costs and benefits (often based on individual preferences, which are assumed to be quite stable) add up to societal benefits and costs, simulating a market situation. Transport choices are seen as individual choices, and at the same time the individual is invisible. This view in mobilities research of the individual—the subject—as embedded in its context, is pivotal in this thesis. Mouffe argues that the conception of individuality "forecloses the nature of collective identities" and those are necessary to formulate a political project (Mouffe, 2005, p. 11).

Time

Time is a commodity in national transport policy and planning where travel time is definitely not 'pleasure' and 'saving time' is an important goal. Time is also central in the new mobilities paradigm—"mobilities are all about temporality" said Urry (2000b, p. 105)—but in a totally different way. Urry outlined in *Sociology beyond Societies* (Ibid., pp. 105-130) how we became disciplined by clock-time—disconnecting us from the rhythms of nature—under the influence of protestant ethics, which early on spread the idea that wasting time was a sin; of industrial capitalist society where labour had to regulated and controlled; and through the emergence of the railway, which required coordination of time zones[14]. This coordination in return facilitated and was necessary for the development of mass mobility. The rise of the railway has frequently been associated with a compression of time and space.

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[13] The use of 'subject' instead of for example 'individual' will be explained in the next chapter in the section on Foucault

[14] In 1884 Greenwich Median Time became the basis for the world's time-zones

Next, Urry introduced the metaphor of instantaneous time to illustrate that the linearity of clock-time is replaced through information being both simultaneously and instantaneously available. This is related to the earlier discussed overall increase in mobility of people, goods and ideas. (Information) technology has once again drastically changed our conceptions of time and space. Events at the other end of the world invade our everyday lives instantaneously and simultaneously and ask for responses that also need to be instantaneous and simultaneous (Ibid.). The effects of one small individual action can be significant, as shown by recent events such as a small bug in a world-wide operating cyber security firm, or an inflammatory tweet of a single man named Elon Musk. Social life feels increasingly sped up and individual time-space patterns increasingly substitute common activities (Urry, 2000b).

However, this speeding up does not count for everybody, which relates to the earlier discussed differentiality of mobility. Urry also pointed out in this book that it seems that the more space and time become compressed, the more significant the characteristics of 'places' become, in line with Cresswell's aforementioned arguments. These notions of time shine a different light on the primacy of travel time in transport planning. The urge for speeding-up and saving time seems to fit in a historical pattern and might be essential to interrupt in the quest for ecological and social sustainability. The third paper, which focuses on innovation, partly builds on these thoughts about time which focuses on innovation.

Positivistic research

The core ideas from mobilities research challenge positivistic research methods that are prevailing in transport, and call for a larger diversity of methods (Manderscheid, 2020). Mobility scholars use a range of methods to study mobility in all its complexity: the build environment, related to the materialities of mobility; its representations; and as an embodied practice, both cognitive and sensorial (Cresswell, 2010; Jensen et al., 2020). With an emphasis on qualitative research in the field, there is also a call to perform more quantitative research, in a way that is in agreement with the ontological and epistemological assumptions of the field (Manderscheid, 2016c). This also seems important for knowledge to be accepted in transport policy and planning, where "numbers are omnipresent", also because they have an aura of neutrality (Ibid., p. 45). Related to abandoning the idea of an autonomous subject, and embracing the idea that meanings are discursively constructed, there is also a call for scrutinising discursive spaces (Frello, 2008; Manderscheid, 2020, p. 366), to which this thesis can be seen as a contribution.

Neutrality

One of the main themes in this field is that (im)mobility, its effects, its meanings, how it is experienced, how coercive or free it is, are unequal and differentiated, as is whose experiences and knowledge about it are recognised and heard (Massey, 1993; Sheller, 2018; Sheller & Urry, 2006). Some people want to be mobile but are not allowed to be or are restricted, others have complete freedom as well as the resources to choose if, when and how they are (im)mobile. It is also clear that the mobility of some is delimiting that of others. Faster modes are often prioritised and limiting the speed of slower modes. This last aspect is eminently visible in road infrastructure, where the desired speed for car traffic often determines how easy it is to move around walking or cycling. On a global scale, mobility of the richest stands for a substantial part of the related ecological damage of which the consequences seem to affect the poorest and least mobile the most (Sheller, 2018). On a bodily scale, transport policy and planning often provide for 'average' persons, restricting children, women, black, disabled and older people. This is tangled up with questions of who is included and who is not, who is recognised and who is not, who is heard and who is not, who benefits and who suffers, and how the mobility of different groups is governed: all utmost political questions (Cresswell, 2006; Sheller, 2018; Uteng & Cresswell, 2008).

The neutrality of bicycle policy is increasingly questioned, particularly in—so-called—'critical vélomobilities' research (see Ravensbergen et al., 2021). Vélomobilities research increasingly targets bicycle policy and planning as such, and shows how these—while still aiming to promote cycling—reproduce assumptions that underlie the dominant mobility regime. This literature emphasises that the co-opting of cycling into discourses of growth (Cox, 2021; Spinney, 2022), and the construction of cycling or the cyclist as dangerous (Aldred & Woodcock, 2015; Bonham et al., 2020; Culver, 2020; Horton, 2007) do not only reproduce an automobility norm but is also shaped by and shape a certain image of cycling that includes some and excludes others. For example, there is an increasing body of literature on how mobility and cycling are gendered and gendering (Bonham & Jungnickel, 2022; Cresswell & Uteng, 2016; Hanson, 2010; Horton, 2007; Lam, 2022).

These insight of critical vélomobilities research are used in this thesis to explicitly address wider inequalities, in the search for alternatives that go beyond automobility. However, I see these two tasks as inseparable and interrelated, as two sides of a coin. Addressing inequalities within cycling cannot but result in tracing back those to the systems in which cycling is embedded. Addressing cycling being in the shadow of cars cannot but be traced back to the inequalities inherent in our mobility system.

In summary, mobilities research—represented by different scholars with slightly different perspectives—links (a reproduction of the) hegemony of automobility to systemic forces, including self-adaptation, path-dependence and perceptions of time and space. The political dimension is theorised as uneven power relations embedded in a system of movement, representation, and practice (Cresswell, 2010). These uneven power relations are produced and reproduced by infrastructures, ideology, knowledge-regimes of truth, and the shaping of subjects into thinking and behaving in accordance with this regime. These factors have contributed to cycling being excluded—but more recently to being increasingly adopted into a regime of economic growth (Böhm et al., 2006; Cox, 2021; Frello, 2008; Spinney, 2022). The political dimension seems to be related in most of this research to regimes of truth, which refers to a Foucauldian understanding of power, to which I come back in the next chapter.

Despite the seemingly large engagement with politics, Sheller argues that scholars have (still) not sufficiently shown how knowledge production is entangled with the shaping and governing of uneven and differentiated (im)mobilities (Sheller, 2018, p. 56). How knowledge production is entangled with the reproduction of the hegemony of automobility—with its inherent unevenness—is one of the central issues in this thesis. The next section briefly discusses adjacent research fields with (a more or less) critical approach.

Critical transport research

The interruption of (the reproduction of) hegemonic automobility has in more traditional *transport research* primarily been approached as a need to make changes *within* the system and not to the system. The failure of cycling to break through in policy has primarily been associated with a lack of knowledge. The transport system has largely been understood as a neutral facilitator (Ernste et al., 2012) and transport policy and planning as a neutral activity, particularly in planning, since its focus is on the transport system (its speed, efficiency and flow) and not on people (Singh, 2020). Barriers to cycling are generally approached from engineering (infrastructure), economic (rational choice) and psychological (behavioural) perspectives. Travel, or transport is seen as a 'cost' and the choice to cycle as a result of a (bounded) rational individual choice depending on preferences (and perceptions of) travel time, distances, infrastructure quality, safety, landscape, weather, etc. (Heinen et al., 2010; Parkin et al., 2007). Besides individual behaviour are also social norms and habits increasingly recognised as barriers (Reckwitz, 2002). This research has contributed with valuable—in particular

quantitative—evidence about the effects of cycling and the effects of measures, which have also provided cycling researchers, policymakers, planners and advocacy with knowledge and justifications to invest in cycling.

The political dimension is mostly formulated in terms of a lack of policies or a lack of 'political will'. Discursive approaches have been rare in transport research but there is increasing attention on how language use in transport is derived from and sustains motorisation (Hannigan & Hickman, 2023). Furthermore, this research is perhaps not questioning power relations but the evidence it provides can help raise and support alternative discourses. On the other hand, by not questioning power relations, there is also a risk that research results unintentionally will help to reproduce the dominance of the automobility system, or become co-opted into prevailing discourses. Results about the positive effects on health are, for example, increasingly co-opted in the discourse of growth, due to the economic consequences of illnesses.

Many transport researchers focus on how to achieve *sustainable mobility*[15], which represents a different paradigm compared to more traditional transport thinking and brings normative dimensions to the fore. It aims to more explicitly include the needs and the abilities of people instead of mainly focusing on the transport system and on travel behaviour (Banister, 2008). Sustainable mobility is supposed to be achieved by reducing travel, altering travel and by making travel more efficient (Berger et al., 2014), also referred to as 'avoid, shift, and improve'. A reduction is linked to information and communication technology as well as to reducing distances. Alteration is achieved through behaviour change and improving options for walking, cycling and public transport. Efficiency will be increased with innovations in transport and communication, such as Mobility as a Service (Berger et al., 2014, p. 308), but also changes made to energy resources. Barriers to cycling are mainly seen in terms of a lack of facilities and infrastructure, and 'wrong' behaviour. This does not really challenge the hegemony of automobility.

