Vélomobility - A critical analysis of planning and space

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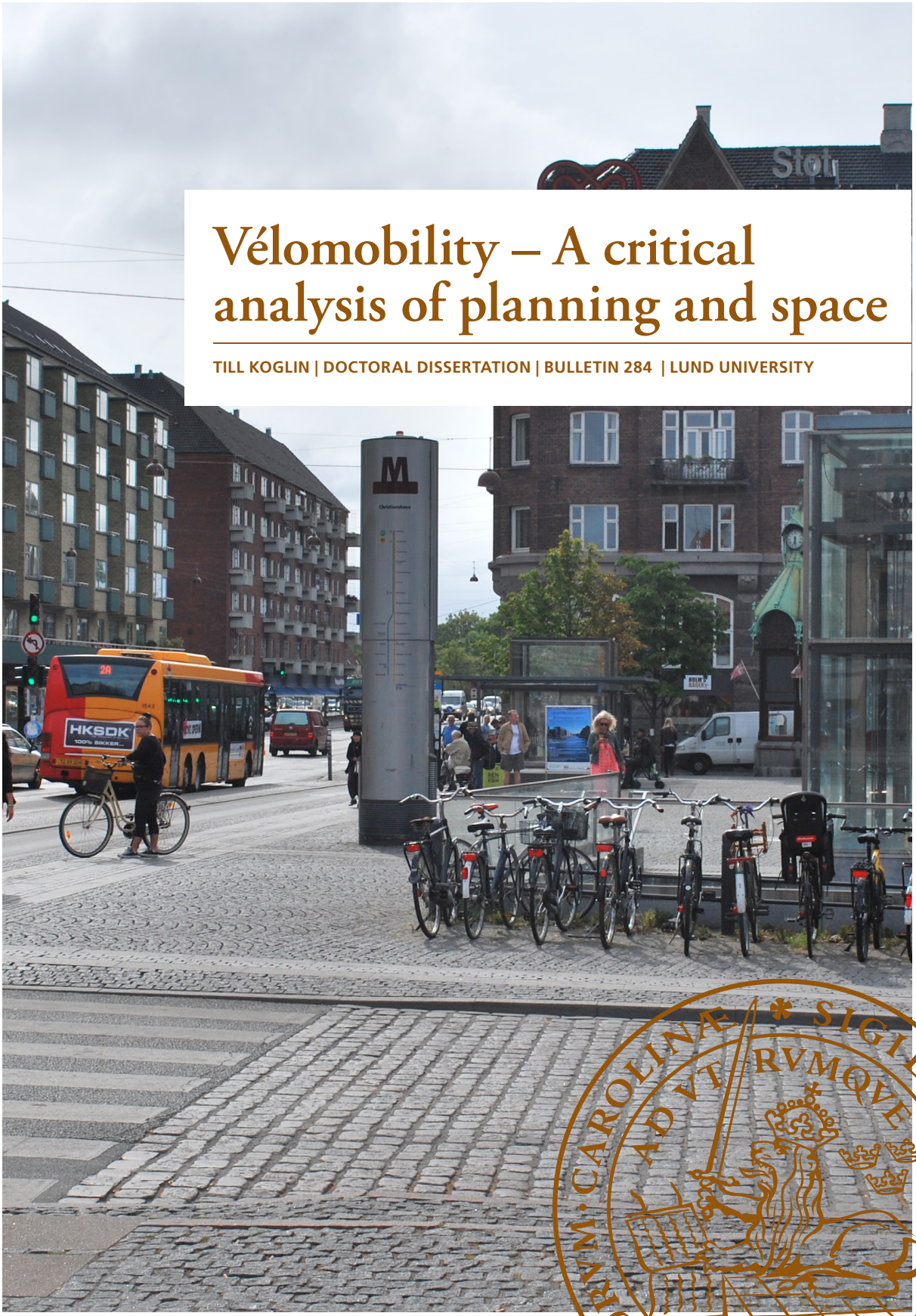

Vélomobility – A critical analysis of planning and space

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Abstract

The purpose of this doctoral study is to bring a spatial dimension into the research on urban mobilities and connect the spatial dimension to the marginalisation of cyclists in urban space. This is been done by exploring the role of urban bicycling and transport planning. The theoretical frame of space, mobilities and power is used for analysing that role through case studies in two Scandinavian cities, Copenhagen and Stockholm. Urban bicycling is a good example of showing the relation between space and mobilities, since cyclists often suffer from marginalised space in cities around the world. The philosophical foundation of the thesis is in critical realism and critical theory. For background data, observations and document studies have been conducted in Stockholm and Copenhagen. The main data collection for this thesis was done both qualitatively, in the form of interviews with planners and politicians, and quantitatively, in the form of survey studies among the citizens of Copenhagen and Stockholm. The data is analysed with the help of the theoretical framework that builds on mobility studies, spatial theory by Lefebvre, and Harvey and power theories deriving mainly from Lukes' three dimensions of power. The materialisation of power relations is analysed with the example of modern planning in Sweden and Denmark. Overall this thesis manages to show how cycling as a mode of transport is marginalised in urban space, and that urban space wars between cyclists and car drivers and among cyclists are fought in Copenhagen as well as in Stockholm. The conclusion is that different factors, such as the economic situations in Denmark and Sweden, have affected urban and transport planning and thus have created two very different transport systems, where cycling plays a large role (Copenhagen) and a smaller role (Stockholm). Nevertheless, this thesis shows that even in cities that are very good for cycling, like Copenhagen, the motorised modes of transport create many problems and are still dominating urban space.

Key words: Vélomobility, mobility, planning, space, power relations, urban cycling

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Summary

Transport has been at the heart of the development of today's societies. To move both people and goods is increasingly important, and the development of transport systems, urban, regional, national and global, has progressed rapidly since the invention of the steam engine. However, transport is not only a source of wealth and development. Infrastructure for motorised traffic also creates social exclusion, and both motorised traffic and air traffic create many environmental problems globally and locally. One part of mobility and transport is cycling. Cycling is a mode of transport quite often marginalised in urban space (e.g. Khayesi et al. 2010 and Emanuel 2012). This thesis is about urban cycling, mobility, planning and space, and what power relations are built into the urban space or have created the urban space. Urban cycling and mobility are seen as an approach to visualising injustice and power relations in the city through case studies in Copenhagen, Denmark and Stockholm, Sweden. Further, the intention is to make a connection to space and the materialities that affect people's movements in an urban context.

Moreover, transport also has a social and cultural side to it. Through the mobility perspective one can add the social dimension to transport research, which is important in this thesis. The shift in social sciences from analysing societies to analysing mobilities was first initiated by John Urry in his book *Sociology beyond Societies: Mobilities for the Twenty-First Century* from 2000. Urry also introduced the mobility paradigm, meaning that social sciences shift more from research on societies to research on mobilities (Urry 2007). Mobility or the field of mobilities includes more than just the movement from A to B. It includes also the social, cultural, political and economic aspects of movements and of transports. This thesis focuses on those aspects of mobility, cycling and transport.

The starting point of the methods used for the data collection for this research is in the methodological considerations and the philosophy of science, which is critical realism and critical theory, in order to use methods suited for a critical analysis of the transport systems, planning processes and cycling in Stockholm

and Copenhagen. The first step was to cycle in the two cities in order to get a feeling and better understanding of the infrastructure and the situations for their cyclists. Further, different documents have been studied in order to prepare for the interviews, which are the next step in the data collection, and also after the interviews, due to the fact that some interviewees recommended or mentioned some reports, policy or plan documents. The document studies should be seen as an empirical contribution to the data from the interviews, concerning facts about bicycle planning in Copenhagen and Stockholm. Thus, the next part of the data collection was interviews with planners and politicians in Stockholm and Copenhagen. Furthermore, two survey studies have been conducted (one in Copenhagen and one in Stockholm) in order to collect data about cyclists' experience of cycling, the transport system and the infrastructure of cycling in the two cities.

The collected data is analysed with the theoretical framework developed in Chapters 3 and 4, i.e. with the help of the power, space and mobility theories. Chapter 3 frames the thesis theoretically within the field of mobility and vélomobility in order to create a better understanding of the theoretical perspectives used in this dissertation. Research about mobility and vélomobility is an important aspect in this framing. Mobility and vélomobility are significant aspects when analysing transport systems and planning, which is why the field of mobility is used to frame this thesis theoretically. This is also the starting point for the analysis in this thesis. From this chapter, the next step is to go deeper into the notions of power and space, important for mobility but not particularly dealt with in connection to each other and to mobility research.

Due to the fact that this thesis deals with people moving in urban areas, transport planning and power relations, power perspectives, the notion of space and space wars are all of interest for the analysis of cycling, urban mobility and transport planning. Those aspects are handled in Chapter 4. The notions of power and space are central when dealing with movements in cities, due to the fact that power relations are created through space and do create space wars. Because urban mobility and vélomobility are set in space (urban spaces in the case of this thesis), space has to be dealt with in order to develop an understanding of where conflicts occur and how space is produced through mobility and through social relations. Here I draw on Lefebvre's theories on the production of space (1991 [1974]) and connect that to his concept of the right to the city (1996). Conflicts between the different modes of transport can

also be seen in the light of urban space wars, a concept developed by Zygmunt Bauman (1998). Moreover, the production of space and urban space wars has to do with power and power relations in cities and urban transport systems and therefore also with urban bicycling. In order to analyse such power relations, Chapter 4 develops a theoretical understanding of power and power relations in connection to space and space wars. This theoretical knowledge comes from different perspectives. I use the three dimensions of power developed by Lukes (2005) and connect his view to Lefebvre. Chapter 4 defines the theoretical outline of power, space and space wars for this doctoral thesis. It connects mobility research with research on power and space in order to develop a theoretical frame for the analysis in this thesis.

Chapter 5 explores how power relations and the productions of space are materialised in urban space, and what has affected and shaped modern urban transport and urban planning. Power relations have been built into our infrastructure, and the political economy of the automobile industry and industries connected to this branch have had a tremendous impact on transport and urban planning around the globe. In this chapter I give examples from Sweden, where I show how this has happened with the entrance of modernism into urban and transport planning and how that still affects planning today. I also connect this to Lefebvre's concept of the right to the city and try to develop a better understanding of how and why infrastructure is shaped today with the help of the theoretical outline of this thesis. The focal point in this analysis of the materialities is modernism and how it has affected urban space. Examples are used from Stockholm and Copenhagen to show the impact of modernism on urban and transport planning. Moreover, the traffic safety and planning guidelines SCAFT, developed in Sweden in order to increase traffic safety, are also an example of how the transformations of urban space have led to the marginalisation of cyclists and a focus on motorised modes of transport. Through those transformations, power relations and structures have been built into the urban space and produced spaces of mobility that prioritise motorised traffic. Those spaces also produce urban space wars between the different road users and affect planning even today. It is, among other things, those structures that have an impact on planning. Here Lukes' third dimension of power is a good analytical tool to explore those power relations and structures.

The case sites for this thesis, Stockholm and Copenhagen, are introduced in Chapter 6. This chapter explains the differences in the modal split, infrastructure and planning. Moreover, it explains why Copenhagen's bicycle

infrastructure is better than Stockholm's and how the two cities have developed their infrastructure. The infrastructure for cycling is much better in Copenhagen than it is in Stockholm; for example there are better solutions for prioritising cyclists at crossroads, and better bicycle tracks. This chapter also serves as a background for Chapter 7, where the empirical material from the interviews in both Stockholm and Copenhagen is analysed. The data collection through the interviews helped create a deeper understanding of how the two cities have been planned and are planned today. Moreover, relations and structures were uncovered that affected the planning and the outcome of planning and policy decisions, both at a political level and at an administrative level. Additionally, through the analysis of the power relations in urban space, one can see what influenced and still influences the planning and the politics of mobility and transport in Copenhagen and Stockholm. From that analysis the question of how cyclists in both cities experience cycling, traffic and the planning for cyclists arises. Planning is very differently organised in the two cities and historical, economic, cultural and political factors have influenced the planning processes and the outcome of transport and urban planning. One major aspect, for example, is that Copenhagen, after World War Two, did not have the financial means to rebuild the city according to the modernistic ideal, i.e. highway investments etc., nor could Copenhagen finance the development of a subway. Thus, planning for cycling was a very important aspect in transport planning after the Second World War. Stockholm on the other hand had better financial means and did invest in highways and a subway. Moreover, the fact that Sweden has a car industry and Denmark does not also affects transport planning.

In Chapter 8 the cyclists' experience is analysed from data collected through survey studies in Stockholm and Copenhagen. The focus of the analysis of the survey data is on the differences and similarities between cyclists in Stockholm and Copenhagen. This is analysed with the Chi2 test, the Mann-Whitney test and by analysing the frequencies of the answers. The result of this analysis is that cyclists in both cities see problems with motorised traffic and other cyclists. Overall the cyclists in Copenhagen have a more positive view on planning, infrastructure etc. than do cyclists in Stockholm. It becomes clear through the analysis of the survey data that there are power relations at work in both cities, and that urban space wars between cyclists and other road users are a problem. With a starting point in the analyses of the qualitative data (interviews and observations) and the quantitative data (surveys), Chapter 9

brings the two together in an analysis of the differences between the views of planners and politicians and the users of the urban spaces of mobility, in this case, the cyclists. It seems that planners and politicians have one view of the outcome of their decisions, which might not correspond to the experience of the cyclists and to the modal split. For example, that motorised traffic still creates the most problems for cyclists in Copenhagen, a city that prioritises cycling. Moreover, connections are made to previous analyses in this thesis concerning automobility, political economy, modernism and power relations in urban space and urban cycling. Neither city has really managed to break free from motorised traffic and create a truly sustainable transport system.

The results from the data analysis and the research done in this doctoral thesis are concluded in Chapter 10. This doctoral thesis has dealt with the marginalisation of cycling in urban space and urban transport systems. Urban cycling, transport planning, people's mobility and urban space are all interrelated, as this thesis shows. In this thesis I have used theories concerning mobility, power relations and space in order to explain today's dominance of motorised modes of transport and the marginalisation of cyclists in urban spaces. This theoretical discussion was followed by empirical research in Copenhagen, Denmark and Stockholm, Sweden, where interviews with planners and politicians have been conducted and surveys of the residents of the two cities have been analysed. Moreover, I have described the important factors that contribute to the development of today's transport infrastructure and the outcome of planning for cyclists in many cities today. Those factors are, among others, the development of modernism and, along with it, a way of performing transport planning that focused and to a certain degree still focuses on motorised traffic. This is also connected to the development of the Fordist production of cars. The influence of economic, social and cultural aspects also contributes to the increased use of motorised modes of transport and vice versa. In other words, this dissertation has been a research project on the political economy, the power relations and the space of mobility and the marginalisation of cyclists in an urban context.

Sammanfattning

Transporter och trafik är, och har varit, en viktig drivkraft för utvecklingen av dagens samhällen. Att förflytta människor och varor blir allt viktigare, och utvecklingen av transportsystem, både urbant, regionalt, nationellt och globalt, har gått snabbt sedan ångmaskinen uppfanns. Transporter är dock inte bara en källa till välstånd och utveckling. Infrastruktur för motoriserad trafik skapar social exkludering, och både motoriserad vägtrafik och flygtrafik skapar många miljöproblem såväl globalt som lokalt. Cykling är en del av mobilitet och transporter. Cykling är ett transportsätt som förhållandevis ofta marginaliseras i stadsrummet (t.ex. Khayesi et al. 2010 och Emanuel 2012). Denna avhandling handlar om cykling i staden, mobilitet, planering och rum, och de maktrelationer som byggs in i stadsrummet eller som har skapat stadsrummet. Genom att studera mobilitet och cykling i Köpenhamn, Danmark, och Stockholm, Sverige, avser denna avhandling att visualisera orättvisor och maktförhållanden i staden. Vidare är avsikten att göra en koppling till rummet och de materialiteter som påverkar människors mobilitet i en urban kontext.

Trafik också en social och kulturell sida. Genom ett mobilitetsperspektiv kan man lägga till den sociala dimensionen till transport- och trafikforskningen, vilket är en viktig aspekt i denna avhandling. Förskjutningen i samhällsvetenskap från att analysera samhällen till att analysera mobilitet introducerades för första gången av John Urry i sin bok *Sociology beyond Societies: Mobilities for the Twenty-First Century* från 2000. Urry introducerade också det så kallade mobilitetsparadigmet, vilket innebär att samhällsvetenskaplig forskning förskjuts från forskning om samhällen till forskning om mobilitet (Urry 2007). Mobilitet och forskningsområden rörande mobiliteter innehåller dock betydligt mer än bara förflyttning från A till B. Den innehåller också de sociala, kulturella, politiska och ekonomiska aspekterna av förflyttningar och trafik. Denna avhandling fokuserar på dessa aspekter av mobilitet, cykling och trafik.

Utgångspunkten för val av metoder för datainsamlingen i denna avhandling grundas i överväganden i kritisk realism och kritisk teori. Detta för att kunna

använda metoder som lämpar sig för en kritisk analys av transportsystem, planeringsprocesser och cykling i Stockholm och Köpenhamn. Det första steget i datainsamlingen var att själv cykla runt i de båda städerna för att få en känsla för och bättre förståelse för infrastrukturen och situationen för cyklisterna i de båda städerna. Vidare har olika dokument studerats i syfte att förbereda intervjuerna, som var nästa steg i datainsamlingen. Även efter intervjuerna har dokument studerats då vissa intervjuade personer rekommenderade eller nämnde olika rapporter, politiska dokument eller planeringshandlingar. Dessa dokumentstudier bör ses som empiriskt bidrag till intervjudata, gällande fakta om cykelplanering i Köpenhamn och Stockholm. Nästa steg i datainsamlingen var intervjuer med planerare och politiker i Stockholm och Köpenhamn. Vidare har två enkätstudier genomförts (en i Köpenhamn och en i Stockholm) för att samla in data om cyklisternas upplevelse av cyklingen, transportsystemet och cykelinfrastrukturen i de två städerna.

Insamlad data analyserades med det teoretiska ramverk som utvecklades i kapitel 3 och 4, det vill säga med hjälp av maktteorier, rumsliga teorier och mobilitetsteorier. Kapitel 3 bildar mobilitetsramverket för avhandlingen och grundar sig teoretiskt inom området mobilitet och vélomobilitet i syfte att skapa en bättre förståelse för de teoretiska perspektiv som används i denna avhandling. Forskning om mobilitet och vélomobilitet är viktiga aspekter i denna process. Mobilitet och vélomobilitet är viktiga aspekter när man analyserar transportsystem och planering, vilket är anledningen till att området mobilitet används för att skapa den teoretiska ramen i denna avhandling och är utgångspunkten för analyserna av det empiriska materialet. I kapitel 3 förs också en fördjupad diskussion av begreppen makt och rum; begrepp som är viktigta för mobilitet men som här inte diskuteras med avseende på kopplingen dem emellan eller till forskningen om mobilitet.

Då avhandlingen handlar om hur människor rör sig i stadsområden, trafikplanering och maktrelationer, är begreppen maktperspektiv, rum och så kallade space wars (kampen om utrymme i staden) av intresse för analysen av cykling, mobilitet i städer och trafikplanering. Dessa aspekter hanteras i kapitel 4. Då maktrelationer skapas genom rummet och skapar space wars är begreppen makt och rum centrala när det handlar om mobilitet i städer. Eftersom mobilitet i städer och vélomobilitet sker i det fysiska rummet (stadsrum i denna avhandling), måste rummet behandlas i syfte att utveckla en förståelse för var konflikter uppstår och hur rummet skapas genom mobilitet och genom sociala relationer. Här använder jag mig av Lefebvres teorier om

produktionen av rummet (1991 [1974]) och kopplar den till hans koncept om *rätten till staden* (1996). Konflikter mellan de olika transportslagen kan också ses i samband med space wars, ett koncept utvecklat av Zygmunt Bauman (1998). Dessutom handlar produktionen av rummet och space wars om makt och maktrelationer i städer och urbana transportsystem och därmed även om urban cykling. För att analysera sådana maktrelationer, utvecklas i kapitel 4 en teoretisk förståelse av makt och maktrelationer i anslutning till rum och space wars. Denna teoretiska kunskap kommer från olika perspektiv. Jag använder de tre dimensionerna av makt som utvecklades av Lukes (2005) och kopplar dessa till Lefebvres teorier om rummet. I kapitel 4 definieras, för denna avhandling, den teoretiska ramen för makt, rum och space wars. Här kopplas forskning om mobilitet med forskning om makt och rum för att utveckla en teoretisk ram för analysen i denna avhandling.

I kapitel 5 undersöks hur maktrelationer och produktionen av det urbana rummet materialiseras i staden, vad som har påverkat och format modern stadstrafik och stads- och trafikplanering. Maktrelationer har byggts in i vår infrastruktur. Bilindustrins politiska ekonomi och industrier kopplade till denna har haft en enorm inverkan på trafik- och stadsplanering runt om i världen. I detta kapitel ger jag exempel från Sverige, där jag visar vad som hänt i samband med introduktionen av modernismen i stads-och trafikplanering samt hur detta påverkar planeringen än idag. Jag kopplar också detta till Lefebvres begrepp om *rätten till staden* för att på så sätt försöka utveckla en bättre förståelse för hur och varför infrastrukturen är utformad som den är i dag med hjälp av den teoretiska beskrivningen i denna avhandling. Modernism är tyngdpunkten i denna analys av materialititer och hur det har påverkat stadsrummet. Exempel används från Stockholm och Köpenhamn för att visa effekterna av modernism på stads-och trafikplanering. SCAFT, riktlinjer för planering som utvecklades i Sverige med syfte att öka trafiksäkerheten, är också ett exempel på hur förändringarna av stadsrum har lett till marginalisering av cyklister och ökat fokus på biltrafiken. Genom dessa transformationer har maktrelationer och strukturer blivit inbyggda i stadsrummet och skapar rum av mobilitet som prioriterar motortrafik. Dessa rum skapar också space wars mellan olika trafikanter och har en påverkan på planeringen än idag. Det är, bland annat, dessa strukturer som påverkar planeringen. Här är Lukes' tredje dimension av makt ett bra analytiskt verktyg för att utforska maktrelationerna och strukturerna i urbana rum.

I kapitel 6 introduceras fallstudierna för denna avhandling, Stockholm och Köpenhamn. I detta kapitel diskuteras möjliga förklaringar till skillnaderna i färdmedelsval, infrastruktur och planering i de båda städerna. Dessutom diskuteras varför Köpenhamns cykelinfrastruktur upplevs som så mycket bättre än Stockholms och hur infrastrukturen har utvecklats i de två städerna. Exempel på varför infrastrukturen för cykling upplevs som så mycket bättre i Köpenhamn än i Stockholm, är bättre lösningar för att prioritera cyklister i korsningar och bättre cykelvägar. Detta kapitel fungerar också som en bakgrund till kapitel 7, där det empiriska materialet från intervjuerna i både Stockholm och Köpenhamn analyseras. Intervjuerna har bidragit till att skapa en djupare förståelse för hur de två städerna har planerats och hur planeringen sker idag. Dessutom har relationer och strukturer upptäckts som påverkat planeringen och resultatet av planering och politiska beslut, både på politisk nivå och på administrativ nivå. Därutöver kan man, genom analys av maktrelationerna i stadsrummet, se vad som påverkat och fortfarande påverkar planeringen och politiken av mobilitet och trafik i Köpenhamn och Stockholm. Från denna analys uppstår frågan om vilka erfarenheter cyklister i båda städerna har när det gäller cykling, trafik och cykelplanering. Planeringen är mycket annorlunda organiserad i de två städerna och historiska, ekonomiska, kulturella och politiska faktorer har påverkat planeringsprocesser och resultatet av trafik-och stadsplanering. En viktig aspekt är till exempel att Köpenhamn, efter andra världskriget, inte hade de ekonomiska möjligheterna att bygga om staden enligt det modernistiska idealet, dvs. med investeringar i stadsmotorvägar och tunnelbana osv. Således fortsatte planereringen för cykeltrafik, som var och är en mycket viktig del i Köpenhamns trafikplanering även efter andra världskriget. Stockholm däremot hade bättre ekonomiska resurser och investerade i stadsmotorvägar och tunnelbana. Det faktum att Danmark, till skillnad från Sverige, inte har en egen bilindustri, har också påverkar transportplanering.

I kapitel 8 analyseras cyklisternas upplevelser från data som samlats in genom enkätstudier i Stockholm och Köpenhamn. Fokus för analysen av enkätdata är om det finns skillnader och likheter mellan cyklisters upplevelser i Stockholm och Köpenhamn. Detta analyseras med hjälp av Chi2-test, Mann-Whitney-test samt genom analys av svarsfrekvenser. Ett resultat av denna analys är exempelvis att cyklister i båda städer ser problem med motortrafik och andra cyklister. Sammanfattningsvis visar analyserna att cyklister i Köpenhamn har en mer positiv syn på planering, infrastruktur etc. än vad cyklister i Stockholm

har. Analysen av enkätdata visar också tydligt att det finns maktrelationer mellan trafikanter i båda städerna och att space wars mellan cyklister och andra trafikanter är ett problem. Med utgångspunkt i analyserna av kvalitativa data (intervjuer och observationer) och kvantitativa data (enkäter), knyts i kapitel 9 dessa analyser samman i en analys av skillnaderna mellan de synpunkter som planerare och politiker har och som användare av stadsrum av mobilitet har, d.v.s. i det här fallet, cyklister. Det tycks som om planerare och politiker har en uppfattning om resultatet av sina beslut, som kanske inte motsvarar cyklisternas upplevelser eller färdmedelsfördelningen i städerna. Till exempel är det i Köpenhamn fortfarande motortrafiken som skapar störst problem för cyklister, alltså i en stad som uttalat prioriterar cykling. I detta kapitel görs dessutom en koppling till tidigare analyser i denna avhandling om automobilitet, politisk ekonomi, modernism och maktrelationer i stadsrum och stadscykling. Varken Köpenhamn eller Stockholm har lyckats bryta sig fri från motortrafikens dominans och skapa ett verkligt hållbart trafiksystem.

Resultaten från analyser av data och den forskning som gjorts i denna avhandling sammanfattas i kapitel 10. Denna avhandling handlar om marginalisering av cykling i stadsrum och om urbana trafiksystem. Avhandlingen visar att stadscykling, trafikplanering, människors mobilitet och stadsrummet är alla kopplade till varandra. I denna avhandling har jag använt teorier kring mobilitet, maktrelationer och rum för att förklara dagens dominans av motortrafik och marginaliseringen av cyklister i stadsrum. Denna teoretiska diskussion följdes av empirisk forskning i Köpenhamn, Danmark och Stockholm, Sverige, där intervjuer med planerare och politiker har genomförts och undersökningar av de boendes upplevelser av trafiken i de två städerna i form av enkätstudier har analyserats. Vidare har jag beskrivit de viktigaste faktorerna som bidragit till utvecklingen av dagens trafikinfrastruktur och resultaten av cykelplanering i många städer idag. Dessa faktorer är bland annat utvecklingen av modernism och, tillsammans med det, ett sätt att trafikplanera som fokuserade och i viss mån fortfarande fokuserar på motortrafik. Detta är också kopplat till utvecklingen av den fordistiska produktionen av bilar. Inverkan av ekonomiska, sociala och kulturella aspekter bidrar också till den ökade användningen av motortrafik och vice versa. Med andra ord har avhandlingen varit ett forskningsprojekt om den politiska ekonomin, maktrelationerna, rum för mobilitet och marginalisering av cyklister i en urban kontext.

Zusammenfassung

Verkehr und Transporte sind häufig im Zentrum der Entwicklung der heutigen Gesellschaften gewesen. Sowohl die Bewegung bzw. die Beförderung von Menschen als auch von Gütern wird immer wichtiger, und die Entwicklung von Verkehrssystemen in städtischen, regionalen, nationalen und globalen Bereichen ist seit der Erfindung der Dampfmaschine weit fortgeschritten. Verkehr und Transporte sind aber nicht nur eine Quelle von Wohlstand und Entwicklung. Die Infrastruktur für den motorisierten Verkehr schafft auch soziale Ausgrenzung, und der motorisierte Verkehr wie auch der Flugverkehr schaffen viele Umweltprobleme auf globaler und lokaler Ebene. Ein Teil der Mobilität und des Verkehrs ist das Radfahren. Das Fahrrad ist ein Transportmittel, das im urbanen Raum oft marginalisiert wurde und auch heute noch oft marginalisiert wird. (siehe z.B. Khayesi et al. 2010 und Emanuel 2012). Diese Abhandlung beschäftigt sich mit urbanem Radfahren, Mobilität, Planung und Raum, und welche Faktoren die Machtverhältnisse in dem urbanen Raum beeinflusst haben und wie diese im städtischen Raum materealisiert sind bzw. wurden. Städtisches Radfahren und Mobilität sind hier als Beispiele zur Visualisierung von Ungerechtigkeit und Machtverhältnissen in der Stadt durch Fallstudien in Kopenhagen, Dänemark, und Stockholm, Schweden, zu sehen. Ferner ist beabsichtigt, eine Verbindung mit dem städtischen Raum und Materialitäten, die die Mobilität von Personen in einem städtischen Umfeld beeinflussen, herzustellen.

Darüber hinaus hat Verkehr auch eine soziale und kulturelle Seite Durch die Mobilitätsperspektive kann man die soziale Dimension der Verkehrsforschung hinzufügen, was ein wichtiger Teil dieser Abhandlung ist. Der Wandel in den Sozialwissenschaften, vom Analyseschwerpunkt der Gesellschaften hin zur Mobilität wurde zuerst von John Urry in seinem Buch *Sociology beyond Societies: Mobilities for the Twenty-First Century* von 2000 proklamiert. Urry führte auch das Mobilitätsparadigma ein, was bedeutet, dass sich die Analysen in den Sozialwissenschaften weg vom Fokus der Gesellschaft und hin zum Fokus der Mobilität bewegen sollten (Urry 2007). Mobilität oder der Bereich

der Mobilitäten umfasst mehr als nur die Beförderung von A nach B. Es enthält auch die sozialen, kulturellen, politischen und wirtschaftlichen Aspekte der Beförderung bzw. des Verkehrs und des Transportwesens. Diese Arbeit konzentriert sich auf diese Aspekte der Mobilität, des Radfahrens und den Verkehr.

Der Ausgangspunkt der Methoden, die für die Datenerhebung für diese Forschung verwendet werden, liegt in den methodischen Überlegungen und der Philosophie der Wissenschaft. Für diese Abhandlung gründen sich diese Überlegungen im kritischen Realismus und in der kritischen Theorie, um Methoden, die für eine kritische Analyse der Verkehrssysteme, der Planungsprozesse und das Radfahren in Stockholm und Kopenhagen geeignet sind, zu nutzen. Der erste Schritt bestand darin, in den beiden Städten selbst mit dem Fahrrad zu fahren, um ein Gefühl und ein besseres Verständnis der Infrastruktur und für die Situationen der Radfahrer zu bekommen. Ferner wurden verschiedene Dokumente studiert, um für die Interviews, die der nächste Schritt bei der Datenerhebung waren, vorbereitet zu sein. Einige Dokumente wurden nach den Interviews studiert, da einige der Befragten Berichte, Pläne oder Policies empfohlen haben. Die Studien der Dokumente sollten als empirischer Beitrag zu den Daten aus den Interviews und als Fakten über die Fahrradverkehrsplanung in Kopenhagen und Stockholm gesehen werden. Der nächste Teil der Datenerhebung waren demnach die Interviews mit Planern und Politikern in Stockholm und Kopenhagen. Darüber hinaus wurden zwei Umfragestudien durchgeführt (eine in Kopenhagen und eine in Stockholm), um Daten über die Erfahrungen der Radfahrer, über deren Erlebnisse beim Radfahren, der Verkehrssysteme und der Infrastruktur für das Radfahren in den beiden Städten zu sammeln.

Die Daten wurden mit Hilfe der theoretischen Rahmen in den Kapiteln 3 und 4, d. h. mit Hilfe von Theorien über Macht, Raum und Mobilität analysiert. Kapitel 3 stellt den theoretischen Rahmen dieser Abhandlung im Bereich der Mobilität und s.g. Vélomobilität dar, um ein besseres Verständnis der theoretischen Perspektiven in dieser Dissertation zu entwickeln. Die Forschung über Mobilität und Vélomobilität ist hier ein wichtiger Aspekt. Mobilität und Vélomobilität sind wichtige Aspekte bei der Analyse von Verkehrssystemen und Planung, weshalb der Bereich der Mobilität in dieser Abhandlung verwendet wird. Dies ist auch der Ausgangspunkt für die Analyse. Diesem Kapitel folgend ist der nächste Schritt tiefer in die Vorstellungen von Macht und Raum, die für die Mobilität sehr wichtig sind, einzudringen. Die

Verbindung von Macht, Raum und Mobilität ist sehr wichtig, ist aber nicht besonders viel in der Mobilitätsforschung behandelt worden.

Aufgrund der Tatsache, dass sich diese Abhandlung mit Menschen, die sich in städtischen Gebieten bewegen, mit Verkehrsplanung und mit Machtverhältnisse beschäftigt, sind Machtperspektiven, die Vorstellung von Raum und das Konzept der s.g. Space Wars (Konflikte über städtische Räume oder Stadtraumkriege) von Interesse für die Analyse des Radfahrens, der urbanen Mobilität und der Verkehrsplanung. Diese Aspekte werden in Kapitel 4 behandelt. Die theoretischen Vorstellungen von Macht und Raum sind zentral beim Umgang mit Beförderung von Menschen in den Städten, da die Machtverhältnisse durch den Raum produziert werden und dadurch Space Wars entstehen. Da urbane Mobilität und Vélomobilität immer in Räumen (städtische Räume im Falle dieser Arbeit) entstehen, ist die räumliche Perspektive von großer Bedeutung, um ein Verständnis davon zu entwickeln, wo Konflikte auftreten und wie diese Räume durch Mobilität und durch soziale Beziehungen hergestellt bzw. beeinflusst werden. Hier stütze ich mich auf die Theorien über die Produktion von Raum von Lefebvre (1991 [1974]) und verbinde diese mit seinem Konzept von *Recht auf Stadt* (1996). Konflikte zwischen den verschiedenen Verkehrsteilnehmern können auch in Bezug zu den städtischen Space Wars, ein Konzept von Zygmunt Bauman (1998), gesehen werden. Darüber hinaus hat die Produktion von Raum und Space Wars mit Macht und Machtverhältnissen in Städten und städtischen Verkehrssystemen und damit auch mit städtischem Radfahren zu tun. Um solche Machtverhältnisse zu analysieren, wird in Kapitel 4 ein theoretisches Verständnis von Macht und Machtverhältnissen in Verbindung mit Raum und Space Wars entwickelt. Dieses theoretische Wissen kommt von unterschiedlichen Perspektiven. In dieser Arbeit wurden die drei Dimensionen der Macht, die von Lukes (2005) entwickelt wurden verwendet und mit den Theorien von Lefebvre verbunden. Kapitel 4 definiert den theoretischen Überblick über Macht, Raum und Space Wars für diese Doktorarbeit. Es verbindet Mobilität mit der Forschung zu Macht und Raum, um einen theoretischen Rahmen für die Analyse in dieser Arbeit zu entwickeln.

Kapitel 5 untersucht, wie die Machtverhältnisse und die Produktionen von Raum im urbanen Kontext materialisiert werden, und welche Bedingungen was die moderne Verkehrs- und Stadtplanung beeinflusst und geformt haben. Machtverhältnisse wurden in unsere Infrastruktur eingebaut und die politische Ökonomie der Automobilindustrie und Industrien, die mit dieser Branche in

Verbindung stehen, haben einen enormen Einfluss auf Verkehrs- und Stadtplanung rund um den Globus. In diesem Kapitel präsentiere ich Beispiele aus Schweden, wo gezeigt wird, wie dieser Einfluss mit dem Eintritt der Moderne in Stadt- und Verkehrsplanung zusammenhängt und wie die Ideale der Moderne immer noch Einfluss auf die Planung haben. Diese Beispiele werden mit dem Konzept *Recht auf Stadt* von Lefebvre verknüpft und es wird versucht ein besseres Verständnis, mit Hilfe der theoretischen Gliederung dieser Arbeit zu entwickeln, wie und warum die Infrastruktur so geformt wurde. Der Schwerpunkt in dieser Analyse der Materialität ist Modernismus und wie Modernismus im Verhältnis zum Stadtraum steht. Beispiele aus Stockholm und Kopenhagen werden angeführt, um die Auswirkungen der Moderne auf Stadt- und Verkehrsplanung zu zeigen. Darüber hinaus sind die Verkehrssicherheit und Planungsvorgaben SCAFT, die in Schweden entwickelt wurden, um die Verkehrssicherheit zu erhöhen, auch ein Beispiel dafür, wie die Transformationen des urbanen Raums zur Marginalisierung der Radfahrer und zu einem Fokus auf motorisierten Verkehr geführt haben. Durch diese Transformationen, Machtverhältnisse und Strukturen, die in den städtischen Raum eingebaut wurden, wurden die Räume der Mobilität produziert, die den motorisierten Verkehr priorisieren. Diese Räume produzieren auch städtische Space Wars zwischen den verschiedenen Verkehrsteilnehmern und wirken noch heute auf die Planung ein. Es sind unter anderem diese Strukturen, die einen Einfluss auf die Planung haben und diese können mit Hilfe von Lukes' dritter Dimension der Macht als analytisches Werkzeug erforscht werden.