Holden et al. (2019) recently reviewed the sustainable mobility literature, almost thirty years after the concept was first adopted in the EU and around fifteen years after Banister's seminal paper "The sustainable mobility paradigm". Holden et al. note that the meaning of the concept has weakened and call for alternative narratives. In a more recent paper, they (Holden et al., 2020) formulate three 'grand narratives': electromobility, collective transport (which includes shared mobility and shared autonomous vehicles), and low-mobility societies in which car-use is reduced or eliminated. The first two reflect the belief that we can transform the system of

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[15] The term sustainable *mobility* instead of sustainable *transport* is an attempt to capture both revealed and potential mobility. It is more used in Europe than in the US. (Berger et al. 2014).

automobility into a sustainable one without questioning fundamental power relations and without addressing all of its inherent antagonisms (Berger et al., 2014; Manderscheid & Cass, 2022, p. 2). The last one (low mobility society)—the only one that questions both mobility and automobility—is deemed unlikely from their perspective (they consider at most car-free city-centres as a possible outcome) as governments hesitate to restrict people. They argue that "ultimately, it is the individual who chooses to buy (or not buy) a car, and it is the individual who decides how and where to travel" (Holden et al., 2020, p. 6). This suggests an understanding of the individual as an autonomous subject, which places the political dimension in the background. Even here, this research is an important supplier of discourses, also because of its firm establishment in European and national policies. However, from a promise to change the system sustainable mobility has rather become a tool to make changes within the system.

Sustainability transition approaches attribute the reproduction of the dominating mobility regime primarily to a locked-in 'regime' or meso-level of a socio-technical system, instead of to macro-level structures such as capitalism or micro-level individual behaviour (Köhler et al., 2019). The 'regime' in this field consists of a socio-cultural dimension, a technological dimension, a policy dimension, a scientific dimension, and a user and market dimension (Geels & Kemp, 2012). A shift of the car-based 'mobility regime' is theoretically linked to all these dimensions.

Despite a focus on locked-in phenomena and normalisation, political power struggles in this field are seldomly grounded in a theory of power (Kalt, 2024). They are often interpreted as disagreement among individuals and groups "about desirable directions of transitions, about appropriate ways to steer such processes, and in the sense that transitions potentially lead to winners and losers" (Köhler et al., 2019, p. 6). The idea of a macro-level that lies outside the analytical scope of most of this research makes the full inclusion of discursive power relations difficult. Empirical research has been criticised for showing a pro-technology bias (Köhler et al., 2019), of thinking too much in terms of market-oriented settings, and for neglecting political dimensions (Avelino et al., 2016; Kenis et al., 2016). It is also argued that power relations in the understanding of sustainability and new technologies have been insufficiently unpacked (Petzer et al., 2020).

Innovation is the main condition for a system shift, or an interruption of the dominant 'regime' hence, (after it is first destabilised through landscape pressures, such as the economy or climate threats). However, it is not self-evident that (niche-)innovations are good or are intended to cause a 'regime' shift (Biggi & Giuliani, 2021). On the contrary, it seems that current modes of innovation seem to "reproduce the narrowing down of transport options to the private car" (Haarstad et al., 2022, p. 7). Part of this research

questions the taken-for-granted meanings of concepts that are used in field and bring them, alongside discursive power relations more to the foreground (e.g. Avelino et al., 2016; Avelino & Rotmans, 2009; Biggi & Giuliani, 2021; Pel et al., 2016; Pel et al., 2023; Westman & Castán Broto, 2022).

Transport justice research addresses how both the access to activities via transport and the distribution of negative effects of transport are uneven or unjust (Gössling, 2016; Martens, 2016; Mullen & Marsden, 2016; Verlinghieri & Schwanen, 2020). This research has been triggered by research showing that social exclusion is entangled with uneven access (Lucas, 2012). Hence, important questions in this research are about who benefits (gains accessibility) and who loses (accessibility) or suffers (from the burdens). Equity and accessibility are central in this research and debates in the literature engage with the question how to define a desirable or 'sufficient level' of accessibility, primarily directed at people below a certain threshold (Ryan & Martens, 2023). The use of accessibility is also meant to take into account the undesirability of increasing mobility for all (Sheller, 2018, p. 26). Several perspectives are used as a base for underlying moral and ethical foundations (see Pereira et al., 2017). It is argued that transport justice should be seen as a political goal because: i) the current transport system is an expression of specific industrial interests and not of broader societal goals; ii) the automotive system increasingly faces limits and places disproportionate burdens on others; and iii) the transport system no longer reflects desires and perspectives on the quality of life (Gössling, 2016, p. 2).

Cycling is seen as a question of justice when the lack of good facilities is the reason why certain groups cycle less than they wish (that this 'wish' also is an effect of power is obscured in this definition). It is also argued that discrimination that is rooted in class, gender or race is much more serious than the marginalisation of cycling and that "the debate on cycling justice should be concerned not with closing the gap between cycling and car driving but with cycling's possible contribution to addressing the wider societal inequities in society" (Martens et al., 2021, p. 18). This is a theme that this research has in common with critical vélomobilities research.

The last few years have witnessed a growing body of *Swedish critical research*, particularly targeting national transport planning. Lundin's provocative book *Bilsamhället* (Car society) from 2008, focusing on traffic safety, was an early contribution, or perhaps a kick-off, and it has been followed by many. The book describes the history of Sweden's warm relationship to the car and how this has manifested out on the streets. Several themes have been explored since then, some already referred to earlier in this thesis. Many highlight the political nature of the transport planning process that usually is considered to be a neutral exercise.

The understanding of sustainability in transport planning is a central issue in this research. Regarding the economic, ecological and social dimensions, it shows that the ecological and social dimensions are underrepresented (Finnveden & Åkerman, 2011) and exist—like cycling—only in the shadows (Winter, 2021). This is in line with a more general argument that assumptions of growth steer how sustainable mobility is conceived. Growth—seen as progress and inevitable—excludes sustainable mobility solutions that not evoke growth (Isaksson, 2023).

An important research subject is how existing or renewed practices in the national transport administration do or do not contribute to a shift towards sustainability. It is argued that the practice of forecasting, essential in Swedish national transport planning, hinders sustainable alternatives from being seriously investigated (Eriksson et al., 2024; Witzell, 2020). Even when practices are reformulated in the aim for sustainability or more inclusion, they often don't have the intended effects because they still are embedded in a broader framework that does not support this change. This broader framework is seen as related, among other things, to the conception of knowledge. Relevant knowledge is often expert knowledge and problems are described in terms of the functioning of the transport system and not in terms of the experiences of those that are affected (Odhage, 2017, p. xiv; Tornberg & Odhage, 2018; Winter, 2021; Witzell, 2021). This is shown in the practices of making preparatory studies in infrastructure planning, aiming at increasing collaboration in the definition of problems and the search for optimal solutions (Tornberg & Odhage, 2018). Another example of this is the four-step-principle, aiming at both more sustainable and more cost-efficient solutions for transport problems by encouraging to take first simpler measures into consideration instead of building new infrastructure (Johansson et al., 2018).

This points at the importance of changing the system and not only making changes within the system.

Part of this literature brings the gendered and gendering dimension of transport to the fore and highlights the gendered knowledge production in the Swedish transport sector. Researchers argue that the transport sector has historically been dominated by men (and still is[16]) and norms that are constructed or coded as masculine[17]—associated with the dominant perspective of economic and technical rationality—are prevailing (Joelsson & Scholten, 2019; Kronsell et al., 2020; Kronsell et al., 2016).

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[16] Trafa.se

[17] Masculine and feminine norms do not necessarily coincide with men and women but "refer to values, meanings, and behaviours associated with men and women" (Kronsell et al., 2020, p. 129).

Contribution

Using a mobilities lens as the basic starting point in this thesis seems utterly relevant as it provides the foundations for understanding the system of automobility as a hegemony and for questioning it. The usefulness of this alternative perspective in transport is even more relevant since it increasingly becomes clear that a technical focus on achieving ecological sustainability in transport risks reinforcing existing patterns of inequality, not only within countries and cities but also globally. Sheller (2018) even argues that the politics of and power relations in mobilities play an essential role in combining ecological and social sustainability in general.

The thesis contributes theoretically to the mobilities field through establishing a clear relation between knowledge, power and the political dimension and showing how this reproduces—and can contest—the hegemony of automobility. This meets Sheller's (2018, p. 56) earlier argument that research has made insufficiently clear how knowledge production is entangled with the shaping and governing of uneven (im)mobilities. I take help from different approaches, which contribute in their own way to a broad perspective on the reproduction of automobility. I draw from the poststructural perspectives of Laclau & Mouffe and Foucault and the critical theory from Rosa. This unusual combination can also be seen as a contribution.

As mentioned, there are several calls that cycling research needs to go beyond trying to compete with the car and engage with larger societal inequalities (Cox, 2022; Martens et al., 2021; Spinney, 2021). The thesis contributes to by combining those two aims. These two goals are inseparable to me; as long as cycling tries to compete with the car on the terms of the hegemonic system of automobility, it will lose the competition. Hence, it needs to alter the terms. I don't think cycling advocacy, in and outside policy, can afford to not address the hegemony of automobility; however, they can do it in other ways than contradict cycling with driving. This will come forward in the thesis.

The thesis contributes to Swedish critical transport research, which already pays a large attention to national transport planning as subject of investigation; the thesis widens the scope of critique towards including road safety and innovation in national policy. It also contributes to this research by showing a path for change, in line with Isaksson (2014) who welcomes utopian approaches on a macro-level.

The next chapter elaborates on the theoretical approaches of Rosa, Foucault and Laclau & Mouffe, which are applied in the papers and together build the theoretical foundation of the thesis—albeit with an overarching role for Laclau & Mouffe's theory of hegemony. The next chapter will discuss these approaches one by one.

Combining Laclau & Mouffe, Foucault and Rosa

To analyse the reproduction of the hegemony of automobility and the effects for cycling, I use different critical perspectives which I see as specifically useful for unpacking dominating understandings in *policy and planning*, related to the hegemony of automobility. My overarching approach is Laclau & Mouffe's discourse theory but I will employ the work of Foucault and Rosa to gain a broader perspective on the reproduction of the hegemony of automobility.

The three approaches have slightly different perspectives on the reproduction of hegemony—and on power—and form together the framework for studying it. *Acceleration as coercive power* (Rosa), *Power/knowledge* (Foucault), and *Power in hegemonic articulation* (Laclau & Mouffe) are used to unpack and analyse mechanisms of reproduction in the four papers. To unpack a sedimented concept in transport policy and planning, and to find potential counter-hegemonic articulations in floating signifiers, Laclau & Mouffe's approach is evident to use. To focus on the production of knowledge in policy, only Foucault's 'problematisation' can be used. To set capitalism and economic growth center stage in the unpacking of innovation, Rosa's theory of acceleration seems a good choice.

Although these approaches are not often used in combination, their critical projects are very similar to each other. All these approaches are influenced by Marx and fight for those who are dominated and suppressed (Williams, 2005, p. 20) but go beyond his primacy of class in their critical projects. Their forms of critique are immanent since they all acknowledge that it is impossible to escape existing normative ideas and institutional systems while formulating 'what ought to be' or what is just or legitimate (Laclau & Mouffe, [1985] 2014; Lemke, 2011). I'll start with discussing Laclau & Mouffe's theory in detail. In the next section I'll describe how Foucault and Rosa's conceptualisation of power can help to broaden the understanding of reproduction.

Laclau & Mouffe's theory of hegemony

With their seminal book *Hegemony and Socialist Strategy* ([1985] 2014) Laclau & Mouffe had both a political and a theoretical goal (Mouffe, 2013, p. 129). They wished to infuse left-wing politics with a new way of thinking, which was necessary after it appeared that class struggles related to economic exploitation did not provoke the revolution that Marx predicted. Laclau & Mouffe didn't see class as the political identity—and the class struggles that are the result of this—as foundational for achieving change, and deemed it therefore necessary to go beyond Marx. Many social struggles or movements, such as, for example, those that are built around questions of race, gender, sexuality, and climate change, are not based on economic exploitation. In our times one can think of Black Lives Matter, Fridays for Future, MeToo and the queer movement.

Laclau & Mouffe emphasised this plurality of demands and aimed in their book to develop a theoretical approach which takes that into account, in the hope of supporting a change towards a radical and plural democracy. With this they meant a democracy that puts liberty and equality into practice, instead of leaning on the idea of undifferentiated individual interests, but also a democracy that embraces discursive struggles, instead of downplaying conflicts under the guise of expert knowledge and economisation. (Laclau & Mouffe, [1985] 2014, pp. 12-13; Mouffe, 2013) Hence, their approach can be read as a critique of depoliticisation, of making the current social order seem inevitable and unchangeable. Their theory of hegemony, or theory of discourse, as it often is called, conceptualises how different demands are articulated and united in order to build, to resist, or to sustain a hegemony.

Laclau & Mouffe's critical approach can—just like Foucault's theorising—be used for a range of topics. It has, as I see it, a stronger account of change than both Rosa and Foucault through their theorising about how hegemony is build and contested. This is of utmost relevance to the question of how the hegemony of automobility is sustained or reproduced and how it can be changed. To explain the use of their theory for this thesis, I need to start by describing more in detail how they understand *discourse*.

Discourse

This explanation starts with an important assumption, and that is that everything—material objects, non-human living objects, practices and identities—are discursively constructed; that is, they gain meaning in discourse through language. There is nothing essential (such as the word of God) that determines meaning, only discourse can do that. This does not mean that everything is discourse; as long as people do not ascribe meaning to it, it falls outside discourse (Jørgensen & Phillips, 2002, p. 9). The meaning that is

given to something has real effects, in the sense that it influences identities, actions and behaviour. This makes discourse constitutive (Jørgensen & Phillips, 2002).

Laclau & Mouffe build on Saussure's structural theory of language—as do other discursive approaches—and on the poststructuralist Derrida ([1978] 2001) to argue that the meanings of words (signs) are arbitrary and relative (Jørgensen & Phillips, 2002, p. 10) but also *contingent*—possible but not necessary (Jørgensen & Phillips, 2002, pp. 10-12). A 'child' gets—in our western culture and in our time of living—its meaning by, among other things, not being above a certain age, not being a mother or father, not being a grown-up, not being sexually active, and not working for a living. But this meaning has changed over the course of history and can change again, even if we cannot imagine it right now. This contingency or instability of meaning is the result of the assumption that there is nothing essential that dictates the meaning of something; meanings are never permanently fixed.

Laclau & Mouffe have extended these properties of language towards including all social phenomena (Laclau & Mouffe, [1985] 2014, p. 93). A state, a school, the market, transport policy, etc., can all be seen as discourses (Howarth, 2010) encompassing concepts, institutions, roles, objects, and practices. Hence, discourse is not only language, as it is in most other discursive approaches. Laclau & Mouffe particularly emphasise that all discursive structures are material in character (Laclau & Mouffe, [1985] 2014, p. 94).

Now we come to the actual meaning of discourse, because what makes something like transport policy or planning a discourse? Laclau & Mouffe define a discourse as a "structured totality" in which meaning is temporarily fixed by establishing relations between the elements of the discourse. They call this meaning-making an "articulatory practice" (Laclau & Mouffe, [1985] 2014, p. 91). Simply formulated, discourse is the result of a process of meaning-making in which relations between elements are established in a way that they seem to be a structured totality. A structured totality suggests that all meanings are fixed. A discourse consists of differential positions which are called 'moments' if they are discursively articulated (given meaning). Have they not been articulated, then they are called 'elements'. All moments are different and relative to each other (Ibid., 92, is a system of differences. Every discourse has key concepts—called '*nodal points*'—which give the discourse structure, coherency and stability; albeit always temporarily. Nodal points of which the meaning still is under debate are called *floating signifiers* (Ibid.,p.99). Elements can also be floating if they can be filled with different meanings, but they are not the most important signifiers in a discourse.

Transport policy becomes a discourse through nodal points—such as for example the 'transport system', or 'safety'—which are given meaning through their relations with other elements. Since the nodal points and their meanings are contingent—never

permanently fixed—so is the centre of a structure. This makes the whole idea of structure collapse, in the sense that it can never be seen as closed, it stays 'undecidable' (Laclau & Mouffe, [1985] 2014, pp. 93-99). This is what Urry referred to when he pointed out the unstable meaning of 'society'. This emphasises the incompleteness and openness of structures, the constant possibility of change. Articulation will never be finished and is a continuing process, even if the discourse may seem stable.

Hegemony

There are two political logics or mechanisms that play a role in articulations, the *logic of equivalence* and the *logic of difference*. The first creates an antagonistic frontier by uniting several meanings/demands/identities by placing them in contrast to what they are *not*. Their mutual differences collapse in relation to a common 'enemy'. This logic is, for example, used to position the immigrant as the enemy, or to position a certain group as 'the elite' but it is also used in other—both left- and right-wing—populist discourses. The second does the opposite, it expands meaning and dissolves antagonisms (Laclau & Mouffe, [1985] 2014, pp. 115-117). An example is 'sustainability', under which an increasing number of activities are shared causing 'sustainability' as a concept becoming weaker. It is the gradual building up of a discursive chain— introducing "more nuances, shades, variations, and differences" (Jacobs, 2018, p. 304).

The concept of *hegemony* comes from Gramsci and refers to domination by consent— that is creating "common sense" through the normalisation of ideas, practices, institutions and materialities (Stoddart, 2007, p. 201, citing Gramsci, 1971). Hegemony emerges if discursive struggles result in pushing aside one chain of meanings and normalise another. These discursive struggles can also be called power struggles and are always political; establishing a hegemony for Laclau & Mouffe is an act of power and a political project (Laclau & Mouffe, [1985] 2014, pp. 108-122). Jørgensen and Phillips (2002, p. 38) express power and the political in Laclau & Mouffe's approach as "two sides of the same coin, where power refers to the production of objects such as 'society' and 'identity', while politics [political] refers to the always present contingency of these objects", as well to the sphere of 'conflict' and antagonism.

Countering hegemony

Every political project is a 'battle' between the logic of equivalence and the logic of differnce (Laclau & Mouffe, [1985] 2014, p. 115; Mukhtar-Landgren & Svärd, 2018, p. 14). However, the presence of *equivalences* plays a more important role in the building of a hegemony or counter-hegemony, because they provoke confrontations and antagonisms. The second condition for building hegemony or counter-hegemony is the

presence of instability, in the form of floating signifiers. If they wouldn't be there, it would be nothing to rearticulate (Laclau & Mouffe,[1985] 2014, 122-123).

Laclau & Mouffe's approach is deemed useful as method in the unpacking of sedimented concepts, in order to trace power relations (traces of power struggles), and in identifying unstable floating signifiers, which can hint at conflicts and counter-hegemonic articulations. It is used in paper 1 and 4.

Foucault and power/knowledge

Foucault is often viewed as either a poststructuralist, focusing on "knowledge and language", or a postmodernist, focusing on "society, culture, and history". (Agger, 1991, p. 112). The quote below from Best and Kellner shows the affinity with both traditions and the similarity to the critical project of critical theory.

> Foucault's project has been to write a 'critique of our historical era' (1984: p.42) which problematizes modern forms of knowledge, rationality, social institutions, and subjectivity that seem given and natural but in fact are contingent sociohistorical constructs of power and domination. (Best & Kellner, 1991, p. 35)

Power for Foucault is entangled with knowledge, truth and the subject (Foucault, 1980; Foucault, 2007). He developed his understanding of power throughout his career, in what are often are called his archaeological, his genealogical and his governmentality period (Torfing, 2009). From the beginning he placed power in discourse, which he described as "an asset that consequently…poses a question of power…by nature, the object of a struggle, a political struggle." (Foucault, 1972, p. 120). For Foucault, discourses are equivalent with "knowledge claims" or "systems of thought" (Stoddart, 2007, p. 203) embodied in writing, in organisation, in institutions and in social relationships (Scott & Marshall, [1994] 2005 p. 35). Power, for Foucault is: (i) a *productive force*, (ii) a *dispersed force*, and can only be exercised over (iii) *free subjects* who have the possibility to resist. I will briefly discuss the first characteristic.