Die Fallstudien für diese Doktorarbeit sind Stockholm und Kopenhagen und werden in Kapitel 6 vorgestellt. Dieses Kapitel erläutert die Unterschiede im Modal Split, in der Infrastruktur und der Planung. Außerdem wird erklärt, warum Kopenhagens Fahrrad-Infrastruktur besser als die von Stockholm ist und wie sich die Infrastruktur der beiden Städte entwickelt hat. Unter anderem gibt es bessere Lösungen für die Priorisierung der Radfahrer an Kreuzungen und bessere Radwege. Dieses Kapitel dient auch als Hintergrund für Kapitel 7, in dem das empirische Material aus den Interviews in Stockholm und Kopenhagen analysiert wird. Die Datenerhebung durch die Interviews dient dazu ein fundierteres Verständnis dafür zu entwickeln, wie die beiden Städte und deren Verkehrssysteme geplant wurden und heute geplant werden. Darüber hinaus werden durch die Analyse die Beziehungen und Strukturen aufgedeckt, die die Planung und das Ergebnis der Planung und politische Entscheidungen beeinflussen, sowohl auf politischer Ebene als auch auf

administrativer Ebene. Zusätzlich wird durch die Analyse der Machtverhältnisse im urbanen Raum deutlich, welche Aspekte sich auf die Planung und die Politik der Mobilität und des Verkehrs in Kopenhagen und Stockholm auswirken. Aus dieser Analyse geht die Frage hervor, welche Sichtweise die Radfahrer in beiden Städten auf das Radfahren, den Verkehr und die Planung für den Fahrradverkehr haben. Die Planung ist in den beiden Städten sehr unterschiedlich organisiert und verschiedene historische, wirtschaftliche, kulturelle und politische Faktoren haben die Planungsprozesse und die Ergebnisse der Verkehrs- und Stadtplanung beeinflusst. Ein wesentlicher Aspekt ist zum Beispiel, dass Kopenhagen nach dem Zweiten Weltkrieg nicht über die finanziellen Mittel verfügte, um die Stadt nach dem modernistischen Ideal aufzubauen bzw. umzubauen. Das bedeutete, dass keine Mittel für Investitionen in Stadtautobahnen oder U-Bahnen usw. vorhanden waren. So wurde mit der preiswerteren Alternative der Planung für das Radfahren fortgesetzt, was ein sehr wichtiger Aspekt in der Verkehrsplanung nach dem Zweiten Weltkrieg in Kopenhagen war. Stockholm hingegen hatte bessere finanzielle Mittel und hat in Stadtautobahnen und in ein U-Bahnnetz investieren können. Auch die Tatsache, dass Schweden eine Auto-Industrie hat und Dänemark nicht, hat Einfluss auf die Verkehrsplanung gehabt.

In Kapitel 8 werden die Erfahrungen der Radfahrer in Kopenhagen und Stockholm analysiert. Die Daten für diese Analyse kommen von den Fragebogenstudien in Stockholm und Kopenhagen. Der Schwerpunkt der Analyse der Erhebungsdaten liegt auf den Unterschieden und Gemeinsamkeiten zwischen Radfahrern in Stockholm und Kopenhagen. Dies wird mit dem Chi2 Test, dem Mann-Whitney-Test und durch Analysieren der Frequenzen der Antworten analysiert. Das Ergebnis dieser Analyse ist, dass Radfahrer in beiden Städten Probleme mit dem motorisierten Verkehr und den anderen Radfahrer erleben. Insgesamt haben die Radfahrer in Kopenhagen eine positivere Sicht auf die Planung, Infrastruktur usw. als es die Radfahrer in Stockholm haben. Durch die Analyse der Erhebungsdaten wird deutlich, dass in beiden Städten Machtverhältnisse das Erlebnis des Radfahrens beeinflussen und dass städtische Space Wars zwischen Radfahrern und anderen Verkehrsteilnehmern ein Problem darstellten. Die Ergebnisse der Analyse der qualitativen Daten (Interviews und Beobachtungen) und der quantitativen Daten (Umfragen) werden in Kapitel 9 beide zusammen gebracht und in einer Analyse der Unterschiede zwischen den Ansichten von Planern und Politikern und den Nutzern der Stadträume, in diesem Fall werden die Radfahrer erklärt.

Es scheint, dass Planer und Politiker einen Blick auf das Ergebnis ihrer Entscheidungen haben, die nicht immer im Einklang mit den Erfahrungen der Radfahrer und dem Modal Split steht. Zum Beispiel schafft der motorisierte Verkehr noch immer die meisten Probleme für Radfahrer auch in Kopenhagen, eine Stadt, die das Radfahren priorisiert. Außerdem werden Verbindungen zu vorherigen Analysen in dieser Abhandlung über Automobilität, politische Ökonomie, Modernismus und Machtverhältnissen im urbanen Raum und städtischen Radfahren hergestellt. Keine der beiden Städte hat es wirklich geschafft sich von dem motorisierten Verkehr zu lösen und ein wirklich nachhaltiges Verkehrssystem zu gestalten.

Die Ergebnisse der Datenanalyse und der Forschung für diese Doktorarbeit werden in Kapitel 10, der Schlussfolgerung, abschließend diskutiert. Diese Doktorarbeit handelt von der Marginalisierung des Radfahrens im urbanen Raum und in städtischen Verkehrssystemen. Städtisches Radfahren, Verkehrsplanung, die Mobilität der Menschen und der urbane Raum stehen alle in Verbindung miteinander, was in dieser Abhandlung aufgezeigt wurde. In dieser Arbeit wurden Theorien über Mobilität, Machtverhältnisse und Raum, mit der heutigen Dominanz des motorisierten Verkehrs und der Marginalisierung von Radfahrern in urbanen Räumen verbunden und erklärt. Diese theoretische Diskussion wurde durch empirische Forschung in Kopenhagen, Dänemark, und Stockholm, Schweden, untermauert. Außerdem wurden die bedeutsamen Faktoren, die zur Entwicklung der heutigen Verkehrsinfrastruktur und die zu den Ergebnissen der Planung für das Radfahren in vielen Städten heute beitragen, beschrieben. Diese Faktoren sind unter anderem die Entwicklung der Moderne bzw. des Modernismus und, zugleich eine Verkehrsplanung, die darauf konzentriert war und bis zu einem gewissen Grad immer noch darauf konzentriert ist, den motorisierten Verkehr zu priorisieren. Dies kann auch auf die Entwicklung der fordistischen Produktion von Autos zurückgeführt werden. Der Einfluss der wirtschaftlichen, sozialen und kulturellen Aspekte ist auch ein Beitrag zur verstärkten Nutzung vom motorisierten Verkehr. Anders ausgedrückt ist diese Dissertation ein Forschungsprojekt über die politische Ökonomie, die Machtverhältnisse, den Raum der Mobilität und die Marginalisierung der Radfahrer im urbanen Kontext.

Preface – Cycling and the materialisation of inequalities

Cycling through cities is a fascinating mode of moving around and experiencing them in a much different way from driving around by car or taking public transport for getting from A to B. However, these impressions are not always positive ones, and some experiences could even be characterised as dangerous. Cycling through the small student town of Lund, almost every day one has to fight for the right to cross a street, and during winter the snow and ice on many bicycle tracks makes it hard or sometimes even impossible to bike safely through the city, while the cars flow smoothly over the clear streets. As a cyclist you are not allowed to travel on the streets in Sweden if there is an infrastructure for cyclists, which causes considerable irritation in the winter. The story of such fights for space and the right to use the urban space continued for me. While cycling around Copenhagen on different occasions I realised that Copenhagen, although one of the best cycling cities in the world, has not managed to reduce the impact of the car as much as one would think. The infrastructure for cyclists is good, but at some points the bicycle track stopped and I had to mix with motorised traffic for example. Motorised traffic is present almost all the time and of course seems to have much more space than that allotted to cyclists. But fellow cyclists can also be a source of annoyance in Copenhagen. At the Velocity Conference in Copenhagen in 2010, I was biking with a colleague through Copenhagen trying to find a new bicycle bridge. We had to stop and look at a map and other cyclists got quite angry and stated shouting at us to get off the track. Of course we were surprised, but I think the other cyclists were much more annoyed than we were.

Bicycling through Stockholm, however, was a different matter. During my cycling observations in Stockholm I truly realised how urban space wars are fought in traffic spaces. On many occasions I was close to being involved in accidents, and the infrastructure was often very frustrating and confusing.

Often I did not know what to do next, since bicycle tracks ended in walls, construction sites or on streets where cars were passing by at about 60 km/h. I saw other cyclists struggling as well, and developed an understanding of the constant wars going on in this city. These fights and problems cyclists face in Stockholm might also explain the scarcity of them. Compared to Copenhagen there are rather few cyclists on the streets in Stockholm, although the number has been growing rapidly during recent years. And compared to other cities in the world, cyclists are a visible part of the urban landscape in Stockholm. During my visit to New York City for the Association of American Geographers Meeting in 2012, for example, I could witness yet another case of the marginalisation of cyclists in urban spaces. Although New York City has also improved the bicycling infrastructure, there are hardly any bicyclists on the streets. The motorised traffic dominates the street space together with pedestrians on the sidewalks. Going to New York with the images of Moses' modernistic destruction of the city in my head I could not help but wonder how New York is handling the situation of cyclists today. And after observing the situation I can only come to the conclusion that cyclists are still marginalised in New York and motorised traffic owns the streets of the city.

The urban space wars, fights and the marginalisation of cyclists in urban spaces are what this doctoral thesis analyses. Questions of how cities evolved in different ways and how mobility is influenced by the cities' materialities are at the core of the analysis of the space, the planning and the mobility of people. For that matter, the case studies in this thesis, Copenhagen and Stockholm, are used to exemplify those struggles and the materialities of urban spaces that result in more or less focusing on motorised traffic and cycling. It is in all those struggles, those fights and wars on urban streets between uneven forces and powers that make research about vélomobility, transport and planning fascinating and highly relevant in today's urban context. In times of climate change, uneven development as Smith so elegantly once put it (Smith 2008) is of great importance to shed light on the marginalisation in urban spaces and the power relations that are at work in cities around the world. Therefore, this thesis should be seen in the setting of urban struggles and conflicts and urban space wars, which contribute to the marginalisation of cyclists in cities everywhere.

More and more spaces of the modern city are being produced for us rather than by us. People, Lefebvre argued, have a right to more; they have the right to the ouvre.
(Mitchell 2003: 18)

1 Introduction: Cycling, mobility and research

Transport has been at the heart of the development of today's societies. To move both people and goods is increasingly important, and the development of transport systems, both urban, regional, national and global has grown rapidly since the invention of the steam engine. However, transport is not only a source of wealth and development. Infrastructure for motorised traffic also creates social exclusion, and both motorised traffic and air traffic create many environmental problems globally and locally. One part of mobility and transport is bicycling. Cycling is a mode of transport quite often marginalised in urban space (e.g. Khayesi et al. 2010 and Emanuel 2012). This thesis is about urban cycling, mobility, planning and space, and what power relations are built into the urban space or have created the urban space. Urban cycling and mobility is seen as an approach to visualising injustice and power relations in the city through case studies in Copenhagen, Denmark and Stockholm, Sweden. Further, the intention is to make a connection to space and the materialities that affect people's movements in an urban context.

Moreover, transport also has a social and cultural side. Through the mobility perspective one can add the social dimension to transport research, which is important in this thesis. The shift in social sciences from analysing societies to analysing mobilities was first initiated by John Urry in his book *Sociology beyond Societies: Mobilities for the Twenty-First Century* from 2000. Urry also introduced the mobility paradigm, meaning that social sciences shift more from research on societies to research on mobilities (Urry 2007). That claim by Urry was a radical attempt to shift the focus of research within sociology. Mobility has always had an impact on people's lives, which is why Urry sees the need to focus more on mobilities in social studies instead of societies in order to understand the rapidly changing world we live in today. However, that does not mean we should not study societies, but that we should focus more on mobilities, which produce and reproduce the social (Urry 2000).

Mobility research goes deeper than common transport research. With a mobility perspective the focus is not only on the transport system, but also on the meaning of movement and the understanding of social aspects and relations that appear in societies through movement and different forms of mobility. Thus mobility research looks at the transport system from a different perspective and goes deeper into social, cultural and political aspects of movements (Cresswell 2006, 2010, Urry 2007). Yet mobility research has not quite entered the research area of the politics of cycling, except with some few exceptions (see for example Furness 2007 and 2010). Those questions are seldom part of the research on cycling and planning for cyclists. That means that there is little empirical research on the planning processes and the politics of cycling. Nevertheless, this field is growing right now (e.g. Aldred 2012, McCarthy 2011 and Jones et al. 2012), and this thesis is set in the growing field of the politics of cycling.

The lack of such perspectives in transport research leads to the question of the right to the city and who has access to the cities' traffic spaces, which are also public spaces where everybody should be able to be and to use the space. This has been illustrated by the critical mass protests in several cities around the world (Furness 2007). What is needed, then, is a theoretical framework for analysing the environments cyclists actually have to move in, in order to improve the planning processes, the implementation of measures for cyclists and for analysing cycling in different cities. Cyclists are often a marginalized group in urban spaces. The space wars in urban spaces of mobility are sometimes visible and sometimes not. There is much research both from the mobility field and the transport field that is useful for analysing the conditions for cyclists in cities. However, there seems to be a lack of bridging the two fields in order to create a just transport system that includes the rights of all users and does not marginalise certain groups like cyclists. Therefore, the overall intention of this thesis is to contribute deeper and novel theoretical aspects of cycling and planning for cyclists. It is very important to fill the gaps and contribute to the research on mobilities and cycling with new insights, new directions and deeper understanding of the processes that lead to a more justly built transport system, and that have prevented more justly built transport systems. A transport system that excludes certain groups from public space and is dangerous or marginalises cyclists cannot be a fair or just transport system. In order to do that one has to look with a different perspective at the transport

system, which mobility research does, and that is also why a mobility perspective is used in this thesis.

Power relations, space and planning are all connected, which is why a focus on those three fields could lead to a deeper understanding of the marginalization of cyclists and broaden our understanding of mobility, transport and vélomobility. By connecting the power relations in urban spaces to mobility, as well as to the political economy of capitalist societies, it becomes visible how the economic structures also influence urban and transport planning. Hence urban and transport planning also affect power relations in urban spaces. This also involves the cultural and historical aspects that shape or have shaped political economy, power relations and urban and transport planning. In order to analyse vélomobility in urban areas, including the marginalisation of cyclists and power relations in planning and within the transport system, theoretical frameworks are needed. Those frameworks help to understand the needs of cyclists in a more general and theoretical way, and involve more critical studies about power relations in public spaces. I have briefly explained above what transport and transport planning deals with, namely transport systems. Moreover, I have hinted at what this thesis is about. The research within the field of transport studies handles important questions, such as traffic safety, transport efficiency and transport infrastructure. This can also be said for transport research on cycling. However, in order to understand the power relations within transport planning, the factors behind the planning of transport systems, the political decisions and other social aspects of transport, I think we need to turn, as mentioned above, to the term *mobility* as a theoretical framework for deeper analysis of those themes and aspects. It is the mobility perspective that provides us with the insights needed for analysing those factors and that enables one to look beyond the transport system for analysis of movements and transport planning (Paterson 2007, Furness 2010 and Harvey 2005).

Thus, the previous section brings us to the question of power or power relations and what really shapes today's mobility. Power is one aspect, and connected to that is the political economy of the production of mobility and space today. Power relations and the political economy of mobility, or rather automobility, has shaped the infrastructure and affected the way space is used and what forms of mobilities are used (see for example Urry 2004 and Paterson 2007). Within the theoretical framework of mobility, studies are needed about power relations and political economy in order to get an understanding of

today's mobility and of the marginalisation of cyclists. The power relations in urban space can also be connected not only to Lefebvre's production of space (Lefebvre 1991 [1974]), but also to his concept of the right to the city (Lefebvre 1996 [1968]). Although studies concerning power and transport have been undertaken (e. g. Flyvbjerg and Petersen 1981 and Flyvbjerg 1998), the connection of those and similar studies to the mobility turn in the social sciences and to space is quite often lacking. A focus on the underpinnings of the politics of mobility can help to understand power relations and be a key issue while developing new frameworks for analysing power in transport planning.

In order to conduct an analysis of urban bicycling, transport planning, vélomobility, power relations and the political economy that affects many aspects, it is of special importance to focus on urban areas, because there are significant differences in what has been done in order to increase cycling and reduce the use of the car (Svensson 2008). The politics of mobility is seldom touched upon, and it seems that transport research avoids the social dimension of sustainability, spatial dimensions, power relations and the structures affecting mobility, transport planning and politics, which may explain differences between cities in the modal split, their transport systems and the space wars in urban spaces. In this thesis I want to analyse transport and cycling from a mobility and power perspective in order to create an understanding of today's transport system and develop theoretical knowledge about urban mobility (e. g. Urry 2000, Cresswell 2010, Buehler and Pucher 2012).

The transport sector is globally contributing to a wide range of environmental and societal problems, such as the emission of greenhouse gases, noise and particulate pollution, traffic safety problems, health problems and the like (Banister 2005). Transport, globally, contributes about 13 % of greenhouse gas emissions (IPCC 2007). Moreover, the pollution of the transport sector is higher in the European Union and North America than in other parts of the world due to the high rate of car ownership and use of motorised road transport, although some countries' transport sectors, such as China's, are starting to pollute more and more (Banister 2005, Nuhn and Hesse 2006). By way of comparison, the transport sector in Sweden consumes 25% of all energy, and it accounts for about 38% of all emissions of greenhouse gases (CO_2) (Naturvårdsverket 2008). There are also considerable problems of noise

and particulate pollution from motorised traffic (Miedema 2007, van Wee 2007).

Due to the negative effects of motorised transport, many cities around the globe are trying to build sustainable transport systems. A sustainable transport system is often regarded as one involving a high degree of walking, cycling and use of public transport. Using the bicycle as a transport mode is, furthermore, often seen as one of the most sustainable transport system modes (Banister 2005 and Tolley 2003). Cycling improves health and physical fitness (Andersen et al., 2000; Cooper et al. 2008), and as cycling is based on muscle power it is a very clean mode (of transport) without emissions. The bicycle is a small vehicle, and cycling does not demand much space in urban areas. The car, for example, uses 22.1 m^2/road user, whereas a bicycle only uses 9.7 m^2/road user (Stangeby and Norheim 1995). In addition, cyclists impose relatively small risks to other road users in the streets and in public spaces (Rietveld and Daniel 2004). Cyclists are, however, as vulnerable road users, generally exposed to high accident risks. In Sweden, for example, for equal distance travelled, cyclists are up to 5 times more likely to be killed compared to car users (SIKA, 2008). Nevertheless, as mentioned above, cycling neither contributes to pollution nor causes significant traffic safety problems for other road users. At the same time, cycling takes up little space, is energy efficient and a healthy mode of transport (Banister 2005, Garrard et al. 2012, Tranter 2012, Cooper et al. 2008). Despite all the positive aspects of cycling and cyclists' high exposure to accident risks, many cities do not plan for cyclists, i.e. do not consider the needs of cyclists in transport plans and in urban planning processes, or they assign cycling a low priority. Generally, cities and urban areas in many corners of the world have been planned around the car. The infrastructure is often based on the needs of motorised traffic. The needs of cyclists, as well as pedestrians, have been ignored in many cities or only given limited consideration. Thus, urban space and its circulation are today often unjust, and cyclists are often marginalised road users with high accident risks (Risser and Wunsch 2003, Khayesi et al. 2010). This can also be seen in Sweden (Lundin 2008).

Cycling is a topic, both in research and in urban and transport planning, which has, in the last few years, received more and more attention, partly because cycling has increased in some countries (see for example Daley and Rissel 2011, McCarthy 2011 and Khayesi et al. 2010). Still, there are many differences between planning and policies affecting cyclists and cycling and also

encouraging cycling in different countries and cities. The result of the different planning initiatives is that people cycle more in certain cities and countries than in others. Another result is that people who do cycle in cities where planning for cyclists is not considered an issue experience higher risks of being involved in accidents. Those cities are often more unsafe and have more insecure environments for cyclists, which leads to a lower percentage of bicycle trips, because people are discouraged by the bad conditions. Some countries, however, are at the frontier of bicycle planning and are developing policies to increase cycling and to make cycling safer and more accessible — and thus also create a more just urban space (Pucher and Buehler 2009, 2008, 2007 Buehler et al. 2009). Nevertheless, the focus in bicycle research has had some notable concentrations. Those have been best-practise (like those by Pucher and Buehler, see above) and behavioural studies (Forward 2003, Bernhoft and Carstensen 2008), investigations of infrastructure (incl. difference between cities) (Ploeger 2003, Goetzke and Rave 2011), effects that have an impact on cycling, such as weather and maintenance (Winters et al. 2007, Bergström and Magnusson 2003, Nilsson 1996 and safety (Öberg et al. 1996, Pasanen 1997). Moreover, some research has also dealt with policy and how it affects cycling (McClintock 2002). However, the connection to mobility research and to critical analysis of the transport systems, urban planning, urban space and power relations is lacking in existing bicycle research.

The aim of this doctoral thesis is to bring a spatial dimension into the research of urban mobilities and connect the spatial dimension to the marginalisation of cyclists in urban space. This is been done by exploring the role of urban bicycling and transport planning. The theoretical frame of space, mobilities and power is used for analysing that role through case studies in two Scandinavian cities, namely Copenhagen and Stockholm. Urban bicycling is a good example of showing the relation between space and mobilities, since cyclists often suffer from marginalised space in cities around the world.

In order to live up to the aim of this thesis, the following three research questions will be answered:

1. How are power relations materialised in urban space and what effect does the materialisation have on transport, mobility and planning?
2. How has transport planning been developed in Copenhagen and Stockholm, and how are cycling, space and mobility handled in the two cities?
3. How do cyclists in Copenhagen and Stockholm experience the transport system, and how does that relate to space, planning and politics in the two cities?

In the introduction of this thesis I have stressed the need to analyse cycling from a mobility perspective and include analysis of power relations and space in research on cycling and transport systems, something that has partly been done in mobility research. My intention is to build a bridge between transport research and mobility research and connect the fields with analysis of space and power relations.

I start in Chapter 2 with a description of my research design, methodologies and methods used for collecting and analysing my empirical material, which is both qualitative and quantitative, in order to give the reader an understanding of my scientific standpoint and of the ideas behind the research in terms of methodological viewpoint. The chapter builds theoretically upon the work of critical theory and critical realism. I try to give the reader an understanding of why I used the methods I used and how they are connected to each other through the theoretical work of both critical theory and critical realism.

In Chapter 3 I frame the thesis theoretically within the field of mobility and vélomobility in order to create a better understanding of the theoretical perspectives used in this dissertation. Research on mobility and vélomobility is described. This chapter frames the thesis and explains why the mobility perspective is used. In other words, this chapter deals with the mobility question and places the thesis in the mobility field. This chapter is the starting point for the analysis in this thesis. From this chapter, the next step is to go deeper into the notions of power and space, which is important for mobility,

but is not particularly dealt with in connection to each other and to mobility research.

Due to the fact that this thesis deals with people moving in urban areas, transport planning and power relations/power perspectives, the notion of space and space wars is of interest for the analysis of cycling, urban mobility and transport planning. Those aspects are dealt with in Chapter 4, where the notions of power and space are considered. The fact that urban mobility and vélomobility are set in space (urban spaces in the case of this thesis), space has to be dealt with to develop an understanding of where conflicts occur and how space is produced through mobility and through social relations. Here I draw on Lefebvre's theories on the production of space (1991 [1974]) and connect that to his concept of the right to the city (1996). Conflicts between the different modes of transport can also be seen in the light of urban space wars, a concept developed by Zygmunt Bauman (1998). Moreover, the production of space and urban space wars has to do with power and power relations in cities and urban transport systems, and therefore also with urban bicycling. In order to analyse such power relations, Chapter 4 develops a theoretical understanding of power and power relations in connection to space and space wars. This theoretical knowledge comes from different perspectives. I use the three dimensions of power developed by Lukes (2005) and connect his view to Lefebvre's. Chapter 4 defines the theoretical outline of power, space and space wars for this dissertation. It connects mobility research with research on power, space and place in order to develop a theoretical frame for the analysis in this thesis.

Chapter 5 explores how power relations and the productions of space are materialised in urban space and what has affected and shaped modern urban transport and urban planning. Power relations have been built into our infrastructure, and the political economy of the automobile industry and industries connected to this branch have had a tremendous impact on transport and urban planning around the globe. This chapter offers examples from Sweden, where I show how this has happened with the entrance of modernism into urban and transport planning and how that still affects planning today. I also connect this to Lefebvre's right to the city concept and try to develop a better understanding of how the infrastructure is shaped today, and why, with the help of the theoretical outline of this doctoral thesis.

The case sites for this thesis, Stockholm and Copenhagen, are introduced in Chapter 6. Some explanations are offered on the differences in the modal split,

infrastructure and planning. Moreover, we learn why Copenhagen's bicycle infrastructure is better than Stockholm's and how the two cities have developed their infrastructures. This chapter also serves as a background for Chapter 7, where the empirical material from the interviews in both Stockholm and Copenhagen is analysed. The data collection through the interviews helped create a deeper understanding of how the two cities have been planned and are planned today. Moreover, relations and structures could be uncovered that affected the planning and the outcome of planning and policy decisions, both at a political level and at an administrative level. Additionally, through the analysis of the power relations in urban space, one can see what influenced and still influences the planning and the politics of mobility and transport in Copenhagen and Stockholm. From that analysis the questions of how cyclists in both cities experience cycling, traffic and the planning for cyclists arise.

This will be dealt with in Chapter 8. Cyclists' experience is analysed from data collected through survey studies in Stockholm and Copenhagen. The focus of the analysis of the survey data is on the differences and similarities between cyclists in Stockholm and Copenhagen. This is analysed with the Chi2 test and by analysing the frequencies of the answers. With a starting point in the analysis of the qualitative data (interviews and observations) and the quantitative data (surveys), Chapter 9 brings the two together in an analysis of the differences between the views of planners and politicians and the users of the urban spaces of mobility, in this case, the cyclists. It seems that planners and politicians have one view of the outcome of their decisions, which might not correspond to the experience of the cyclists and to the modal split. Moreover, connections are made to previous analysis in this thesis concerning automobility, political economy, modernism and power relations in urban space and urban cycling.

It is in Chapters 6, 7, 8 and 9 where the empirical data from interviews, observations, surveys and analysis of plan and policy material are analysed, and where the difference from the theoretical research in the mobility field lies. Those chapters develop the empirical understanding of what mobility or vélomobility means, and why the urban transport system and urban cycling look as they do in the case studies. Although some empirical data is also used in Chapter 5, the main work in the empirical field is done in these four chapters. Finally, I wrap the thesis up in Chapter 10, where I summarize the findings of the empirical and theoretical work of this doctoral thesis and try to connect the

research to the theoretical outline of this thesis. In this chapter I also line out ideas for further research on the topic of mobility/vélomobility.

2 Research design – a story about methods

Today, the urban phenomenon astonishes us by its scale; its complexity surpasses the tools of our understanding and the instruments of practical activity. It serves as a constant reminder of the theory of complexification, according to which social phenomena acquire increasingly greater complexity. (Lefebvre 2003 [1970]:45)

This chapter describes the methods used for collecting the empirical data and how the collection of the empirical data took place and evolved during the process of collection and analysis. Furthermore, it sets the theoretical outline for the collection of the empirical data in this dissertation. It also explains the theoretical approach for the methods used for the collection of the data, meaning a short excursion to the field of philosophy of science.

The analysis of planning for cycling, as mentioned in the introduction of this thesis, rarely goes beyond research of best-practice and policy studies, aspects of traffic safety or the basic notion that cities need to increase cycling and provide better infrastructures for cyclists (Banister 2005, 2006 and 2008, Banister and Hickman 2006, Kenworthy 2006, Rietveld and Daniel 2004). Understanding the underlying processes that have an impact on urban and transport planning is important in order to deal with sustainable modes of transport such as bicycle traffic. Here it is important to analyse the historical aspects, as Emanuel has done for Stockholm and Sweden for the period 1930-1980 (Emanuel 2012). The focus in his analysis is, however, not on the materialities of space and other structures, such as economic ones, that influence planning. That is why research on the materialities, structures and politics of transport planning is very important in order to deal with problems concerning sustainable modes of transport, such as walking and cycling, traffic in general, politics of mobility and questions of mobility in general.

The research design for this thesis has developed on the basis of different ideas and theoretical standpoints. The philosophical foundation of the design of this thesis and of the methodological and analytical approaches draws mainly on critical theory and on critical realism. It has been my ambition to build a solid philosophical and theoretical foundation for the methods used for collecting empirical data and for the analysis of that data. Drawing on those two philosophies it makes sense to merge different methods, namely qualitative and quantitative, into a dual approach in order to gather as much information as possible so that the research questions can be answered. In section 2.1 I will outline the philosophical foundation of the thesis in greater detail. In the beginning of the dissertation project the only part that was clear was the focus on cycling as a sustainable mode of transport. The idea came up that a comparison of two cities could be interesting. I developed ideas about two cities, namely Copenhagen, Denmark and Stockholm, Sweden. Both countries have a similar history characterised by welfare systems and class struggles during the 20th century and share a culture of providing good infrastructures, both social and physical, for their citizens. Moreover, both countries have a strong tradition of democracy and similar ideas about citizen participation in democracy (Benner and Vad 2000).

To analyse planning in the two capital cities would be a good starting point for taking a closer look at the urban transport and cycling infrastructures and the planning processes involved in developing them. Furthermore, Copenhagen seemed to me to be a good choice due to its reputation as a world leading cycling city and a high rate of cycling in the modal split (see Table 2 in section 6). Living close to the Danish border in the city of Lund I had visited Copenhagen on several occasions and noted the huge amount of cyclists in the city. Copenhagen appeared in many articles about cycling as a pioneer in bicycle planning. Thus, the choice of Copenhagen seemed natural. However, since I wanted to make a comparative case study in order to get a broader understanding of bicycle planning in different settings, I needed another city to compare Copenhagen with. I chose Stockholm, because Stockholm and Copenhagen are two Scandinavian capitals similar in size. Moreover, I wanted two cities that are not symmetric in comparison, in other words similar in size and both Scandinavian capitals, but very different when it comes to cycling. The modal split for cycling is much higher in Copenhagen than in Stockholm (see section 6), which has triggered my hypothesis that Copenhagen is a cycling city, with a good infrastructure for cyclists, well developed approaches to

planning for cyclists and a high share of trips by bikes in the modal split, and that Stockholm would, to some extent, be the opposite of Copenhagen. This hypothesis is also partly underpinned by the research done by Emanuel (2012), who shows that Stockholm, historically, mixed traffic until the car became more dominant and established in the Swedish society, and that consequently very little infrastructure was built for cyclists. Copenhagen, on the other hand, established an infrastructure quite early at the beginning of the 20th century (Emanuel 2012). That was the starting point for the comparative case study that constitutes the foundation of the empirical data collection for this doctoral thesis.

Another idea that I identified as important in the field of cycling and transportation studies was that cycling and bicycle planning could not be fully understood by investigating cycling exclusively. Planning, transport and cycling are complex social phenomena. Transport planning in particular, but also urban planning, are seen as rational (Flyvbjerg 1998), which means that social relations (including political aspects) are often excluded when looking at planning and transport. If only one aspect of a factor such as cycling is taken into account, the whole story of why the transport systems look like they do could not be fully told. This is important in order to create a full understanding of planning and politics (see Sandercock 1998). My concept was that a broader approach, both method wise and theory wise, would be needed. Therefore, two main methods have been used for the concrete collection of the empirical data in the two case cities, namely interviews (with central important planners and politicians) and survey studies among cyclists in Copenhagen and Stockholm. As background data and better insight in the bicycling and transport infrastructure and the transport planning, observational studies and document studies (of important policy and planning documents) have also been undertaken. The observations and the document studies serve as an introduction to the cases and are described more in detail below.

This approach enables a data collection from different perspectives and with different insights into the use and condition of the infrastructure and the thoughts behind transport planning and planning for cyclists. It is important to avoid looking at cycling and bicycle planning from a purely bicycle or bicycle planning perspective. Transport and planning are interconnected with other areas, such as the user's impressions of the system, urban planning and politics. Therefore, the variety of methods used for the data collection in this thesis give the broad data needed in order to answer the research questions

posed in the introduction chapter. They also allow for theoretical discussions, which is also part of this doctoral dissertation (Alvesson and Sköldberg 2008).

The starting point of the methods used for the data collection for this study is in the methodological considerations and the philosophy of science, which are outlined in the next section of this chapter.

2.1 Excursion to the philosophy of science – the methodological foundation

The philosophy of science, the theories involved and the methodology connected to it determine scientific research and are the foundation of the investigations conducted in research projects. It also determines which methods and approaches are chosen and which are left out. It is therefore important to give a short account of the philosophical foundations that have determined the research approach in this dissertation and the methodological consequences that approach brings with it.

Philosophically, observations, interviews and plan/policy analysis are part of the hermeneutic and/or phenomenological research traditions. In the case of my research I have partly been inspired by Lukes (2005) and by critical theory and critical realism. Both critical theory and critical realism acknowledge the duality of different methods used in research and also the need for such a duality, however differently. Lukes' methodological approach is more practical. Furthermore, one important aspect of Lukes' idea about methodologies is that a focus on empirical data collection and the methods connected to it might not be enough. In order to understand power relations and the effect of those relations we need theoretical understanding and interpretations of power, power relations and aspects connected to it (Lukes 2005). This is why this thesis also focuses on a theoretical understanding of power and space in order to develop an interpretation of the empirical data collected about cycling and planning in Stockholm and Copenhagen. The theoretical discussions in Chapters 3, 4 and 5 pave the way for a deep analysis of the data collected and for an understanding of the different dimensions of power that Lukes (2005) talks about. The approach adopted in this thesis can be seen as the opposite of a positivistic or naturalistic one like scholars such as Popper put forward (Popper 1991). It is rather a hermeneutic approach. In hermeneutic or

individualistic research studies, approaches build more on an individual qualitative understanding of specific problems in the society, in this case planning for cyclists and mobility in two Scandinavian capital cities. A hermeneutic approach also entails a different kind of methodological thinking. The methodology builds on understanding and interpretation and is followed by certain kinds of methods, such as interviews or observations, but quantitative studies can also be interpreted in a qualitative way and can thus be part of a hermeneutic approach. When conducting research in a hermeneutic way there cannot be a claim of total objectivity or ultimate truth, but the claim of individual understanding of a certain situation, for example the transport planning processes in Stockholm and Copenhagen (Hollis 1996).

The theoretical considerations of this chapter offer a framework for the methodology for analysing the planning for bicycles, mobility and vélomobility in Copenhagen and Stockholm. Planning also involves culture, politics, identity and the production of space. Being aware of all those aspects, I tried to create a framework for interviews with planners and politicians in Copenhagen and Stockholm that would yield material for a deeper analysis than just the physical structure, which naturally also influences how many people use the bike but is certainly not the only aspect. Furthermore, it is of interest to investigate why decisions were taken that led to the physical structure we can all see today in Copenhagen and Stockholm. The factors behind these decision, for example power relations and different forms of power in planning processes (as Lukes 2005 describes, see Chapter 4) and cyclists' perspectives are very important in order to develop an understanding of today's urban infrastructure. This also means that different approaches, methodological considerations and methods are needed in order to find the hidden power relations and aspects that affect the outcome of planning and politics (Lukes 2005).

Thus, the question of how the collection of the empirical material and the analysis of the same is analysed and interpreted remains to be answered from a philosophy-of- science perspective. Although the account of the methodological background above is closely linked to that answer, the philosophical basis of the analysis is grounded on critical realism. Proponents of critical realism, Popper among others, have criticised both positivistic and naturalistic philosophy for searching for laws in social sciences, similar to the laws in natural science, and the postmodern philosophy that seems to have a tendency to neglect the reality of life in societies and only seems to argue that

no generalisations or causalities but only interpretations are possible (Sayer 2004). I certainly agree with Sayer's criticism of positivism as well as with the criticism directed towards postmodernism. In my own research the mix of interpretations and causalities has guided the development of the methods and the analysis of the data. Critical realism supports broad investigations and claims, as Sayer (2004) puts it:

First, the real is, whatever exists, be it natural or social, regardless of whatever it is an empirical object for us, and whatever we happen to have an adequate understanding of its nature. Secondly, the real is the realm of objects, their structures and powers. (Sayer 2004:11)

If that is taken as a requirement for conducting research, the need for a broad methodology for developing research methods becomes evident. Furthermore, the philosophy of critical realism forms the philosophical basis of the analysis of the empirical material.

Critical realism acknowledges that the researcher can only investigate and develop a certain, limited kind of knowledge about society and can only develop that knowledge within certain, limited areas, transferred by certain discourses. However, this does not mean that nothing can be said about the society under investigation, as mentioned above (Sayer 2004). Moreover, critical realism also promotes a broad use of methods (see Sayer 1992) in order to develop a stratification of knowledge. This is done by dividing knowledge into the real, the actual and the empirical. Sayer (2004) defines "the real" as everything that exists, both natural and social. It is also defined as the structures and power of the objects acting within the real. "The actual" is defined by Sayer as follows:

The actual refers to what happens if and when those powers are activated, to what they do and what eventuates when they do… (Sayer 2004:12)

This means that the actual, according to Sayer (2004), deals with matters of power relations and structures and their effects. "The empirical", then, *is defined as the domain of experience* (Sayer 2004:12), i.e. to what extent the power relations etc. in the actual are experienced. In order to gain knowledge of all three domains, a broad methodological foundation is needed. I believe the empirical research in this thesis and the analysis of it are well founded in the philosophy of critical theory and critical realism due to the broad use of different methods, the theoretical analysis of power relations, mobility and

space and the theoretical analysis of the marginalisation of cyclists in urban public spaces.