Power produces knowledge and is produced by knowledge, and becomes in this sense besides a constraining force also a productive force; a force that determines what is seen as knowledge and 'truth'; through, for example the productions of categories. It normalises certain ways of thinking, saying, and doing, and at the same time labels other ways of thinking, saying, and doing as anomalous (Foucault, 1980). Power is not something that one possesses, rather it is "exercised" (Foucault, [1975] 1995, p. 26), it produces an effect, such as, for example, affect and desire (Foucault, 1978, p. 94, volume

1). According to Foucault "the political problem, to sum up, is not error, illusion, alienated consciousness, or ideology: it is truth itself" (Foucault, [1982] 1997 p. 133).

Critical policy studies based on Foucault's thoughts ask the question of how power is exercised in policy and what its effects are (Lövbrand & Stripple, 2015). They focus on uncovering under which conditions—through which inclusions, exclusions, divisions, limits—that which is said and done in national policy and planning acquires truth, how it becomes possible to say and do certain things (Rose, 1999, p8), and how it shapes and divides subjects. *Problematisation* is a strategy for conducting such an investigation (Lövbrand & Stripple, 2015). Taking inspiration from Foucault, Bacchi (Bacchi, 2009; Bacchi & Goodwin, 2016) has developed problematisation as an analytical tool, which can incorporate questions such as 'what assumptions underlie road safety policy' and 'what are the effects of this?'. This tool is used in this thesis in paper 2.

Rosa and acceleration

Rosa builds on the foundations of critical theory, which originates from the Frankfurt School with its founding fathers Horkheimer, Adorno, and Marcuse (Alvesson & Sköldberg, 2018). More recent representatives include, among others Habermas, Honneth, Von Redecke and Rosa.

Critical theory is most of all a critique of domination and social control (Marcuse, [1964]1991), and a diagnosing of social pathologies (Rosa, 2010). It aimed from the start at encouraging the people to critically reflect on the capitalist system of which they were part. They followed Marx in using the term 'false consciousness' to refer to the situation in which capitalism has taken such root in consciousness that inequality and exploitation are no longer recognised. However, they went beyond Marx in realising—inspired by Gramsci's theory of hegemony, which Laclau & Mouffe also draw from—that cultural norms and mindsets, and not only economic factors, are the place where "power and domination could become woven into the consciousness and everyday life of subjects " (Thompson, 2017, p. 5). Culture was seen as the transmitter for the capitalist ideology[18]. These ideas were important starting points for what is called the Frankfurt School.

Critical theorists address a number of issues, particularly related to the totalising effects of 'modernity'. Without abandoning rationalism—the power of reason to unmask

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[18] The concept of ideology does not really fit in the approaches of Foucault and Laclau & Mouffe, in the sense that ideology suggests that there is some underlying truth which can be revealed.

dominating structures—their main targets for critique were and are the forms of rationalism[19] which, under the influence of modernity, have become dominating in capitalist society (Thompson, 2017). From the beginning, they critiqued the positivist turn in social science, which assumes that social processes "finally can be theoretically predicted and controlled" (Honneth, 1993, p. 6). Expertise has becomes the highest form of knowledge and substitutes the political (Feenberg, 2017). They emphasise that capitalist modes of production and consumption have become a totalising force[20] or a "social pathology" (Rosa, 2010). The relation to technology is a central theme as such a totalising force (Alvesson & Sköldberg, 2018). In the time of Horkheimer and Adorno the totalising effects of automobility were already addressed (Pel, 2016, p. 665). Critical theorists do commit to the ideals of modernity, such as rationalism, freedom, and autonomy, but not to the processes that place them outside the realm of politics and are in and of themselves totalising. A central theme is that these totalising structures will eventually turn against ourselves (Thompson, 2017).

Rosa distinguishes—integrating work from Marx, Durkheim, Simmel and Weber— four totalising forces of modernity: rationalisation, individualisation, (increasing) functional differentiation, and technological domestication of nature. He argues that these forces turn against ourselves through their paradoxical flipsides, which respectively are: imprisonment in irrational iron cages of meaning (he mentions economic growth), massification of culture, societal disintegration and ecological catastrophe (Rosa, 2013, pp. 58-59). Rosa adds time as an overarching principle and considers acceleration as the central motor of these flipsides (Ibid., pp. 71-80). Acceleration occurs as a self-propelling wheel—first set in motion by competition—in the form of technological acceleration, the acceleration of social change and of the pace of life, all of which reinforce each other (Ibid., p. 156)

His critique concerns this process of acceleration as a depoliticised, totalising force. Our subjugation to this regime of acceleration is normalised and never questioned. This domination of depoliticised totalising forces—as part of ideology—and our subjugation to it is what critical theorists generally see as ideology and power (Stoddart, 2007; Thompson, 2017). This acceleration wheel has several serious consequences according to Rosa. Acceleration feeds desynchronisation. Nature, the mind, the body, and

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[19] Rationalisation here refers to a scientific-technical rationality (seen as a legacy from the Enlightenment) that has resulted in domination, destruction and oppression. It is associated with the "quantification of nature" and domination over the senses, privileging quantification and appearing neutral (Marcuse, 1964, p. 147, 148).

[20] Rosa defines a totalising force or totalitarian power as 1) "exerting "pressure on the wills and actions of subjects", 2) "inescapable", 3) "all-pervasive", 4) difficult to resist (Rosa, 2010, p. 61).

democratic processes for example cannot keep up with the acceleration wheel, which results in overburdens. Another consequence is that it undermines the ideals of modernity. Acceleration is enslaving and not liberating anymore, while liberation was once the goal of modernity. The main societal goal seems to be competitiveness; or in other words, sustaining society's acceleration capacities. And finally, he argues, acceleration results in serious forms of alienation: from space, from time, from things, from our actions, from others and finally, from ourselves (Rosa, 2010).

Critical theory is often used when capitalism and economic growth are placed centre stage. Rosa's perspective is particularly relevant in the third paper, in which *innovation policy and projects* are scrutinised. His insights offer substantial critique on the dominating meaning of innovation. The reproduction of the hegemony of automobility in innovation and its effects on cycling are discussed in the light of his theory of acceleration. This perspective seems suitable since innovation policy centres on increasing competitiveness—that is, on keeping pace with the wheel of acceleration—and wishes, at the same time, to increase sustainability. It is in the thesis combined with a discursive approach to cover the role of language. Insights from Rosa—and from other critical researchers, as well as from mobility scholars—are used to zoom in on the marginal role of cycling in innovation.

Studying power in discourse

Discourse is the primary subject of analysis in this thesis and the common ground in the four papers. As explained, the approaches represent three slightly different understandings of how power reproduces hegemony. Figure 2 shows the three understandings of power: as totalising or coercive force (domination), as knowledge, and as hegemonic articulation, joined together in discourse. This framework will help uncover how the hegemony of automobility is reproduced and how this has placed cycling in the shadows.
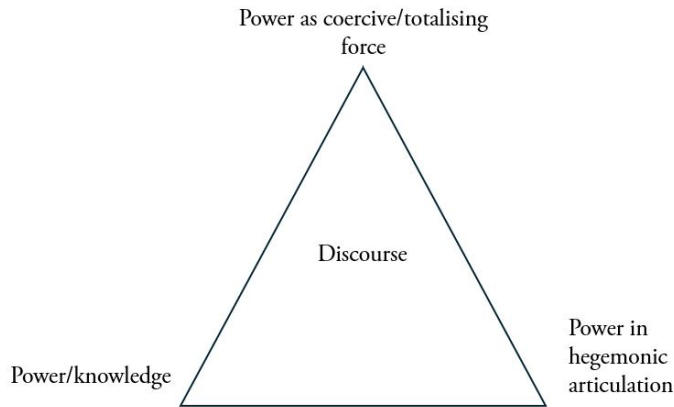
Figure 2 Different perspectives on power that reproduces hegemony

Summary

Critiquing domination and hegemony through normalising forces is important in all the discussed perspectives in different ways. Critical theory locates power as domination in depoliticised totalising forces, and for Rosa acceleration is the most important one. Foucault argued that power—located in discourse— is exercised through the production of regimes of 'truth'. These can be studied in problematisation in policy. Laclau & Mouffe place power in the articulation of hegemonic discourses that are the result of discursive 'conflicts' (power struggles), which always are 'political'). In all approaches power is not limited to the institution of 'government' and discursive power struggles are not reserved for politicians. Also, in all approaches, power is related to normalisation, to taken-for-grantedness, and not questioned, hence depoliticised.

Topics

Opening windows of opportunity for change, so is argued in this thesis, requires unpacking how the hegemony of automobility is reproduced; or in other words, delving into discourses and unpacking the mechanisms of reproduction with the help of power. The choice of which discursive power relations to focus on, is guided by the expectation of a surplus of meaning which could become antagonistic to the discourse and can potentially evoke a counter-hegemonic articulation. These are concepts in which a tension is observed, either in research or in practice. The chosen topics are accessibility, road safety, innovation and future mobility. In this chapter, I will briefly discuss them, but first I will further motivate the choice to focus on national policy discourse.

Zooming in on national policy discourses

An important choice has been made regarding the analytical level of the thesis, besides its focus on discourse. I have already explained that I focus on politics, policy and planning as playing fields for hegemonic articulation. There is no term that describes them as a single unit, and often in this thesis I speak of (transport-related) policy and planning. Documents that are analysed are mostly produced in a governmental department or within governmental agencies, such as the administration itself.

As described earlier, there is no determined locus of 'the political' or an exclusive location of discursive power struggles; they, or their traces are everywhere. However, the state is often the place where concepts are given meaning in order to make and implement policy; that, "after all, has the ambition of improving collective decision-making through better knowledge" (Wagenaar, 2014, p. 112). The state is also heavily involved in 'politics', that is, the institution of a discourse and making it common sense. It does this in its communication, through formulating goals, through its planning processes, through making legislation, and by organising driving education, making traffic rules, designing rules for infrastructure, etcetera.

It is evident from the discussion in the former chapter that discursive power struggles and acts of inclusion and exclusion of meanings are not limited to politicians. Power

struggles around the meanings also occur in governmental administrations, among policy makers, among infrastructure designers, etc. This also happens in a context of antagonism and contingency.

There is a myriad of power struggles at different levels around meanings that don't come up to the level of politicians but are still political and have real effects on groups of people. This is the reason why I do not clearly distinguish in this thesis between things 'said and done' in bills, policy documents, or within transport planning practices. Each of these can play a role in hegemonic articulations on different levels. The distinction is not relevant for the aim and research questions in the thesis. The next sections describe the topics in the papers.

Accessibility

Swedish transport politics steers through different goals and principles. Overarching principles are for example that citizens (often denoted with 'clients') have a freedom of choice to decide how they wish to travel; that competition between travel alternatives shall be encouraged and that social costs shall guide the design of policy instruments (Government, 2009, pp. 8-9).

The overarching goal of Swedish transport politics is a socioeconomically efficient and a sustainable transport system for citizens and companies in the whole country (Government, 2009, author's translation). There are two underlying—equally important—goals. Accessibility is part of the first goal (called the functional goal). The functional goal is that the transport system offers basic accessibility to everyone and also contributes to the capacity for development in the whole country. It must also respond equally to women's and men's transport needs and be useable for people with disabilities. It must also be designed in a way that improves children's safety and autonomy. The transport administration sees accessibility (the functional goal) as its core task, while the other underlying (consideration) goal is supposed to set limits as per the level of accessibility. Accessibility for people with disabilities, which follows European agreements, has become a kind of separate concept, and focuses on design at a micro level.

Cycling is generally praised because of its contribution to many goals, yet accessibility for its users is seldomly mentioned as one of them. Cycling infrastructure is often motivated with an argumentation that it will make the situation safer for cyclists; comfort or accessibility is less often used as argumentation. *This raises the question how accessibility is understood and how this affects the position of cycling.*

Accessibility is also a concept that in research has become entangled with 'sustainable mobility' (Banister, 2008). It aims to capture potential mobility and puts people at the forefront instead of mainly referring to travel behaviours and the transport system (Banister, 2008; Berger et al., 2014; Ryan & Martens, 2023). This tension makes it an interesting topic to investigate.

Road safety

Road safety is part of the second transport political goal (called the consideration goal). This goals emphasises that the transport system must be adapted so that no one is killed or seriously injured, and must also contribute to environmental goals and to increased health. Emissions from domestic transport have to be decreased with 70 % between 2010 and 2030[21]. Fatalities in road traffic have to be halved between 2020 and 2030 and the number of people that are seriously injured must be decreased with 25 % in that same period.

Vision Zero is Sweden's road safety vision that has become official policy when it was adopted in Swedish parliament in 1997 (Government, 1997). This can cause some tension because transport policy has more goals than safety alone. Vision Zero has spread all around the world as a strong discursive tool, which makes it in and of itself interesting to examine, as plenty researchers before me have done.

In policy practices, cycling is generally not praised for contributing to road safety goals, just as with accessibility. It is also argued in research that road safety solutions facilitate automobility and speed (e.g. Beckmann, 2004; Blank-Gomel, 2019). Balkmar (2007) observes a tension in Swedish road safety discourse (represented by Vision Zero) between a vision of freedom of mobility and the right to safe mobility.

There is also a substantial body of literature (Aldred & Woodcock, 2015; Bonham et al., 2020; Culver, 2020; Horton, 2007) focusing on how cycling is constructed as dangerous in policy through educating 'the vulnerable'. These characteristics of road safety policy seem counterintuitive, as one would expect it to ally with the most vulnerable road users and educate and limit the most dangerous road users.

This raises question as to how road safety policy and vision make this possible, or in other words *how mobility and safety are understood in road safety policy and how this hampers cycling*. Is road safety policy able to look beyond the automobility norm and also facilitate cycling?

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[21] Regeringen.se

Innovation

Innovation and transport use to thrive together. As Pel (2022, p. 17) notes, "transport innovation is a particularly influential example of the modernist belief in progressive innovation that pushes the boundaries of what can be realised in society ". Innovations in transport have had—and not unlikely continue to have—an enormous impact, on people's everyday life, on how we use space, on levels of consumption, and on industrial production processes. They have placed mobility "at the heart of contemporary economic, social, political, and cultural life" (Hanson, 2017, p. 469). However, against enormous social and ecological costs (Gössling et al., 2022). The high level of motorised mobility is the largest contributor to these costs.

Future mobility is imagined as dominated by automation, electrification and digitisation of mobility and billions are invested in making this imaginary reality. In particular the first two solutions are also subject of a 'rat race', a competition within the car-industry to be the most competitive. This role of innovation in upholding or increasing economic competitiveness has been criticised in research (Adey et al., 2021; Nykvist & Whitmarsh, 2008). This is particularly relevant since innovation has been attributed a role in achieving sustainable mobility and in that sense has to promise change. In that light it would be expected that innovation would focus on achieving lower levels of motorised transport.

It would also be expected that the expansion of cycling as a practice is a target of innovation policy. Van Wee et al. (2022) argue that the time and space determine if something is an innovation or not. A cycle path in a country without bicycle infrastructure would be an innovation. In a country in which cycling as a practice is not fully diffused to all groups and all kinds of errands, it would be innovative to expand the practice of cycling.

In the light of these two arguments, it is surprising that cycling is as good as invisible in transport innovation in Sweden. It raises *the question how the tension between competitiveness and sustainability discursively takes form and how cycling is understood in innovation policy and projects. How does this contribute to a reproduction of the dominating mobility regime*?

Future mobility

Above, it is mentioned that mainstream articulations of future mobility centre electrification, automation and shared mobilities (shared cars in particular, but also shared e-bikes), also in Sweden. It is argued that these solutions do not fundamentally question automobility (e.g. Isaksson, 2014), while the problems they are supposed to solve (emissions, lack of space, safety) are for a large part caused by excessive automobility. Shared car systems challenge car ownership but not the car in itself.

This is why scholars increasingly search for alternative imaginaries of future mobility, and cycling often plays an important role in these. However, an alternative articulation of future mobility entails not only replacing driving with cycling, walking and forms of public or collective transport but must also—as earlier discussed—explicitly address the inequalities that characterise the automobility system (Cox, 2022; Manderscheid & Cass, 2022; Martens et al., 2021; Spinney, 2021).

To address this, the paper adopts a gender perspective and asks if *the automobility norm is reproduced—or not—in articulations of future mobility,* and *it critically assesses the potential of a counter-hegemonic articulation of mobility based in cycling from a gender perspective.* As a practitioner, this question is also interesting with regard to the political aim that the transport system must equally meet men's and women's needs (Government, 2009). The paper can be seen as a follow-up on paper 3, intending to open up windows of opportunity for a rearticulation of future mobility.

These topics imply that the thesis goes beyond a usual focus on transport planning and explores discourses in adjacent policy fields. Naturally, the choice for these topics is not exhaustive. Yet, those that are chosen—accessibility, safety, innovation and future mobility—carry, as shown, already carry a tension within them that invites unpacking. At the same are accessibility and safety sedimented concepts in transport and their meaning is seldomly questioned. The next chapter discusses the thesis' methodological points of departure.

Methodology

Ontology and Epistemology

This thesis combines critical approaches that have a lot in common. When taking Rosa, Foucault and Laclau & Mouffe as representatives of critical theory and poststructuralism, they all assume knowledge does not reflect the world and is always considered as contextual. They all question uneven power relations and taken-for-granted understandings (Alvesson & Sköldberg, 2018, p. 79; Jørgensen & Phillips, 2002, p. 5). They don't believe in the making of law-like statements that can be used to explain the world in patterns of cause and effect (Agger, 1991; Best, [1995] 2005). Foucault said that the role of this work is to "loosen the grip of power" (Williams, 2005)(in Williams, 2005, p. 110); that could be said of all of the approaches.

   All approaches see the world as socially constructed; however, they differ somewhat in their ontological perspectives. In general, poststructuralism combines this anti-foundationalist epistemology with an anti-essentialist ontology (Gibson-Graham, 2017). For Laclau & Mouffe the world is fully discursively constructed and they don't recognise binary divisions between culture and nature, human and non-human, or material and non-material; all these binaries are discursive constructions (Mouffe, 2013, p. 80). For them, objects in the world do exist outside our thought, but they don't have a meaning without discursive interpretation (Laclau & Mouffe, [1985] 2014, p. 94). Foucault is less explicit about this but in particular in the *Archaeology of Knowledge* he writes a lot about "statements" as the elementary units of discourse and distinguishes between a discursive and a non-discursive world (Foucault, 1972, p. 80). Poststructuralist thought has a specific idea of the subject, as explained earlier in an earlier chapter, and they reject the idea of ideology as a totalising force that cannot be resisted. (Jørgensen & Phillips, 2002). Rosa's critical theory does not give primacy to discourse but sees the world as constructed by both historical and social contexts (Alvesson & Sköldberg, 2018). Rosa underscores—in line with Foucault—that "there is no a-historical epistemological truth" (2010, p. 51).The idea of the subject is somewhat different, as the emphasis is more on ideology as totalising force.

My methodological point of departure for questioning the unquestioned, is—following Laclau & Mouffe—that language is constitutive and meanings (and society) discursively constructed, contingent and interconnected with power. This does not exclude an engagement with ideological power (as theory of the unconscious), even if my point of departure doesn't commit to one ideology as a closed structure, functioning as 'grand narrative'. Ideology is also discursive (Stoddart, 2007, p. 193).

How to uncover reproduction?