While critical realism forms the philosophical and methodological basis for the methods used for collecting the empirical material, critical theory is used as the philosophical basis for analysing the data and the processes in the two case cities. In order to analyse power relations and maintain a critical view of the data, but also of the planning and political processes in Copenhagen and Stockholm, I use critical theory as a broad analytical approach to the empirical data and to investigate the on-going processes in Copenhagen and Stockholm. Critical theory builds on the work of the so-called Frankfurt School of Critical Theory and is known for its interpretive or reflective approach. Critical theory can be linked to critical realism in its view of science and society. Although critical theory is often seen as more macro- oriented than critical realism, they share the view that societies and social phenomena are produced by social relations and structures and often rooted in a historical context. Those relations and structures cannot be analysed by looking for social laws but must be approached in a more qualitative way, which is something that both critical realism and critical theory have in common (Alvesson and Sköldberg 2008). Another main aspect of critical theory is

… a pronounced interest in critically questioning the realised social reality. (Alvesson and Sköldberg 2008:287 – Author's translation)

Moreover, critical theory is sceptical about the rationality of science, especially the shift towards the search for truth and general laws in societies. Talking about the shift in the philosophy of science towards rationality Herbert Marcuse said:

Made into a methodological principle, this suspension has a twofold consequence: (a) it strengthened the shift of the theoretical emphasis from the metaphysical "What is…?... to the functional "How…?, and (b) it establishes a practical (though by no means absolute) certainty which, in its operations with matter, is with good conscience free from commitment to any substance outside the operational context. (Marcuse 2002 [1964]:155)

What Marcuse means is that theoretical research has lost its meaning, because it deals with metaphysics and perceptions that cannot be measured. This also has a bearing on other immeasurable aspects, such as justice, social perceptions or the socially constructed places we move in. That process had, in a way, already begun with the French revolution. Marcuse explains that, although

criticising its terror, the German idealists, e.g. Hegel, Kant or Fichte, appreciated the revolution, since they thought that from then on, *The world was to be an order of reason.* (Marcuse 1999 [1941]:4) Furthermore, Marcuse also considers a great many of our needs as preconditioned by the capitalist societies we live in. He distinguishes between true and false needs as follows:

The intensity, the satisfaction and even the character of human needs, beyond the biological level, have always been preconditioned. … We may distinguish both true and false needs. … Most of the prevailing needs to relax, to have fun, to behave and consume in accordance with the advertisements, to love and hate what others love and hate, belong to this category of false needs. (Marcuse 2002 [1964]:6-7)

Due to the fact that only the measurable counts, and therefore what we can connect to the physical world it is argued that other aspects of reason and theoretical thought not contribute to the development of society. Therefore, the automobile can also be seen as a part in this shift from metaphysical, theoretical and also social thinking to empiricism and measurable facts (Marcuse 2002 [1964]). Nevertheless, one should remain critical towards Marcuse's statement, because who is he to tell us how and why we want to relax, for example? However, I believe he touches upon a very important aspect, namely that, in this kind of society that Marcuse describes very clearly, automobility has a dominant position. Through Marcuse's theoretical work we can understand and look at structures that are otherwise hard to identify and thus easy to overlook. Marcuse's work sets the agenda for the methods used in this thesis.

The connection of automobility to the accumulation of capital during the 20th century and the social climate described by Marcuse have paved the way for new forms of urban and transport planning, which has affected traffic and marginalised non-motorised modes of transport since the 1920s and onwards in many countries and cities around the world. The false needs and the preconditioning have shaped capitalist societies and consequently also the way people move about. Capital accumulation is the dominant factor in shaping people's mobility. Thus, critical theory is about research that reveals such structures and critically analyses the institutions in societies. Critical theory helps to approach social phenomena with the intention of questioning the taken-for-granted issues and processes (Alvesson and Sköldberg 2008). Therefore, critical theory offers a plausible philosophical foundation for the research carried out in this doctoral thesis. The aim of this research, besides the aim mentioned in the introduction, is to critically analyse the transport systems

in the two case cities. Moreover, critical theory offers a perspective that allows me to critically approach the taken-for-granted systems and structures behind the planning processes in Stockholm and Copenhagen. This includes, for example, a critical analysis of bicycling in Copenhagen, which might not be as perfect as it seems at first glance. In other words the research design builds both on critical realism and critical theory, as both provide the critical and broad approach needed to analyse the research questions posed and live up to the aim of this thesis.

2.2 Background information – observations and document studies

Bearing in mind the broad approach needed for this project, I considered how knowledge about transport planning and the infrastructure of cyclists in the two cities can be gained and how cyclists view the situation. The first step was to cycle in the two cities in order to get a feeling and better understanding of the infrastructure and the situations for cyclists in Stockholm and Copenhagen. Although, I knew that I was going to conduct interviews with planners and politicians and probably also collect data on cyclists' attitudes, the starting point was making observations in the two cities.

Thus, observations have been made in the form of cycling through both Copenhagen and Stockholm in order to obtain a deeper understanding of the infrastructure for cyclists and to observe traffic and the networks in the two Scandinavian cities. The observations were made over a 5-day period (5 days in Stockholm and 5 days in Copenhagen). During the observations notes and pictures were taken, for a better understanding of the infrastructure and of cycling in Copenhagen and Stockholm. The observations lasted for about 6 hours during daytime, from morning to early evening every day of the 5-day period, and were mainly made in the central parts of the two cities. Both the interview studies and the observational studies were conducted between January 2010 and March 2011. The observations I made in Copenhagen and Stockholm involved visual observation of cyclists and traffic in Copenhagen and Stockholm, but I also cycled on my own in order to get a feeling of what it is really like to cycle in Copenhagen and Stockholm. It was my ambition to get a feeling for cycling in both Copenhagen and Stockholm, the people who

cycled there and the problems connected with cycling in those cities. It was important for me to really experience and observe the process of cycling in Copenhagen and Stockholm in order to get a better understanding of what it involved. The observations were made in a more or less unstructured way in the central parts of the two cities. I tried to follow different flows of cyclists through the city and observe their behaviour and the problems and possibilities when cycling there. The observations were made beside the cycle tracks in the central parts of Copenhagen and Stockholm. I was a passive observer of the traffic and the interactions between cyclists and other road users. The participant observations were made on my own bike in Copenhagen and on a rented one in Stockholm.

Observation is a widely accepted method in social science, especially in the fields of anthropology, ethnology and geography. The method provides the researcher with direct data throughout the process of using it (Arvastson and Ehn 2009). Furthermore, observations are also common in other fields, e.g. traffic safety research, where researchers observe crossroads in order to identify conflicts between road users. This type of observation is, however, a way of getting more quantitative data about traffic safety problems (for more information see Svensson 1998). Participant observations are more frequently used in social science than in, for example, traffic safety research or other fields. Participant observations are similar to regular observations in that they provide first-hand and direct data that can subsequently be analysed. The difference between the two kinds of observations is that one participates in the actions that are observed, i.e. in this case riding a bike through Copenhagen and Stockholm (Rose 2002, Kemmis and McTaggart 2000, Arvastson and Ehn 2009). The observations took place in the central parts of Copenhagen and Stockholm. I paid special attention to crossroads and parts of the infrastructure where cyclists interact with other road users, and to the overall infrastructure for cyclists and how it works for cyclists. The participant observations were unstructured. I followed the flow and tried to cycle in as many different central areas as possible in order to get a deeper understanding of the infrastructure and what it is like for cyclists to get through Copenhagen and Stockholm on a bike. Furthermore, I wanted participant observations to enable me to get to know parts and areas where it is especially difficult or pleasant to cycle and where conflicts with other road users take place.

During the observations I took pictures, and after each period of observation I took notes about what I had seen. When I was back in the office I rewrote the

notes on the computer. The information from the observations proved to be very helpful later in the interviews with the planners, since I had a deeper and better understanding of cycling in Copenhagen and Stockholm and of what the infrastructure in the two cities looks like. Moreover, it helped me to develop the kind of knowledge about the two cities' cycling and transport infrastructures, problems/advantages when cycling in the two cities etc. that I needed. In other words, the observations provided me with the kind of knowledge that I was hoping to get. Additionally, I could also verify my hypotheses about the cycling infrastructure etc. in Stockholm and Copenhagen. Those were also confirmed in the data from the national travel surveys in Sweden and Denmark (see Chapter 6 in this thesis). However, it should be noted that the observations made in Copenhagen and Stockholm served more as a complement to the data from the interviews and the data from the survey studies. The data collected are not shown as independent results in this thesis but are used for confirming certain parts of the data from the interviews and for introducing the cases of Stockholm and Copenhagen in Chapter 6. Moreover, they have been used to strengthen my own understanding of the infrastructure in the two cities and have been an important part in the process of collecting the empirical data.

The document study was partly, as mentioned above, conducted to prepare for the interviews, but was also useful after the interviews, since some interviewees recommended or mentioned certain reports or policy or plan documents. The document studies should be seen as an empirical complement to the data from the interviews concerning facts about bicycle planning in Copenhagen and Stockholm. Chapter 6, where the cases are introduced, draws a great deal on the plans, policies and similar documents in order to create an understanding of the infrastructure for bicyclists in the two cities and in order to show the way they plan and direct their policy efforts within the field of bicycle planning. It was not my ambition to systematically go through all the material from the two cases about bicycling or bicycle planning and make a systematic comparison as such. Rather, the document study should be seen as complementing the empirical data from the interviews and as introducing the cases of Stockholm and Copenhagen. The documents used for this study were mainly bicycle strategies and plans as well as other plans or documents concerning cycling and transport in Copenhagen and Stockholm, such as technical investigations or environmental plans or transport strategies.

2.3 Interview studies

The next step in the empirical data collection was to find out more about cycling and bicycle planning in Stockholm and Copenhagen. Interviews were chosen as a good way to achieve that and also to develop a deep and thorough understanding of the planning processes. The concrete approach for investigating the planning systems and what has had an impact on them was interviews with different bicycle and transport planners at different positions and levels in the two cities. Furthermore, politicians who were then and/or are still actively working at different administrative levels with transport and bicycle planning in Stockholm and Copenhagen were interviewed. Overall, thirteen interviews have been conducted, 6 in Stockholm and 7 in Copenhagen.

The following persons were interviewed:

Copenhagen:

Andreas Røhl: Head of the bicycle planning program at the Centre for Transport, City of Copenhagen, interviewed 2010-01-08

Niels Jensen: Bicycle planner with long experience at the Centre for Transport, City of Copenhagen 2010-01-08

Niels Tørsløv: Head of the Centre for Transport, City of Copenhagen, interviewed 2010-10-07

Hjalte Aaberg: Head of the Technical and Environmental Administration under which the Centre for Transport is located, today Regional Director for the Capital Region of Denmark, interviewed 2010-10-19

Søren Elle: Urban and transport planner with long experience of planning at the Centre of Urban Development, City of Copenhagen, interviewed 2011-09-21

Jakob Hjortskov Jensen: Urban planner at the Centre of Urban Development focused on zoning planning, City of Copenhagen, interviewed 2011-11-18

Klaus Bondam: Politician for the Radical Left party, vice mayor for Technical and Environmental Administration 2006-2012, City of Copenhagen, interviewed 2011-02-15

Stockholm:

Krister Isaksson: Bicycle planner at the Transport Planning Department, City of Stockholm, today consultant for SWECO, interviewed 2010-05-25

Krister Spolander: Senior consultant at Spolander Consulting with long experience of transport in Stockholm with a focus on bicycling, interviewed 2010-02-12

C 2010-11-01

One transport planner who wanted to be anonymous: interviewed 2010-11-01

Mats Fager: Transport planner with long experience working at the Transport Planning Department, City of Stockholm, now consultant for WSP, interviewed 2011-10-13

Eric Tedesjö: Urban planner with a focus on transport issues in zoning planning at the Urban Planning Department, City of Stockholm, interviewed 2011-09-26

Stella Fare: Politician for the Stockholm Party (now Liberal Party), vice mayor for urban politics 1998 – 2002, City of Stockholm, interviewed 2011-03-25

It has to be mentioned that it was somewhat easier to get interviews in Copenhagen than in Stockholm, and it was also easier to get the permission of the persons interviewed in Copenhagen to use their names. As can be seen in the list above, one planner in Stockholm wished to remain anonymous. Moreover, one person I planned to interview in Stockholm who has a similar position as that of Hjalte Aaberg in Copenhagen refused to give me an interview. However, I also wanted to interview a certain consultant in Copenhagen, who also declined. Nevertheless, it was not very complicated to get the interviews I needed in Copenhagen and Stockholm.

The first idea was to start interviewing the responsible bicycle planner/s in each city. In those interviews the planners mentioned other planners of importance to, or who had been important to, transport and bicycle planning. The purpose was to gather information from different types of planners, such as urban planners, transport planners and bicycle planners at different levels in order to develop a rather broad understanding of transport and bicycle planning in

Copenhagen and Stockholm. All the interviewees are playing, or have played, an important role in bicycle, transport or strategic planning or in organising the departments. The interviews were either telephone interviews or face-to-face interviews in Stockholm and Copenhagen and lasted an average of 45 minutes. Due to the limited time of some of the persons interviewed and my having to travel to Stockholm and Copenhagen for every single interview, certain interviews were conducted via telephone. One of the most obvious advantages of conducting some of the interviews by phone was to get the data I needed for the research for this thesis. However, the major disadvantage is the lack of personal contact and the fact that one cannot observe the reactions etc. of the interviewed persons. However, telephone interviews are often less expensive and less time-consuming for both the interviewer and the interviewee (Baily 1987, Kvale 1997). The difference in length was due to either the time available to the persons being interviewed or how much the persons wanted to talk. In general it can be said that the higher the position of the interviewees in the organisational hierarchy, the less time they had. The interviews were semi-structured according to themes and certain questions, which enabled the interviewees to direct the interviews towards themes and aspects they found important. Conducting interviews with different planners and politicians should provide the broadness required to get a sufficient amount of data to answer the research questions. When the thirteen interviews were conducted, the answers gradually became more and more repetitive, and new, deeper and different knowledge for this thesis could not be gained, which led to an end of the process of conducting interviews in the two case cities. This is a common approach in interview studies (Maxwell 2004).

I interviewed the planners and politicians in Copenhagen and Stockholm by means of an interview guide I developed (see Appendix 1). Consequently the interviews were semi-structured according to different themes I would like to be covered. The guide was more of a tool to keep a red thread throughout the interviews. I wanted to have open interviews where the interviewees can tell me as much about planning for cyclists and transport planning etc. in Copenhagen and Stockholm as possible without my interfering too much. In order to prepare myself for the interviews I studied several documents from Copenhagen and Stockholm dealing with bicycle planning, e.g. Copenhagen's bicycle policy and the bicycle plan for the inner city of Stockholm. The interviews allowed me to build knowledge about the planning and political processes and the developments within traffic and bicycle planning in

Stockholm and Copenhagen. Furthermore, my observations in the two cities provided knowledge about how people cycle, what it is like to ride a bike in Copenhagen and Stockholm, what kind of people cycle in the two cities and also where critical points of conflicts are located. The focus in this kind of research is more on the interpretation of the answers I received and on obtaining a deeper understanding of the complexity and different aspects of a social process called "planning for cyclists" and of the development of bicycling in Copenhagen. The social activities and power relations were of special importance here (Rubin and Rubin 2005, Gubrium and Holstein 1997, Cloke et al.2004).

The interview study was conducted in the following form, which partly builds on Kvale (1997):

- Create a theme for the study
- Planning
- Interview
- Transcript
- Analysis

The themes of the study were developed in line with the different people who were interviewed, and the aim was to investigate bicycle planning in Copenhagen and Stockholm and whether the transport planners in the two cities really plan for cyclists or not. Moreover, it was important to develop an understanding of the transport development and processes and other background factors of importance for the creation of today's transport systems in Stockholm and Copenhagen and for the mobility of the citizens in the two cities. The interviews had been planned in advance, and the choice of interviewees was based on recommendations from the first interview partners and developed in accordance with what knowledge and data seemed to be missing. The analysis of the interview material was a content analysis. After the transcripts, the content was analysed by applying the theories used in this thesis (see Chapters 3, 4 and 5 for the theoretical discussion). I looked for answers to my research questions, connections between the interviews and if and how they interrelate with one another. I also looked at the data from the interviews and tried to detect differences between the answers of the planners and politicians

in Copenhagen and Stockholm respectively. In other words, I tried to see where the differences, if any, were and how the answers, in respect to the differences, could be interpreted. I also tried to find similarities in the answers and the data collected. This process of conducting interview studies was developed in close connection to Kvale (1997) and Rubin and Rubin (2005) and was grounded on the philosophical ideas of critical theory and critical realism discussed in the previous chapter. Marcuse's and Sayer's theoretical and philosophical work enables me to conduct research in a critical way and offers a philosophical and theoretical understanding of the research done for this thesis. Especially the work of Marcuse provides an insight into how critical research can be conducted in order to understand structures and aspects of the social world that one might not be aware of (Marcuse 1999 [1941] and 2002 [1964]). Sayer's work, on the other hand, offers the theoretical foundation for using different methods in order to collect the empirical data needed for this research (Sayer 2004).

It is sometimes argued that qualitative research cannot be generalised, which is to a certain degree the case. However, the qualitative research in this dissertation outlines aspects that have affected urban and transport planning in Stockholm and Copenhagen, and provides a deeper view of why the cities' transport systems look like they do. This could also have a bearing on other cities, and in this sense the generalisation of the qualitative data is more analytical (see Freudendal-Pedersen 2009). Consequently, the analysis of this kind of data could have an impact on other research on transport and urban planning. Nevertheless, the research for this doctoral thesis does not seek the truth, but instead attempts to develop an understanding of the processes, the relations and the politics that have shaped the outcome of the transport systems in Stockholm and Copenhagen. This is quite in line with the philosophical foundation of the thesis described in section 2.4 in this chapter. It was important to collect the appropriate data in order to answer the research questions posed in this thesis properly, which is also why the choice of the philosophical foundation and, consequently, the use of the different methods for the empirical data collection has been made. The critical analysis of the cases chosen for this thesis was very important for this research (Marcuse 1999 [1941] and 2002 [1964], Sayer 2004).

2.4 Survey studies

After the collection of the qualitative data, the perspectives of the cyclists in Copenhagen and Stockholm were still missing. During the preparations for the interviews I had already decided that an overview of the perspective of the cyclists in Copenhagen and Stockholm should be included in this research. Initially I tried to test on-street interviews with cyclists by stopping cyclists to interview them in the spring of 2010. This appeared to be quite difficult, since many cyclists did not want to stop or told me that they had no time.

I therefore decided to conduct a survey study in each of the two cities, which was carried out in the spring of 2011. 3,005 postal questionnaires were sent out in Copenhagen and 3,012 in Stockholm, followed by a reminder about three weeks later.The response rate was 39.54 % in Stockholm (1,191 individuals) and 36.61 % in Copenhagen (1,100 individuals), which is quite satisfactory, and since there is no bias in the responses (see Chapter 8) they can easily be used in the statistical analysis in this thesis. The questionnaire was divided into three parts. The first part consists of basic questions for collecting some background data, e.g. questions about age, sex, income etc. The second part contains questions about time spent in traffic using different modes of transport, and the third part contains statement questions. The questionnaire contains a total of seventeen questions, of which questions 11 and 12 have several sub-questions. An example of the questionnaires in Stockholm and Copenhagen, which includes all the questions and the design of the questionnaires, can be found in Appendix 2. The detailed description of the method can be found in Chapter 8. However, as an introduction, the method used for analysing the data from the questionnaires was partly descriptive statistics, that is to say that I created frequency tables and graphs and compared the data in those tables and the graphs in Stockholm with the data for Copenhagen. This gives a very good overview of the data collected and a good insight into who has answered the survey and what kind of people bike in both cities (Eggeby and Söderberg 1999). Furthermore, I did a Chi2 test, a statistical method for comparing two samples, like the answers from Stockholm and Copenhagen (Edling and Hedström 2003), and a Mann-Whitney test, a statistical method that can handle scale data and compare it (Agresti and Finlay 2009) with other parts of the data from the survey and compared this data from Stockholm with Copenhagen. As mentioned before, the complete

description of the methods and detailed information about the surveys is found in Chapter 8 of this dissertation.

The survey studies were done in order to gather some general information about the attitudes of people who use the bicycle in Stockholm and Copenhagen and what their impressions of the infrastructures for cyclists are. The surveys, described in greater detail in Chapter 8, build upon the methodology developed in this chapter and the politics of mobility explained in the following chapter. They were also conducted partly to clarify the views and developments expressed in the interview study. This should serve as a complement to the views of the planners and politicians. In other words, the survey study expresses the views of the cyclists in the two cities. From a statistical point of view, the analysis of the survey data reflects the cyclists' views of cycling, planning and politics in Copenhagen and Stockholm (Eggeby and Söderberg 1999). The analysis of the survey studies and the concrete methods used for the analysis are explained in Chapter 8. I decided to make this division, since I think it is important for the reader to have the detailed facts about these studies near at hand when reading about the results of the survey studies. Moreover, the data collected in the survey studies are also compared with the data obtained in the interviews with planners and politicians, in order to create the broad understanding and approach that is needed when analysing cycling and transport planning.

However, it also seems important to take a critical look at the limitations of survey studies, which, just as in those conducted for this thesis, are so detailed, and deep information about how people in Stockholm and Copenhagen experience cycling is not captured. Nevertheless, a general view of cycling and the differences between the two cities can be presented, which was also the purpose of the survey studies I conducted. However, it would be interesting for future research to develop such understanding that is missing by conducting interviews and/or focus group studies with cyclists. The survey was not only sent out to devoted cyclists in the two cities but also to a sample of residents in the case study cities, in order to get a higher response rate. The idea was to create a smaller sample that includes only the cyclists that have answered the survey. The methods for doing that are explained in Chapter 8. Moreover, another way of building knowledge about the cyclists' views could have been on-street interviews, which, as mentioned above, turned out to be difficult. Furthermore, the last question in the survey was whether the person would like to participate in an interview or a focus group session. The purpose was to

follow up the survey data by interviews or focus group sessions; this could not be done here for lack of time and is certainly worth considering in future research.

2.5 The combination of methods

One question that needs to be answered is: What happens when those methods are combined? This is dealt with in the next part of this chapter.

In order to answer this question I divided the methods into two different categories and described them, their function, the type of information gathered and what type of data is collected (see Table 1 below). The illustration of the methods used for data collection in this thesis should help to understand the different roles of the methods in the process of collecting the empirical data. The different methods also provide different data that have to be kept in mind when analysing the empirical data. It is important to remember that the empirical data offer different answers to the research questions.

Table 1: Methods used for data collection

Methods	Function	Type of information	Type of data
Interview Studies	Increased understanding of the planning and policy material; increased understanding of the planning processes and factors that have influenced and are influencing the planning and the politics	First-hand information from professionals and politicians working with urban transport and bicycle planning	Qualitative data
Survey Studies	Increased understanding of the attitudes and impressions of cyclists in Stockholm and Copenhagen	First-hand information from cyclists in Stockholm and Copenhagen	Quantitative data

The two different methods used for data collection served different purposes and resulted in different types of data. One method collected qualitative data and one quantitative data. The qualitative data from the interviews and document studies built a very important foundation for the analysis of the transport and cycling systems in the two case cities and also form the basis for the analysis of the influence of power on the outcome of planning and on political decisions. The other qualitative method used for collecting the empirical material for this thesis is the observations in Stockholm and Copenhagen. This method delivered the initial data on the cycling and transport infrastructure and a deeper insight into the use of bicycles in the two cities based on my own experiences and on observations of the traffic. Those impressions are partly backed up by the survey studies, where the quantitative data of cyclists' experiences and views of the infrastructure, transport/bicycle planning and politics are collected.

Although survey studies might not collect all data on cyclists' views, they certainly give an overall impression of what people who use their bikes in Copenhagen and Stockholm think about the infrastructure and the planning for cyclists. The role of the survey was also to obtain a more general picture of the views of cyclists in the two case cities and to compare these data with that from the interviews. This was done in order to find out whether planners and politicians have similar views of the infrastructure and the strategies in the two cities as the cyclists and whether cyclists experience cycling according to the goals set up in the two cities. Furthermore, I wanted to establish a comparable data set of cyclists' views and experiences in order to find out whether there are differences between Stockholm and Copenhagen and, if so, whether those correspond with the power relations, politics and planning approaches of the two cities. It was important for my research to get both sides of the coin, namely the planners' and politicians' views of the infrastructure and the planning and the cyclists' view of them. It seemed important to me to include the experiences of the cyclists, because on an everyday basis it is the cyclists and the inhabitants of the two cities who encounter the urban transport space and infrastructure and who have to use it. This can also be seen in close relation to both Lefebvre's production of space (Lefebvre 1991 [1974]) and Cresswell's politics of mobility (Cresswell 2010), which are dealt with later in this thesis.

On the whole, it can be said that the different methods used for collecting the empirical data are suitable for different purposes. The quantitative data serve the purpose of getting a general understanding of the cyclists' perspectives in

Stockholm and Copenhagen, whereas the qualitative methods are best suited for developing a deeper understanding of the planning processes and politics in the two case cities and for developing my own understanding of the bicycling infrastructure. It was not the purpose of the research design to weigh different methods against each other, since the methods used in this thesis are best suited for collecting the data needed to answer the research questions. All the methods helped me understand different aspects of the research, such as the historical development of the infrastructure and how cyclists experience the infrastructure in Stockholm and Copenhagen. The data, as was hopefully made clear in the philosophical part of this chapter, are not a reflection of the truth. They are an interpretation of a mobile reality in two Scandinavian capital cities.

3 Mobility and vélomobility – framing the dissertation

…mobilities rather than societies should be at the heart of a reconstituted sociology… (Urry 2000:210)

This chapter starts with a question: Why analyse society and bicycling through the lens of mobility? During the 19th and 20th centuries, the movements of people and goods have changed quite dramatically. Railroads and steamboats have fostered industrialization, and the invention of the bicycle has, at least to a certain degree, liberated women by enabling them to move around more easily. Although the bicycle was initially just a toy for the upper classes, it later (in the early 20th century) became a general mode of transport, not least for the working class. In the early 20th century the automobile started to have an impact on rich people's mobility. By the 1950s and 1960s the automobile became increasingly common in western societies and came to dominate urban and transport planning and the mobility of many people (Merki 2008, Mackintosh and Norcliff 2007). According to Urry (2000), the impact of mobilities on society is very important, so important, in fact, that Urry claims that, due to the tremendous impact of mobilities on societies and people's everyday lives and complex social relations, sociology should seek to incorporate studies of mobilities into the core subjects of the investigation of society. He stresses that the development of sociology as a discipline has been influenced by different forms of social movements, such as the gay/lesbian movement, the women's movement or student movements. It was such movements that created new, but often limited, public spaces and new forms of social sciences. Therefore, mobilities can be seen as a very powerful tool in analysing social phenomena. Moreover, Urry also states that mobility of intellectual thoughts contributes to the restructuring of disciplines, e.g.

sociology, towards focusing on mobilities rather than societies. Thus, a focus on mobilities rather than societies offers new insights into social relations, power relations and political decisions (Urry 2000). Bearing that in mind, framing this thesis within mobilities instead of adopting other social staring points provides a mobile perspective on a topic that focuses on movement and transport, i.e. bicycling and transport planning, while at the same time offering a new lens through which power relations, critical theory, planning etc. can be studied. However, Urry's argumentation is a purely theoretical one, which is why empirical studies of mobilities, or in this case of vélomobility, would contribute a deeper understanding of the practice of mobilities.

Thus, the concept of "mobility" contributes to a deeper theoretical understanding within the field of planning for cyclists, and could offer an approach for analysing transport planning. Mobility could also have implications for rethinking transport policies in cities. Mobility can, as seen above, be infused with power relations, and is of great significance for how people use mobile spaces. This creates conflicts between different kinds of road users that are not always observable (Handerson 2009). Moreover, the politics of mobility proposed by Cresswell (2010) and introduced below provides a theoretical concept for analysing cycling and transport in space. The mobility turn thus broadens the perspectives on transport and brings social and cultural perspectives into issues of movements and transport.

The word *mobility* is used in different contexts. The mobility turn, or the new mobilities paradigm as this turn has also been called (Sheller and Urry 2006) in the social sciences includes many aspects. It is a broad conceptualisation of transport and traffic, of the movement and flow of people (Sheller and Urry 2006). For example, the word *automobility* refers to a form of mobility that works automatically, or, in the usual sense, that works through a machine, i.e. the car. Automobility, according to Urry, refers to a whole system that includes different aspects, such as culture, consumption, industrial production and private mobility (Urry 2004). Moreover, automobility can also be seen as the hegemonic practice of mobility in western societies (Aldred 2010, Horton 2006). The example of automobility shows how much more complex the term *mobility* really is, compared to, for example *transport*. Furthermore, automobility and vélomobility are aspects that exemplify research on different forms of mobility or mobilities. Another form of mobilities where extensive research has been conducted is aeromobilities. Within this field, the mobility turn in social sciences is used to analyse the expansion of air travel, aviation

and global mobility in a globalised world. An understanding of mass travel, globalisation, space and place, subjectivities and modernity is developed (Cverner et al. 2009, Adey 2008, Guiva and Jain 2011). Another interesting aspect of mobilities is research on mobile lives and how mobility affects our public and private spheres, which has focused on the impact of mobility on people's everyday lives and how mobile people are perceived in societies. Here Creswell offers insights into life as a tramp in the USA or how immigration is shaped by, and shapes, mobility (Cresswell 2001 and 2006). Mobile lives and how they affect and are affected by society and their impact on the public and private spheres represent another aspect of mobility that is focused on in research in social sciences (Sheller and Urry 2003, Elliott and Urry 2010). Empirical research plays a more important role within those fields of mobility than in mobility research focusing on the mobility turn within social sciences, which can be seen e.g. in research on mobile people and their lives (Kesselring 2006). However, for the purpose of this thesis the theoretical research on mobility, automobility and vélomobility seems best suited for the theoretical frame for analysing cycling, space and planning in Stockholm and Copenhagen.

In order to give mobility an even broader definition, the term *vélomobility* can also be included in the concept of "automobility". Vélomobility is the cyclist's form of mobility and, as the term suggests, refers to mobility on a bicycle. Cyclists display a different type of mobility than motorists, in terms of space (both while cycling and parking), and also in terms of safety and in terms of environmental problems and energy use/pollution (Horton 2006, Furness 2007, Pucher and Buehler 2012). In addition, some aspects of vélomobility, such as critical mass events, try to intervene with and create their own urban space and, in that context, establish a normative critique of the use of urban space today. The domination of automobility and the performance of cycling can also be seen as a form of contesting the use of urban space (Furness 2007, Spinney 2010).

As a start it can be established that mobility often starts with a movement from A to B. Therefore, mobility is a form of displacement between different geographical locations. However, mobility, especially in recent research, has also included other aspects, such as mobility in the forms of networks and communication and the technology connected with them, migration etc., which widens the perspective from only the geographical movement from point A to point B (see for example Urry 2004 or Sheller 2004). This is also a

claim made by Cresswell in his book "On the Move: Mobility in the Modern Western World" (2006). Cresswell argues that:

The movement of people (and things) all over the world and at all scales are, after all, full of meaning. They are also products and producers of power. (Cresswell 2006:2)

He also finds similarities between place and mobility (Cresswell 2006). "Place", as it is often referred to in geographical research, always has a meaning attached to it. "Space", on the other hand, is a more general and abstract definition of the areas of the world. It can be claimed that almost all kinds of space are also connected to places and therefore have a social relation connected to it. Moreover, the production of space and place, as Lefebvre sees it, is connected to power relations and structures, both social, economic and cultural ones, that form spaces and convert them into places (Lefebvre 1991 [1974]). There are many different types of places, such as urban places, traffic places, places of memories etc. All those places have different meanings, depending on the personal experience etc. linked to them. In other words, places are spaces that are made meaningful by people and their relations (Cresswell 2004). Hence, Cresswell sees the connection between place and mobility, since mobility, like place, has a deeper meaning and is produced through social relations, structures and power relations (Cresswell 2006). It can thus be concluded that both places and mobilities have political dimensions and are affected by different structures and relations. This discussion of space, place and power will be followed up in the next chapter of this thesis.

According to Cresswell (2010) mobility includes three political aspects, namely:

- Physical movement from A to B
- The representation of the movement, which can create a shared meaning
- The practise of movement, which is experienced and embodied

These three political aspects of mobility illustrate the complexity and also the realities of the mobile world we live in today. Mobility and the politics of mobility shape, through social relations, differences in representation and the

embodiment of mobility. Thus, power relations in the urban space are connected to those differences and cannot be analysed without the analytic concept of mobility. Consequently, the term *mobility* includes such values as justice and equity, and could, therefore, be used for analysing the power relations between different modes of transport in public spaces. This can be linked to bicycling, since planning for cyclists involves facilitating and increasing the possibility for cyclists to ride their bicycles safely throughout the city without being marginalised and without having to fight for space. Therefore the concept of "mobility" could be a starting point for a theoretical understanding of the needs of cyclists and the planning processes for cyclists in cities (Cresswell 2010). Thus, the term "mobility" covers more than behaviour and the ability to move around in urban space. The contradictory terms "automobility" and "vélomobility" could also be used to approach the conflicts between motorised and cycling traffic as well as the power relations that are connected to those conflicts.

Getting from A to B is the fundamental principle of just about any movement. Cresswell defines "movement" as follows:

Physical movement is, if you like, the raw material for the production of mobility. People move, things move, ideas move. (Cresswell 2010: 19)

Physical movement can be measured (Cresswell 2010). Cresswell claims that there is a rationality connected to it and that this rationality of moving from A to B has marginalised the broader or more societal thinking about mobility that was introduced by Urry in the social sciences (Urry 2000). Nevertheless, moving physically from one point to another usually constitutes the beginning of actual movements and mobilities. Cresswell then progresses to the representation of such physical movement (Cresswell 2010). At this next stage of Cresswell's politics of mobility, i.e. the representation of mobility, he connects the representation of mobility with the meaning of movements that are shared by the people who perform them. Those shared meanings might today be such issues as e.g. freedom (Cresswell 2010). One shared meaning could also be the performance of urban cycling, which some researchers have touched upon. They see, for example, urban cycling as a means of incorporating people into the civil society. Moreover, cycling can create a shared experience of the effects of urban cycling (e.g. Spinney 2007, 2010, Wray 2008 and Garrard et al. 2012). The last aspect of Cresswell's politics of mobility is practice, which can also be linked to cycling:

"Finally, there is practice. By this I mean both the everyday sense of particular practices such as walking or driving and also the more theoretical sense of the social as it is embodied and habitualised (Bourdieu, 1990)." (Cresswell 2010: 20)

This quote from Cresswell suggests that mobility includes, not only the movement from A to B and the meaning of that movement, but also the practice of moving. The social side of movements is also included in mobility. In this part of the politics of mobility, connections are made to the experience of movements. Approaching transport, mobility and cycling from a perspective that includes the practice of movements will make certain relations, such as power struggles over urban space, visible. Thus, the politics of mobility, research on mobility in general and research on vélomobility might contribute to developing new and deeper insights into the development of urban transport systems, the power struggles within these systems and the role of urban cycling in the planning and development of urban transport systems. Urry, for example, also connects consumption, culture and production to automobility (Urry 2004, 2007), suggesting that the economic structures of today's capitalist societies, which affect the power relations between motorised and cycle traffic, could be analysed from a mobility perspective. A high percentage of car ownership and the domination of automobility are, moreover, connected to such economic structures and to culture, or a car culture, which can be discerned in societies with the highest percentage of car ownership, such as the USA (Wray 2008).

What Cresswell offers, among other things, is a connection between mobility and space by means of the politics of mobility. Cresswell's (2004) starting point for this connection, however, is not space, but place. Whereas space is something more general, like public space, and can be everywhere, place is often linked to a specific location. Moreover, the abstraction of space seems to be the opposite of place, since space becomes place when human beings attach meaning to space. However, this division between space and place becomes less clear when we look at the theory of space proposed by Lefebvre and Harvey (see Chapter 4). Space in their sense is socially produced and produces power relations. Therefore, it is quite close to the term "place" in this sense. Place always has meaning attached to it, which, of course, can vary a great deal from person to person. Consequently, what is a place full of meaning for one person does not necessarily have the same meaning for another (Cresswell 2004).

Cresswell has described place in the following way:

Place, at a basic level, is space invested with meaning in the context of power. (Cresswell 2004:12)

This description of place is very closely linked to social space as Lefebvre sees it. It is therefore no easy task to distinguish space and place. In this thesis concerned with mobility and power relations, the Lefebvreian form of social space, the spatial analysis of Harvey and Creswells's analysis of place are well suited for the analysis of mobile power relations in urban areas. The social production of space and the meaning attached to place are central to mobility, since mobility takes place in time and space. Therefore, mobility in general, and vélomobility in particular, are produced in time and space by similar relations and forms of power as space. Hence, the notions of social space and place are central to this thesis on vélomobility. It could also be pointed out that place is more connected to belonging, whereas space is connected to other aspects, e.g. economic structures, as well. Cresswell (2004) puts it as follows, when he describes the development of a geography of place at a time when space was dominated by ideas of the rationality of spatial science:

While space is amenable to the abstraction of spatial science and economic rationality, place is amenable to discussions of things such as ´value´ and ´belonging´. (Cresswell 2004:20)

Moreover, due to the social production of space and the definition of place, I find it rather difficult to accept Augé's (1995) theory of "non-places", which he defines as places with no meaning, places of flows, such as airports. Those places might be experienced as placeless by people passing through, since they are soulless places that look the same everywhere and seem to have no real human life attached to them, just because the modernity of development in human history has managed to take over. However, those places might have meaning for other people, for example the staff of airports, who have to work and spend a great deal of their time there to earn their living.

In order to analyse transport planning and power relations we have to turn to the term *mobility* as a theoretical framework for a deeper analysis of the power relation between motorised traffic and bicycle traffic. Moreover, due to its broad definition, the term "mobility" can be useful while approaching the marginalisation of cyclists in public spaces as well as in transport and urban planning. In connection with Lukes' theoretical framework of power (discussed in greater detail in the next chapter) and Cresswell's definition, an analytic

basis can be developed for bringing transport planning and bicycling and social theory together. What Lukes offers is a methodological framework for analysing power relations, whereas Cresswell proposes a theoretical framework for analysing mobility. By combining the two, we achieve a broad theoretical starting point for analysing power relations between motorised traffic and bicycle traffic in urban public spaces. Cresswell's view of the representation of mobility and the experience of embodied mobility creates a research agenda for bicycle traffic and why this mode of transport is excluded in many urban public spaces. Lukes' third dimension of power gives a deeper insight into how non-observable aspects of power can be analysed. The combination of the theories will reveal the underlying mechanisms for why bicycle traffic in urban spaces has much less power than motorised traffic, which calls for a deeper analysis of the power relations between motorised traffic and bicycle traffic in urban public spaces. This can be connected to Lukes' third dimension of power, which will be explained below (Lukes 2005). The different aspects of the politics of mobility need to be analysed from a power perspective, which, as Lukes states (2005), needs to involve a methodological change. Consequently, in research on the politics of mobility and power relations, new ways of unfolding power relations need to be found. Since street space is a very important aspect of both power relations and mobility, a theoretical and methodological development for analysing street space from a perspective of mobility and power is needed.