Two aspects are pivotal in moving forward from the critical perspectives I draw on, via my conceptual framework, to a method of investigation in each paper. First, it is in power that hegemony is reproduced, in forms of domination, knowledge in the form of regimes of 'truth', and hegemonic articulation. Secon can be found in discourse and in this discourse. how to uncover power in discourse?

A Laclau & Mouffe inspired policy analysis can exist of identifying the main nodal point (key concept) in a discourse and the chain of elements that give meaning to this nodal point as a chain of equivalence (Jørgensen & Phillips, 2002; Marttila, 2015). In the last paper Laclau & Mouffe's concept of the floating signifier is used to scrutinise conflict in how mobility futures are contested.

A Foucauldian approach to discourse analysis deconstructs truth claims (Williams, 2005). In order to apply this specifically to policy, Bacchi's developed a tool called "What's the problem represented to be?" (Bacchi, 2009), that focuses on how policy constructs problematisations.

There is no clear method that prescribes how to do empirical research in the tradition of critical theory. However, discourse is also here the vehicle for power, and meanings are found in discourse. In the next step, critique is exercised—following Alvesson and Sköldberg (2018) and Thompson (2017)—by questioning and analysing how this force permeates the understanding of innovation (Thompson, 2017).

Before describing these methods more in detail, I will in the next section discuss the primacy of qualitative research in the thesis and how texts and interviews—as primary form of empirical material—are treated.

Qualitative research

Since my epistemological point of departure is poststructuralist, and discourse is my main subject of analysis, the use of qualitative research methods is not surprising. The critical research in this thesis wishes to question and disrupt usual ways of thinking and this seems easier in a qualitative approach than in a quantitative approach, which seldomly addresses societal contexts and focuses on the here and now (Alvesson & Sköldberg, 2018, pp. 206-207), and not on what could be. Furthermore, since the aim is understanding rather than explaining, there is no need to study a large number of variables and subjects in order to make generalised statements. For the aim and question in this thesis, quantitative methods did not seem the most appropriate to use.

However, this does not mean that I don't see quantitative research as necessary or incompatible within the premises of this thesis. As Manderscheid (2016a) also notes, it is numbers that gave rise to the new mobilities paradigm, and there are a lot of issues where quantitative methods can help, both in initiating research questions, in answering them, and perhaps most of all as discursive tools. However, reflexivity is needed about the collection of data and the interpretation, even without a poststructural perspective. As also discussed in paper 2 on traffic safety, numbers are powerful and can be used and misused to make certain discursive claims. The use of quantitative research from a poststructural perspective can also be used to shine a different light on an issue through abandoning taken for granted categories and creating new ones, for example the combi-traveller instead the cyclist, the driver or the buss- or train passenger.

Written texts

The empirical material that is used in this thesis are primarily written texts, except in paper 4, where interviews form the empirical material and function as texts. These written texts are often produced by a group of people with different perspectives and pursuing different goals. In that sense, the production of a text is a result of discursive power struggles, it is not one voice that is 'speaking'. Not all the involved might underscore the eventual product in total. However, it is meant to be representative of the organisation that produces it.

The analysis of written texts in this thesis is more than reading and interpreting. In the words of consecutively Torfing and Derrida, it requires:

> A textual labour that involves a double reading of the text (Derrida 1988:21). The first reading is a faithful attempt to follow the dominant strategy, or interpretation, of the text, its presuppositions, its concepts and its arguments. The second reading then consists in tracing the excluded, repressed and inferior strategy, or interpretation, which forms the

undercurrent of the text. When the textual hierarchy is established, it is shown that the dominant strategy, or interpretation, is dependent on what it excludes and represses. (Torfing, 2009, p. 116).

One of the definitions of what is called deconstruction would be the effort to take this limitless context into account, to pay the sharpest and broadest attention possible to context, and thus to an incessant movement of recontextualization. The phrase which for some has become a sort of slogan, in general so badly understood, of deconstruction ("there is nothing outside the text" [it n y a pas de hors-texte]), means nothing else: there is nothing outside context. (Derrida, 1988, p. 136)

This 'double reading' is kind of figurative; it is an iterative process and many readings are required. The result I would call an attempt to deconstruction. A consequence of this labour-intensive process is that not many documents can be used to analyse in this way. To place the documents that I used in a policy context I have—besides the documents referred to in the papers—also read policy documents in other areas than transport, for example related to urban planning, children's rights, health, rural areas, however, less intensive than describe above.

The quotes above refer to Derrida's concept of 'deconstruction' (Derrida, [1978] 2001). Laclau & Mouffe use this to put the undecidability of discourse—instead of closure— to the fore, which is necessary to build a hegemonic discourse. (preface 2001, xi). Deconstruction of a text (which doesn't have to be a written text) reveals the construction of "'violent inscriptions' of binary textural hierarchies in Western thought" (Torfing, 2009, p. 114).

Texts that are used for analyses in the papers are policy documents—produced at a national level—from the government and from governmental agencies or institutes. For paper 2 not only from the Swedish national level but also from the Dutch. Paper 3 also includes material (text on websites and in reports) that are produced in innovation projects that have received national funding.

Interviews

I do not see the interviewee as a simple source of neutral information or myself as a neutral interviewer. The interpretation of interviews has to be in line with this point of departure. The interviews in paper 2 (road safety) and paper 4 (future mobility) had different aims. In the road safety paper, policy and vision documents were the primary empirical material and the focus in the interviews was at first hand not so much on discussion but on gaining background information, which required little interpretation. In this project my role as interviewer approached the role as 'neutral researcher'.

In the last paper, the aim of interviewing was totally different. It was the main source of empirical material and the aim was to identify building stones for an alternative imaginary of future mobility. Here, the interviews formed the 'texts'. Here, the interaction with the interviewees was more in the form of discussions, and the contents and the interview dynamics and output were partly dependent on my input as interviewer, their role, their knowledge of the critical character of my research and their response to that. In that sense, the results are much more a joint product. After transcription of the interviews, in an iterative process, I reread and recoded the material several times, re-arranging themes, from what in the beginning just were issues or topics, towards interpreting in terms of counter-hegemonic articulations.

Paper 1 Accessibility and the chain of equivalence

The analysis of how accessibility reproduces the automobility norm is based on Laclau & Mouffe and uses their concept of chains of equivalence. It shows the way accessibility in the transport discourse is constructed through a nodal point 'growth' which represents a chain of equivalence, a chain of meanings. The inscription of binary hierarchies uncovers the contingency, the openness of the meaning.

To do the analysis, several policy documents have been consulted. The research strategy for unpacking the meaning of accessibility exists of different steps (taken simultaneously). A first practical step in using Laclau & Mouffe's theory as a tool is mapping the discourse in main policy documents, for which Marttila (2015) was an inspiration. It required making connections between values, subjects, and activities. Activities can be many things, such as actions, objects, strategies (Ibid., p. 133). The start was a very chaotic map. Multiple readings altered the map into a more structured one when detecting nodal points and grouping elements together. It became gradually a map that very much was sorted by what seemed the values of social, ecological and economic sustainability.

Nodal points in the total transport discourse were for example 'inclusion' and 'safety'. In paper one, 'growth' was identified as a nodal point giving structure to the meaning of accessibility; important accessibility was tied to that which generates growth. Hence, what was associated with accessibility that generates growth? This chain of meanings is called the chain of equivalence filling 'accessibility for growth' with meaning. This chain of equivalence is a result of the earlier discussed logic of equivalence. It 'fixes' the meaning in such a way that the differences between elements in a chain collapse and the elements

receive their meaning through what they are not. In a (political) act of power these meanings are privileged over others.

Paper 2 Studying problematisations in road safety

The analysis in paper 2 (on road safety) is based on Bacchi's method for policy analysis—called *what's the problem represented to be*, which builds on Foucault's ideas of discourse, power, knowledge, the subject, governmentality and problematisation. Bacchi (Bacchi, 2009, 2012; Bacchi & Goodwin, 2016) interprets policy as discourse. The fundamental idea of the method is that policy governs through problematising and not through solving problems. The answers (policy proposals, actions) are delimited by how problems are posed. Problematisation as the locus for power struggles can open up windows of opportunity for change. The task in a discourse analysis that follows Foucault is to look for meanings that are excluded in the discourse, and in showing the gaps, voids, absences, limits, and divisions in the formation, that never can be a totality, a closed system.

The empirical material consists of policy and vision documents about Swedish road safety policy and its Vision Zero and Dutch road safety policy and its Sustainable Safety vision. With the automobility norm in road safety as a point of departure, a Bacchi inspired discourse analysis is performed to unpack this norm.

Her tool entails asking the following questions (Bacchi, 2009; Bacchi & Goodwin, 2016, p. 20):

(i)   What's the problem represented to be in specific policy or policies?
(ii)   What presuppositions or assumptions underlie this representation of the problem?
(iii)   How has this representation come about?
(iv)   What is left unproblematic in this problem representation? Where are the silences? Can 'the problem' be conceptualised differently?
(v)   What effects (discursive, subjectification, lived) are produces by this representation of 'the problem?
(vi)   How and where has this problem representation been produced, disseminated and defended? How has it been and how can it be disrupted and replaced?

These questions are used as inspiration for the analysis. Additional to this approach, a cross-cultural comparison (Bacchi & Goodwin, 2016) is done with Dutch empirical material, as a way to identify windows of opportunity for change. As Bacchi formulates it:

The Dutch case is particularly interesting to compare with since the approach to traffic safety is very similar; both countries follow a systems approach in which human, environment and vehicle are seen in interrelated. At the same time, it is in the Netherlands part of a context in which cycling plays a much larger role. The empirical material in this research consists of written texts and interviews.

Paper 3 Questioning the meaning of innovation

One of the central themes in critical theory is how the state intervenes to protect capitalism (Agger, 1991). This made it logical to use critical theory (Rosa) and critical innovation research as a point of departure to analyse the role of cycling in innovation.

Paper 3 does not follow a specific method but presents typical research in the tradition of critical theory, as described above, in combination with a discursive perspective on the use of language. The understanding of 'innovation' is studied from a critical perspective, primarily Rosa's critical theory of acceleration. This is assisted by critical perspectives that specifically target mobility (via Urry and mobilities research) and innovation as such (via so called critical innovation researchers). The empirical material consists of (policy and project) documents and websites related to two strategic innovation programs in Sweden, Drive Sweden and Viable Cities, who receive large funding from the government to drive transport innovation towards sustainable mobility. From these document the dominating meanings of innovation are extracted.

Paper 4 Floating signifiers in future mobility

Paper 4 (on mobility futures) also builds on Laclau & Mouffe's theory of discourse. It uses the concept of 'floating signifier' and tries to identify how these are given meaning. The imaginary of future mobility is filled with different meanings, which makes it highly political. We defined '*everyday life*' and '*space*' as floating signifiers in the discourse

around future mobility. In the paper, 19 experts, involved with cycling at a national level in Sweden, but not part of the national administration, are interviewed to share their visions of future mobility, and the changes they deem necessary. Interviews were manually transcribed, thematically analysed, and used to construct two vignettes. In the analysis we applied a gender perspective to critically assess their visions and ways they contest prevailing understandings in national policy and planning. Their contributions are used to find points of conflict that carry seeds for anti-hegemonic articulations. This means that the question of representativity does not play a role.

The next chapter discussed the findings in the four papers.

Findings

This chapter starts with a short recapitulation of aim and research question and how the research question is approached in the different papers. It presents the findings in the four papers. The conclusive chapter will discuss the aim and to what extent it is reached.

The aim of the thesis was formulated as follows:

Finding windows of opportunity for rearticulating mobility and cycling in national policy and planning in such a way that cycling is embraced.

This shows the wish to offer a path forward, towards change. Rearticulation refers to changing a discourse through counter-hegemonic articulations. I have explained that this interpretation is based on Laclau & Mouffe's definition of discourse as the result of an articulatory practice. However, to be able to suggest an anti-hegemonic articulation, it had first to be investigated how the hegemony of automobility is reproduced. This informed the formulation of the research question:

How do national transport-related policy and planning contribute to reproducing the hegemony of automobility and how does this affect cycling?

To answer this question, power in discourses have been scrutinised, with the help of different approaches, that have slightly different conceptions of power but all focus on normalisation and reproduction as the effect of power. With help of Laclau & Mouffe, we have in the first paper looked at how the concept of *accessibility* gets its meaning—is articulated—in transport policy and planning. The focus was here on the practice of articulation, on the building of a discourse through establishing a chain of equivalence around a key concept—a so-called nodal point. What are the important elements that give accessibility its meaning? The hegemony of automobility is reproduced in the meaning of this concept through the inclusion of certain meanings and the exclusion of others. The practice of articulation was even central in the fourth paper, where the articulation of future mobility was examined through discovering two elements in the articulation of future mobility that specifically were seen as open for contestation. We

focused on how these two elements—two floating signifiers—were given meaning. These two elements were 'everyday life' and 'space'.

Another way of approaching the question was—with the help of Foucault—by looking into the understanding of *road safety* in the second paper. Here the locus of power struggles giving meaning to road safety were not articulations but problematisations in policy. How does road safety policy reproduce the automobility norm and subordinate cycling in its problematisations?

In the third paper the discourse of innovation is approached from a critical theory perspective. Critical theorists would rather have spoken of the totalising force of automobility, instead of the hegemony of automobility. While the poststructural perspectives are particularly focused on uncovering the exercise of power in normalised meanings and practices, does critical theory this from a more explicit emancipatory attitude which includes a diagnosing of social pathologies and a substantial critique of dominating, totalising forces. In the paper, Rosa's critique of the dominating force of acceleration and time-pressure in capitalist society are used to analyse the discourse of innovation and its effects.

Below, I present the findings of the papers. The first section is dedicated to answering the research question, and the second to presenting possible rearticulations.

Accessibility

The first paper focuses on accessibility. How does the understanding of accessibility in Swedish transport discourse reproduce hegemonic automobility and how does this affect cycling? Accessibility in transport discourse seems to centre around growth, which was identified as a key concept (a nodal point). A chain of elements that fill this '*accessibility for growth*' with meaning, distinguishes relevant from irrelevant accessibility. It reveals an understanding of 'accessibility for growth' in which non-utility (or leisure), non-quantified, slow, local and rural are subordinated. Cycling appears to be largely excluded from this dominating discourse. In an urban context, cycling can contribute to growth indirectly, in the sense that accessibility of cities is threatened by congestion and cycling is seen as one option to reduce congestion. This reinforces its understanding as urban transport mode, something which results in not receiving a lot of national attention and not being able to profit from national muscles. The dominating meaning of accessibility downplays local lifestyles and rather enhances accessibility with making destinations at longer destinations at longer reach accessible by higher speeds. Automobility as a vehicle for delivering 'important' accessibility—that which contributes to growth on a national scale—is taken for granted. Older people, children and non-utility travel is largely excluded in the discourse. These are particularly groups, which would gain accessibility

and autonomy from a stronger policy to improve cycling conditions. There is an attempt to co-opt cycling as leisure (particularly in the form of tourism) in the growth discourse.

The hegemony of automobility—and the subordination of cycling—is reproduced in this understanding of accessibility. These results also show that the understanding of accessibility does not approach the understanding which is increasingly expressed in research (Van der Meulen & Mukhtar-Landgren, 2021).

Road safety

Road safety can potentially be a window of opportunity for change, yet it seems strongly entwined with the rise of the car era. Road safety policy emerged as a reaction to the rise in casualties in traffic, seen as 'externalities' from car traffic.
 (Lundin, [2008] 2014). The paper investigated how the automobility norm, or the hegemony of automobility is reproduced in road safety policy, and how this affects cycling. The empirical material consisted of policy and vision documents.

Road safety policy is unpacked with help of Foucault's concept of problematisation, translated into a practical tool by Bacchi. It uncovers which key problematisations steer road safety policy and play a role in reproducing the hegemony of automobility. A first problematisation that is noted is the *concern about safety measures obstructing automobility*, in particular speed (hence utility, hence growth). There is no large concern that safety measures might obstruct the speed, or better, the flow of cycling. Automobility's effects on both road safety and health—in a broader understanding than only safety—are barely problematised.

A second problematisation is the construction of *cycling as dangerous*. There is great emphasis on individual protection gear. The car becoming larger and heavier all the time, and the risk this puts on other road users is not problematised. Mitigation instead of preventing is the main rationale for road safety policy, which put the emphasis on protection gear. It is also constructed as dangerous through the utilitarian principle of attributing casualties to the victim. The car driver often survives a collision a cyclist, but the cyclists get killed or injured; hence cycling is dangerous and not driving. That means that 'the stronger, bigger, heavier, more protected, the safer' (but the more dangerous for others)

The last problematisation is the construction of *safety as an objective, quantified feature*. This neglects perceived safety, which at the same time has been shown to be a pivotal barrier for cycling, in particular for women (Buehler & Dill, 2016; Ravensbergen et al., 2019). It also gives opportunities to use selected statistics to enforce a discourse, which risks result in numerical claims making. Routes or places that are perceived as dangerous are avoided which doesn't make it to the statistics of objective safety (Van der Meulen, 2022).

This paper also started to look into possibilities to identify counter-hegemonic articulations, with help of a cross-cultural perspective. The paper compared the problematisations in Swedish policy and Vision Zero with the take on those in Dutch policy and road safety vision (Sustainable safety). The Dutch Sustainable Safety vision recognised to a larger extent the entanglement of road safety with other issues, such as mobility, quality of life, use of space, and the environment, and recommends analysing these problems together. In other words, it displayed a more *integrated perspective on goals*. In this light can the problematisation of *liveability* in the (early editions of the) Dutch vision be understood. Dutch policy also problematises fear or *perceived safety*, in particular from the perspective of increasing cycling and encouraging older people to continue cycling when they get older.

Innovation

Innovation hints at promises for the future, however it has been mainly driven by the urge for competitiveness. It is also increasingly attributed a role in achieving sustainability goals. However, the invisibility of cycling in imaginaries of future mobility gives rise to questioning the understanding of innovation. The paper investigates how the hegemony of automobility is reproduced in innovation policy and projects. The empirical material consists of (policy and project) documents and websites related to two strategic innovation programs in Sweden, Drive Sweden and Viable Cities, who receive large funding from the government to drive transport innovation towards sustainable mobility. The results are analysed with help of critical innovation scholars (e.g. Godin & Vinck, 2017), mobilities research (e.g. Urry, 2000b), and Rosa (e.g. Rosa, 2010). The emphasis is on Rosa's theory of acceleration.

The paper focuses on three dominating understandings of innovation that are found in the material: as *progress*, as a *technological novelty* and as *inevitable*. The modernist understanding of process links it to an accelerating pace of innovation and to competition. For Rosa acceleration is the overriding totalising force that steers the other key processes of modernity: rationalisation, differentiation, individualisation and commodification. The focus on competitiveness instead of sustainability goals contributes to the invisibility of cycling. The inclusion of biking as part of shared systems is explainable since they are often associated with rendering growth. This is an example of incorporating cycling into a growth discourse. It can also be related to extracting 'behavioural surplus' from the cyclist, as Spinney (2021) emphasises. Bike share systems help to foster an image of bike-friendly city, which makes it competitive, and the data that those systems extract from cyclists can be exploited for commercial ends.

Innovation in transport is also predominantly understood as a technological novelty, that is assumed to automatically contribute to both sustainability and to business opportunities. New technology evokes acceleration occurs since it often aims at speeding up processes, but also transport itself. Digitisation is currently seen as a tool for speeding up transport and related processes. 'Technology' and 'novelties' also speak to emotions.