Vélomobility has emerged as a further development of the terms "mobility" and "automobility". Like the term "automobility", it describes the mobile issues of cycling, including its cultural, political and economic aspects. In other words, it captures a broader view of cycling than traditional definitions within the field of transport planning or transport geography. Vélomobility has gradually emerged as a field within mobility research,, most of the research coming out of the UK and the USA (see for example Aldred 2010, 2012, Spinney 2006, 2007, 2010, Furness 2007, 2010 and Pesses 2010). In Sweden and Denmark, research on cycling and especially on vélomobility is not very common (e.g. Emanuel 2012, Nilsson 2003 and Stigell 2011).

On the whole, there is very little empirical analysis of the political processes and the cultural, economic or historical aspects (see Chapter 1 in this thesis) that affected the results of and the decisions taken in planning for cyclists. Although the research by Urry, Cresswell etc. described above is very important for a deeper theoretical understanding of mobilities today, it lacks the empirical

dimension, which is why this thesis aims at connecting the theoretical perspectives of mobility and vélomobility to empirical investigations. The concept of "mobility" offers the right framework for the purpose of investigating vélomobility, automobility, planning, etc.

4 Power, space and space wars – the theoretical outline

The urge to conquer and control space is as old as humanity itself. (Lund Hansen 2006:15)

The purpose of this chapter is twofold. Firstly, I aim to highlight the theoretical concepts of power and power relations used in this thesis as an analytical tool to explain the current mobilities in Stockholm and Copenhagen and the transport and bicycle planning approach in the two cities. Moreover, relations between motorised traffic and cycle traffic, and how those relations are formed and influenced by urban and transport planning, are touched upon here in order to exemplify the theoretical approach. Thus, the focus is on theoretical aspects of urban transport and cycle planning, and how that planning paradigm might have influenced the emerging car society, the exclusion of cyclists from public spaces and the power relations between the different modes of transport.

Secondly, the concepts of space and space wars are introduced in order to set the structures and theoretical knowledge of power and power relations in a theoretical notion of space and spatial conflicts (space wars).

The themes introduced above can, of course, also be applied to other forms of mobility such as walking and public transport. However, the focus of this thesis is on vélomobility and urban bicycle traffic in relation to automobility and motorised traffic and in relation to urban and transport planning.

The development of urban and transport planning has vast implications for power relations in the public space, which explains the marginalisation of cyclists even more. Throughout the processes of transport planning and urban development, cities and their infrastructure are built in certain ways, often in

favour of motorised traffic. There are in general many differences between European and American countries regarding planning, policies affecting cyclists and cycling and encouragement of cycling. Therefore, there are also differences in the inclusion and exclusion of the needs of cyclists in many different countries as well as within countries and between different cities in any one country. The results of the different planning initiatives are that people cycle more in certain cities and countries than in others. However, aspects other than planning, such as culture, might also have an impact (Aldred 2010). Furthermore cyclists are often exposed in non-cycling cities to a higher accident risk (Pucher and Buehler 2008, Elvik 2009). That leads to the question of the right to the city and who has access to the cities' public traffic spaces, where everybody should be able to be (see Khayesi et al. 2010). Some countries are at the frontier of cycle planning and develop policies in order to increase cycling, making cycling safer and more accessible, and thereby also create a more just urban space (Pucher and Buehler 2009, 2008, 2007, Buehler et al. 2009). The next section will elaborate on the concept of power and power relations used in this thesis in order to analyse power in public spaces between cycle traffic and motorised traffic.

4.1 Power – theoretical concepts and ideas

Power as a concept has been widely discussed in research throughout the social sciences and humanities, for example by Foucault (1980) and Allen (2003). For the purpose of this doctoral thesis, the concept of power developed by Steve Lukes (2005) will be used. Power works in many different ways, and analyses of power relations and the connections with cycling and transport in urban spaces require analyses of the structures behind the taken-for-granted aspects; Lukes puts it this way:

My view was, and is, that we need to think about power broadly rather than narrowly – in three dimensions rather than one or two – and that we need to attend to those aspects of power that are least accessible to observation: that, indeed, power is at its most effective when least observable. (Lukes 2005:11)

The first dimension of power focuses on aspects such as decision-making, observable conflicts, behaviour and policy interests that are exposed in political decisions etc. Moreover, the focus is on key issues in social relations. That

means the first dimension focuses on observable actions of power revealed in political and social processes. The second dimension of power centres on what Lukes called a "(qualified) critique of behavioural focus" (Lukes 2005:29). The focus within the second dimension is also on decision-making, but also on non-decision-making and subjective interests within political processes. Further, also within the second dimension, issues are of importance. However, not only key issues are part of this dimension, but also potential issues that might arise in social relations or political processes. Within the third dimension of power the focus is not only on a qualified critique of a behavioural focus, but on a more general critique. Here, the focus is on decision-making and political agendas behind decisions, but they cannot, essentially, be revealed or dealt with through decisions. Also, conflicts are important for analysis of power within the second dimension. Those conflicts are also visible conflicts, but might also consist of hidden conflicts, which makes them harder to observe and analyse (Lukes 2005). As Haugaard (2003) sees Luke's theory of power, it deals with false consciousness. The third dimension of power is hidden in the taken-for-granted social structures and everyday practises, which means power relations are at play without people subjected to them really recognising those relations.

Thus, power often works in a hidden form, unapparent and even invisible. Lukes (2005:1) states that the most effective form of power is the kind of power that:

...prevent[s] people, to whatever degree, from having grievances by shaping their perceptions, cognitions and preferences in such way that they accept their role in the existing order of things. (Lukes 2005:1)

Consequently, such power works very effectively when people do not feel influenced or over ruled, but instead just act according to what other people want (or expect). For example, if cyclists feel that they always have to yield for car drivers, a rule of order is established and accepted. The car drivers control the traffic situation and quasi naturally claim the right to go first. Another example is marketing strategies of car producers to create a larger demand for cars and thereby also influence planning and decision-making. Although difficult to perceive, they nevertheless imply power relations. This is what Lukes sees as the third dimension of power. Power in this sense works without traces and is often hard to observe, while simultaneously influencing people's thoughts, behaviour and actions in everyday life by creating a hierarchical practise.

In this sense power relations between users of different modes of transport and within transport planning are important to analyse with a broader perspective on power, because even here the third dimension of power will emerge. It could for example be seen in the continuous growth of car use, supported by commercials making people feel the need of a car in order to gain freedom. People generally seem unaware of how power affects their travel behaviour and how at the same time they contribute to the production of unsafe streets. Simultaneously, the power of car-producers and their marketing strategies influences the planning of the city and the city's transport planning. More people want to buy a car, even several per household. More cars on the streets lead to planning and space demands for cars, hence the almost inevitable marginalisation of cyclists in urban and transport planning, turning many streets into roads for motorised traffic. The same mechanisms that affected transport planning in the early days of motorised traffic affect planning today, for example through economic structures and the dedication to modernity. Although some cities try to think and act differently, the overall marginalisation of cyclists in public spaces is a problem in most cities around the world. The third dimension of power works through different types of communication, framed by feelings and behaviour produced and reproduced by the road system context. Therefore it seems that Lukes' notion of the third dimension of power can be applied to power relations between different types of road users. The quotation by Lukes can contribute to a theoretical concept for analysing the power relations between cyclists and car-users on one hand and, on the other hand, between road users in general and transport planners. Lukes' view of power is radical, because he sees power in its invisible form as the most effective form (Lukes 2005).

This kind of power is very effective, but of course not easy to analyse since it is hidden in people's actions, behaviours, preferences and the like. Accordingly, Lukes sees methodological problems when dealing with power relations. When one approaches power relations and power of the third dimension, behavioural studies have limitations. Therefore, a change in methodological thinking is needed in order to analyse the third dimension of power (Lukes 2005).

Overall, Lukes' analysis of power in different dimensions appears to be a sound theoretical framework for analysing the spatial outcomes of power and power relations. However, Lukes has no spatial dimension in his analysis of power relations. Therefore, Allen (2003) did not include Lukes in his analysis of power, because Allen sees this lack of spatiality in Lukes' work. This can, of

course, be debated. Lukes provides a deep and thorough analysis of power and, although he does not make a connection to spaces and places, this connection can easily be made, especially if combining Lukes with Lefebvre, which is done in this thesis. With this connection of the spatial context, which is needed in an analysis of transport, planning, mobility and vélomobility, a deeper perspective of power and a deeper understanding of the changes in methodologies can be achieved. Lukes' work shows that other methods, and hence a change in methodology, are necessary when one tries to analyse power and power relations on a more profound level. The third dimension of Lukes' definition of power requires several methods, and overall also a more hermeneutic approach, which goes hand in hand with a change of methodological thinking. Whereas Dahl's analysis of power (also criticised by Lukes 2005) focuses on strictly behavioural studies of a more positivist nature, Lukes' suggestion of a second and third dimension must involve other approaches. Dahl's approach to power, where A exercises power over B, which can be observed, is far too shallow and misses the deeper, underlying structures that affect decision makers, planners and the like, and which cannot be directly observed (see Dahl 1957). This methodological change in power analysis and the connection to the theoretical analysis of power and space by Lefebvre offers a new perspective on power relations in public urban spaces between road users and between decision makers/planners and road users. The third dimension of Lukes' power analysis is furthermore a contribution to Allen's seductive logic of power. Also in Allen's view, power works hidden from physical observation, although one can observe aspects of this seduction; in architecture for example, there is no observable conflict (see Allen 2003, 2006). The same can be said about Lukes' third dimension of power, which makes it even more surprising that Allen does not include Lukes in his analysis of power.

To summarise the previous paragraphs, a methodological development and different empirical studies in power analysis are needed in order to develop a deeper understanding of the power relations in transport planning, in urban public spaces and spaces of traffic. In order to capture all dimensions of power, broader methodological approaches, besides behavioural studies, are needed. The methodological foundation and the methods resulting from that foundation have to be broader, meaning that more different methods, like interviews, surveys, observations etc. are needed for analysing all aspects of power within political and social relations. It is not enough to know that motorised traffic has more power in the public space than cyclists; we also need

to know why they have that kind of power and why cities are planned as they are. One of the aspects is the influence of modernism, but it is vital to realise that there are other mechanisms, such as the car industry, status, culture, and the like. Those aspects need more research and a hermeneutic approach if one wants to understand the outcome of planning and the power games in urban spaces.

Obviously, throughout this analysis of the concept of power in connection with traffic, cycling and transport planning, power has many different aspects and dimensions. It is important to combine those different dimensions in order to use them as a theoretical framework for analysing power relations between users of different transport modes and between different users of public spaces and streets. Moreover, it is also important to combine those dimensions when focusing on the conflicts between cycle traffic and motorised traffic and the built-in problems in urban public spaces, conflicts that lead to the exclusion and marginalisation of cyclists from public urban spaces. For this dissertation, the spatial theories of the production of space and the right to the city combined with Lukes' three dimension of power seem well suited for analysing power relations in the mobile world of transport and urban planning. Power, as seen in Lukes' work, has different dimensions and works even when one is not aware of the effects. Moreover, since, according to Allen, power always has a spatial dimension, it must be seen in its relation to the production of space, which is why Lefebvre's theories on the city and on the production of space offer a well-founded theoretical approach to urban and transport planning in relation to vélomobility. The tensions in today's urban areas between different modes of transport, the pressure on transport infrastructure and the conflicts between sustainable urban development, if one wants to use that term, and movements in cities need to be analysed in order to create knowledge about what happens in cities around the world. Therefore, the theoretical lens of the production of space and the three dimensions of power can offer deeper insights in mobilities from an empirical perspective.

In order to come to terms with power relations in urban space and to develop a theoretical framework to analyse power relations in transport planning and between different road users, and bring studies of power relations into the field of vélomobility, power and power relations have been defined. However, power is interlinked with geography, because power is distributed in time and space, meaning that power is part of space, because when power is used it is situated in space (Allen 2003). Within the concept of space, one has to define

what power is and how it is distributed between different institutions or individuals. Here I agree with Allen that geography and space are important in power issues, which is why I briefly connect power to space with Allen's help, and later in this chapter with Lefebvre's philosophy of the right to the city and the production of space.

Power can be defined as an effect of social relations within social interaction, or as Allen expressed it: *Power… is a relational effect of social interaction.* (Allen 2003:2) This definition of power can, than, be seen as structural, because: *Some people and some groups have more power than others, not by accident or by a series of fortune events, but by virtue of the structure of relations of which they are a part.* (Allen 2003:26) Power is affected by the structures in society, and in the case of traffic those structures are both social and physical.

Thus, power cannot be seen as something one can possess, but as a phenomenon that arises from social relations and interaction in space and time, and therefore it must be analysed in a spatial context (Allen 2003). It is therefore we find power in spaces and places, and it is precisely the lack of spatiality that Allen misses in other works on power and power relations). Power according to Allen can also be seen as a medium that flows in networks and is mediated through the actions of people, as individuals or as groups. Thus, in this case power is produced through action, and is therefore an effect rather than something one can possess. Consequently, power must be seen in relation to people's behaviour, actions and the like, and how the effect of those actions relates to other people and how that is expressed in time and space (Allen 2003). Allen's notion of power and power relations brings power into a spatial perspective, which is highly needed in urban and transport planning and mobility studies.

When it comes to power relations in an urban context, one could say that it is about the right to use public space, and therefore about equity between citizens who use different modes of transport and have different forms of mobility. Henri Lefebvre called this "the right to the city"; a theoretical framework for analysing urban conflicts. The right to the city will also be discussed in the next chapter. However, it seems important to explain the theoretical thinking about the right to the city developed by Lefebvre, because it has connections to the discussion on power and power relations in connection to urban and transport planning and is highly relevant for the discussion on space, place and space wars. The idea, right to the city, was developed by Lefebvre in 1968 (Purcell 2002). In 1996 the writings of Lefebvre on that topic were translated into

English in the book "Writings on Cities", and it is from that book the discussion that follows draws (Lefebvre 1996 [1968]). Here Lefebvre develops the idea of the right to the city, which is partly drawn upon in this thesis. The right to the city concept is a concept for radical change of the urban landscape and of urban life. Much focus in Lefebvre's work is on everyday life (see for example Lefebvre 2004 [1992]). Therefore, the right to the city is also a concept for the people and their everyday life. Lefebvre delivers not a recipe for change and what rights should be included in the right to the city, but instead sees the concept more as a right to transform the city by the people. It is no concept for reform, but for radical transformation (Lefebvre 1996 [1968]). Or in Lefebvre's own words:

…the right to the city is like a cry and a demand. … The right to the city cannot be conceived of as a simple visiting right or as a return to traditional cities. It can only be formulated as a transformed and renewed right to urban life. (Lefebvre 1996 [1968]:158)

From this Lefebvre also connects the city to people by exemplifying that motorised traffic or cars produce one kind of noise etc., but people a different one, namely that of "feet and words" (Lefebvre 1996 [1968]:220). Here one can again see the focus on everyday life and the people who create urban living and who also have the right to change and transform urban space and urban living. In other words the right to the city is a radical concept of urban change and transformation. One can see in Lefebvre's work the city as a question of distribution of assets and rights. Through his work one can make structures in cities visible in order to analyse power relations.

Moreover, Lefebvre developed the idea of the production of space in his book "The production of space" (1991 [1974]) on the basis of his earlier writings and theoretical development on the right to the city and urban realities. He develops theories about how spaces in urban areas are formed and, as he sees it, produced. He sees space produced through social interactions and everyday living. Space is therefore not only physically built, but also socially interpreted, produced and re-produced. By using the built space in different ways, people will assign different meanings to public spaces. Furthermore, the social interactions between people in the public space produce the urban space and contribute to how different places and public spaces in cities are perceived and how people use those spaces and places. The social interaction and the social production of urban space therefore have impact on how people perceive and experience space. People interpret space very differently and also use space very

differently, which can have a major impact on power relations in cities and urban areas as well as on the planning processes. Power relations are, through social relations, written into the physical structures and produce and reproduce spatial power relations. Some people or groups have more power in (the) space than other people and groups; specific power relations in urban spaces and between different groups who use those spaces emerge. That means that the spatial power relations or the materialities of cities benefit some people or groups and strengthen their position, while others experience disadvantages. However, eventually it is about "the right to public spaces" in cities, and about who has (better) access to those spaces and who is restricted or even excluded. Those spaces are, according to Lefebvre (1991 [1974]), produced by capitalism, and force people to conduct their lives according to the needs of capital. Furthermore, those spaces create certain power relations in urban spaces and within the transport systems of cities (Lefebvre 1991 [1974]).

The details of Lefebvre's spatial concept will be analysed in Chapter 4.2 where space is introduced more thoroughly. In terms of transport, capitalism has produced the motorised modes of transport, and through that also certain kinds of urban spaces that marginalise cyclists and create power relations that favour motorised modes of transport (Furness 2010). Nevertheless, the right to public space is only one minor aspect of the concept of the right to the city, because, as mentioned above, this concept is broader and more radical. The connection, though, to the power relations in urban space and in the production of urban space is an important aspect. Here one can see in many cities around the world that motorised traffic is dominating urban space, while cyclists often are marginalised. This is something that is further developed later in this thesis.

Lefebvre's theories on urban public spaces and the right to the city can have implications for power relations between the different modes of transport, such as cycling and car use. For example streets where car-users frequently exceed the speed limits produce a public space that could be perceived as dangerous for cyclists. Such high-speed streets or roads appear unsafe to these groups. This could exclude people from using those spaces with other modes of transport than cars, e.g. people who do not have access to a car. Car drivers may have more power in these spaces, as through their behaviour they produce barriers for other road users' possible use of this space. Lefebvre's theories can provide the basis for a concept analysing how public space and street space are perceived and how power relations between the different road users are

established. This can also be connected to Allen's theory of ambient power, which means a form of power that is quite invisible and leads for example to the exclusion of people from space without physically excluding them (Allen 2006). This view of power can be closely linked to Lukes' third dimension of power, described above. Signs of ambient power could be salient in spaces of mobility. Certain roads or streets may cause feelings of vulnerability and insecurity. This could be due to fear of crime because of poor or no lightning, or simply because the streets seem empty – a problem taken up later in this thesis. This could make pedestrians and cyclists feel unwelcome. Thus, certain road users can be excluded from the use of certain streets and environments. The way public spaces are designed and socially produced influences the power relations between different people, or between different road users. As the design gives certain road users more power and feeling of belonging than others, it influences the way road users communicate and interact with each other ("I belong here, you don't!").

The power relations between the different road users are formed both by social interaction, which produces the places, and by the design of public spaces. Clark (2003) describes the feeling of being pushed aside as a cyclist by the physically stronger motorised road users, in his case by a SUV (Sport Utility Vehicle). This feeling of not being in control of the situation and of being powerless, when such a car claims priority, reflects that motorised road users are stronger than non-motorised road users. Moreover, this shows at the same time that the power of the stronger parties can be used (and abused) by claiming for example priority in the public spaces in urban areas, even though they legally do not have that priority (Clark 2003). Other studies have also shown that, compared to drivers of other types of vehicles, drivers of SUV's more often exceed speed limits and act more recklessly in lane switching, which also can have negative effects on non-motorised road users (Rudin-Brown 2006).

To conclude, several theoretical approaches seem appropriate when analysing the power relations between cyclists on the one hand and motorised traffic on the other hand in urban space created through planning. In the analysis of power in this thesis, several aspects are touched upon, for example the power relations between cyclists and motorised traffic, which is analysed not least through the survey studies in Copenhagen and Stockholm and through the materialities in urban space. Here all dimensions of power are at play and analysed, both the hidden structures in the urban materialities and the

observable conflicts between the different modes of transport. Nevertheless, the aim of this thesis is not only to analyse the power relationship between different road users. Although that is one aspect in this thesis and it is very important, the power relations between the groups are a result of planning the urban space. Thus, design, planning and architecture all influence the power relations and the behaviour of people in public spaces, which, enlisting the theory developed by Allen, could be analysed; especially, the hidden structures and social relations that have led to the outcome of cyclists' marginalisation in urban space, and also different results in two different cities (Stockholm and Copenhagen). Here the three dimensions of Lukes' view of power are very important. Furthermore, connections could be made here to Lefebvre's theories of the production of public spaces and the concept of the right to the city.

The power of the car is also structurally embedded in the socialisation of people in the Western world, for example by commercials and through the use of the car by parents. Those structures together with the symbols (fast cars, highways etc.) form different power relations between different road users and contribute to the exclusion of cyclists from the public spaces in urban areas. The power relations between cycle traffic and motorised traffic, which are built into the urban spaces, are created through the social structures. Those structures are often influenced by commercials, socialisation, planning ideals and the production systems for cars (Allen 2003). The power relations one can observe in the public space through visual observation of, for example, architecture and urban planning, could also depend on underlying social power structures. It could for example also be related to discourses stemming from car commercials, stating that car drivers (par préférence) have more power than other road users. Here the connection to the economic structures that formed the car society by modes of production becomes evident (see for example Gartman 2004).

4.2 Space and space wars

Space, or rather the production of space, has already been illuminated. Nevertheless, it is important to clarify what space is and what space in relation to place is. Moreover, it is important, when analysing power relations in space, to see how the concept of space wars could be included in this discussion and

could shed light on the problems connected with power, space and mobility. This section will introduce the spatial concepts in order to come to terms with the lack of spatiality in Lukes' power analysis. Although that has partly been done above, I feel there is a need to properly introduce space as a theoretical concept for analysing power relations in urban space and in transport.

According to Harvey (2006b), space is a complex construction. Harvey starts by giving an illustration of the philosophy of space by referring to what Newton and Descartes understood as space. This form of space is seen as fixed and everything in it is bound to its laws. It is the space of measurements and rationality, space of calculations; or in other words it is the space of science. Harvey calls this kind of space absolute space. When it comes to social relations this kind of absolute space is

The space of private property and other bounded territorial designation (such as states, administrative units, city plans and urban grids). (Harvey 2006b:121)

Although these forms can also be seen as socially constructed, they are still measureable and to a certain degree rational. However, with Einstein's introduction of relativity, space was seen as relational to time. That means that space is not fixed, but dependent on the relation to time. This means that space changes over time and is affected by time. Einstein's idea of relative space, which is partly influenced, according to Harvey (2006b), by Leibniz concept of the monad, makes it more complicated to reduce space to measurements and calculations, due to the fact that space is bound to time in spatio-temporality (Harvey 2006b). The connection between time and space offers a new way of theorizing about space as a social construct in the way Lefebvre has done in "The production of Space" (1991 [1974]). Moreover, the concept of relativity leads to the development of space as relational, meaning that time and space are not only relative, but also are formed in relations to other forms, such as music, poetry etc. Thus, according to Harvey (2006b), one can identify three types of space:

- Absolute space
- Relative space
- Relational space

Harvey sees the complexity of space. He summarises the complexity and difference between the forms of space that he identified. Similarly, Lefebvre developed a triad of space or spatial practice that is closely linked to the production of space and to the different forms of relations that form space. He calls those three types of space or spatial practice:

1 Spatial practice, which embraces production and reproduction, and the particular locations and spatial sets characteristic of each social formation. Spatial practice ensures continuity and some degree of cohesion. In terms of social space, and of each member of a given society's relationship to that space, this cohesion implies a guaranteed level of competence and a specific level of performance.

2 Representations of space, which are tied to the relations of production and to the 'order' which those relations impose, and hence to knowledge, to signs, to codes, and to 'frontal' relations.

3 Representational spaces, embodying complex symbolisms, sometimes coded, sometimes not, linked to the clandestine or underground side of social life, as also to art (which may come eventually to be defined less as a code of space than as a code of representational spaces).
(Lefebvre 1991 [1974]:33)

In Lefebvre's definition of space or the different forms of space, the social aspects are already at work. Harvey (2006b) mentioned that the line between the three forms of space (absolute, relative, relational) is not clear, and space can be one of the forms or all three. This depends on the social relations and the different situations in which space is experienced. Therefore, space is formed, as Lefebvre (1991 [1974]) argued, by social relations, and those of course change over time, which is why space changes over time. Moreover, Harvey (2006b) sees the three spaces in a dialectic relation to each other rather than completely separated from each other, or rather than in a certain hierarchy to each other.

For this thesis it is important to focus on the social construction and the production of space, since that has a connection to power relations in general and public space in particular. As power and power relations have different forms and are expressed in different ways it is interesting to examine how those forms of power and power relations are connected to space and mobility. Mobility is also connected to space and place, as mentioned in Chapter 3 above, due to the fact that almost all forms of movements and mobilities are conducted in time and space. However, those social constructions of space

determine to a certain degree how people see themselves in space or, in other words, how people place themselves and their relations, experiences etc. in that space. Thus, the connection between place and space is very important for illuminating the power relations and the impacts on vélomobility in urban public spaces, planning and society (Harvey 1996).

The production of space and social space is well suited as a reference frame for analysing mobility in general and vélomobility in particular. This thesis is about movements in space and the production of motorised spaces, leading to the marginalisation of cyclists. Nevertheless, cycling can be connected to identity, belonging, and hence, place or a sense of place (see for example Spinney 2010, 2007, 2006 or Fincham 2007), but the purpose of this dissertation is to analyse power relations and the spaces of mobility, which, as we shall see later, are connected to the production of space and mobility in a Lefebvreian sense.

To follow up on the discussion of space I want to introduce the idea of space wars. Originally, the term "space wars" was introduced by Zygmunt Bauman (1998). Bauman sees social space not rising from objective and measurable space, but the other way around. Space comes from social relations, and in such relations battles over space or space war occur. Bauman is critical towards the idea of measuring space objectively, and also towards the measuring process itself. He states:

Not just the question of measuring the space 'objectively' presented a problem, however. Before it may come to measuring, one needs first to have a clear notion of what is there to be measured. (Bauman 1998:28)

From this Bauman goes further and sees how modern states forces space into objectively measurable units and into maps in order to get around local subjectivities, which could contain different meanings of space and practise, especially in an urban context. It seems therefore, according to Bauman, that the battle over space and interpretations of space are part of people's daily lives. The focus on local spaces has come due to the effects of globalisation (Bauman 1998). In a globalised world freedom to move over space becomes more and more important, and with that freedom of movement the question arises who has the right to what mobility and who can actually move around.

Mobility in other words becomes increasingly important, or as Bauman puts it:

Mobility climbs to the rank of the uppermost among the coveted values – and the freedom to move, perpetually a scarce and unequally distributed commodity, fast becomes the main stratifying factor of our late-modern or postmodern times. (Bauman 1998:2)

The attempt to objectify and measure space and the effects of globalisation together create the basis for space war. Space wars are battles over space, the interpretations of space and battles over the use and the freedom of space:

Urban territory becomes the battlefield of continuous space war, sometimes erupting into public spectacle of inner-city riots, ritual skirmishes with the police, the occasional forays of soccer crowds, but waged daily just beneath the surface of the public (publicized), official version of the routine urban order. (Bauman 1998:22)

In the daily battle over space and how space is interpreted, we can see connections to the more philosophical discussion about space by Harvey and Lefebvre in the previous section of this chapter. The meaning of space is not fixed, and it seems that the role social space takes in this is very important. The different definitions of space discussed above lead back to the subjectivity of space and from that to the space wars in urban areas due to the fact, according to Bauman (1998), that through globalisation actors, nation states, cities, try to objectify space to avoid alternatives to the globalised and neo-liberal view of space and of mobility. It is in those tensions between subjectivity and objectivity we can find the space wars erupting. When connecting the space war concept with the definition of space by Harvey and Lefebvre and with the right to the city concept by Lefebvre, one sees a framework for analysing power relations in urban spaces and planning. Moreover, the connection to the definitions of power and power relations receives a more spatial dimension. Those aspects together, then, can be related to the overall mobility turn in the social sciences, described in the previous chapter, in order to create the link between space, power and mobility. Those connections and links will be made clear in the analysis of the empirical material collected for this thesis. The start of that will be made in the next chapter, where urban mobility is analysed in relation to modernism and the dominance of motorised traffic in urban space. Thus the combination of space as a theoretical concept and power relations helps to understand the different processes and structures that influence the mobility of people and that lead to spaces where people are excluded.

One research area where the concept of urban space wars has been used is gentrification and urban development research. Lund Hansen, for example,

uses the concept of urban space wars in order to show the struggles over spaces in cities, especially living space or affordable living space. The processes in cities around the world often lead to the exclusion of certain groups of people from public spaces, as well as from housing. Those conflicts can often be quite violent, as examples from New York show (Lund Hansen 2006). In this thesis the concept of space wars is used in a similar way in order to show that conflicts over urban spaces exist and that street space is fought over and negotiated in the everyday life of cyclists in Stockholm and Copenhagen. Although those struggles are not really violent in the two case cities, the fight over the right to move around in the city and over public space is an important issue.

In conclusion, the theoretical work discussed above on space, space wars and power will help to understand the analysis of the empirical material collected for this doctoral thesis. Space as a concept is used to show how power relations in urban space are materialised and how space and the materialities of the cities of Stockholm and Copenhagen influence power relations between different modes of transport, and also form the outcome of urban and transport planning practises in the two cities. The spatial perspective is vital for the analysis of the different dimensions of power and the power relations between different modes of transport, because space does influence power relations in urban space. This has been shown in the work of Lefebvre and Harvey (see above) and will also be clarified and shown in the following chapters. In other words the combination of space and power with the overall frame of mobility makes a deep, thorough and critical analysis of cycling, planning, space and movements in Copenhagen and Stockholm possible. Moreover, it allows for an analysis of the structures and factors behind the obvious ones in order to come to terms with the marginalisation of cyclists in urban space. The analysis of mobility, transport, planning and space, which will be dealt with in coming chapters with the theoretical tools of power and spatial theory, helps to develop an understanding of the social, political, cultural etc. processes in Stockholm and Copenhagen that have shaped and are shaping the urban fabric and the fight over urban space today.

5 The materialisation of power relations in urban mobility

If you've ever dreamed of driving an Army tank, the Hummer is the next best thing. (2001 SUV line-up, Crain's Chicago Business, October 9, 2000, quoted in Clark 2003:159)

This chapter introduces the materialisation of power relations in urban mobility and explains this materialisation through the turn to modernistic planning and ideas in transport and urban planning. Examples are given from Sweden and Denmark of how such materialisation was realised and implemented. Those materialisations are built into today's infrastructure and still affect planners thinking, unconsciously, about how urban space and the transport system should be planned and organised, leading to the marginalisation of cyclists in public space. This is very close connected to the theoretical framework on space and power relations outlined in the previous chapter, and is the start and the background for the analysis of the empirical data that follows in the following chapters.

Today, policy goals like decreasing car traffic and modal shifts towards public transport, walking and cycling are common in European cities. Moreover, dense urban planning and areas for pedestrian and cyclists are promoted (e.g. Kennworthy 2006, Banister 2006 and 2008). Transport planners in the United States of America formulated similar goals in the early years of the 20th century. In those days, transport planners as well as urban planners favoured a dense planning approach with space for pedestrians and cyclists (Brown et al. 2009).

As Brown et al. state:

During the 1910s and 1920s, transportation planners stayed largely faithful to the principles of the 1909 conference (Brown, 2006). By and large they embraced

multimodalism and they viewed the integration of transportation and land use as critical to successful planning outcomes… (Brown et al. 2009:163)

However, the history of urban and transport planning throughout most of the 20th century tells a different story. So what has happened that triggered a different development? In the beginning of the 20th century, the ideal of the modern city was developed and implemented in many cities around the world, and that still haunts our modern societies. The modernist urban planning favoured motorised traffic (Heineberg 2001, Nuhn and Hesse 2006, Featherstone 2004). Modernism and modernist urban planning are closely linked to the theoretical work of Le Corbusier. One cornerstone in Le Corbusier's theories was to physically separate areas for living, working, leisure and so forth (Hall 2002), which means that the modern city prioritises travelling by car. Le Corbusier's ideal city was one with very tall buildings and straight roads to enable motorised traffic to flow efficiently (Hall 2002). Furthermore, the theories of Le Corbusier inspired planners and politicians to create a modern city, which can, for example be seen in the Swedish SCAFT regulations, which came much later (in the late 1960s) and will be analysed more below (Hagson 2004, see also Lundin 2008 and Emanuel 2012). Even if hardly any of Le Corbusier's plans were implemented, there were other architects and urban planners who influenced modernist planning in cities, for example Moses in New York or Kubitschek de Oliviera in Rio de Janeiro (Hall 2002). Modernist planning favoured motorised traffic, because it saw motorised traffic as the modern way of moving within and between cities. Thereby public life in the street became old-fashioned, and streets were to be transformed into roads for motorised transport. Thus, modernistic planning saw the death of the street with a public life. The streets were seen as places of flow for motorised traffic, symbolizing modernity itself. In other words, the street as a public space had to die for (the creation of) a modern city. Hence, in order to create a modern city, one had to plan for motorised traffic, which also would lead to there being no space for other modes of transport in the streets (now roads), such as cycling (Holston 2002).

Transport today is very important for people, their mobility and the accumulation of capital. Capital and transport have been connected since the invention of the steam engine and the development of the railway for the transport of production factors and finished products. With the invention of the combustion engine the domination of the car for personal transport began. The production and the distribution of the car to the lower and middle classes

were made possible by new forms of production today known as Fordism, which strengthened the connection of motorised traffic and capitalism. Paterson writes about different regimes of capital accumulation, drawing on regulatory theory. Those regimes highly connect to automobility. He claims that the accumulation of capital and economic growth in many industrialised countries depends very much on the car industry. It all started with the Fordist production of cars, where the automobile worked itself into everyday travel and in that way created new markets for capital accumulation. This is the first regime of capital accumulation within the car industry. At this stage the car took over increasingly as a mode of transport, even for working class people, because Fordism made it possible to produce cars on a large scale and at a lower price. The first regime of capital accumulation worked quite well for the car industry in the USA and Europe until Japanese car producers created "just in time" production and could compete with equally good cars at a lower price. This together with the first oil crisis threw the car industry into the second regime of capital accumulation, generally known as post-Fordism. It is also a sign of the survival potential of capitalism. Paterson shows how motorised traffic is part of the accumulation of capital at different stages, which is also an explanation for why little happened in many countries to stop the rise of the car and ignored for so long its destructive force in forms of pollution, destruction of communities and public spaces, traffic related deaths and the like (Paterson 2007). In this sense urban conflicts in traffic are connected to automobility and to accumulation of capital, because capital is at the heart of automobility and its dominance in private transport.

Countries also have an important role to play in the production of car spaces and in the accumulation of capital for the car industry. Already in the early years of automobile production, the economic growth that resulted, especially in the years of Fordism and Post-Fordism, gave countries with a car industry arguments to support it. Since the car industry provides economic growth, employment and capital accumulation, in which capitalist countries have an immense interest, the support in different forms to the car industry is understandable. This support is also an effect of the car lobby, and later on, when the car was already a mode of mass transportation, the oil industry and the road building industry. While motorised traffic was growing, such industries demanded that roads should be better and more beneficial to motorised traffic, which of course left fewer investments for other modes of transportation such as cycling. In a coalition of the industries and municipal

traffic engineers, the focus shifted from regulations for car traffic, such as built-in speed limits in cars in the late 19th and early 20th century, to more and better space and less regulation of cars. This led to the marginalisation of other modes of transport, such as the bike. The most excluding way of promoting the car was the invention of the highway, a road that is for motorised traffic only, leaving no space for cyclists or pedestrians. The highway, initiated by Mussolini in Italy and Hitler in Germany and adopted later in Great Britain and the United States of America, marks the real death of the street and the total exclusion of other transport modes from public space, especially when highways were built through cities and urban spaces (Paterson 2007, Holston 2002). Having said this, it is also true that automobility forced urban and transport planners to find new ways of planning the city. In connection with the dominance of quantitative, measurable science, motorised traffic and the research and planning for car traffic emerged as an objective and measurable science, leaving aside other aspects of traffic, such as the destruction of neighbourhood communities.

Sweden has, in general, a long tradition of traffic and urban planning with an initial boom in the 1950s. Since then planning has always played an important role in Sweden urban development. In the end of the 1960s and in the 1970s, the idea of modernism had a tremendous impact on Swedish cities. The construction of suburbs in cities like Stockholm was closely linked to the thinking of Le Corbusier, and in many cities the centres were torn down to make place for broader roads and new modern buildings that were promoted as the new homes for the working class (Lundin 2008). Those suburbs were part of the so-called Million Program (1965-1975), where the plan was to build one million new flats within 10 years, because of the crisis in the housing market in that time. The plan was realized and one million new flats were built. In Stockholm, for example, we have Tensta and Rinkeby (Björk and Reppen 2000, Länsstyrelse Stockholm 2004).

It is therefore not surprising that Swedish planners and engineers wrote the SCAFT regulations, which are planning guidelines for transport planning and are very much influenced by modernistic thinking and favours motorised traffic. Those regulations were developed by the working group for traffic safety at Chalmers Technical University in Gothenburg. However, those guidelines were developed for traffic safety reasons because many people, especially pedestrians and cyclists, were killed in traffic in Sweden in the 1960s and 1970s. It was a guideline for transport planning in order to create a safer

traffic environment. In order to reduce fatalities, the idea was to build or design a transport system where different modes of transport never have to interact. This should at the same time create a good flow for motorised traffic with fairly high speeds for car traffic. The results of SCAFT included traffic separation, which makes sense when modes of transport otherwise are mixed on streets with speed levels at 50 km/h or higher, there is an infrastructure generating more motorised traffic, and a focus on the flow of motorised traffic and the marginalisation of cyclists and pedestrians (Statens planverk 1967). Thus, the intentions of SCAFT were of course good, but the results of its implementation were, among other things, a marginalisation of bicycles as a mode of transport, built-in power relations in the infrastructure and a self-generating structure that means more mobility for people who have access to motorised modes of transport and less for the rest. This creates a structure were the car is very important for people's everyday mobility. Nevertheless, cycling within areas planned according to SCAFT is quite good, but the connectivity with other parts of the city is not being considered. Thus, cycling is not seen as a mode of transport, but more as a means of recreation and leisure (Hagson 2004). While modernism had an impact on planning even in Denmark, it is remarkable that Sweden applied modernism to the SCAFT regulations. Thus, the SCAFT idea and modernism in Stockholm made investments in infrastructure of motorized traffic possible (see Statens planverk 1967). Furthermore, urban structures and distances affect travel behaviour (Næss 2012), and therefore the SCAFT planning ideal, which has been realized in Sweden, affects transport, travel and also the use of the bike or the car, and planning practises (Jonsson 2008).