Innovation, as technological novelty, is also understood as inevitable. Besides being part of a rat race, innovation is linked to improvement. There seems no alternative because innovations are presumed to make things better (and who doesn't want that?), which is also called the 'pro-innovation paradigm' (Godin & Vinck, 2017; Sveiby et al., 2012). Rosa (2010) links this phenomenon to the speed of innovation and the speed of policymaking being desynchronised. Policy is not steering or reflecting (there is no time and knowledge for that), which results in an uncritical attitude. Policy only adapts without being reflexive.

The consequences of this understanding of innovation are not favourable for cycling. Trying to co-opt cycling into growth shapes cycling as being part of a shared system and the cyclist as a customer of this system. Electric biking is not seen as technological novelty and obviously not as something that can speed up processes or transport. It shapes cycling as practice—outside shared services—as rather old-fashioned and regression instead of new and progression. The current understanding of innovation can explain why cycling is a blind sport in innovation projects (Van der Meulen, 2023).

Future mobility

This paper looked into the understanding of future mobility, based in cycling, and analysed the results from a gender perspective. This as a response to calls that cycling research must engage with wider inequalities, instead of mainly trying to compete with the car. This paper interpreted '*everyday life*' and '*space*' as floating signifiers in imaginaries of future mobility and examined how the hegemony of automobility is reproduced—or not—in imaginaries from (cycling) experts. Cycling is, just as mobility, gendered and a gender perspective is used to assess articulations. The contributions of the participants showed that they challenge the normativity of automobility but not automobility itself. They had difficulties imagining a car-free mobility future. However, the vignettes showed some interesting power struggles or conflicts that can contain seeds for counter-hegemonic articulations.

Two underlying power struggles or conflicts—possible counter-hegemonic—emerged from the material and interpretations of the interviews: a power struggle between valuations of time and space, and a struggle between the values of homogeneity and heterogeneity. The participants contest the primacy of time over the quality of space and the primacy of homogeneity over heterogeneity. The dominant meaning of space

facilitates in their eyes speed and comfort for motorists as opposed to cyclists. They contest the privileging of saving travel time—as this also means that space for cycling is being reduced or non-existing—over the objective to provide a liveable, sociable and convivial environment. By doing so, they seek to bring this alternative meaning of space as place into debate. To argue for the importance of quality of space addresses the 'masculine' coding of current space. It goes beyond the usual argument that emphasises traffic safety fears of women and problematises the right to inhabit space.

By contesting the power of homogeneity, they call for shared road space that safely accommodates a plurality of users and activities. The current situation of homogeneity can be seen as a critique of the lack of care for groups of people who are not normative. These counter-hegemonic articulations challenge masculine-coded designs and uses of space.

The next chapter draws conclusions from the four papers and discusses to what extent the aim of the thesis is reached.

Conclusion and reflection

This thesis aimed to find windows of opportunity for change; in other words, to identify potential counter-hegemonic articulations. Laclau & Mouffe argue that for the building of hegemony (or counter-hegemony), there must be phenomena of equivalence—frontiers—and instable signifiers, of which the meaning can be filled with different understandings ([1985] 2014, 122-123). In Laclau & Mouffe's words, "…[counter-]hegemony should emerge in a field criss-crossed by antagonisms and therefore suppose phenomena of equivalence and frontier effects" ([1985] 2014, 122). This means that it must be possible to detect different 'camps' and that there must (in this case) be concepts that can be filled differently by people that support a more cycling oriented policy. The first condition, the presence of (chains of) equivalence is met.

When placing the results and discussions in the four papers next to each other, a hegemonic understanding of mobility emerges, as well as a counter-hegemony related to cycling. Here it becomes possible to detect an equivalence in the understanding of mobility in transport-related policy and planning (on different levels of abstraction): *transport, 'utility' traffic, accessibility for economic growth, accessibility by speed, economic growth, saving time, progress, utilitarianism, innovation for competitiveness, more, physical protection (safety), homogeneity in activities, homogeneity (division) in space, homogeneity of people, new technology, anonymity, individualistic, 'masculinity'[22]*. The thesis has, throughout its different articles, illustrated that cycling either struggles getting a foot-hold in this context—or alternatively is subsumed under the norm; for example, when bicycle tourism is subsumed into a discourse of growth; or when there is a tendency to focus on physical protection for cyclists, instead of on decreased speed of cars and more space for cyclists, related to safety. A policy that embraces cycling is articulated with the following chain of equivalence: *wellbeing, liveability, human-scale, accessibility by proximity, post-growth/degrowth, quality of space, collectivity, sociality, liveability, femininity', prevention (safety)*.

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[22] This means 'masculine-coded', not necessarily referring to men. The same counts for 'femininity' further below.

These chains show several antagonisms. There are frontiers between *saving time* and *quality of space*, between *individualism* and *collectivity,* between *protection* and *prevention,* and between *economic growth* and *wellbeing.*

This is not enough. There must also be floating signifiers which are articulated differently both camps and can function as 'vehicles' for counter-hegemony. *Space* and *time* could be floating signifiers but there is no obvious conflict visible about the meaning of time. *Space,* however, has come forward as something people (and policymakers) 'want to fight about'. They do not want the city as 'traffic space' but as 'lively and convivial'. This 'conflict' was observed in the last paper. People argued for the 'seeing' of space and place in transport—the quality of it—and how it is constructed. Massey emphasised that the interrelationships between objects do not "occur *in* space and time" but themselves "*create/define* space and time" (Massey, 2004, p. 79, emphasis in original). Traffic does not cross space; it creates space and place in a way that is not deemed attractive. Space could also become a vehicle for (traffic) safety. The frontier between individualism and collectivism is an interesting one. Health could become a vehicle for the 'battle' between individualism and collectivism when it is emphasised that driving threatens the health (and safety) of the people around, just like happened with smoking.

It seems necessary to link different frontiers to one and the same signifier, that then becomes the vehicle for different interpretations, a floating signifier. It helps when it also is a signifier where people on the street can gather around, as one saw in Amsterdam, when different interests seem to coincide around 'safety'. It can be doubted if safety would be able again to fulfil such a role.

When just returning to the meaning of time for a moment; the rearticulation of space is as much about the rearticulating of time, however not recognised as so. Massey argues that what makes relations something spatial is their dynamic simultaneity (Ibid., p. 81). When the meaning of time is seen as a social construction, just like any other discourse, this characteristic can be expanded to time. When time also carries a dynamic simultaneity, then it makes no sense to label time as 'travel time', or as something that would need 'to be saved'.

However, there are two important aspects or remaining issues in the articulation of counter-hegemony, at least when it is cycling that is the vehicle for counter-hegemony. To make a potential counter-hegemonic articulation of mobility seem a totality (which it never is of course, because it can never be closed), which is able to break the current chain of equivalence, the urban-rural or urban-non-urban divide is one of the issues that need to be solved in the articulation. It is a problematic dichotomy, ruling out many people. The hegemony of automobility prevents imagining cycling in future mobility but prevents even more non-urban cycling being a part of that (Cox, 2022). An alternative articulation cannot seem a totality if it sees urban and non-urban as silos and

excludes a large geographical part of the country and the people that live there. Cycling has to come up with clear idea or vision of cycling in the 'non-urban'

Another important aspect is that a discourse also needs to "win the hearts and minds of people" (Torfing, 2009, p. 117). However, here, I have reached the limit of the thesis, which brings me to the limitations. This brings me to the limitations of this thesis.

Limitations

What is obscured in the thesis is the role of materialities and emotions. Emotions do not only play a role in the subjugation to discourses but also in the articulations itself even if they are not visible. This exclusion has been a conscious choice; policy documents are not the best place to find expressions of emotions. However, Mouffe emphasises that the "affective dimension" in a political project always needs to be recognised; people do not fight for abstract ideas (Mouffe, 2022, pp. 30-31). This is certainly a dimension that needs to be further explored in relation to the potential of counter-hegemonic articulations.

This limitation touches upon another critique that is often expressed against discursive approaches, and that is that they attribute too much power to language (Barad, 2003) and neglect materialities and their agency. I do not totally agree, at least when it refers to Laclau & Mouffe's approach. The material is part and parcel in the meaning-making process. In my interpretation their theory does not encourage a distinction between nature and culture, or human and non-humans; every distinction is discursively constructed, not essential. However, Laclau & Mouffe do not give it much attention, more than stating that every discourse is material. Their work concentrates on big questions around democracy, liberty and equity. The lack of attention to it in this thesis can be seen as a limitation.

How could materiality have been more included in this thesis? Without being complete, I just briefly mention some approaches that I encountered in the literature. An increasing engagement with materiality can be observed and different scholars have engaged with the question in different ways. In mobilities research it is argued that there is a need for a deeper and more sensitive engagement with materialities, and mobilities design is mentioned an important research path (Jensen, 2016, p. 589). The agency of materialities can lie in the design of the vehicle and in the shaping of spaces (for example edges, pavements, materials, amount of space, etc.) (Jensen, 2016) or the trees that are planted along the cycle path. Space shapes power and is a product of power (Cresswell,

2006), and infrastructure as well as design are part of that. In a Derridean way, design, design manuals, as well as field observations can be treated as 'text' and be analysed.

From a Laclau & Mouffe discourse-theoretical perspective, Carpentier (2019) offers a novel suggestion. The problem with Laclau & Mouffe's interpretation of the material, he argues, is that a hierarchy is suggested: discourse gives meaning to material (Ibid., p. 377). He introduces the 'discursive-material knot' as a metaphor for the (impossible to untangle) liaison of discourse and matter, and coins the concepts of 'invitation' and 'investment' to describe the nature of the entanglement. He sees matter as *inviting* to become discursively represented and as always already *invested* with meaning. A further exploring is beyond the scope of the thesis but there are interesting ways ahead to utilise Laclau & Mouffe's discourse theory in studying mobilities.

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In the shadow of cars

This thesis delves into the automobility norm in Swedish national policy and planning, which has placed cycling in the shadows. It uncovers mechanisms that reproduce this norm and its effects on cycling. It does this by looking at taken-for-granted understandings of concepts, and at how policy problematises certain issues and not others. It also looks forward by identifying how vélomobility can be made a 'political' project.

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