Due to the close relation of SCAFT to the ideas of Le Corbusier and modernism, the effects on traffic and transport planning have resulted in a prioritization of motorized traffic under the cover of traffic safety and better flow of traffic. The figures below exemplify very clearly what is seen as right and wrong in transport planning and how it should be done. They were developed in a publication after SCAFT was introduced to exemplify how SCAFT should be applied in transport planning in Sweden (Gunnarsson och Lindström 1970).

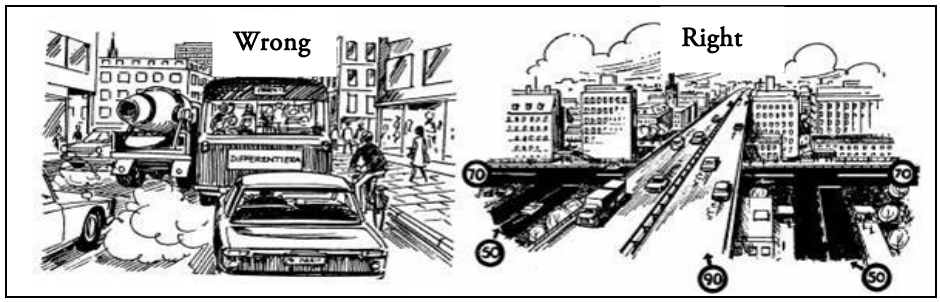


Figure 2: Principles of Differentiation
Source: Gunnarsson och Lindström 1970

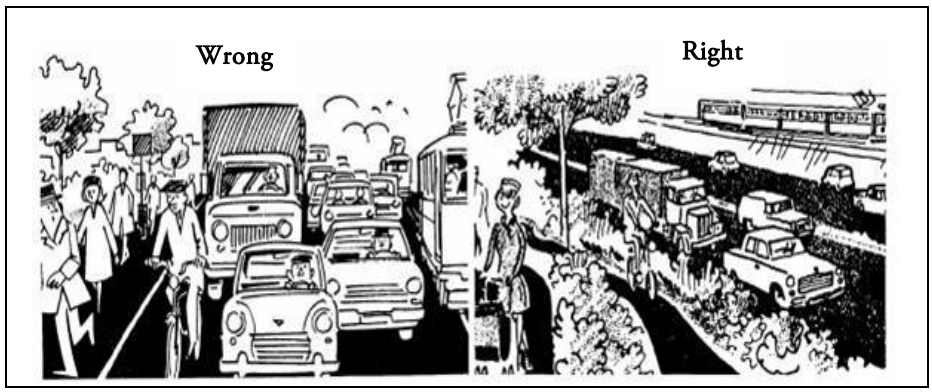


Figure 3: Principles of Separation
Source: Gunnarsson och Lindström 1970

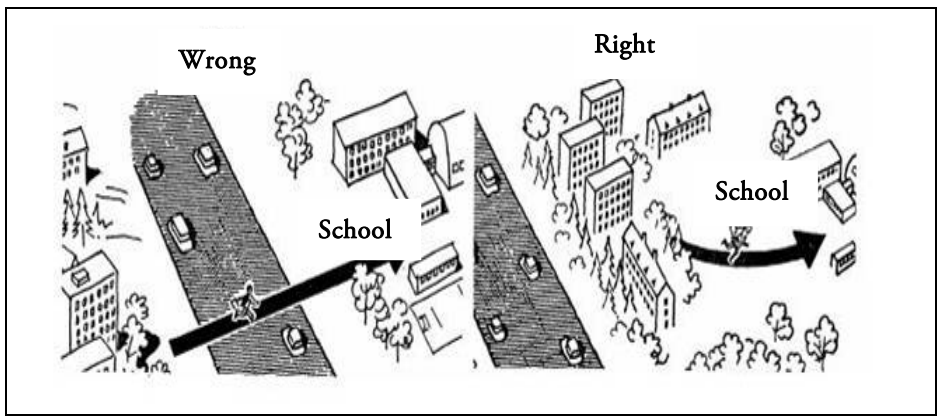


Figure 4: Principles of Location
Source: Gunnarsson och Lindström 1970

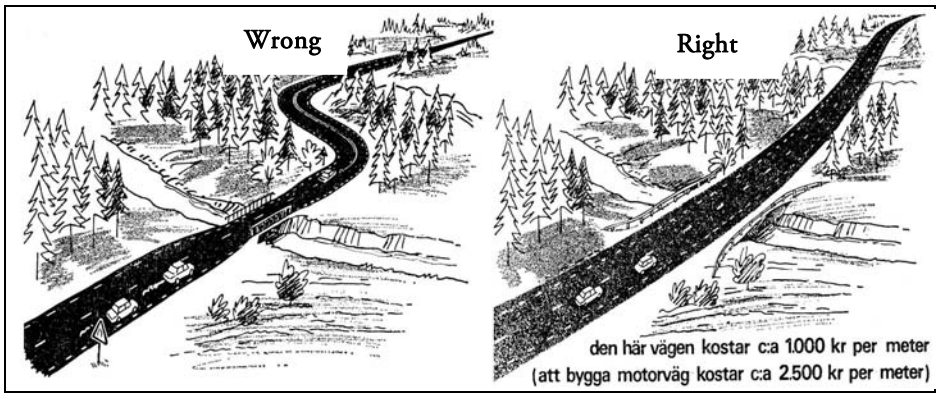


Figure 5: Principles of easiness and better overview
Source: Gunnarsson och Lindström 1970

Those SCAFT images show how the flow of motorised traffic can be increased through different types of roads and highways in the cities, better easiness and overviews on rural roads, right location of residences and services, and separation of the different modes of transport. Although the initial idea builds on traffic safety, it leads to increased motorised traffic. The ideas of modernism and, hence, of SCAFT, see pedestrians and cyclists as traffic safety problems and problems for (motorised) traffic flows. Those ideas, when implemented, lead to a marginalisation of cyclists and to built-in power relations that favour motorised traffic. Similar to SCAFT are ideas from e.g. Germany, where Die Autogerechte Stadt – ein Weg aus dem Verkehrschaos (Reichow 1959) was published even earlier then SCAFT. This publication builds on similar modernistic ideas as SCAFT, and has led to marginalisation of cyclists in many cities in Germany (Nuhr and Hesse 2006, Reichow 1959).

Furthermore, the development of modernist thinking was also influenced by the increased production of cars, something I will come back to in the next section. Increased production, decreased unit costs and increased sales triggered the field of transport and traffic research. Development of theoretical planning models in favour of motorised traffic increased, and together with the Fordist production of cars and modernism, among other things, the redesign of urban areas for motorised traffic pushed other modes of transport, such as cycling, aside (Nuhn and Hesse 2006 and Hagson 2004, Urry 2004). Thus, planners changed their direction as the motorisation of society increased, which was continuously supported by the Fordist production of cars and the evolving

automobile lobby (see Gartman 2004). The development required higher degrees of model and theory sophistication within the field of planning. Gradually, but more and more efficiently, urban and transport planners prioritized motorised traffic and marginalised non-motorised traffic, such as cycling. In the late 1920s, theories on traffic flow were developed at Harvard University, partly driven by new traffic regulations that were implemented in many cities around the United States. Those regulations promoted traffic separation in order to increase the speed of traffic. Similar developments can also be seen in other countries, such as Sweden (Hagson 2004). Due to the increase in motorised traffic, better (statistical) data needed to be collected, which facilitated the development of more elaborate and empirically based planning theories. Furthermore, during the 1930s the development of urban freeways was one important tool for creating better flows and higher speed of motorised traffic through urban areas and cities. As the streets at the time served the needs of pedestrians and carriages, they had to be transformed into roads (urban freeways) to better fulfil the needs of cars. Even after the SCAFT regulation, similar ideas were promoted, according to Hagson (2004). That shows that those utopian ideas of modernism have influenced planning, both urban and transport planning, to a very high degree. During an interview with an urban planner in Stockholm I asked about the collaboration with the department of transport planning. The answer was quite long but the planner mentioned that some transport planners did not like the new zoning plan, because it is in conflict with the SCAFT guidelines (interview Tedesjö).

Moreover, through the increased motorisation of western societies, other modes of transport became less and less significant. The increased motorisation growth, and the planning approaches that were used, contributed to the continuous marginalisation of cyclists in urban and transport planning (Brown et al. 2009, Knoflacher 2009, DiMento 2009, Iacono et al. 2008, Horton 2006).

Accessibility has always been at the heart of infrastructure development. One of the earliest aims of transport planning was the efficient and fast transport of people and goods (Johnston 2004, Wachs 2004, and Bae 2004). To achieve this goal, the financing of urban transport was early focused on railway systems. In the beginning of the 20th century, the construction of roads was prioritized. Therefore, especially in the United States, projects for cyclists and pedestrians received much less funding. This made it much more difficult to develop policies and implement them to promote good cycle planning policies

and infrastructure (Taylor 2004, Guiliana and Hanson 2004). The investments in infrastructure for cyclists differ of course from country to country. Some countries have invested more, like the Netherlands, Denmark and Germany, and others much less (Pucher and Buehler 2007, 2008, Buehler and Pucher 2009, Buehler, et al. 2009). One important factor in this context is that (rapid) changes in land use and infrastructure are very difficult to achieve, due to the fact that cities are already built; it is hard to change the existing physical structure of cities. Moreover, this also has long term implications, because the existing physical structure will exist for 20, 30 or 40 years (or more) (Bae 2004, Guiliana and Hanson 2004).

To sum up, the development of the ideas of the modern city influenced both urban and transport planning, and research in transport planning, for a long time. Within the field of transport planning, models and theories were developed to meet the needs of the emerging motorised traffic already during its early years (during the 1950s, 60s and 70s) and to plan the modern city, which at the same time marginalised other modes of transport, such as cycling (Horton 2006, Nuhn and Hesse 2006, Hagson 2004, Featherstone 2004, Inglis 2004). Planners, together with other actors, such as private organisations or politicians, have contributed to an ever-increasing use of cars and created the right infrastructure for motor vehicles (Beckmann 2001). As mentioned above, the built infrastructure is very difficult to change, and unfortunately this infrastructure is almost solely designed for automobile accessibility. The result is that we have built-in power relations in the infrastructure that favour motorised traffic and marginalise cycle traffic, which can be analysed in connection with the theoretical outline from the previous chapter.

The visualisation of the relations should help to understand the difficulties when dealing with transport planning and vélomobility. What can be concluded is that ideas such as SCAFT, utopian thinking like modernism and the structures of the political economy of the car and car-related industries are exactly how the third dimension of power according to Lukes (2005) works. Young transport planners today in Sweden might not know directly what SCAFT is, but the effects of it are still visible in many areas from the 1960s and 1970s and also in the way transport planners (as the example mentioned above) think about planning today. Furthermore, more examples of modernistic planning, such as urban highways, are still on the agenda today in Sweden (Lundin 2008, Chapter 7 below). Such planning can be seen for example in Stockholm at the inner-city highway at Klaraberg (see Figure 6

below). Already in the 1970s there was criticism from radical architects, mainly in the UK, who saw the static utopia of modernism and modernistic planning as problematic for urban life and for urban movement (Pinder 2013).

Figure 6: Klaraberg, Stockholm
Source: City of Stockholm 2013a

Moreover, modernistic planning had and still has also an impact on transport planning in Denmark as, for example, the newly developed district of Ørestad in Copenhagen shows that similar ideas also work today. There is no real traffic separation in Ørestad as SCAFT suggests and as we find in towns like Stevenage, Almere and Albertslund that were built in the 1960s and 1970s. There are traditional bike lanes and sidewalks. However, you do have a reminiscence of (somewhat late) modernistic planning: functional zoning. That means shopping and workplaces (offices) in one location and living or housing spaces in a different location. Since the road for cars follows the same diagram as the metro, and pedestrian and bike transport are not prioritised in the local neighbourhood, the result is prioritising car transport. Moreover, the area is surrounded by main roads/highways and parking, especially at the shopping centre Field's, is quite dominant (By & Havn 2011). Those power relations have been affecting transport and urban planning in a structural way, hard to notice for the persons subjected to it. Therefore, the third dimension of power works effectively in transport planning today with a marginalisation of cyclists

and urban space wars as a result. Thus, modernism and the effects of it are still visible in today's planning approaches. The complexity of the situation needs a broad approach for empirical analysis. In the next chapter the cases for the empirical data collection (Stockholm and Copenhagen) are introduced, and the empirical data collected with such a complexity in mind are analysed in the following chapter.

Through the focus on motorised traffic, conflicts and injustices appear in urban areas between non-motorised traffic, such as cyclists, and motorised traffic. Space in cities is often distributed to the advantage of motorised traffic. Those conflicts and injustices in urban spaces have generated protests and activism in many cities around the world, like the critical mass movement or resistance movements against car traffic in the form of different practises in public space (see Furness 2007, Spinney 2010 and Wray 2008). However, taking the political economy of the car industry (mentioned in the previous chapter) into account, such movements and protests have not been very effective and have so far not produced different or more just city spaces. The marginalisation of cyclists must be seen in a broader view, and in order to change that marginalisation and create fewer conflicts and more just city spaces, the perspective of the right to the city could be helpful.

There are different meanings of the concept of the right to the city. Mayer (2012) talks about those different meanings in two ways: in terms of revolutionary change, the right to transform the city in a Lefebvreian sense, and in terms of different actual rights to the city, such as housing, public transportation etc. Mayer criticises the second definition of the right to the city, because it does not really involve social change and has also been hijacked by neo-liberal think tanks and other organisations, which do not work for real social change, but only for improvements within the existing exclusive capitalist system (Mayer 2012). In order to understand the problematic situation of urban mobility, a radical view of the right to the city offers a deeper understanding of what is needed. Peter Marcuse asks the question of *whose* and *what* right to what city. Marcuse answers the question of whose right with the deprived, the alienated and the excluded (Marcuse 2012).

He makes it clear that the right to the city is not concerned with everybody's right, because as he puts it:

Some already have the right to the city, are running it now, have it well in hand (although "well" might not be just the right word, today!). They are financial

powers, the real estate owners and speculators, the key political hierarchy of the state power, the owners of the media. (Marcuse 2012:32)

When it comes to the question of what right, the answers seem at first glance quite simple, like the right to water, mobility, housing etc. However, this would simplify a complex issue. The right to the city exceeds the individual rights and involves a broader view. Marcuse puts it like this:

It is the right to the city and not rights to the city. It is a right to social justice, which includes but far exceeds the right to individual justice. (Marcuse 2012:34)

It is in this sense that Marcuse's view of the right to the city is closely connected to Mayer's view. However, the last question remains, which is to what city. According to Lefebvre it is the right to the future city, a different city from what we can see today. There are some suggestions about what that city might be like,, but it is important to stress here that it is a different form of urban life — and that is the radical transformative view of the right to the city (Lefebvre 1996 [1968], Marcuse 2012, Mayer 2012).

In connection to mobility, vélomobility and the political economy of the automobile industry the right to the city concept, as outlined by Mayer and Marcuse, offers a theoretical basis for analysing conflicts in urban (traffic) spaces, where some groups are marginalised and excluded and some forms of mobility are dominant. The concept offers an analytical starting point of the conflicts connected to mobility, such as pollution, displacement, accidents or conflicts in a safety perspective (see Svensson 1998 and Hydén 1987). This connection offers a broader view than the classical transport research perspective. The classical transport perspective is dominated by engineers and does not problematize mobility or the common mobility perspective of sociologists like Urry. The mobility perspective tends to focus more on the experience of mobility, the cultural aspects, but not so much on conflicts or political economy, and does not much problematize the broader problems with certain form of mobility (Freudendal-Pedersen 2009, Urry 2000 and 2004 and Paterson 2007). The politics of mobility, automobility and vélomobility tend to touch on those problems (and therefore also Urry and others), but the problems of power relations and political economy seem to go deeper than this research suggests, which is why more research about planning processes and the political process is needed.

It can be concluded that this kind of connection, namely power, political economy, mobility and space, offers a deeper understanding of the processes

affecting urban mobility and vélomobility and resulting in the materialities that promote motorised modes of transport and urban mobile conflicts one can observe in many cities around the world. It is this kind of relations that can be identified as Luke's (2005) third dimension of power and that results in the urban space wars described in Chapter 4.

6 Introduction to the cases: Stockholm and Copenhagen

Copenhagen is known far and wide as the "City of Cyclists" – due to its longstanding and lively cycling tradition and, in recent years, its City Bikes. (City of Copenhagen 2002:5)

The expansion of the bicycle network and an increased understanding of the bicycle's competitiveness in relation to other modes of transport have contributed to a heavy increase of the numbers of cyclists in the inner city of Stockholm during the last decade. (Översiktsplan Stockholm 2010:21)

Since it is my intention to include cyclists, the hitherto marginalised group of road-users, there seems to be a need to explore the planning made for this group and how it can be integrated in transport planning in order to create a planning system that takes the needs of cyclists into account and thereby also contribute to a more sustainable transport system in cities. Stockholm and Copenhagen have been chosen as case cities for a deep analysis of planning for cyclists. Both cities are Scandinavian capitals, with good public transport systems. As mentioned in Chapter 2, Sweden and Denmark have a similar tradition of welfare systems and public participation. Moreover, both countries have good public infrastructures, e.g. schools, health care etc. In other words, Denmark and Sweden are welfare states with a strong public administration and a tradition of strong government involvement in society (Benner and Vad 2000). Although both Copenhagen and Stockholm displayed a high share of cycling at the beginning of the 20th century, their cycling stories turned out differently. Since the 1920s cycling in Copenhagen and Stockholm has been an important mode of transport, especially for the working class (Emanuel 2012).

Plans for cyclists have been on the agenda in Copenhagen for a long time, and the first bicycle track was built in the late 19th century to reduce the conflicts between cyclists and horses and carriages (see more in the next section). Ever since then, the city of Copenhagen has had a more or less strong focus on cycling. However, during the 1960s and 1970s transport planning in Copenhagen focused a great deal on motorised traffic as well. Nevertheless, the existing infrastructure for cycling was built, and from the 1980s on the focus on cycling has been expanding (interview Røhl and Jensen). When cycling through Copenhagen, one can see that there is a good infrastructure for cyclists, as can also be seen in Figure 2. In Stockholm cycling took place more on cobblestone streets mixed with other modes of transport. With the entrance of the car into the city, cycling was neglected in transport planning (Emanuel 2012). Although a historical perspective will also be included in this thesis, the interviews and survey data are from the time period between 2010 and 2011. Those are analysed in greater detail in Chapter 7. Thus, there are similarities as well as differences between the two case cities. The next section will present some facts about Copenhagen and Stockholm in order to give a clearer picture of their transport systems.

Stockholm has an area of 188 km² and Copenhagen of 89.78 km². The population density in Copenhagen is 6,200 inhabitants/km² and Stockholm's population density is 4,309 inhabitants/km² (City of Copenhagen 2013a, b, City of Stockholm 2013b) Moreover, as shown in Table 2, Stockholm has more inhabitants than Copenhagen. Thus, Stockholm is larger than Copenhagen in terms of both area and population and has a lower population density. One other major difference between Copenhagen and Stockholm is that many more people use their bikes in Copenhagen than in Stockholm. Depending on how the share of trips by bicycle is calculated, it can be established that about 31% of all trips in Copenhagen are by bike, compared to only 5% in Stockholm (see Table 2). Furthermore, Stockholm has a higher share of public transport than Copenhagen and a slightly higher share of walking. The trend of using a bicycle is increasing in both cities. Moreover, both cities display high shares of transport by car (see Table 2) (RES 2006, RES 2005). There is also a difference in car ownership between Stockholm and Copenhagen. In Stockholm car ownership in 2010 was 359 cars/1,000 inhabitants and in Copenhagen 236 cars/1,000 inhabitants the same year (Stockholms miljöbarometer 2011, Statistics Denmark 2011). These differences in modal split between Copenhagen and Stockholm might to a

certain degree be due to geographical circumstances, e.g. density and distances, and might also have an impact on the planning approaches in the two cities. However, research has shown that those factors, especially density, only affect travel behaviour and use of different modes of transport to a rather small degree (Haugen 2012). One factor that does influence travel behaviour is urban design on a structural level (Næss 2012).

Table 2: Modal Split Stockholm and Copenhagen
Source: RES 2005, RES 2006

	Stockholm	Copenhagen
Inhabitants	840,000	530,000
Car share in %	35.7%	28%
Bicycle share in %	3.7%	31%
Walking share in %	31.2%	26.8%
Public transport share in %	29.1%	13.8%
Other (i.e. scooter)%	0.3%	0.4%
Total %	100%	100 %

The figures presented in Table 2 justify looking into the reasons behind these similarities and differences between Stockholm and Copenhagen. They seem to indicate that the focus in Stockholm has been on public transport and car traffic, whereas the focus in Copenhagen has been on cycling and car traffic

The difference in the two infrastructures for cyclists is very striking. The following pictures taken by me during my observational studies in Copenhagen and Stockholm will further an understanding of the differences in the infrastructures for cyclists in the two cities (see Figures 8 and 9).

Figure 7: Stockholm
Source: Till Koglin

Figure 8: Copenhagen
Source: Till Koglin

In Copenhagen the backbone of the cycling infrastructure is the cycle tracks, which are tracks separated from motorised traffic, like a pavement. In Copenhagen those tracks often run beside streets and roads for motorised traffic and are also separated from pedestrians. Cycle tracks are one of the best solutions to improve the accessibility and the level of service and safety of cyclists (Nilsson 2003). At crossroads there are special traffic lights for cyclists, which turn green before the traffic lights for motorised traffic turn green and which consequently give priority to cyclists. Before reaching the traffic signals these cycle tracks are transformed into cycle lanes (marked on the street, often in a different colour, and not really separated from motorised traffic), which also contributes considerably to the safety of and accessibility for cyclists (Elvik and Vaa 2005). Moreover, cycling against one-way traffic is allowed in Copenhagen, which also increases the accessibility for cyclists and, if correctly implemented as in Copenhagen, has no known negative effects on traffic safety (Alrutz et al. 2002, interview Røhl and Elle). "Correctly implemented" means that it should be implemented on streets with a speed limit of 30 km/h and that visual interaction should be possible (Alrutz et al. 2002). Another aspect that bicycle planners talk about in Copenhagen but that has not yet been implemented is green waves for cyclists, i.e. that cyclists on certain tracks will have green lights when approaching traffic lights (interview Elle). Although this measure is very common in order to increase the level of service for motorised traffic (see for example Klijnhout 1986), it is not so common for bicycle traffic, which could be connected to power relations in urban spaces and space wars/conflicts, since planners implement this for motorised traffic but not for bicycle traffic.

However, the fact that planners in Copenhagen are discussing this measure might show that a shift of power towards cyclists is at hand. This is, however, not only the case in Copenhagen. There are different plans and policies in Copenhagen concerned with bicycle planning, the most important of which are the Copenhagen Cycle Policy 2002-2012 and the Cycle Priority Plan 2006-16 (City of Copenhagen 2002, City of Copenhagen 2009). Of these two main documents concerning cycling in Copenhagen, the Cycle Policy is concerned with the goals and directions for planning for cyclists, whereas the Priority Plan focuses on the implementation of the policy and concrete measures for improving accessibility, safety, etc. for cyclists. Furthermore, there is detailed information on how cycling will be planned and the amount of money to be invested in cycling in the Traffic and Environmental Plan from

2004 (City of Copenhagen 2005). What is striking in the documents about traffic published by the city of Copenhagen is that cycling is integrated in all the documents, which implies that cycling is also integrated in transport planning in general. During a bicycle trip through Copenhagen and from interviews with planners (interviews with Røhl, Jensen, Tørsløv and Elle) I got the impression that Copenhagen focuses a great deal on planning for cyclists and on the infrastructure for cyclists in order to prioritise cyclists and make cycling safer and more accessible.

Planning for cyclists has a shorter history in Stockholm. The first bicycle plan, which was adopted in 1976, was more of a design manual than a plan, and not much of it was implemented (interviews with Isaksson and Spolander). Very little happened before 1998, and the first real plan was adopted in 1998 in order to create a systematic plan for implementing measures for cycling (interview with Isaksson). Nevertheless, the infrastructure in Stockholm leads to conflicts between motorised traffic and cyclists, as seen in Figure one. Much of the infrastructure in Stockholm is based on cycle lanes (painted on the streets), and since there is rarely any separate infrastructure for cyclists, they are forced to mix with motorised traffic on streets and roads where the speed limit is 50 km/h or higher. Cycle lanes can be seen as a cheap way of investing in a bicycling infrastructure. They are better than no infrastructure at all but cannot be compared to cycle tracks, which are a much better way of improving the infrastructure for cyclists (Nilsson 2003). Furthermore, cycling against one-way traffic is not allowed in Stockholm, and cyclists are hardly prioritised at crossroads, which makes accessibility for cyclists quite low in Stockholm (Alrutz et al. 2002, Elvik and Vaa 2005). Although Stockholm has a cycle plan, it mainly focuses on cycling in the inner city and along special cycle routes (see Trafikkontoret 2009 Trafikkontoret 2006, Gatu- och Fastighetskontoret 2004a, b). This, however, is not a major problem, since most problems for cyclists occur in the inner city of Stockholm, while the cycling infrastructure in the outskirts of Stockholm is quite good (Trafikkontoret 2010). In the documents, the focus on Stockholm's inner city is much more pronounced than the focus on the outer parts of the city. The only existing bicycle plan for the outer parts of Stockholm contains much less information and fewer proposals, which is due to a better infrastructure in the outskirts, observable when one is cycling through them (Trafikkontoret 2005).

Moreover, many good ideas and proposals in the plans, such as in-depth cycle planning, building of cycle tracks etc., do not seem to be implemented in the

urban spaces in Stockholm, which can be observed by cycling through the city and which is also mentioned by practitioners in Stockholm (interviews with Isaksson and Spolander). However, some ideas and measures have actually been implemented and also show good results (Gatu- och Fastighetskontoret 2004a, b, Trafikkontoret 2005, Trafikkontoret 2006). "Green waves" are also being discussed for cyclists in Stockholm (Gatu- och Fastighetskontoret 2004b).

This chapter has presented the differences and similarities of the transport systems in Copenhagen and Stockholm. Furthermore, it has shown that there are social and political similarities in the history of Denmark and Sweden and of Copenhagen and Stockholm. In the next chapter the empirical material from the interview studies will be analysed.

7 Vélomobility, planning and politics – The practitioner's view

Der Strukturwandel der Öffentlichkeit ist eingebettet in die Transformation von Staat und Ökonomie. (Habermas 1990 [1962]:21) (The structural change of the public sphere is embedded in the transformation of state and economy. – Author's translation)

The aim of this chapter is to investigate the reason why some cities have a very good infrastructure for cyclists and some do not. In order to do that, this chapter examines planning for cycling and the politics of planning in Copenhagen and Stockholm. The purpose is to analyse the different planning perspectives in the two cities and develop a deeper understanding of how and why transport planning can differ in two similar cities in two similar countries, what affected and affects transport planning and why the results are so different with a high share of cycling in Copenhagen and a low share in Stockholm. The planning processes and the political processes in the cities have, of course, been influenced by aspects mentioned before in this dissertation. Thus, the question is why Copenhagen has such a good infrastructure for cyclists and such a high share of cycling in the modal split and Stockholm has not. Although Copenhagen has a good infrastructure and planning for cyclists, they have also not managed to break the trend of high car ownership and a high share of car traffic in the modal split. However, the car ownership per capita is less in Copenhagen than in Stockholm and the modal split shows fewer car trips in Copenhagen. That could mean that, to a certain degree, Copenhagen has advanced a bit further than Stockholm when it comes to sustainable mobility and vélomobility. Nevertheless, planning for cycling was not a sustainability issue from the beginning, as will be shown later. The analysis of the data in this chapter is connected to the theoretical discussions about power, space, political

economy and mobility in previous chapters. By doing this I hope to develop an understanding of the problems in transport planning that contributed to the marginalisation of cyclists.

The factors that have affected and continue to affect planning for cycling in Stockholm and Copenhagen can be divided into different categories or aspects. In this chapter three main aspects are identified and analysed: (i) economic, spatial, cultural and historical aspects, (ii) organizational features of the planning systems and (iii) the politics of planning for cycling in the two cities.

7.1 Spatial, economic, cultural and historical aspects – the third dimension of power and the political economy of mobile spaces

Transport and bicycle planning is dependent on structures because planners are part of the culture and economy they are planning in and therefore affected by those aspects. One important factor in explaining the differences in bicycle planning in Copenhagen and Stockholm is the historical development of urban transport planning in the 20th century, which is dependent on both economic and cultural forces. While there are many similarities between the cities, such as the introduction and dominance of motorised traffic and the building of roads, there are, precisely when it comes to those aspects, also important differences. Those aspects are closely related to the more theoretical work about power, space, political economy and modernism described in Chapters 4 and 5 above.

In the first half of the 20th century, it was common in Stockholm to mix traffic. However, already in the early 1950s car traffic became more dominant on the streets of Stockholm. During a long period (roughly from the 1940s until the late 1990s) no new cycle infrastructure was built. The economy of Sweden and Stockholm was growing in the period after World War Two. People did not leave Stockholm during the post-war period (except during the green wave in the 1970s), but were instead moving to Stockholm, giving the city government high tax incomes and a better budget than in Copenhagen. The different developments of the economic structure of the two cities left Stockholm with more financial means than Copenhagen, which Stockholm invested in the construction of the subway and several highways and roads throughout the city

(interview Fager, Isaksson, Elle, Emanuel 2012). As Elle, the transport planner with long involvement interviewed in Copenhagen explained:

Denmark and Copenhagen were poorer than Sweden and Stockholm after the Second World War. We had small properties and still have in Copenhagen. Typical is 50-60 m². … And so the taxes on cars are quite high. We pay for three cars when we buy one. So we pay twice as much as in Sweden when we buy a car. So we were poorer then the Swedes and cars are more expensive than in Sweden. That is why car ownership was quite low in Copenhagen. So we did not have the money to plan for a city for cars, like Stockholm did. We did, during the 1950s and 1960s, have a discussion about a subway system, but it was not realised, because we could not come to an agreement with the national government. (interview Elle)

The transport planner Fager in Stockholm, who has long experience with planning in Stockholm, described transport planning in Stockholm as follows:

When it comes to road traffic, the largest problem is that Stockholm is divided into two parts of water and we can say that we have not built anything new since the 1960s, where we had several road projects. During that period the cenrtalbron [central bridge] and Essingeleden [an inner city highway], which is today Sweden's most used road, were built and today we plan Förbifarten [a ring highway around the inner city], which should be ready 2020/2022. (interview Fager)

The city of Copenhagen thought of cyclists already before modernism became a dominant form within urban and transport planning. In the late 19th century and early 20th century Copenhagen experienced conflicts between cyclists and horses and carriages. Therefore, the planners planned for the first cycle tracks and built them as well. The building of cycle infrastructure continued until car traffic became more dominant in the 1960s. As Jensen, a bicycle planner in Copenhagen with long experience of planning described it:

Copenhagen is quite different from other cities. Because the first bicycle track, originally a bridle path, which the cyclists started to use, because there were bumpy cobblestones on the street itself, was turned into a cycle track around 1905, and the car, in relation to other cities, came into the picture quite late in Copenhagen. It came first in the beginning of the 1960s. Then people in Denmark began to drive more cars. (interview Jensen)

And he continued:

Even cycling decreased during the 1960s, but it never disappeared from Copenhagen. This had much to do with the fact that Copenhagen already had an

existing infrastructure for bicycling, which was built before the car came into the picture. This infrastructure helped to keep the bicycle as a mode of transport. (interview Jensen)

The SCAFT guidelines were translated into Danish in the 1970s, but never had the same effect on planning as in Sweden, except in suburban areas planned and built in the 1960s and 1970s, as in Sweden. SCAFT was translated into Danish and there were attempts from the planners to implement the SCAFT guidelines also in Copenhagen, but the same planners thought the physical structure of the city did not allow that; thus in the 1970s the planners of Copenhagen stopped such attempts. Instead the transport planners of Copenhagen adopted the Dutch planning ideal of the *woonerf*, special traffic calming zones where traffic is integrated. This ideal was much later adopted in Sweden and Stockholm (interview Elle). The transport planner Elle explains the situation as following:

… we looked at how we can use SCAFT. Can we rebuild the existing street system, like it was done in Östermalm in Stockholm around 1975, I think it was. … But it was very, very difficult. With our small streets. So what do we do with the SCAFT system? … It was not a success. We built tunnels for pedestrians and cyclists under roads and streets for motorised traffic, but that was no success either. So when the woonerf (home zone) was introduced in Holland … we thought that might be more of a thing for Copenhagen. Then we introduced speed limits at 50 and 30 km/h and made clear in certain streets what the rules are. It was about the coexistence of pedestrians, cyclists and cars. A certain law was introduced in 1976 and that was implemented in the early 1980s. … However, in 1967/68 discussions came up to build highways through Copenhagen. But those ideas were not popular and died out in 1972 when the Danish government decided that all streets and roads within the city of Copenhagen are municipal streets and roads. (interview Elle)

Even though Copenhagen's focus on cycling decreased during the 1960s and 1970s the existing infrastructure for cyclists was there, which was an advantage that Stockholm did not have. Because of the long tradition of planning for cyclists in Copenhagen (from the late 19th century) a bicycle culture could, gradually, develop in Copenhagen, and also, to a lesser extend though, in Denmark in general. This can be exemplified by the status of cycling as a professional sport, which is higher in Denmark than in Sweden. Furthermore, some other historical aspects had an impact on cycling and planning for cyclists in the two cities. One such aspect was the Second World War. Sweden was

neutral during the war, whereas Denmark was attacked and occupied by the Germans, which affected the economy of Denmark and Copenhagen. During the period after the war, Copenhagen was characterized by decline. People were leaving the city for a "better" life in the suburbs or the countryside, which led to a decrease of tax income for the city of Copenhagen. The planners of Copenhagen, in fact, did propose some ideas for road and highway building and also for a subway, but those ideas were financially not possible (interview Elle and Røhl). As one transport planner, with long experience of transport and urban planning in Copenhagen, puts it:

Copenhagen had no money to build a subway or highways, like Stockholm did, which is why we continued our culture of planning for cyclists. (interview Elle)

The occupation of Denmark by the Germans also had an effect on the Danish culture. The bike, already seen as a national symbol in Denmark, became even more a symbol of freedom and Danish culture during the period of occupation. It was seen as very Danish and was developed further after the Second World War (interview Elle). However, until the early 1930s the way bicycle traffic was handled was similar between Stockholm and Copenhagen. Although Copenhagen was earlier in constructing bicycle paths, Stockholm started with the same in the early 1900s as well. Thus, the negative turn for bicycle traffic and planning in Stockholm came mainly after the Second World War. It was also during that time many Swedish cities adapted the SCAFT ideas and a delegation from Stockholm went to the USA to study the transport systems. At that time Sweden had one of the highest densities of cars in Europe and wanted to build the truly car-oriented city (Emanuel 2012 and Lundin 2010). Accordingly, Copenhagen has created the space or the materialities for cycling. The production of such spaces in Copenhagen and the space for motorised traffic in Stockholm are examples of how the cities have created two different forms of urban space. Affected by different cultural and economic structures, the planners and politicians have, consciously or not, created cities for biking and motorised transport. The power relations at work for this outcome can be seen in light of Lukes' (2002) different dimensions of power discussed in Chapter 4. Certain decisions can be observed, but certainly the planners and politicians were unaware of some of the aspects behind the decisions. However, as will be shown below, the space produced affects the choice of mode of transport, and also shapes the power relations in urban transport spaces and the mobility of the people.

As shown above, there are several historical aspects that influence planner's perspectives and the outcome of urban transport planning and planning for cyclists. One other aspect is structures out of reach for today's planners, such as the economic structures of the capitalist societies, which include the Fordist production of cars and the marginalisation of cyclists in many cities around the world (see Foster 2002, Gartman 2004, Paterson 2007). This has been explained and exemplified in Chapter 5. Those aspects have affected planners and politicians also on the urban level. It is important to understand that those economic structures exist and that, as Marcuse (2002 [1964]) (see also Chapter 5) sees it, lead to one-dimensional societies, where in the case of transport and vélomobility, cyclists are marginalised and motorised traffic is still very dominant. The political economy of automobility seems to have a larger impact on transport planning in a country like Sweden with a car industry (Melin 2000). However, motorised traffic is also very dominant in Copenhagen (see Table 2 in the previous chapter). The effects of that can also be seen in the statistics of the survey study in Chapter 8.

Furthermore, cultural differences between Copenhagen and Stockholm are of importance. Through the fact that Denmark has no car industry the country, but especially Copenhagen, is more eager to stand up for cyclists' rights and to restrict car driving, than Sweden and Stockholm — for example by allowing cyclists to bike against one-way traffic or by having high taxes on car purchases. Therefore, a cycling culture could develop in Copenhagen.

As Elle said, when asked if the fact that Denmark does not have a car-industry matters:

I don't know if Denmark would have had such high taxes on cars if we had our own car industry. Probably not. So therefore it is of importance. It was much easier to have high taxes on cars since they are not produced in Denmark.(interview Elle).

Spolander, a senior consultant in Stockholm who works with transport planning, said, when asked the same question about Stockholm and Sweden:

Also, the costs for driving and purchasing a car are quite low in Sweden and that has of course an impact on society, planning and political decisions. But it is hard to say exactly to what extent. (interview Spolander)

Furthermore, Spolander writes in his book about cars in Sweden (2007):

Volvo and Saab have dominated the Swedish car market. … By that dominance Volvo and Saab have during the years influenced our impression of cars, how they should be and how they should be driven. (Spolander 2007: 62-63)

Thus, it seems that having a car-industry or not has an impact on our societies and how we plan our transport systems, but as Spolander said in the interview, one cannot say for sure to what extent the car industry matters.

In Sweden the car was seen as a tool for gaining freedom for the working class and could therefore, due to a strong working class movement in the 1950s, 60s and 70s, inhabit a very strong position in the Swedish culture. Due to the fact that workers could afford a car they could take trips out of the dirty industrial areas and cities into the countryside. This can also partly be said about Denmark, especially when looking at the movements to the suburbs. Moreover, the connection between freedom and the car is similar in Denmark and Sweden. However, there are differences between Sweden/Stockholm and Denmark/Copenhagen. The city of Copenhagen is quite different from the rest of Denmark, where cycling does not have such a dominant position. Cycling has been and still is important in Copenhagen, but this focus is not comparable in the rest of Denmark. Similar the city of Stockholm is quite different from the rest of Sweden in terms of public transport and cycling. As Tørsløv, the head of the centre of transport in Copenhagen put it when I interviewed him:

It is special in Copenhagen. Although other larger Danish cities, Århus, Aalborg, Odense, also have strong bicycle cultures and a good infrastructure. … But what we do in Copenhagen leads other cities and shows the way. We find our partners rather in other big cities like Stockholm, Hamburg and the like. Not so much in Denmark, where Copenhagen, as it is, is special. (interview Tørsløv)

That is different in Sweden, where the domination of motorised traffic and the marginalisation of bicycling cannot only be limited to Stockholm. Similar trends happened in other urban areas around Sweden (interview Spolander, Emanuel 2012). However, these structures are not easy to observe, which is why they are also very effective. This is what Lukes sees as the third dimension of power, where people are influenced without recognising it (Lukes 2005, see quote by Spolander above). The structures at work influence planners, politicians and also the people moving around in the cities, which has led to the marginalisation of cyclists in the urban space of Stockholm. The behaviour of people might also be influenced by the power relations and structures in the city and lead to the use of certain modes of transport. However, Lukes'

perspective lacks a spatial dimension, which is why for a more thorough analysis of such structural forms of power that affect transport planning Allen's theory of seductive and geographical power can explain the power relations in urban public space more thoroughly (Allen 2003, 2006). Power, according to both Allen and Lukes, is not a thing, but is created in social relations. Therefore, some forms of power are hard to observe, and those unobservable power relations in the form of the economic structures of, for example the car industry, are even more effective (Allen 2003, Lukes 2005). Furthermore, the social relations, cultural, spatial and economic aspects form power relations in both Stockholm and Copenhagen that focus on and favour different modes of transport. In Stockholm those structures lead to planning for motorised traffic public transit, whereas Copenhagen has been influenced by such relations and structures to plan for cyclists. That means for example that due to the fact that Copenhagen after the Second World War was quite poor compared to Stockholm, ideas of major modernistic planning could not be realised. Moreover, the lack of a domestic car industry also affected the planning outcome in Copenhagen. It is in those power relations, both observable and unobservable, one finds explanations for why the urban transport systems of Stockholm and Copenhagen differ from each other, and why Copenhagen has such a good infrastructure for cyclists and Stockholm has not. As Elle explains it:

Because of the economic situation after the Second World War, Copenhagen and also Denmark was quite poor … Therefore, people in Copenhagen did not buy cars and car ownership was very low and is quite low today. Because of that the government could introduce high taxes on purchases of cars. We pay for three cars in Denmark, when we buy one car and we pay twice as much for registering a car as in Sweden. So we had no money and it was much more expansive to buy a car in Denmark than it was in Sweden. Thus, we had fewer cars in Copenhagen and therefore never planned for a car-centric city like Stockholm did. (interview Elle)

The economic and the developed cultural structures in Sweden and Denmark also affect the thinking about urban and transport planning. Although there are similarities when it comes to planning in general in Sweden and Denmark, and also in Stockholm and Copenhagen, there are noticeable differences. Modernism for example has, very effectively, influenced planning and transport planning all over the world during the 20th century. Although Copenhagen and Stockholm have a similar share of car trips in the modal split, the economic structures and thus the car industry can explain the

marginalisation, in Sweden in general and Stockholm in particular, of planning for cycling than generally in Denmark and particularly in Copenhagen (for more details on the power of the car industry see Paterson 2007). These economic structures that affect transport planning can be connected to Harvey's analysis of capitalism and urban planning. He sees similar structures that shape urban design, urban developments and urban planning, leaving several groups outside of the planning processes and thereby outside of shaping the city (Harvey 1989, 2005, 2006a, 2008). The same seems to be happening in transport planning when more infrastructure for motorised traffic is being built, or has been built, leaving groups, like cyclists, marginalized in urban spaces. The system of automobility, as Urry (2004) calls it, can therefore be seen as a dominant form of transport, which has formed urban settings and our culture. Therefore, this system has influenced planning in both Denmark and Sweden. However, the influence is greater in countries with a car industry (see quotes from interviews above, Spolander 2006 and Melin 2000).

The historical aspects mentioned above, together with the cultural and economic differences, explain why Copenhagen did not invest in new infrastructure for motorised traffic or for public transport, but continued to plan for cyclists, after World War Two. Thus, in conclusion the focus in Stockholm has long been on public transport and motorised traffic, whereas the focus in Copenhagen has long been on cycling. This can, partly, also be explained by the economic structures of the two cities and Sweden and Denmark. Moreover, the politics in Copenhagen and Stockholm also had an impact on the planning of the transport system and the fact that Copenhagen has planned more for cyclists than Stockholm. This is analysed in Chapter 7.3.

7.2 Organisational aspects

During the research on Copenhagen and Stockholm and during the analysis of the interviews it became clear that there are organisational differences between Copenhagen and Stockholm, which affect transport planning in general and bicycle planning in particular.

In Stockholm there is one administration for transport planning, one for urban planning, one for environmental questions etc. The department of transport planning is part of urban planning more as a consulting authority, to take a

look at the work of the urban planning department when they finished their work, in order to make some remarks. In these processes transport planning is neglected, and even more planning for cyclists, which seems to have the lowest priority within the transport planning department in Stockholm. Furthermore, during the time of the data collection for this thesis (2010-2011) Stockholm had only one person working fulltime with bicycle planning, Krister Isaksson, whereas Copenhagen has a whole division working on planning for cyclists. Moreover, Isaksson, who was working in Stockholm with bicycle planning, changed jobs and does not work for the city of Stockholm anymore. At the time of writing there are no plans to replace this person with a new bicycle planner. That could be a sign of low appreciation of planning for cyclists, but could also be seen as a start to get bicycle planning into all parts of transport planning in Stockholm, which would be very good, especially in a time where cycling is increasing in Stockholm and comprehensive planning for cyclists is very important. As Isaksson, the bicycle planner from Stockholm, puts it in the interview:

In principle it is only me who works with bicycle planning fulltime. But I have colleagues who help me in different projects. The cooperation with other departments, for example the urban planning department, exists, but to a far too little extent. It is often the case that areas are planned first and later cycling comes in, which is far too late. It is also first during the last few years that bicycle planning has come on the map for urban planners and transport planners. Moreover, there is a lack of cooperation between the municipalities and the region. There are many who like to bike into Stockholm from other municipalities, but the cooperation between Stockholm and other municipalities is in principle not existent. For example, it does not at all go well for bicycle planning between Stockholm and Solna. (interview Isaksson)

In Copenhagen the urban and transport planning departments are under the same administration for Technology and Environment and have to work in cooperation with each other. This kind of organisation of urban and transport planning has roughly always been as it is today. As the head of the Technical and Environmental Administration in Copenhagen puts it:

The general principal of the organisation has always been as it is today. This administration [Technology and Environment] today was a merger of smaller administrations, but the administration has been this way for really many, many years. (interview Aaberg)

However, it was not my impression from the interviews that this kind of organisation was a decision taken in order to create a better environment for urban and transport planning. Nevertheless, this kind of organising planning might prevent conflicts between the different divisions/departments. Tørsløv explains it the as follows:

Every time when we have a new project, regardless if it is an urban or transport planning project, all should sit together and the project leader explains shortly what the project is about. Then he or she gets comments and viewpoints from the heads of all divisions, from the head of transport, from the head of green spaces, etc. And this should ensure that there will not be conflicts, for example between transport and urban planning, in later stages of the planning process. A bit of reconciliation one could say. Then all heads of the divisions have meetings once a week, where we talk more concretely about how we plan our work within different projects and look at the advantages in the different projects. And this leads the way for the rest of the work in the divisions. Here we discuss the development of the whole city and how the different projects affect the whole city and not just the smaller local projects. (interview Tørsløv)

At the urban comprehensive planning level transport planners are part of the administration both in Copenhagen and Stockholm, and at that level cooperation with the department for transport planning seems good in both cities. However, there seem to be problems when it comes to the new strategy for urban planning in Stockholm. In the new comprehensive plan the urban planners in Stockholm developed a vision of the walkable city, which, among other things, promotes traffic integration, dense urban living and walkable distances (Översiktsplan Stockholm 2010, interview Tedesjö). According to the interview with Tedesjö, an urban planner in Stockholm focusing on transport issues in zoning planning, this was not easy to communicate to the transport planning department, due to the focus in transport planning on the SCAFT regulations (see previous section 5.1, interview Tedesjö).

When it comes to the strategic level of planning, which is what I mostly work with, I have good contacts with my colleagues at the department of transport planning, like in the Förbifart Stockholm project… When it comes to more detailed questions of urban design etc. when our architects draw the development plans, it is very mixed, I would say. I think that has to do with personal issues, different expectations, like #you at the urban planning department don't get it" and the like. We have different educations and different points of view… A seminar about bicycling we had exemplifies it. Our new zoning plan wants to tear up the old street

structure built on the SCAFT principles. But here we could see the conflicts between our thinking and the transport planners' quite clearly. The new plan is good for cycling, because it builds on the dense city, integration etc. But it led to conflicts when we want to "sell" it to the transport planners. (interview Tedesjö)

Here one can see the conflicts in Stockholm between planning for vulnerable road users and planning for motorised traffic. The focus on motorised traffic in Stockholm still seems high and it does not seem easy to introduce ideas to change that. As mentioned before, there are separate departments in Stockholm dealing with urban planning, transport planning and environmental issues and there are also three different political heads of those departments, developing different political visions and directions for the departments, which leads to less cooperation, because the staff has to realize the political visions and directions for their own department. It is already here where conflicts between urban and transport planning occur, which lead to different planning directions and also, apparently, to the marginalization of some transport questions. Cycling, as one transport planner in Stockholm explains, often comes at the end of traffic projects and urban planning projects. This is often too late for good solutions for cyclists as well as for other modes of transport (see quote Isaksson above).

In Copenhagen the inclusion of transport planning, urban planning and environmental planning within the same administration is part of the organization. Due to the fact that the departments for transport planning and for urban planning are under the same roof in Copenhagen the cooperation between them is very close. The outcome of this is that transport planning is often a part of urban planning and the other way around. Even though conflicts might arise between the disciplines etc. it seems like a better solution than in Stockholm. In Copenhagen the organization for planning (both urban and transport) is built around the divisions for transport and urban planning/design and the environmental division. The heads of these divisions meet regularly once a week to discuss the work and future plans. This, of course, tightens the cooperation of the divisions and directs planning towards more cooperation. Furthermore, there is one political head of the whole department who develops the visions and political directions for all (urban and transport planners and the environmental staff). Organizational aspects thus clearly affect transport and urban planning and make it easier or more difficult to integrate bicycle planning in the processes of urban and transport planning. However, even in Copenhagen problems of integrating bicycle planning can

emerge, but due to the regular meetings and organisation of the administration those difficulties can more easily be handled (interview Tørsløv, Aaberg, Røhl and Hjortskov Jensen). It seems that the integration of urban and transport planning is important, both since bicycle and transport aspects are part of the planning processes from the beginning and in order to show that those aspects are of importance. This can also be seen in the organisation schemes of Stockholm (Figure 9) and Copenhagen (Figure 10).

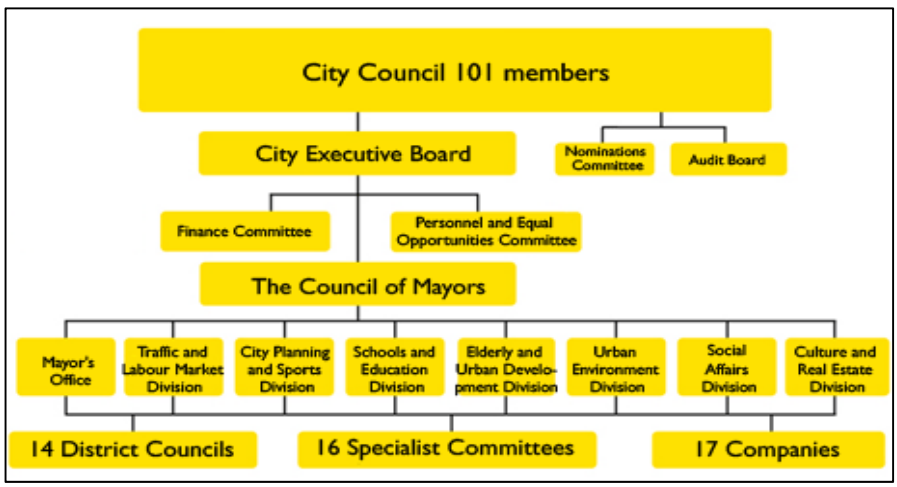


Figure 9: Organization scheme Stockholm
Source: City of Stockholm (2011)

Figure 10: Organization scheme Copenhagen
Source: City of Copenhagen (2010)

The integration of the urban and transport planning departments in Copenhagen can be seen as a step towards an integrated transport policy, which could lead to a more sustainable transport system. In this step political integration is very important, along with technological and social integration. This is often hard to achieve and Germany, for example, has not managed to do so, although many attempts have been made in the direction of. It therefore seems difficult to achieve transport integration in which close cooperation between different departments is one important aspect (Schöller-Schwedes 2010). A weak cooperation between the departments leads to less transport integration and makes it harder to create an integrated transport system for sustainable transport. There are barriers for integrating transport planning with urban planning, such as different professions, different methods and different cultures (Te Brömmelstroet and Bertolini 2010, Tornberg 2011). Nevertheless, the concept in Copenhagen seems a step closer to integrated transport policy, than that in Stockholm. Copenhagen has managed to find a way to get the professions of urban and transport planners under the same roof and has created an integrated environment of urban and transport planning, which is also shown in the professions, where for example some cycle planners are geographers, a profession otherwise often concerned with urban planning.

Knowledge, planning and power are closely connected to the questions of organization. Planning projects and decisions are based on specific knowledge, which knowingly or not can shape power relations. This can be seen in close relation to Lukes' three dimensions of power (Lukes 2002). Lukes draws on the work of Foucault in order to show how knowledge is part of power plays and of the three dimensions of power (Lukes 2002, Foucault 1980). Here, a connection can be made to the case studies in Copenhagen and Stockholm. The organisation of the urban and transport planning departments in Copenhagen seems to foster planning for cyclists and a common approach to urban and transport planning. That could be explained by the power of knowledge. Knowledge is spread and organized within the department including both urban and transport planning, which creates a better understanding of all parts of planning, contributing to solutions which are good for cyclists. The way these departments are organized in Stockholm, on the contrary, seems to make urban planning and planning for cyclists much harder. The division of the departments prevents the spread of knowledge, and the knowledge stays at the different departments. This form of power, I think,

is embedded in several aspects that Lukes connects to the work of Foucault. He states that Foucault was dealing with

'structural relationships, institutions, strategies and techniques' rather than with 'concrete politics and the actual people they involve'. (Lukes 2002:89)

Those aspects also have bearing on the way planning and the knowledge of planning is organised. The kind of organisation of planning and knowledge shapes the power relations with the cities and shapes also the outcome that is materialised in the urban space. However, certain aspects of this might be part of the third dimension of power (Lukes 2002) where the planners and politicians might not be aware of the effects, and that might be hard to observe, but on the other hand organisations and the outcome of the planning processes are easy to observe and some planners are very well aware of the effect the organisation has on planning (interview Isaksson). The structural relations, the planning institutions and strategies are part of this power play and thus lead to different materialisations in urban space that can marginalise cycling or improve the conditions for cyclists.

Moreover, the organization of Stockholm and Copenhagen seem to create different planning environments. One can see that the organization in Copenhagen creates an environment of planning, where decisions are based on consensus. The regular meetings between all parts of planning contribute to a better understanding of other parts. For example the transport planners can understand the problems urban planners face and vice versa. In order to plan comprehensibly a consensus has then to be established, because all parties are involved in the planning process from the beginning. An additional example for such consensus is that all planners interviewed for this case study agree that transport is one of the most important aspects of the development in Copenhagen and that the first priority in transport planning is planning for cyclists and pedestrians (interview Røhl, Jensen, Tørsløv, Aaberg, Elle and Hjortskov Jensen). This is not the case in Stockholm. Since the urban and transport planning departments are different departments, the planners do not work as closely together as in Copenhagen. Through the interviews with the planners it became clear that there are conflicts between the departments and also between the mainstream transport planners and those specializing on bicycle planning (see quotes form the interviews with Tedesjö and Isaksson). Transport is also a very important issue in Stockholm, but treated very differently in the different departments (interview Isaksson, Fager and Tedesjö).

Due to the different organisations, Copenhagen seems more favourable than Stockholm towards planning for cyclists and towards a comprehensive planning approach that involves both urban and transport planning. Thus, one can conclude that knowledge is spread more effectively in an integrated organization, such as in Copenhagen, then in a divided organization, such as in Stockholm. That also leads to different power relations within the organisations. Those aspects, as mentioned before, might be hidden from the official plan material, and since they are hard to observe we are back to Lukes' third dimension of power (see Lukes 2005 and Chapter 4). By integrating all planners in planning processes, as in Copenhagen, bicycle planners get more power in the processes because they are involved from the beginning. The organisational structures therefore create different opportunities for cycling, which lead to different solutions in the urban transport spaces. Therefore, power relations are created, without planners or politicians recognising them, resulting in different planning systems that can be observed in Copenhagen and Stockholm. Power relations are effective within the systems in different directions; in Copenhagen more in favour of cycling and in Stockholm more of public transport and motorised traffic. Lukes and Allen both understand power as forms of social relations, and this is exactly what can be observed in the different systems of Stockholm and Copenhagen. It is not necessarily the case that transport planners in Stockholm intentionally want to favour motorised traffic, but the organisation with its social relations creates power relations that lead to less power for bicycle planning and therefor also to an unsatisfactory infrastructure for cyclists.

7.3 The politics of planning practise

It seems there is a difference between Copenhagen and Stockholm when it comes to planning practice and direction relating to the politics of planning. Some of those aspects are tightly connected to spatial, economic, historical, cultural and organizational aspects discussed in the previous sections. However, much of the planning practise can be connected to actual political decisions in Copenhagen and Stockholm.

Despite or maybe due to the structures, it was a political decision in Copenhagen in the 1970s to focus much more on cycling. During the 1960s and early 1970s the city of Copenhagen focused intensively on motorised

traffic and marginalised cyclists to a certain extent. The result of that was massive protests during the 1970s. Environmental protests were, in that time, very common due to the oil crisis and publications, such as Carson's book "Silent Spring" from 1962. In Copenhagen those protests focused on the situation of cyclists and the transport infrastructure. From then on politicians focused more and more on cycling within the field of transport, because they could gain votes from the focus on bicycle infrastructure (interview Jensen and Elle). Although some protests in Stockholm also focused on the transport system and some movements wanted to see an alternative city without car traffic (Stahre 1999), that has not led to larger protests that could change the politics of transport and mobility. This shows that the shaping of urban space can be part of citizens' active protesting and that this can have an effect on the actual urban and transport planning.

One aspect all the interviewees in both cities mentioned when asked what influences transport planning the most was: politicians. Here one can see a clear connection to the work of Susan Feinstein (2001). Feinstein analysed the impact certain persons had on the urban development and planning in for example New York. Part of her conclusion is that influential persons, like Robert Moses in New York, often make an important impact on urban planning and development. The power of politics and politically influential persons is of great importance for the outcome of planning and political decisions (Feinstein 2001). The importance of political actions, decision making and will to change urban and transport planning is very relevant in transport planning in both Stockholm and Copenhagen. In the 1998 election the Stockholm Party was elected to be part of a conservative coalition. Their focus was cycling. During that period the investments in cycling infrastructure were skyrocketing and the implementation of the cycle plan from 1998 was driven by the politician Stella Fare, causing protests in the media, and from the social democrats and other organisations, such as the taxi organisation and among Stockholm's own transport planners (Beckman and Linusson 2009, interview Fare). Fare, politician for the Stockholm Party (now Liberal Party) and vice mayor for urban politics 1998 – 2002, explains the opinion during her time in Stockholm as follows:

After we had implemented the first measures the third world war had started; about bicycle tracks and about bicycle lanes on Sveavägen. … I took it as an opportunity to explain what we are doing, but the negative sides were the ones that the media jumped on. … All the major newspapers and their motor journalists had their war

headlines against bicycle tracks and lanes, like Aftonbladet, Expressen and so on. … Also DN. They had their negative motor journalist. … But it was not only motor journalists. The newspapers had affected the whole debate on cycling and the public opinion was against the measures. … The Social Democrats were also against those projects. … The administration was also radically against the plans. It was also therefore the implementation took as long as it took. They tried as hard as they could to prevent the plans, as they always did. So if you are not a very strong politician nothing happens for four years. It was quite often a whole delegation that came into my office and said this is not possible. (interview Fare)

Despite these protests, the conditions for cyclists were improved, and from the early years of 2000 until today cycling has been increasing in Stockholm. Here, one can clearly see a connection to the work of Feinstein (2001). Individuals and actors do highly affect the planning processes and the shaping of the transport system, for good or bad (Feinstein 2001). The political influence of Fare and her will to develop cycling in Stockholm were of tremendous importance for the fact that cycling had a boost in the late 1990s. This is what Feinstein has analysed in her book from 2001, as mentioned above. It was a political decision in Stockholm to build the subway and the highways during the 1950s and 1960s. In the story of the Stockholm Party one can also see another aspect: planning for motorised traffic. Although the infrastructure for cyclists has been improved due to the political action of the Stockholm Party, the protests and resistance of the transport planners against cycling infrastructure show how deeply rooted the priority of motorised traffic is. The planners protested against bicycle infrastructure, because they saw conflicts between motorised traffic and bicyclists, because the spaces for cars would decrease and the spaces for cyclists would increase, something that was not seen as possible. However, Stella Fare stood her ground and pushed the planners to find solutions (interview Fare). In the interview she explains the political situation in Stockholm:

The more time that went on the more important became questions about transport. … And during the period the Stockholm Party was part of the government bicycling had come up on the agenda. … So there have been changes. … The main investments, however, go to public transport. We have never had this much money put into the public transport system. But some old habits are still there, like statements that we need both cars and cyclists etc. from both the conservative parties and the Social Democrats. So unfortunately those arguments are still there. (interview Fare)

Another aspect in Stockholm's planning practice is that Stockholm has the ambition to become the world's best city in public transport or, as one planner, who wants to remain anonymous, puts it:

There is the vision for Stockholm called Vision 2030, which is a general policy document for the whole city of Stockholm at a visionary level. But it includes certain transport objectives that should lead the way forward for the transport system. And the mission is, then, how can we go that way and how can we reach the goals, which, in principal, involves that Stockholm should be the city that is best in the world in using public transport. (interview anonymous transport planner)

This is why there are plans for new trams and tramlines, as well as more subway traffic in Stockholm, leaving fewer investments for cycling. Moreover, this policy goes even further and includes large public transport projects as well as projects for motorised traffic. The planner continues and explains:

And in this strategy we will also try to illuminate what happens with traffic if we change things and steer towards a better transport system. And what happens if we don't do that, if we continue without correcting the direction. And this is very hard of course. And this is not done in a jiffy, but if you try to be more concrete and are careful with if we build Förbifart Stockholm and Norra Länken [highway projects] *and those infrastructure projects that will exist for the next 20 years and Citybanan and Spårväg City* [public transport] *and so on, so it is not about…* (interview anonymous transport planner)

Here the planner stopped and, I believe, it was because many of the plans do not really fit into the vision of public transport. However, the planner goes on:

Public transport objectives, they are city oriented, to strengthen the possibilities to travel within the city centre and to get, like, to the city centre. Citybanan will be a gigantic capacity addition, where we, roughly, double the capacity on the rail system in Stockholm. (interview anonymous transport planner)

This shows how much Stockholm focuses on public transport, but also on motorised traffic. Those large-scale infrastructure projects, as the planner mentioned, will be in place for many years and this is why one should be careful in planning such projects. Otherwise urban spaces can lead to the kind of spaces mentioned in Chapter 5 in this thesis. However, the budget for the city of Stockholm from 2012 promises that more money will be allocated to cycling. This money will be used for example to improve the bicycling infrastructure and cyclists' safety. In the budget it is promised to spend 1

billion Swedish Kronor (ca. 115 million Euros) from 2012 to 2018 for such measures. Further, Stockholm has developed a strategy for increasing the level of service of public transport and cycling. In this strategy it is for example said that the city will allocate more space to busses and cyclists (City of Stockholm 2013c and d). However, how much of those projects will be realised and how much of that money really ends up in the cycling infrastructure is a different question. Because as Spolander puts it in the interview:

Planners and politicians are often good at making plans and policies, but bad at implementing them. Moreover, large car-oriented projects are often underfunded and later take money from bicycle projects. (interview Spolander)

Moreover, car related projects acquire much higher funding. The highway project Förbifart Stockholm rests on a budget of 28 billion Swedish Kronor (ca. 3 billion Euros) (Trafikverket 2013a), and for the road tunnel project for motorised traffic Norra Länken ca. 15.5 billion Swedish Kronor (1.8 billion Euros) are allocated (Trafikverket 2013b). The city of Stockholm does not stand for the costs alone. Much of the costs are coming from the national government. Nevertheless, Stockholm stands for 4.5 billion kronor (ca. 518 million Euros) for Norra Länken (Trafikverket 2013b), and Förbifart Stockholm is financed by the congestion charge in Stockholm (80 %), which is administrated by the city of Stockholm and the national government (20 %) (Trafikverket 2013a).

It seems that the politics of planning practises are slightly different in Copenhagen. In the 2000s the campaign of the politician Klaus Bondam, who built his campaign on cycling in Copenhagen and won the election, led to an even larger focus on cycling in transport planning in Copenhagen (interview Bondam and Røhl).

As Røhl, head of the bicycle planning program at the centre for transport in Copenhagen, explains:

2005 was the first time a mainstream politician went into the election with a bicycle program and won the election with specific bicycle projects. It was a well-established mainstream politician within the area of environmental and transport questions. And now even conservative and liberal politicians take up bicycle projects in elections. You see now all politicians in general, independent of party membership, take bicycle politics and bicycle planning serious today. There is a decision that sees the bicycle not as a goal, but as a means to create a more effective

transport system, and that is backed up by all parties in Copenhagen. (interview Røhl)

Bondam, the politicians in Copenhagen, who had built his campaign in cycling, puts it this way:

I was chairman of the Technical and Environmental Committee between 2006 and 2010. It was clear that Copenhageners wanted investments in bicycling. There was already a focus on bicycling in the politics and government in Copenhagen. … It was a very significant election campaign in 2005 and bicycle mobility was very important… (interview Bondam)

The focus on cycling in Copenhagen is also present in all the planners' and politicians' statements. All persons interviewed for this research mentioned quickly that planning for cycling and pedestrians is the most important aspect in Copenhagen's transport planning. However, due to the much better economic situation of Copenhagen and because of more state funding, a focus on public transport (the building of the Metro) is also important. The priority in transport planning in Copenhagen seems clear: First cyclists and pedestrians, second public transit and third motorised traffic, according to the planners and politicians. Additionally, Copenhagen has the ambition to become the world's best city for cyclists (interview Røhl, Jensen, Tørsløv, Aaberg, Elle, Hjortskov Jensen and Bondam). However, the reality seems a bit different when asking the cyclists in Copenhagen. Motorised traffic creates, for example, the most problems for cyclists in Copenhagen (and for cyclists in Stockholm) according to the survey studies done for this research. This is dealt with in the next chapter.

The politics of planning practise in both Stockholm and Copenhagen shows that mobility, transport and planning are highly political and influenced either by people's protests or by individual politicians shaping urban space. Planners' practice is highly influenced by political decisions. On the other hand, planners also try to influence politician's decision making and politicians are, of course, sensitive to voter's opinions, which is exemplified in the Copenhagen protests during the 1970s. Thus the politics of cycling mobility is developed in a mash of political and planning decisions and citizens' opinions. However, the opinion of the citizens is highly contested today, when looking at recent protests against gentrification, capitalism and capital power all over the world. Politicians seem to see the protests today as a marginalized phenomenon, which raises the question whether such cycling protests would have the same

effects today as they had in Copenhagen in the 1970s. There still are cycling protests around the world, such as the critical mass movement, but they do not seem to have the same effect on transport planning and transport policy as the protests had in Copenhagen in the 1970s (Furness 2007).

In the 1970s the residents of Copenhagen developed a new structure of the public, which meant more public involvement in the planning processes and decision-making through protests. This is what Habermas (1990 [1962]) described as a new public sphere. The new public sphere brought cyclists' needs into the discussions and political discourses in Copenhagen. Thus, those protests and the public involvement put planning for cyclists on the political agenda of, at first, left-wing politicians, but later on (during the 1990s) also of conservative politicians. This development opened up for a new public sphere, where cycling plays an important part and which makes it difficult today to do anything that is against cycling. The public sphere goes through many different transformations in general, according to Habermas (1990 [1962]). However, the transformation is always embedded within changes of the state and the political economy. It was the change of the political economy in Denmark, even without a car industry, towards more car traffic, and, at the same time, no financial means to create a better public transport system, which created the mass demonstrations in Copenhagen for better planning for cyclists, since in this period the focus in Copenhagen's transport planning was more on motorised traffic (interview Røhl and Elle, Habermas 1990 [1962]).

Bicycling went down in the 1960s. But during the 1970s came large protests, not only in Copenhagen, which can be seen as grass-root movements that pressured the politicians not only to invest in the car. Those movements had their origin in environmental movements. The oil crisis surely played its part in making people want more bicycles and fewer cars. To leave the bicycle out of the politics is wrong. The car took more and more space and people opposed that. So there were huge protests outside the city hall with many people who advocated for bicycle traffic. This way it came into the political system. Politicians saw an advantage to do something for bicycling. And the turning point came in the end of the 1970s and early 1980s (interview Røhl).

And as Jensen puts it:

Since the beginning of the 1970s more activist groups like the Danish Cyclists Association, which was a quite slow organisation but became more activist, began to organise themselves in order to create a resistance against the progression of the

car and manifested more and more for the bicycle. There were demonstrations and protests in Copenhagen. And there were many more people than expected…The activists continued with their protests and pushed the politicians to actions which also affected the planners (interview Jensen).

In Stockholm there were also mass protests in the 1970s. However, although there were some cycle protests, the general concern for protesters was not cycling. The protest was more concerned with saving trees and anti-war, but also, as mentioned before, with the transport system, but those protests did not involve bicycle questions in particular (Stahre 1999). Stockholm here missed the chance to create a new pro-bike public structure. Transport related protests in Stockholm came later, in the 80s and 90s, and were concerned with concrete projects such as some highway projects or the so-called Dennis-package (Isaksson 2001). However, those protests did not affect the planning outcome or the overall urban and transport planning directions.

What is striking in Stockholm is that we seem to be witnessing a change in the public discourse on cycling and towards more sustainability, which can also be seen in the new zoning plan (Översiktsplan Stockholm 2010) and the congestion charge. The public opinion expressed in the newspapers has changed from protests against the bicycle measures introduced in the late 1990s by the Stockholm Party (Beckman and Linusson 2009) to positive articles today (mainly in 2011) about how Stockholm is doing more and more for cyclists (see for example Sundström 2011). This could be a sign of a transition of the public sphere also in Stockholm (Habermas 1990 [1962]). Moreover, this could also imply a new focus on mobility questions, which could be connected to the new mobility paradigm within the social sciences (Sheller and Urry 2006). The positive articles could at least be seen as the arising of a new paradigm in mobility towards more sustainable modes in Stockholm. Mobility is not only focused on more and more in the social sciences because of its importance in the world today, but also because of its reinforcement of power relations, due to the fact that not everyone has the same access to mobility (Sheller and Urry 2006). The same shift can be observed in the politics of cycling, which focused, in Stockholm as well as in Copenhagen, on the one hand on the existing mobility of the citizens and on the other hand on the fact that cyclists are marginalized in the urban transport system and that people who use the bike as a mode of transport do not have the same access to mobility as people who use motorised traffic.

A fair and sustainable transport system is the goal of both Copenhagen and Stockholm. In comparison one has to say that Copenhagen has come a bit farther in their political actions than Stockholm. The political actions in Copenhagen were more progressive than in Stockholm. Furthermore, those actions created a new public sphere much earlier in Copenhagen than in Stockholm, and were therefore embedded in the planning practises at an earlier stage. This led the way for Copenhagen to become one of the world's leading cities when it comes to planning for cyclists. Hopefully, with the emerging change of attitudes, a new public sphere can also be created in Stockholm to follow Copenhagen's example of a politics for vélomobility.

7.4 Planning, politics and the differences between Copenhagen and Stockholm

This chapter has shown that there are many differences between Copenhagen and Stockholm when it comes to planning for cyclists. It was shown that five aspects seem to be of special importance. Those are economical, spatial, historical and cultural aspects, organizational aspects and the politics of planning. In all five aspects Copenhagen and Stockholm are very different, and they seem to push Copenhagen more towards cycling and planning for cyclists, than Stockholm. Stockholm on the other hand seems more eager to plan for public transit, which is also shown in the modal split in Table 2. In conclusion one can say that the different economic, cultural and historical structures in Copenhagen affected the planning system and favoured planning for cyclists, whereas in Stockholm those structures favoured planning for motorised traffic and public transport.

The political discussion on cycling in both Stockholm and Copenhagen, mentioned in section 7.3, can be framed within the mobilities research put forward by Urry, Sheller and Cresswell (see Urry 2000, Sheller and Urry 2006 and Cresswell 2010). However, Urry and Sheller are not quite involved in the politics of mobility, which is taken up by Cresswell (2010). Mobility has, to a very large degree, to do with politics, political decisions and political economy. The politics of mobility, according to Cresswell (2010), involves the movement from A to B, but also the representation of movements and the embodiment of movements. Through the different political decisions concerning cycling and

bicycle planning in Stockholm and Copenhagen, the representations of cycling and the embodiment of cycling have become quite different. For example in Copenhagen all planners and politicians interviewed mentioned cycling as the most important part of transport in the city, and cycling was always viewed as positive (interview Røhl, Jensen, Tørsløv, Aaberg, Elle, Hjortskov Jensen and Bondam). In Stockholm, on the other hand, when interviewing the transport planners they mentioned that transport is complicated, but few planners mentioned cycling without my bringing it up. During the interviews, bicycling was more a part of the greater transport system that does not need very much consideration (interview anonymous transport planner, Fager and Tedesjö). The exception was of course the bicycle planner Krister Isaksson who started to talk about cycling from the start (interview Isaksson). However, one planner explained that the transport system is complex and that the situation needs to be improved for all, which does not lead, I believe, to an improvement of the situation for bicyclists:

We get much support that this is very complex; that to improve the conditions for public transport, you need also to develop bicycling and walking; we have to prioritise the transport modes with high capacity. … For a couple of years ago the focus was mainly on motorised traffic. That we could save the transport system by prioritising the cars' accessibility. And I think that this is not as outspoken any more as it was a couple of years ago. There has been an increased understanding that we have a complex transport system that needs to nurture the accessibility of all modes of transport, and this is also present in the budget that we got after the election. It is pushed forward in that budget that we should take care of all modes of transport and provide all modes with good conditions. (interview anonymous transport planner).

It seems that in reality the priorities go to motorised traffic and public transport, when all modes of transport should be equally prioritised. In relation to Copenhagen, where the priority among politicians and planners alike is on bicycling, the effect is a better infrastructure for cyclists.

This can also be seen in the next chapter of this thesis, where the survey studies are analysed. Thus, the politics of, what I would like to call, vélomobility in the two case cities of this thesis are quite different, which has resulted in different urban spaces, different power relations and different ways of dealing with issues involving cycling. The movements of cyclists are more limited or restricted in Stockholm than in Copenhagen, because the infrastructure, planning decisions and politics differ between the two cities. That also leads to the fact that

motorised traffic in Stockholm has more power in the public space, than in Copenhagen. The space is produced with motorised traffic in mind, even though planners and politicians might not directly be aware of that. Through the social relations in the urban spaces in Stockholm, power relations in favour of motorised traffic are in place, which marginalises cyclists. This is not the case in Copenhagen. Through planning and political decisions, cyclists' movements are not as limited or restricted as in Stockholm, and motorised traffic is more restricted, which is also represented in the modal split. However, as one can see in the analysis of the survey study in the next chapter, motorised traffic still creates problems for cyclists, also in Copenhagen. The vélomobility world seems better in Copenhagen than in Stockholm, but is far from perfect.

The representations of cycling (cycling movements) are clearly different between Stockholm and Copenhagen. As mentioned earlier, investments in bicycle infrastructure have been represented rather negatively in Stockholm, whereas the media in Copenhagen seemed much more positive towards such investments (see above, interview Elle). This picture, however, has changed in recent years in Stockholm as well, towards more positive reactions of the media. Cycling is represented more positively, which could be a start for a different and generally better or more positive representation of cycling and movements of cyclists and could perhaps lead to more positive reactions of the politicians and the planners. It can also be shown in the case of Copenhagen that positive representation of mobility or vélomobility can lead to changes, and that the representation is an important aspect for better conditions for cyclists.

Here the connection to critical social theory and theories about power relations (Marcuse, Lefebvre, Lukes etc.) helps us understand the effect of planning decisions. The rationality of planning is closely linked to Marcuse's analysis of rationality in the social sciences explained in Chapter 5 and also to the way he described needs as false or true (Marcuse 1999 [1941] and 2002 [1964]). The rationality planners use in the planning processes and the satisfaction of the needs of the motorised traffic are linked to today's marginalisation of cyclists and to urban mobility and the problems connected to it. Moreover, the planning decisions have produced certain spaces, quite often motorised spaces. However, the way people in Copenhagen demanded a different way of planning and also to a certain degree a different city could be related to Lefebvre's right to the city (Lefebvre 1996 [1968]), as well as to the production of space through social relations, as seen in Lefebvre's analysis of the

production of space (Lefebvre 1991 [1974]). The spaces produced in Stockholm and Copenhagen are quite different, due to different influences, but many aspects in the planning processes and the production of spaces can be connected to the theoretical work explained in Chapter 5 in this thesis. The politics of bicycle planning in the two cities can also be connected to certain power relations, such as unabashed political power, as in the case of the Stockholm Party, and also in power structures less visible, such as the economic and cultural structures in the two cities that influenced planning and politics. In those structures one can see the third dimension of power described by Lukes (2005) and explained in Chapter 5. Those connections and the empirical data from the interviews lead to further questions, such as how cyclists see the planning and the situation in Stockholm and Copenhagen. That is dealt with in the next chapter, where the survey studies are analysed.

8 Mobility and cycling – The cyclist's view

When studying the bicycle, one must avoid the romantic images of the eco-friendly, civic-minded rider who chooses to resist the car. (Pesses 2010:19)

The empirical data in this chapter build on a survey study in Copenhagen[1] and Stockholm. As mentioned in the previous chapter on method, the study was conducted in the spring of 2011. 3,012 surveys where sent out in Stockholm and 3,005 in Copenhagen. The response rate was 39.54 % in Stockholm (i.e. 1,191 responses) and 36.61 % in Copenhagen (i.e. 1,100 responses). The selection was stratified, i.e. the same amount of surveys was sent to each city district in Stockholm and Copenhagen. Furthermore, the selection was designed to be representative in terms of age and sex. The survey was sent to a representative population of all citizens in Copenhagen and Stockholm and not to cyclists exclusively. A more detailed description of who answered the survey and of the data collected in Stockholm and Copenhagen is outlined in Chapter 2.

The survey was developed along the lines of Cresswell's politics of mobility mentioned above. Since the term "mobility" includes such values as justice, feelings/experiences of movement and infrastructure, it can be used for analysing the experiences of cyclists in Copenhagen and Stockholm in a

[1] The survey includes the municipality of Frederiksberg located in the central parts of Copenhagen, which means that it is practically a district of Copenhagen. The cooperation with the two municipalities is very close, and their policies concerning cycling, traffic and urban planning are very similar (interview with K). The municipality of Frederiksberg is henceforth included in the term "Copenhagen".

theoretical framework of the politics of mobility. The concept also forms a link with planning. Planning for cyclists involves facilitating and increasing the possibility for cyclists to use their cycles safely throughout the city, without being marginalised and also without having to fight for space. Therefore, the concept of "mobility" can also be a framework for a theoretical and empirical understanding of the needs of cyclists and the planning processes for cyclists in cities (Cresswell 2010). Cycling can be connected to all the three aspects of the politics of mobility developed by Cresswell. It is first of all a way of getting from A to B, and it is often said that it creates a shared meaning. There is, for example, much activism going on around the subject of cycling (see for example Spinney 2010, Furness 2007 or Wray 2008). Moreover, cycling is also a very physical experience, and the embodiment of cycling is very important. Therefore, the politics of mobility serves as the theoretical framework for both the development of the survey and the analysis of the data, in order to obtain a deeper and more thorough understanding of cycling and the politics of cycling in both Stockholm and Copenhagen. Moreover, the survey data are collected in order to get a deeper understanding of how people in Copenhagen and Stockholm experience bicycling. Mapping what is happening in the two cities and how cyclists view the planning, the infrastructure etc., contributes to an understanding of the development of the processes. The survey study also builds on an idea that evolved from the observational studies in Stockholm and Copenhagen, namely that the experience of cycling must be different for cyclists in Copenhagen and cyclists in Stockholm. During the observational studies my own experience of cycling was very different in the two cities. Furthermore, the infrastructure for cyclists in Copenhagen is better than the infrastructure in Stockholm (see Chapter 6). Consequently, since cyclists' experiences of cycling might differ in the two cities, that is another aspect the survey study should analyse.

In the analysis of the survey I first analyse the views of the cyclists in both Stockholm and Copenhagen and compare them with each other. Secondly, I compare the results of that analysis with the qualitative empirical material, i.e. with the interviews conducted with the planners and politicians in Copenhagen and Stockholm. The purpose of this is to get an insight into the impact of planning, as explained to me by the planners and politicians, on cyclists' experience of cycling in the two cities. In both cases, connections are made to the theoretical framework by Cresswell presented above. This analysis

of the politics of mobility allows for a deeper understanding of cycling, vélomobility and the processes involved in planning for bicycle traffic.

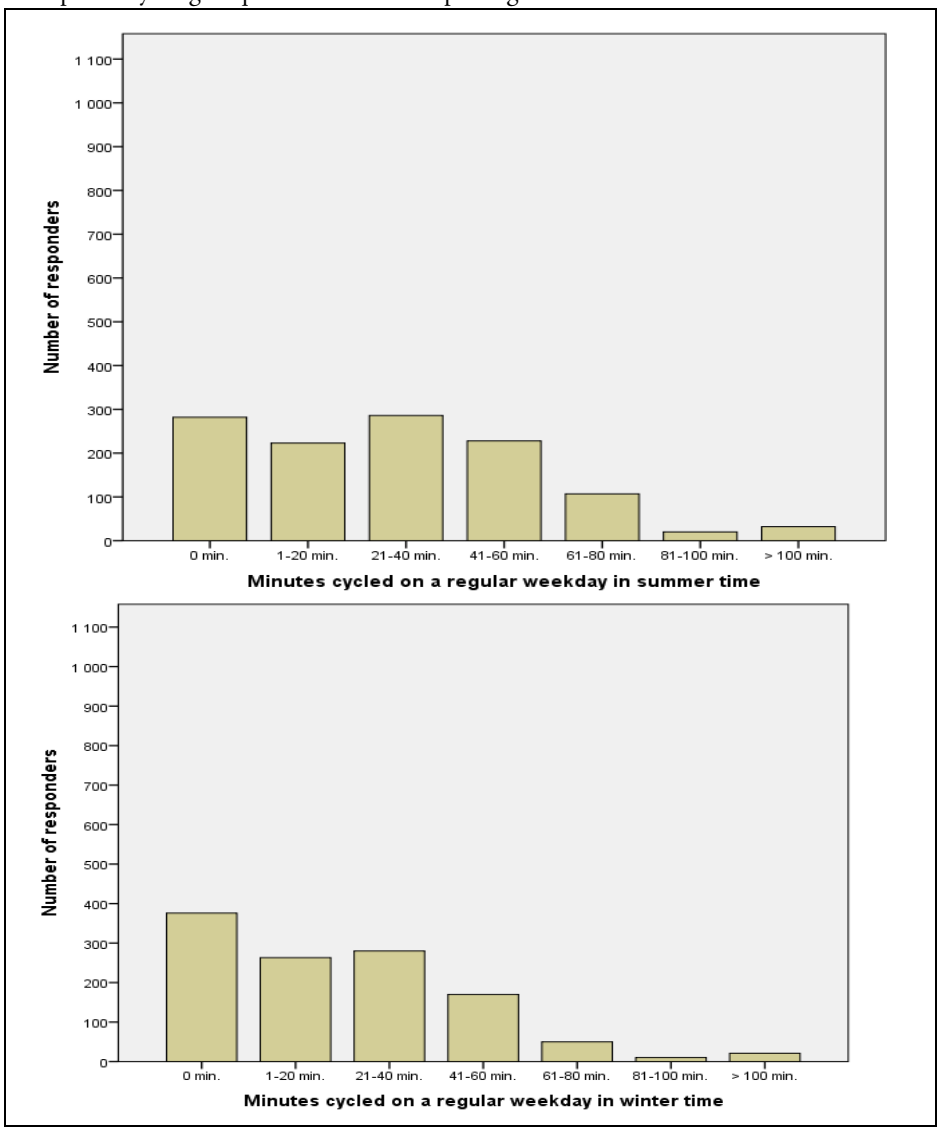
8.1 Cycling in Stockholm and Copenhagen – a question of mobility and space

The survey distributed to the residents of Copenhagen and Stockholm was concerned with the use of different modes of transport in their daily movements, their movements during weekends in both summer and winter and how they experience of these movements. The respondents had to estimate how much time, in minutes, they spend on a regular weekday and a regular Saturday and Sunday on different modes of transport, i.e. by car, walking, biking, by public transport or other modes, e.g. by motorbike. Different intervals ranging from 0 min., 1-20 min., 21-40 min. up to > 100 were suggested. The first part of the survey covers general background questions about age, sex, household composition, education level, occupation, income and what district the respondent lives in. Moreover, the respondents are asked if they have a driver's license, a functional bicycle and if they have access to a car and, if so, to what extent. In the last part of the survey the respondents are asked to agree or disagree with a number of statements on a scale from 1 "Do not agree at all" to 5 "Agree completely". Those statements refer to issues like safety, perceived security, transport planning, prioritisation in traffic and accessibility. All of these statements were to be answered from the perspective of the mode of transport used. If, for example, respondents did not cycle at all, they could choose the alternative "Never use this mode of transport". Moreover, the last statements dealt with issues of prioritisation among the modes of public transport, cars, bicycles and walking. Here the respondents had to rank, for example, what mode of transport they see as most prioritised in transport planning, ranging from one, the most, to four, the least.

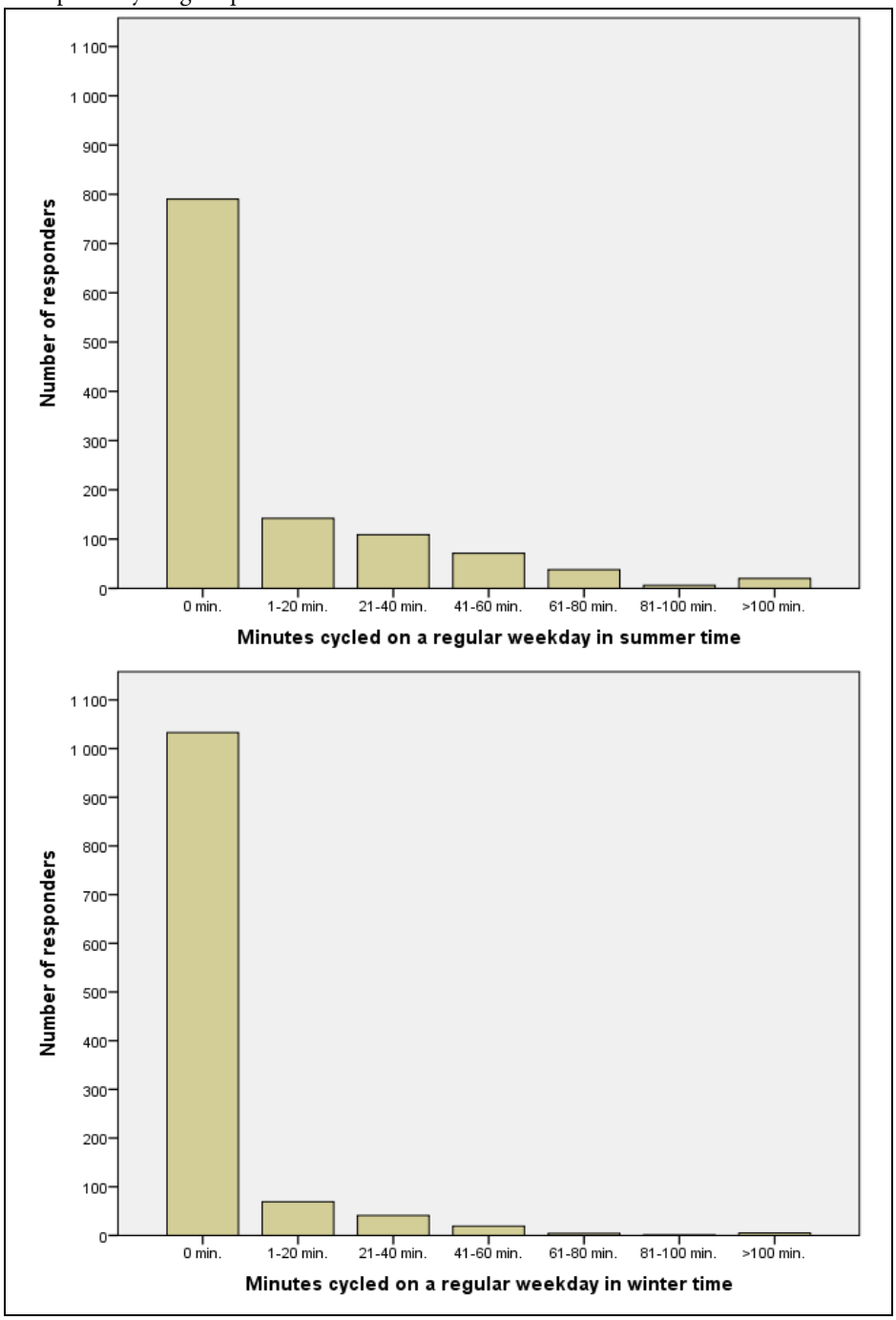
The last statement in the survey dealt with the issue of how the respondents identify themselves. In order to facilitate for the respondents, eight alternatives were given, as for example “Car driver”, “Cyclist” and so on. For more detailed information about the questions, statements and the design of the survey, see Appendix 2.

To begin with I selected all individuals who cycled 1 min. or more on a regular weekday, Saturday or Sunday in either summer or winter. This selection was made out of all responses and was drawn from the question about how much time a respondent spends on the above- mentioned days on the different modes of transport. The results when the cyclists were selected in the responses were 952 out of 1,100 responses in Copenhagen who cycle and 485 out of 1,191 responses in Stockholm. This result is not very surprising, since, as mentioned in Chapter 6, the modal split for cycling is 3.7 % in Stockholm and 31 % in Copenhagen. The next step was to create frequency tables and diagrams in order to obtain an understanding of how the cyclists in Copenhagen and Stockholm answered the questions in the survey, but also based on the overall data, i.e. before selecting only the cyclists. The overall data show that the respondents in Copenhagen cycle more than those in Stockholm. Respondents in Copenhagen cycle for a longer time on a regular weekday, and cycling on a regular weekday is less affected by winter weather than it is in Stockholm (see Graphs 1 and 2).

Graph 1: Cycling frequencies/time in Copenhagen

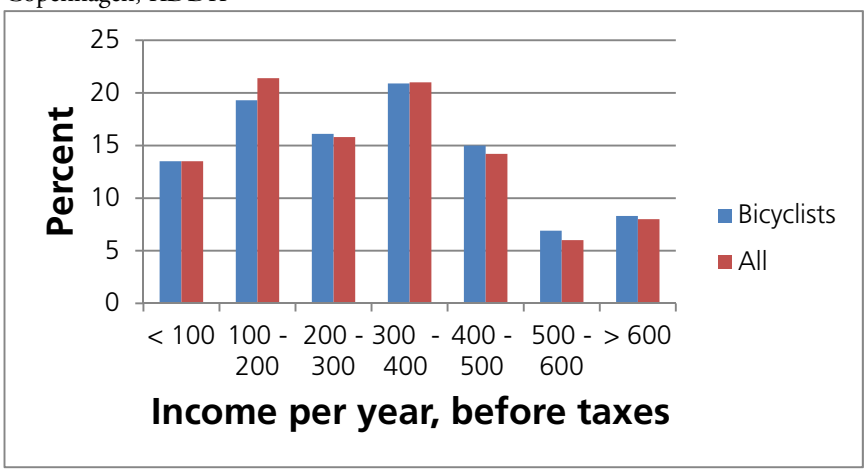


Graph 2: Cycling frequencies/time in Stockholm

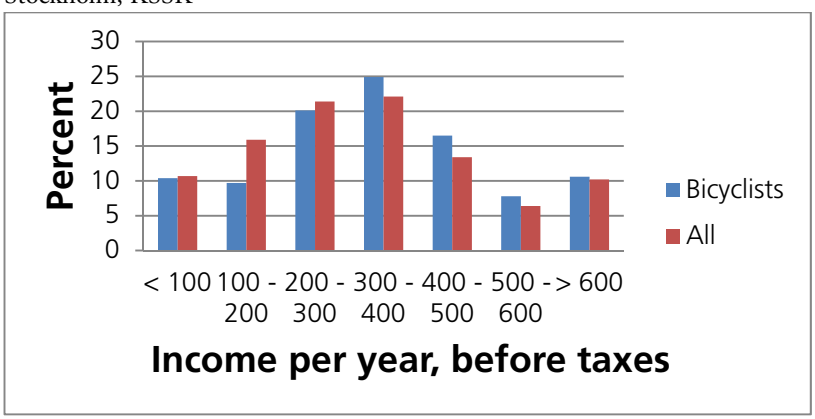


The background of the respondents who cycle in Copenhagen and Stockholm varies to a certain degree. The data show that the cyclists in Stockholm have a slightly higher income than their counterparts in Copenhagen, whereas the majority of the cyclists in both cities have a higher education (college or university degree) (see Graphs 3 and 4 below). This is quite interesting, because it might indicate that different groups of people use the bike in the two case cities.

Graph 3: Income per year and before taxes for all respondents and cyclists in Copenhagen, KDDK



Graph 4: Income per year and before taxes for all respondents and cyclists in Stockholm, KSSK

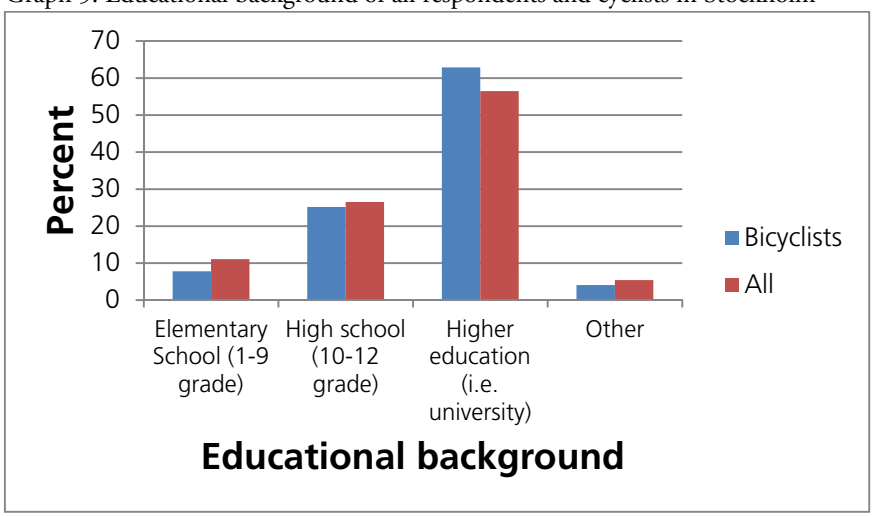


It is important to point out here that the Danish krona (DKK) is somewhat stronger than the Swedish krona (SEK). One DDK costs ca. 1.18 SEK, which means that one SEK costs ca. 0.12 Euros.

The graphs above also show that the percentages of the cyclists who responded to the survey and of all the respondents in the survey do not differ very much (see Graph 3 and Graph 4).

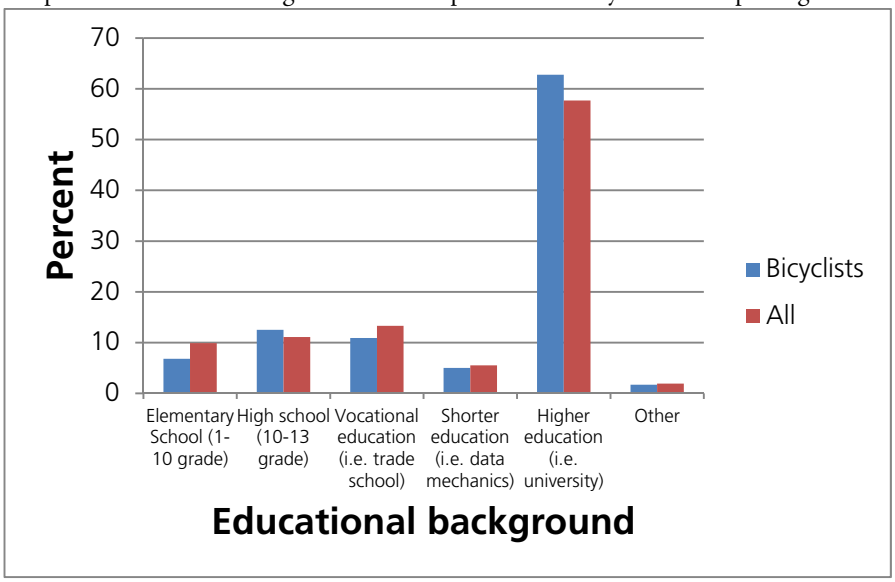
When it comes to educational background, it can be said that the respondents both in Copenhagen and Stockholm were mainly people with a higher education (college or university). In Stockholm the percentage of people with a higher education is slightly higher among cyclists than in the general responses of the survey (see Graph 5).

Graph 5: Educational background of all respondents and cyclists in Stockholm



The situation in Copenhagen is basically like the one in Stockholm. The education level is slightly higher among the cyclists than among all the respondents (see Graph 6).

Graph 6: Educational background of all respondents and cyclists in Copenhagen



The graphs indicate that the respondents in Stockholm and Copenhagen have a similar socio-economic background when education and income are compared. It seems that the respondents in general and also the respondents who cycle belong to the middle class or the upper middle class. According to statistics from the city of Stockholm, this is also in accordance with the general population (City of Stockholm 2012).

However, the general population in Copenhagen differs from the respondents of the survey. According to statistics provided by the city of Copenhagen, the majority of Copenhagen's population does not have such a high income and does not have such a high educational background (City of Copenhagen 2012).

Other background data collected in the surveys were the place where the respondents live, other socio-economic background than income and level of education, such as household structure or occupation, whether they have a driver's licence or have access to a car or to a functional bicycle. Although the distribution of gender among the respondents could be of interest, those data have not been analysed. This background data can be found in Appendix 3 for Copenhagen and Appendix 4 for Stockholm. These data show that there are respondents from all districts in both Stockholm and Copenhagen and that the

gender distribution is almost 50:50/even. The background data do not indicate a large difference between all respondents and respondents who use the bicycle. Overall, it can be said that the data collected in this survey study are quite representative in many aspects when compared to the general population of the two cities.

The background data presented here constitute the basic statistics about who answered the survey and who uses the bicycle in the two cities. The respondents from Stockholm and Copenhagen seem similar, which facilitates the comparison of the two survey studies. The background data indicate that more people with a higher income and a higher educational level use the bike in both cities. That impression was confirmed in Stockholm by my own observations. However, the impression I got when cycling through Copenhagen was slightly different, where it rather seems that all categories of people use the bike. Moreover, the fact that the responses indicate that people cycle more in Copenhagen than in Stockholm and also tend to bike more during winter shows that cycling is a more dominant phenomenon in Copenhagen than in Stockholm. This might also have an impact on the representation of cyclists and their movements and the embodiment of their movements, which connects to Cresswell's theory about the politics of mobility (Cresswell 2010). Since people tend to bike more in Copenhagen than in Stockholm, politicians' and planners' views of cyclists might vary, as can be seen in the analysis in the previous chapter. This can also lead to a change in the use of space and therefore lead to a different form of space produced by cyclists (see Lefebvre 1991 [1974]). Nevertheless, the modal split presented in Table 2 shows that motorised traffic is still very dominant in Copenhagen, even though the traffic space in Copenhagen may look different from the one in Stockholm.

The main part of the survey consists of ten statements chosen for various reasons. First of all there is a connection to the earlier studies and the theoretical framework for this thesis. The aim is to obtain a deeper understanding of what cyclists think and feel about cycling in the two cities and about planning for cyclists in Copenhagen and Stockholm. As mentioned before, the statements are therefore based on my own observations as well as the impressions I had and the understanding I developed for cycling in Stockholm and Copenhagen. Furthermore, they are connected to the interview material from my earlier interview studies with planners and politicians in Copenhagen and Stockholm and from studies of reports and plans from the

two cities. The statements are also inspired by Cresswell's politics of mobility (2010), in the sense that through my own observations, the interviews and the study of the official reports etc. I began to see that there seem to be differences in cycling patterns between Copenhagen and Stockholm and that there seems to be a different politics of mobility at work in the two cities. Therefore, the connection to Cresswell seemed reasonable (as can be seen in the previous paragraph). Since the focus of this doctoral thesis is on vélomobility and bicycling and on the comparison and analysis of the experiences of cyclists in both Copenhagen and Stockholm, I want to emphasize that those cyclists who spent at least one minute cycling were selected for the analysis of the statements.

As mentioned earlier, the survey study builds, among other things, on the idea that there are differences between cyclists in Copenhagen and Stockholm. To find out if there are differences between how cyclists in Stockholm and Copenhagen perceive their traffic environments, the following ten statements were formulated:

1. It is fast and efficient to cycle
2. I am able to reach most of my important destinations by bike
3. I experience stress as problematic when cycling in the city
4. As a cyclist I perceive that I am prioritised in traffic
5. I find it safe to cycle
6. As a cyclist I think that planning for bicycle traffic is good
7. As a cyclist I perceive that cooperation with other modes of transport works well
8. As a cyclist I feel that bicycles are prioritised as a mode of transport

9. As a cyclist I feel that cycling should be prioritised

10. As a cyclist I feel that car traffic creates most problems for me

The statements have been somewhat rewritten here as compared to those presented in the questionnaire, since the statements in the questionnaire referred to all transport modes but are here formulated for bicycles only. In order to test my statements, a Chi 2 test was performed. The Chi 2 test is a statistical method for testing how significant differences between two groups are (Edling and Hedström 2003).

The statements in the surveys could be answered by the respondents in the following ways:

- Agree completely
- Agree
- Neither/nor
- Do not agree
- Do not agree at all

Since the Chi 2 test only works for two groups, it was important to merge groups Agree completely and Agree into one group and Do not agree and Do not agree at all into another. This means the test does not take the Neither/nor responses into account. Nevertheless, since those responses were few and of no interest for my statements, the loss of those responses is of no concern. Moreover, statements 8, 9 and 10 are statements where the respondents (the cyclists) were asked to rank from 1 (most) to 4 (least) what mode of transport, for example, creates most problems for them. A Mann-Whitney test was performed on those three statements. This test is a non-parametric method for testing statements where there are ranks involved (for the results of this test, see Graphs 7, 8 and 9 below). I will first discuss the results of the Chi2 test and subsequently those of the Mann-Whitney test.

The results of the test often confirmed my impression that a great deal is better when it comes to cycling in Copenhagen than in Stockholm, which can be seen in Table 3 on the next page.

Table 3: Results of the Chi 2 test

Statements	Results from Chi 2 test			
		Agree or agree completely	*Do not agree or do not agree at all*	*Sig.*
Statement 1: Efficient	*Stockholm*	88%	12%	
	Copenhagen	96%	5%	0.000 ***
Statement 2: Destination	*Stockholm*	88%	12%	
	Copenhagen	75%	25%	0.000 ***
Statement 3: Stress	*Stockholm*	52%	48%	
	Copenhagen	54%	46%	0.682 n.s.
Statement 4: Prioritisation	*Stockholm*	36%	64%	
	Copenhagen	72%	28%	0.000 ***
Statement 5: Safety	*Stockholm*	42%	58%	
	Copenhagen	67%	33%	0.000 ***
Statement 6: Good planning	*Stockholm*	39%	61%	
	Copenhagen	71%	29%	0.000 ***
Statement 7: Cooperation with others	*Stockholm*	49%	51%	
	Copenhagen	61%	39%	0.001 ***

The Chi 2 test measured significant differences in nearly all the answers between cyclists in Copenhagen and in Stockholm. The significance for all the statements was very high. In all cases it was 0.000*** (p-value) except one (Statement 7), where it was 0.001***. For Statement 3, which was not statistically confirmed, the significance was 0.682 n.s. It is worth pointing out that the Chi2 test only tests significant differences between the two groups. Both groups can still show similar results, however; i.e. cyclists in both Stockholm and Copenhagen can feel that it is fast and efficient to cycle in their city, but the cyclists in Copenhagen are more positive than those in Stockholm. The results from the Chi 2 test are presented in Table 3 below and discussed in greater detail in Appendix 5.

Statement 1: It is fast and efficient to cycle
Cyclists in both cities feel that it is fast and effective to cycle in their city. The percentage of cyclists who agreed or agreed completely with this statement was 88 % in Stockholm and 96 % in Copenhagen. However, this also shows that cyclists in Copenhagen are more positive than cyclists in Stockholm, which is why the difference between Copenhagen and Stockholm is significant in the Chi 2 test, 0.000***. Thus, there is a difference in how cyclists feel about the effectiveness of bicycling in their respective cities.

Statement 2: I am able to reach my most important destinations by bike
Cyclists in both cities feel that they can reach their most important destinations easily by bicycle. However, cyclists in Copenhagen agree to a lesser extent than cyclists in Stockholm (75 % agreed or agreed completely in Copenhagen as compared to 88 % in Stockholm). The Chi 2 test shows that there is a significant difference (0.000***) when cyclists in Copenhagen and Stockholm respond to the statement whether they can reach their most important destinations easily by bicycle. Nevertheless, the fact that cyclists in Stockholm agree to a larger extent than those in Copenhagen was a bit surprising.

Statement 3: I experience stress as problematic when cycling in the city
About half of the respondents in both cities agreed or agreed completely that they experience stress while cycling in the city (52 % in Stockholm and 54 % in Copenhagen). The Chi 2 test does not show any significant difference (p-

value 0.682 n.s.) between cyclists in Copenhagen and in Stockholm. Therefore, there is no difference in the extent to which cyclists feel stressed while cycling in Stockholm and Copenhagen.

Statement 4: As a cyclist I perceive I am prioritised in traffic

The responses to this statement revealed a clear difference between Copenhagen and Stockholm. The majority of the cyclists in Copenhagen (72 %) feel that they are prioritised, whereas the majority of the cyclists in Stockholm (64 %) feel that they are not prioritised. This difference is also statistically significant according to the Chi 2 test. The p-value is 0.000***. Accordingly, there is a difference in the extent to which cyclists in Stockholm and Copenhagen feel that they are prioritised in traffic in the two cities. This might have something to do with the discourse of cycling in Copenhagen. As can be seen from the analysis of the interviews in the previous chapter, great attention is paid to cycling in Copenhagen, which might have influenced the answers of the cyclists. Some results shown below, however, indicate that cyclists still feel that motorised traffic creates most problems for them. Thus, cyclists would perhaps not have been as positive in an interview or focus group study as they were in the survey. The case of Stockholm seems a bit different. Cyclists there seem to have accepted the conditions and to cope with them. Due to the improvements made in the cycling infrastructure in Stockholm, the views of cyclists are quite positive. However, an interview or focus group study might yield different results here as well. This, I would say, would be a good research idea in order to follow up the research in this thesis.

Statement 5: I find it safe to cycle

When it comes to safety, cyclists in Stockholm and Copenhagen have different experiences. While the majority of cyclists feel it is safe to use their bikes in Copenhagen (67 %), the majority of cyclists in Stockholm feel it is not safe (58 %). This is also a statistically significant difference, with a p-value of 0.000 ***. Here too, it can thus be concluded that there is a difference in how cyclists in Stockholm and Copenhagen feel about safety.

Statement 6: As a cyclist I think that planning for cyclists is good

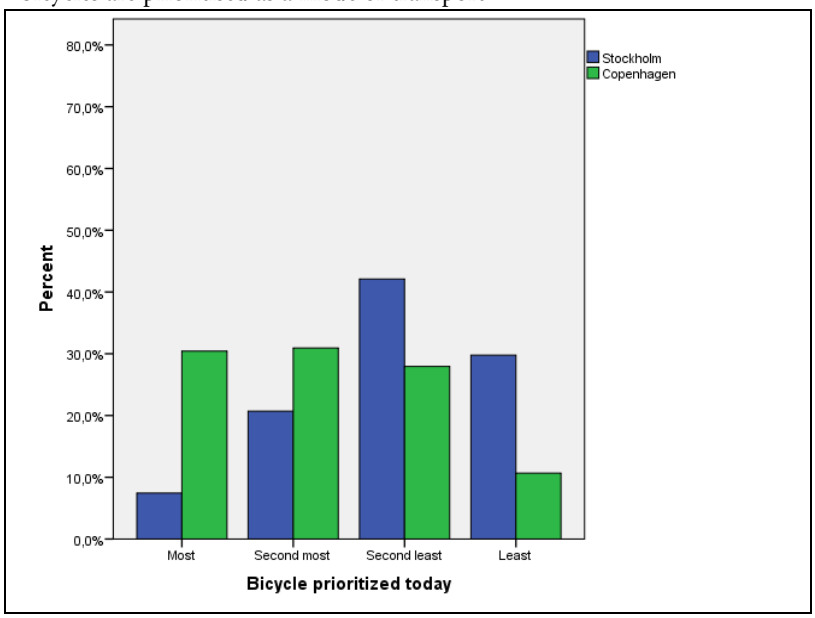
Planning for cyclists is also judged differently by respondents in Stockholm and Copenhagen. The majority of cyclists in Stockholm do not agree that planning for cyclists in Stockholm is good (61 %), whereas the majority agree that it is good in Copenhagen (71 %). The Chi 2 test confirms that this is a statistical difference, with a p-value of 0.000 ***. Thus, there is a difference between cyclists in Copenhagen and Stockholm when responding to the statement that planning for cyclists is good.

Statement 7: As a cyclist I perceive that cooperation with other modes of transport works well.

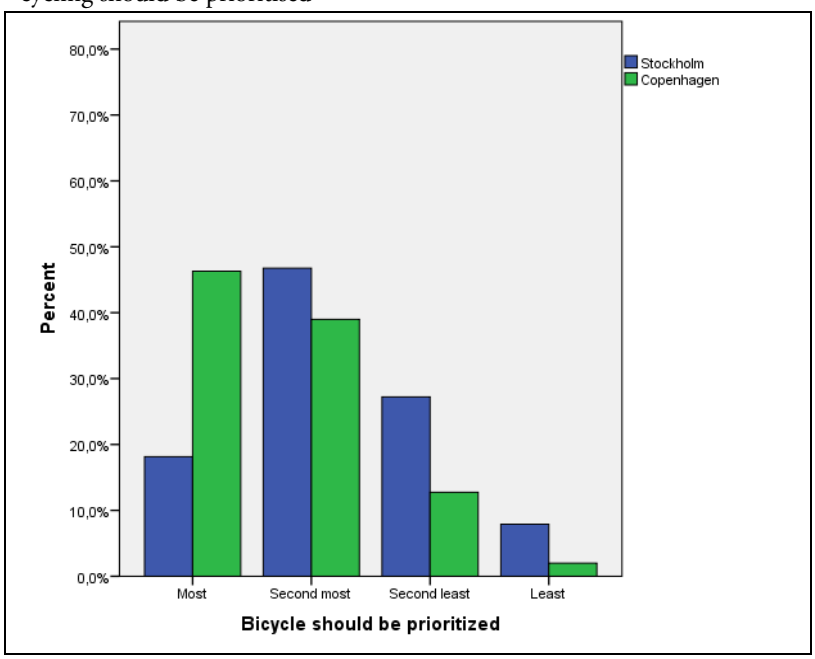
The last statement where the difference between cyclists in Stockholm and Copenhagen was tested with the Chi 2 test concerned the cooperation between cyclists and other road users. 61 % of the cyclists in Copenhagen agreed or agreed completely that the cooperation with other road users works well. In Stockholm, however, the corresponding figure is 49 %. This difference was also confirmed statistically in the Chi 2 test, with a p-value of 0.001***. Hence, there is a difference in how cyclists in the two cities experience cooperation with other road users.

As mentioned above, statements 8, 9 and 10 are tested, with a Mann-Whitney test. The result of this test can be seen in the tables and graphs below. The first tables are frequency tables that show how the cyclists in Stockholm and Copenhagen have responded to the statements, and then the results from the Mann-Whitney test are presented. The survey study also delivered other interesting results, e.g. the fact that cyclists in both cities see motorised traffic as the main problem.

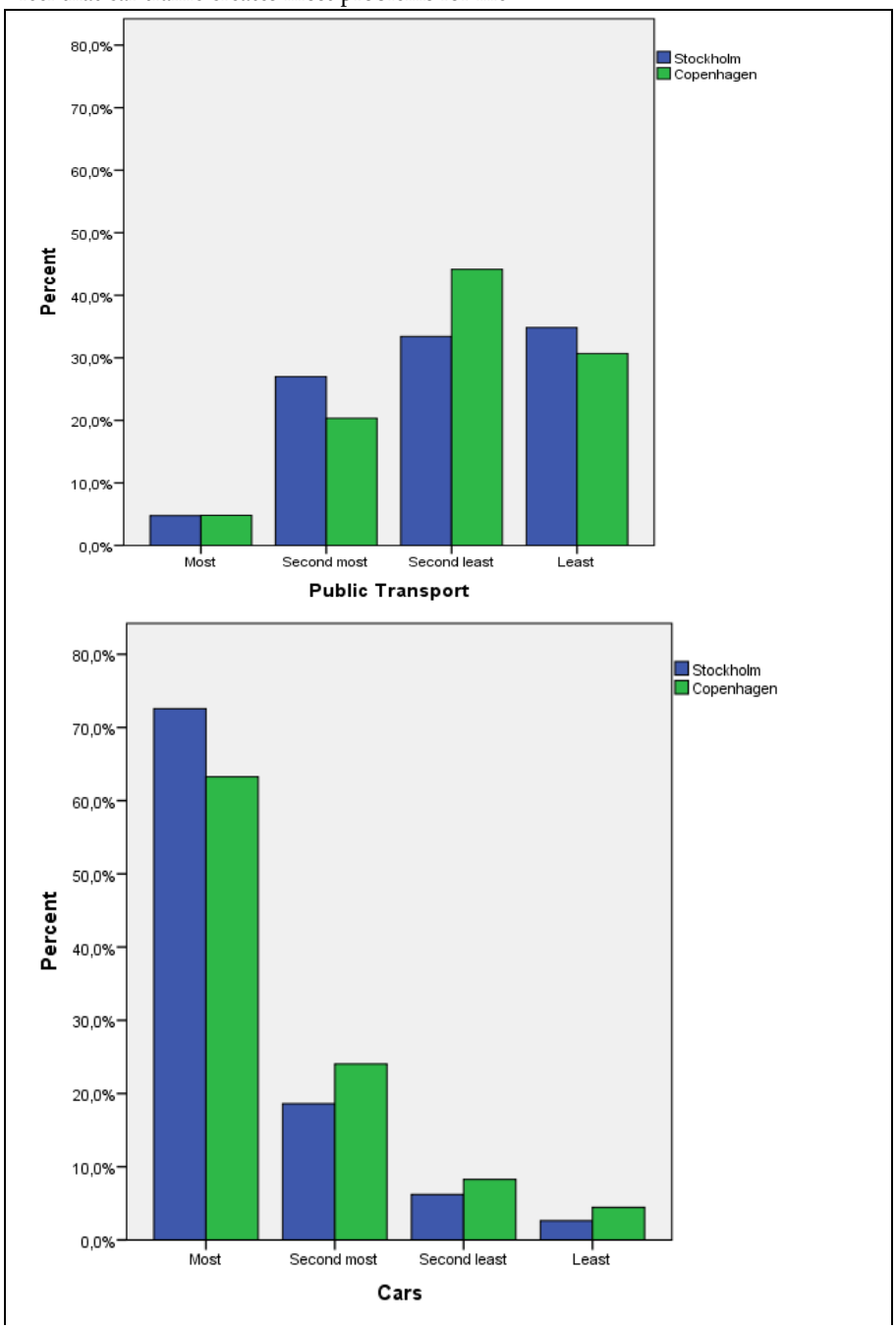
Graph 7: Results of the Mann-Whitney test for statement 8: As a cyclist I feel that bicycles are prioritised as a mode of transport

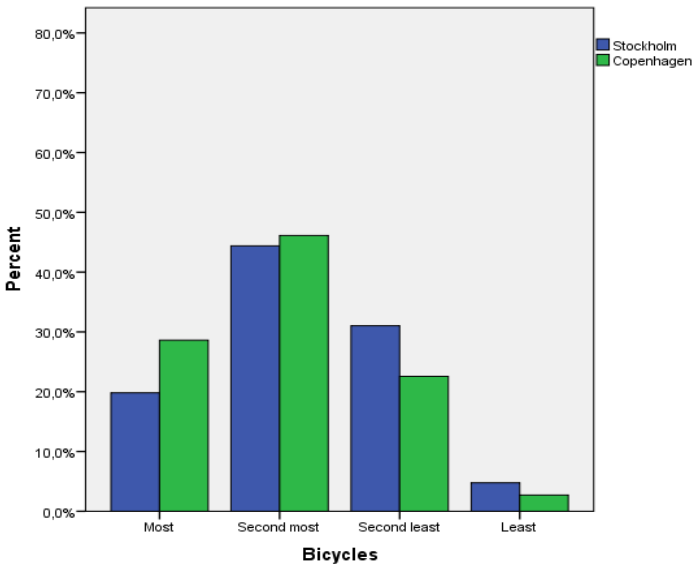


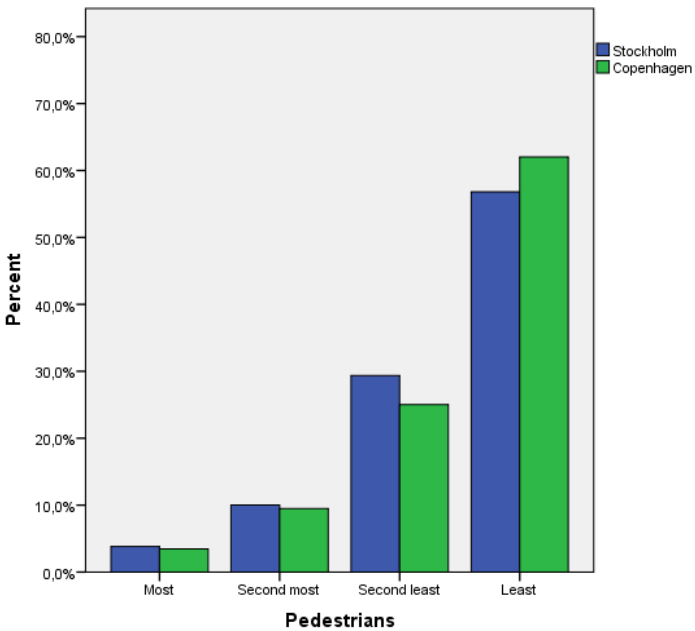
Graph 8: Results of the Mann-Whitney test for statement 9: As a cyclist I feel that cycling should be prioritised



Graph 9: Comparison of Stockholm and Copenhagen for statement 10: As a cyclist I feel that car traffic creates most problems for me







What does the Mann-Whitney test applied to statements 8, 9 and 10 show? I will discuss the three statements in a similar way as the results of the Chi 2 test above.

Statement 8: As a cyclist I feel that bicycles are prioritised as a mode of transport
The frequency table in Appendix 7 shows that the majority of the cyclists in Stockholm (42 % Second least, 30 % Least) do not think that the bicycle is prioritised in general in Stockholm. The same table shows that the majority of the cyclists in Copenhagen (30 % Most, 31 % Second most) think that the bicycle is prioritised in general in Copenhagen. This is also shown in Graph 9. Furthermore, the Mann-Whitney test also confirmed that the difference between the answers of cyclists in Copenhagen and in Stockholm is statistically significant (p-value 0.000).

Statement 9: As a cyclist I feel that cycling should be prioritised.
According to the figures for Statement 9, the majority of the cyclists in both Copenhagen (46 % Most, 39 % Second most) and Stockholm (18 % Most, 47 % Second most) think that bicycling should be prioritised. However, an even larger majority of the cyclists in Copenhagen think that the bicycle should be prioritised. Therefore, the Mann-Whitney test also calculates a statistically significant difference between the answers of cyclists in Copenhagen and in Stockholm (p-value 0.000).

Statements 10: As a cyclist I feel that car traffic creates the most problems for me.
In Statement 10, i.e. which mode of transport creates most problems for cyclists, the cyclists in both Stockholm and Copenhagen feel that car traffic and bicycle traffic create most problems for them. As for the other modes of transport, public transport and pedestrians do not, according to the answers of the cyclists, create many problems for cyclists in Copenhagen and Stockholm; see Graph 9 and, for details, the frequency table in Appendix 5.

The account of the results given in Table 3 should be understood as a general overview. The test shows that cyclists in both case cities experience problems to a certain degree, for example stress while cycling. That may be due to motorised traffic creating most problems for cyclists in Stockholm and Copenhagen (see analysis below in this chapter). Moreover, it may also be due to cyclists feeling that cooperation with other road users does not work or that planning for cyclists, especially in Stockholm, is not considered very good. All those problems can be related to the fact that cyclists have to fight for their

right to be on the streets or in public space in general, which calls the "space war" concept to mind. The survey, however, does not provide any deeper insights into why cyclists feel the way they do, which is why an interview and/or a focus group study would be required to further investigate the topic in order to offer deeper insights. This would be a good way of collecting more data about how cyclists experience bicycling. However, the connection between the theoretical outline of this thesis, especially of the politics of mobility put forward by Cresswell (2010), the production of space suggested by Lefebvre (1991 [1974]) and the different dimensions of power submitted by Lukes (2005) is visible in the analysis of the survey studies. To a certain degree the cyclists do not seem quite satisfied with the situation, which can be associated with all three theoretical dimensions mentioned before. Power relations are at the core of this, because it seems that the infrastructure is not built for cyclists (due to certain power relations in planning, as analysed in the previous chapter). Moreover, this can be associated with Cresswell's politics of mobility in terms of moving from A to B, but also with the embodiment of cycling and with Lefebvre's production of space, because the social relations in urban space produce certain spaces and, especially in the case of Stockholm, a space for motorised traffic. This becomes even more evident in the analysis of Statements 8 to 10 later in this chapter, where, for example, cyclists state that motorised traffic and other cyclists create most of the problems in traffic for them, which in turn has to do with the infrastructure and the space built for motorised traffic. Those aspects also lead to the fight for public or transport spaces in the two cities, which, according to Bauman (1998), ends in urban space wars. The space wars in the case of cyclists in Copenhagen and Stockholm are fought over concrete space, where cyclists, even in Copenhagen, seem to have less space and therefore can be seen as marginalised. In order to give a more detailed overview of the statements submitted above and the results, I will go through all the statements tested with the Chi 2 test.

The overall results of the survey study are very interesting in the light of the theoretical framework of political mobility by Cresswell mentioned above. Cresswell describes politics of mobility in terms of physical movement from A to B, the representation of the movement and the practise of movement (Cresswell 2010). It seems that in a city that works a great deal to promote cycling, like Copenhagen, physical movement on a bike is slightly easier than in a city that does not, such as Stockholm. However, the difference between Stockholm and Copenhagen is not very large and, for Statement 2, even in

favour of Stockholm (see result in Table 3). Still, the politics of mobility has an impact on how people get from A to B and what kind of transport mode they use. As Cresswell puts it:

Physical movement is, if you like, the raw material for the production of mobility. (Cresswell 2010:19)

The production of mobility can also be seen as the production of power relations in time and space. Here connections to Lefebvre (1991 [1974]) can be made. As mentioned in Chapter 5 here, space and therefore mobility are socially produced by means of relations, but also by means of rhythms and capitalist production. Like space, mobility is also produced, since mobility cannot be separated from place and space. Those two concepts are highly intertwined, and therefore both are socially produced (Cresswell 2006). This production, as seen earlier, is highly affected by capitalism and power relations. Consequently capitalism, power relations and the production of space and mobility illustrate the complexity of analysing data from a survey. The responses are also influenced by the concepts of the politics of mobility, the production of mobility and space. Power relations that, influenced by capitalism, shape the meaning of mobility, e.g. using the bicycle as a mode of transport and how people experience cycling in Stockholm and Copenhagen, are an important factor when analysing the data, for example that cyclists in Copenhagen feel they are prioritised in traffic, as opposed to cyclists in Stockholm.

The representation of mobility, or in the case of this survey study, of vélomobility can be seen in the shared views of cyclists in Copenhagen and Stockholm concerning the situation of cyclists in traffic and the feelings they share when cycling through the cities. Since cyclists in both cities give very similar answers in the survey, those answers can be interpreted as a shared representation of vélomobility in Stockholm and Copenhagen. Vélomobility is represented as more difficult in Stockholm than in Copenhagen. This, according to the findings in the survey, is linked to the planning of the infrastructure for cyclists, but also to the fact that cycling is experienced as less prioritised in Stockholm than in Copenhagen. Furthermore, the embodiment of movements and the representation of mobility both seem to foster a shared experience and a shared meaning in Stockholm and Copenhagen. It can be argued that the experience is more satisfactory in Copenhagen than in Stockholm, which can be due to different aspects of planning, the traffic

situation, but also to where the cyclists live etc. (see below for more information on that topic).

The combination of the movement from A to B, i.e. in this case the representation of vélomobility, and the experience of such a form of mobility produces two different politics of mobility; one towards prioritising cycling as a mode of transport and a less prioritising one. The first one is found in Copenhagen and the second one in Stockholm. The survey data have shown that Copenhagen has managed to produce a more sustainable form of mobility and a fairer way of forwarding the rights for cyclists to public space. In other words Copenhagen seems to have succeeded in breaking, at least to a small degree, free from the total domination of automobility, although car traffic remains the most problematic transport mode for cyclists in Copenhagen as well as in Stockholm. This is also reinforced by the modal split of the two cities, where the share of bicycle trips is much higher in Copenhagen than in Stockholm. However, the share of car trips is very similar in both cities. Copenhagen has not managed to lower its share of car trips but has at least created a more just environment for bicyclists than Stockholm.

One surprising result of the Mann-Whitney test was that cyclists in both Stockholm and Copenhagen see other cyclists as a mode of transport that creates problems for them. This could be due to the high flow of cyclists in Copenhagen and with a high flow of cyclists along specific routes in Stockholm. Although the modal split in Stockholm suggests that not many people use bikes as a mode of transport, some routes in the inner city of Stockholm experience a high flow of cyclists at rush hour. In Copenhagen the same effect can be seen along several routes, especially during rush hours. I have already mentioned that the results can be linked to space wars. There also seems to be a connection between power relations and the results. Since the cyclists mention that motorised traffic creates most problems for them, it may be an overemphasis on motorised traffic in the infrastructure that creates problems for them. This might be linked to the power relations in transport planning explained in the previous chapter and in Chapter 5. Power, as Lukes (2005) sees it, works in different dimensions, and here we can at least discern the first dimension, where the car seems to have more power than the bicycle. Other power relations, as explained in Chapter 7, might also affect the experience of cyclists in Copenhagen and Stockholm. Further, the connection to the "space war" concept becomes quite clear. The urban space or the urban street space is limited. The limited spaces accessible to cyclists seem to create

problems for their experiences and movements, as the analysis of the survey answers has shown. The analysis clearly shows that there is a lack of space for cyclists, who have to fight for their space, be it with other road users, especially cars, or with other cyclists. Those everyday struggles of cyclists are the essence of urban space wars (see Chapter 4 and Bauman 1998) and also lead to observable power struggles over space that could easily fit into the first dimension of power according to Lukes (Lukes 2002). Thus, both Stockholm and Copenhagen are the scenes of urban space wars over street space, the main problem being motorised traffic and the lack of space for cyclists.

In conclusion, it is evident that Copenhagen could be seen as a good example of a city that has managed to break free from the dominance of motorised traffic. However, it must be said that the politics of mobility are influenced by different structures in society, as discussed in Chapter 5. Those structures affect not only power relations in public spaces and planning decisions, but also the theoretical framework of the politics of mobility, since those politics are a result of those structures. Therefore motorised traffic is still a problem in Copenhagen, and the percentage of car ownership has been rising in the last 2-3 years (interview with Elle). In other words, Copenhagen has managed to create a better environment for cyclists in the city than Stockholm, but has not been able to break completely free from the dominance of motorised traffic and is still part of the capitalist production of space and mobility. Since cyclists are still struggling for space in both cities, space is one major aspect that needs to be taken into account when planning for urban transport systems.

9 Cyclists, planners, observations

Traditional planning theory does not go beyond the planning system itself, and therefore cannot be used to analyse the relationship between planning and societal development. It is necessary to replace the subjective-idealistic conception in traditional theory by a more materialistic understanding in order to explain why ideas, methods, and practices of planning and participation appear as they do. (Flyvbjerg and Petersen 1981:309)

One important remaining aspect is the overall synthesis of the data, i.e. the comparison of the answers of the cyclists in Copenhagen and Stockholm with my qualitative data from the interviews with planners and politicians and with my own observations.

It seems that there is a difference between how the planners and politicians see the infrastructures for cyclists, planning for cyclists and transport planning in general, and how the cyclists experience cycling, the infrastructure and moving around in the city. The view of the planners in both cities is very clear. In Copenhagen all planners mentioned that the first priority in transport planning is cycling, followed by walking, public transport and the least priority goes to the motorized traffic. In Stockholm it is slightly different. Here it is said that all modes of transport are equally prioritized. That means that all road users should experience that they are prioritized in the transport system.

The cyclists in Stockholm, however, do not feel prioritized and they have more or less negative experience of cycling in the city, something I witnessed as well during my observations in Stockholm. Moreover, the statements of the planners in Stockholm that all modes of transport are prioritized is in itself contradictory, because if all are "prioritized" no one is or some are, but that is not the official view of the planners.

The fact that cyclists in Copenhagen feel prioritized and think that planning for cyclists is good reflects the view of the planners in the city. This is also my impression from the observations I made in Copenhagen. The infrastructure prioritizes cyclists in Copenhagen, for example at some traffic lights, which turn green first for cyclists and then for motorized traffic. However, it is also contradictory that cyclists still see motorized traffic as the main problem and that car ownership is rising in Copenhagen, although the planners (follow the money) do not prioritize car traffic in transport planning.

In both cities motorised traffic still has a high share of the modal split (see Table 2) and cyclists in both cities feel that motorised traffic creates most problems. Moreover, the fact that cyclists in Stockholm are not more critical towards the infrastructure and the planning for cyclists might also depend on the steps Stockholm has taken during the last decade. In Copenhagen, on the other hand, not all is perfect. The pictures below will exemplify how it can also look in Copenhagen and Stockholm, and that might also influence how cyclists feel about the infrastructure and the planning for cyclists in the two cities.

Figure 11: Copenhagen
Source: Till Koglin

Figure 12: Stockholm
Source: Till Koglin

This shows that simple best practise studies are not enough. As a saying in German goes:

Es ist nicht alles Gold was glänzt! (English translation: All that glitters is not gold)

By looking at the empirical data from the interviews, the observations and the survey data it becomes more evident that the fact that Copenhagen has a much higher bike share in the modal split then Stockholm does not mean that the dominance of motorised traffic or the complete infrastructure is perfect, or that all bicycle infrastructure in Stockholm is bad. That means that a broader picture is revealed that shows that it is simply not enough, as it has been done

in some best practise studies (e.g. Pucher and Buehler 2007 and 2008), to take a look at some aspects of the bicycle infrastructure in Copenhagen and at the modal split and state that Copenhagen's transport system is sustainable and if other cities would copy Copenhagen their transport system would be sustainable, too. It is more difficult than that. Power relations in space in both cities play their role, especially in the everyday struggles of cyclists who try to get from A to B. It is in those struggles, where, according to the survey studies, cyclists struggle with motorised traffic and here the connection can be made to the space wars concept by Bauman (1998) introduced in Chapter 4. The problems cyclists in both cities seem to face are motorised traffic, and the space that is fought over seems to me of importance here. From my own observations it seems that there is in general more space allocated to motorised traffic in both Stockholm and Copenhagen and that leads to conflicts between motorised traffic and bicycle traffic. Moreover, due to the fact that there are many cyclists in Copenhagen, and also on certain tracks in Stockholm, the fight over space happens also between cyclists. The space wars seem quite eminent in both case cities, when analysing the survey data and comparing it to my own observations. Furthermore, the pictures (see Figures 12 and 8) I took in Copenhagen and Stockholm show that there seem to be conflicts in the cities between motorised traffic and bicycle traffic, and it is those space wars the cyclists have to fight when cycling through the urban spaces.

Those conflicts or space wars also stand in conflict with some ideas of the planners and politicians. The interview studies have shown that in Copenhagen, planners and politicians want to prioritise cyclists, and in Stockholm they want to improve the conditions for all transport modes. That should be reflected in the views of the cyclists in the two cities and to a certain extent it is. However, the problems cyclists seem to face when biking through the cities do not reflect the ideas of the planners. The space wars and the difficulties connected to them are highly problematic and neither city seems to have come to terms with those problems. That Stockholm is no bicycling city became quite clear in the beginning of this research. That Copenhagen's cyclists, however, seem to experience similar problems, was a surprising result to me. I think more detailed studies with interview studies and/or focus group studies with cyclists in Copenhagen and Stockholm could contribute to an even better understanding of the difficulties and the space wars connected to the mobility of the cyclists in the two cities. However, when Bondam explains

the transport planning and politics of Copenhagen it seems that there are similar issues at play as in Stockholm, meaning that the car is very important.

He states:

The starting point was the modernistic urban thinking that stands or stood above all. This view is also part of our social democratic welfare model — that the worker is entitled to a car. Freedom is larger through the car. That is an idiotic old-fashioned thought. But the bike was more secondary. Yes, you cycle a lot and it's nice, but in the considerations it was secondary. And the right to the car was more important. This also meant that the bike did not have sufficient space in planning and policy. The problem is that the social democratic welfare reasoning was that all the mobility should take place in cars rather than on bikes. (interview Bondam)

It seems that Copenhagen was going, or wanted to go, in a similar direction as Stockholm. The results from the survey study in Copenhagen show that this kind of thinking has had an impact on the urban space today, and has created urban space wars among cyclists and cars and also among the cyclists, since there is not enough space for them. Stockholm, as mentioned before, has also gone in the car direction, leaving far too little space for cyclists and thus also creating urban space wars. The urban space is a very important issue here, since it is in urban space where the everyday struggles of moving in the cities are fought, and by creating certain spaces cyclists are marginalised in urban street space, even, although to a lesser degree than in Stockholm, in a bicycle friendly city like Copenhagen.

10 Conclusions

Vélomobility – A critical analysis of planning and space is a doctoral thesis that deals with the marginalisation of cycling in urban space and urban transport systems. Urban cycling, transport planning, people's mobility and urban space are all interrelated, as has been shown in this thesis. I have used theories concerning mobility, power relations and space in order to explain today's dominance of motorised modes of transport and the marginalisation of cyclists in urban spaces. This theoretical discussion was followed by empirical research in Copenhagen, Denmark and Stockholm, Sweden, where interviews with planners and politicians have been conducted and surveys of the residents of the two cities have been analysed.

Moreover, I have described the important factors that contribute to the development of today's transport infrastructure and the outcome of planning for cyclists in many cities. Those factors are, among others, the development of modernism and, with it, a way of performing transport planning that focused and to a certain degree still focuses on motorised traffic. This is also connected to the development of the Fordist production of cars. The influence of economic, social and cultural aspects also contributes to the increased use of motorised modes of transport and vice versa. In other words this dissertation has been a research project on the political economy, the power relations and the space of mobility and the marginalisation of cyclists in an urban context. The mix of method developed a deep approach to the research question and offered a broad range of answers to the complexity of the transport systems in Stockholm and Copenhagen. The qualitative data allowed for broad and deep analysis of the planning and political processes at work in both case cities. Furthermore, it gave insights into the complex situations when it comes to transport and urban planning and the historic, economic, cultural and political factors that all influence transport planning and the outcome of political and planning decisions.

From the quantitative data the view of the cyclists could be analysed with the help of the Chi 2 and Mann-Whitney tests. This data gave generalizable

insights into the situation and experiences of people who cycle in Stockholm and Copenhagen. Also, it allowed a statistical comparison of the data between the two cities. Both methods offered very different kinds of data, but the comparison between the views of the cyclists and of the planners in Copenhagen and Stockholm was very interesting. It showed that planners might have one view of how bicycling or the infrastructure is perceived, and that cyclists might experience it quite differently. The knowledge from all data created a deeper understanding of how the transport systems in both cities were developed, which factors influence and have influenced the planning and the transport systems, and how cyclists see the system and the planning. This kind of knowledge offers a new way of analysing transport systems and a different way of understanding why certain cities have more cyclists on the streets than others.

The increased use of motorised modes of transport together with modernist visions of the city paved the way towards urban and transport planning policies and practises that favoured motorised traffic and marginalised cycle traffic. Under the influence of modernism, in Sweden materialised through SCAFT, and Fordist car production, urban and transport planners prioritised motorised traffic and designed infrastructures that created power relations in favour of motorised traffic. However, SCAFT was a guideline for increased traffic safety. Traffic safety was also increased, but the side effects were marginalisation of cyclists and a car-oriented society. When that happened, cyclists were marginalised and excluded from urban spaces in many cities. This has been analysed particularly in Chapter 5 in this thesis. The research shows how those existing infrastructures, although often built many decades ago, are very hard to change (or redesign). Few attempts to change them have been undertaken by urban and transport planners. It is in the infrastructure, which is the materialisation of planning decisions, where the spatial dimension brings together the struggle over space and the mobility of people in the cities. The marginalisation of cyclists in urban space is a very obvious effect of those struggles and fights for urban street space — in other words urban space wars. The materialities of the planning decisions show that power relations are built into the infrastructure of today's transport systems, that cyclists are marginalised in urban space and space wars are created between different road users.

The analysis in Chapter 5 also shows the materialisation of power relations in urban space, and this leads to further considerations of power relations in

connection with planning and traffic. Planners and decision makers often have advantages in terms of knowledge that road users do not have, which according to Foucault gives them more power (and the "right" to exercise it) (Foucault 1980). They decide what infrastructure should be built and how. Thus, the decisions taken by planners and decision makers are connected to the power relations in public spaces, and this is also highly connected to what Lefebvre calls the production of space (Lefebvre 1991 [1974]). The actions, processes and politics of planning have been analysed in Chapter 7, via the case studies in Copenhagen and Stockholm. Through the interviews with planners and politicians in the two cities, an understanding has developed about what factors have influenced the planning and the politics of the transport systems in the two cities. It has become clear throughout the analysis of the interviews, in connection with the analysis of the materialisation of the marginalisation of cycling in urban space, that there are power relations that are structured around culture and economy. The emerging car culture and the economic structures of the Fordist production system together created power relations that are not easy to observe, but nevertheless influence people's daily lives. The lobbying campaigns and the marketing strategies of the automobile industry affect not only consumers, but also decision makers and planners, which deepens the power relations between different road users and between road users and planners and decision makers.

The cyclists have had very little influence on planning in Stockholm and had a larger impact on planning in Copenhagen. This became quite clear during the analysis of the interviews in Chapter 7. An additional factor that has contributed to the development of the transport systems in the two cities is the organisation of the planning departments and administrations; the organisation in Copenhagen is far more cooperative organised than in Stockholm and has more planners working with bicycle planning. The data from the interviews have shown that there is more cooperation between different planners in Copenhagen than in Stockholm, and that bicycling is part of the planning process right from the start, which is not the fact in Stockholm. This might lead to the marginalisation of cycling, not only in the urban space, but also within planning.

The politics of planning are also different between Copenhagen and Stockholm. As described in Chapter 7, the inhabitants of Copenhagen took the issue of cycling to the streets and protested in the 1970s for better bicycling infrastructure. Those protests ultimately resulted in a shift in politics towards

better cycling conditions. This did not occur in Stockholm, and the focus of the politics of planning remained on motorised and public transport. First with the Stockholm Party and its policies in the late 1990s did cycling become an issue on the political agenda, much because of the Stockholm Party politician, Stella Fare. Her policies and those of the Stockholm Party have led to a focus on cycling also in Stockholm. That shows that political decisions are very important for dealing with a change of the transport system and people's mobility. Furthermore, this shows also that the materialities of urban space can be changed, at least to a certain degree, by political actions.

However, urban space is not always perceived as it first appears. Through the analysis of the survey data (see Chapter 8) from Copenhagen and Stockholm it can be concluded that neither cyclists in Stockholm nor in Copenhagen are perfectly happy with the infrastructure, policies and planning for cyclists. Cyclists in Copenhagen are in general more satisfied with the situation than cyclists in Stockholm. But when considering the image Copenhagen has built as a cycling city, it is quite surprising that cyclists in Copenhagen are not more satisfied with the situation. The analysis of the survey data shows that cyclists both in Copenhagen and Stockholm perceive motorised traffic as the mode of transport that creates the most problems for them. Other cyclists follow motorised traffic. Those results show that cyclists experience motorised traffic and other cyclists as problematic. Further, the results lead to the conclusion that cyclists have to fight for the street space in both cities. The struggles can be described as urban space wars between cyclists and motorised traffic and between cyclists. Urban space is the materialisation of power relations, and shows how cyclists are marginalised in both Copenhagen and Stockholm, although to a lesser degree in Copenhagen. Due to the fact that many people in Copenhagen use a bicycle as a mode of transport and that certain routes in Stockholm have high flows of cyclists, the lack of space for cyclists also leads to a fight over space between cyclists. Thus, the urban materialities and the urban space, which have been favouring the motorised traffic, create urban space wars between different modes of transport. Nevertheless, according to the survey data, people bike more, and longer distances, in Copenhagen compared to people in Stockholm, and cyclists in Copenhagen are more satisfied with the transport system and the planning for cyclists than are cyclists in Stockholm. This is a reflection of the better infrastructure for cycling in Copenhagen, and of the fact that Copenhagen in general has a more advanced cycling culture than Stockholm.

It can, thus, be concluded that space and the materialities of the cities create a self-generating structure, depending on how space and the materialities are perceived and experienced. If there is focus in planning on public transport this infrastructure is supported, which, in the case of Stockholm, leads to a higher share of public transport in the modal split. On the other hand, if a city, like Copenhagen, focuses on cycling the modal split for cycling is higher than in cities that do not focus on biking. Space influences the mobility of people and hence also the social relations in cities, which is one important aspect when considering the complexity of the transport system.

Lastly, I would like to conclude that the transport system and the infrastructure in Copenhagen is more in favour of cycling than it is in Stockholm, which also is reflected in the modal split (see Chapter 6). However, cyclists do experience difficulties in both cities and the share of the modal split for trips by car is very high in both Stockholm and Copenhagen. Therefore, neither city has a sustainable transport system, and both cities have inbuilt power relations in the system, which are materialised in space and through urban space wars. The power relations at play are sometimes hard to observe and are influenced, as shown in this research, by many different aspects. The high share in the modal split in both cities for car trips, the influence of SCAFT and similar modernistic planning ideals are connected to the social welfare system in both Denmark and Sweden. Both, as can be seen in the SCAFT guidelines and the million program in Sweden, as explained in chapter 5, and the right to the car, as Bondam sees it (interview Bondam) is one important factor explaining that the car is still as dominant as it is in both Copenhagen and Stockholm. Here the connection to the third dimension of power (Lukes 2005) is essential. Those influences are hard to observe, but in the political and planning decisions they are still very influential, which makes it hard to change the system towards a sustainable transport system. I hope this research has contributed to a broader view of the processes that have led to the transport systems in Copenhagen and Stockholm, and of the aspects that influence vélomobility in urban space. Space, power and mobility are connected, and in order to create a more sustainable transport system those aspects have to be analysed and visualised. Many cities around the globe try to create a sustainable transport system. However, in order to create a more just and sustainable future and a better urban life the transport systems have to change dramatically. Social, economic and cultural aspects are part of the systems and one needs to develop an understanding of those matters and the structures that

effect planning, politics and people's mobility. Thus, research on such topics in other cultural settings and different cities around the world might illuminate the problems of developing sustainable transport systems.

Epilogue – Changes in two cities

Since the research conducted for this doctoral thesis, much has happened in both Copenhagen and Stockholm, as in many other cities around the world. During the last stages of writing this thesis I became increasingly aware that cities see cycling as a way of reduce their environmental impact. The same can be said for Stockholm, which has invested more and more in bicycle infrastructure; since the end of the 1990s the opinion in the media and among the planners and the politicians has changed quite a lot. The media went from being very negative towards almost all bicycle infrastructure investments in the late 1990s and early 2000s to being very positive about such investments. It seems also that the planners have changed their view on cycling and urban transport. New bicycle plans have been developed and partly implemented. However, Stockholm still has a long way to go if the city wants to fully embrace urban cycling and create a good environment for cyclists. Moreover, the investment in the infrastructure for motorised traffic is still very high, and the new ring road (Förbifart Stockholm) is not an investment that creates a sustainable urban transport system. Still, bicycle traffic is rising in Stockholm and the shift of opinion in the media and among politicians has led to an improvement of the bicycle infrastructure, even though many problems, especially with connectivity, remain. However, the new strategy for improving the level of service for cyclists and the money allocated to cycling in the 2012 budget give hope that changes will happen. Furthermore, the city of Stockholm invests in the existing subway system and plans to invest and build a tram system. It seems that Stockholm wants to continue developing public transport and at the same time try to improve the situation and infrastructure for cyclists.

Also in Copenhagen things have happened since the research for this thesis was carried out. One example is the national strategy of the Danish Government on cycling (Sick Nielsen et al. 2013). One so-called super-highway for cycling was opened on the 20th of April 2013. This highway will connect the city of Copenhagen with other municipalities in the region, in order to increase

bicycling between Copenhagen and the surrounding municipalities. Nevertheless, car ownership is rising in Copenhagen, and trips with bikes are not really increasing as planners and politicians would like. Since the people of Copenhagen have become richer the car seems to be a symbol of freedom and prosperity. It seems that the cycle of motor domination has not been broken in Copenhagen, although cycling still is one of the most important means of transport in the city. Moreover, during recent years Copenhagen has invested in a Metro system, which has been in operation for some years now. The city of Copenhagen still builds on the Metro and more stations will open in the next few years. These are some of the investments Stockholm made after World War II (e.g. build a subway system) and Copenhagen could not do due to the lack of financial means.

Overall, changes are happening in both Copenhagen and Stockholm. However, trends in and the domination of motorised traffic are not really broken. Steps are taken in both cities in order to create a better system for cyclists and a better public transport system. The future will show if those steps are enough to stop the domination of motorised traffic in Copenhagen and Stockholm and create a sustainable transport system.

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Interviews

Copenhagen:

Andreas Røhl: Head of the bicycle planning program at the Centre for Transport, City of Copenhagen, interviewed 2010-01-08

Niels Jensen: Bicycle planner with long experience at the Centre for Transport, City of Copenhagen 2010-01-08

Niels Tørsløv: Head of the Centre for Transport, City of Copenhagen, interviewed 2010-10-07

Hjalte Aaberg: Head of the Technical and Environmental Administration under which the Centre for Transport is located, today regional director for the Capital Region of Denmark, interviewed 2010-10-19

Søren Elle: Urban and transport planner with a long experience of planning at the Centre of Urban development, City of Copenhagen, interviewed 2011-09-21

Jakob Hjortskov Jensen: Urban planner at the Centre of Urban development focused on zoning planning, City of Copenhagen, interviewed 2011-11-18

Klaus Bondam: Politician for Radical left party, vice mayor for Technic and Environment 2006-2012, City of Copenhagen, interviewed 2011-02-15

Stockholm:

Krister Isaksson: Bicycle planner at the Transport planning department, City of Stockholm, today consultant for SWECO, interviewed 2010-05-25

Krister Spolander: Senior Consultant at Spolander Consulting with long experience of transport in Stockholm with focus on cycling, interviewed 2010-02-12

C 2010-11-01

One transport planner who wanted to be anonym: Similar position in Stockholm as Niels Tørsløv has in Copenhagen, interviewed 2010-11-01

Mats Fager: Transport planner with long experience at the Transport planning department, City of Stockholm, now consultant for WSP, interviewed 2011-10-13

Eric Tedesjö: Urban planner with focus on transport questions in zoning planning at the Urban Planning Department, City of Stockholm, interviewed 2011-09-26

Stella Fare: Politician for the Stockholm Party (now Liberal Party), vice mayor for urban politics 1998 – 2002, City of Stockholm, interviewed 2011-03-25

Appendix 1 Interview Guides

The interview guide builds on different themes. Those themes were used differently depending on the position of the interviewed person. The questions were guide questions for me in order to remind me what topics I want to touch upon. Many questions and themes are similar, but some, depending on the person interviewed, are different. Below are all individual interview guides for all interviews.

Interview guide planning for bicycling Andreas Røhl, Niels Jensen, Krister Isaksson

1. Background factors of today's planning for bicycling – Why do people bicycle so much in Copenhagen and so little in Stockholm?

a. The history of bicycling in Copenhagen (the 1950s, 60s and 70s)?

b. What influenced planning for bicycling?

c. What was the impact of the oil crisis on planning for bicycling? Did it affect policies and planning? If so, in what way?

d. What was the role of politicians in planning for bicycling? Influential people who promoted bicycling issues (planners, administrators and politicians)?

e. Were/are politicians involved in these issues? Since they concern the capital, national politicians may be interested in planning the city.

f. What is the bicycling culture like? Does it include identity creation?

g. What are the citizens' attitudes to bicycling, and how does this affect planning and processes?

h. What are the present plans? Goals?

2. Other factors that affect planning for bicycling and bicycling policies

a. Does the existence or non-existence of a car industry affect bicycling policies and planning for bicycling? Lobbying groups for and against bicycling? The costs of owning a car (purchase + tax and insurance)?

b. What is the role of the economic development in planning for bicycling?

c. What are the laws in Denmark/Sweden?

d. What does the interplay between motor vehicles and bicyclists look like?

e. How do you assign priorities in planning for bicycling?

f. How do the media look upon bicycling policies?

3. Other aspects of planning, such as cooperation with urban planners, citizen influence, gender etc.

a. What cooperation is there with urban planners, other transport planners? Is planning for bicycling included in other planning processes, e.g. overall planning?

b. How are citizens incorporated in planning processes?

c. How safe are bicyclists at different hours?

d. Who has the major impact on the planning process?

e. Do you regard bicycling and planning for bicycling as satisfactory as they are at present? At whose expense do you expand? Cars? Buses?

f. Other aspects of the situation?

Interview guide Elle, Fager

1. Background factors of today's transport planning and traffic in general (history)

a. How do you look at transport planning, and how has it developed?

b. What has had the major impact on transport planning and traffic?

c. How do politicians influence transport planning?

d. Were/are national politicians engaged in issues of traffic and bicycling?

f. What is the role of the car industry?

2. Other aspects of planning, such as cooperation with urban planners, citizen influence, gender etc.

a. How does cooperation with urban planners, planners for bicycling and other transport planners take place? *Is* there any cooperation? Is planning for bicycling included in other planning processes, e.g. overall planning? If so, in what way?

b. What does the interplay between transport planning and planning for bicycling look like? What is given top priority in the area of transport planning?

c. As a transport planner, how do you look upon planning for bicycling? How do you assign priorities among other types of traffic?

d. How do you regard your role in traffic/urban planning?

e. How are citizens incorporated into planning processes?

f. Who exerts the major influence on the planning process?

g. What other actors have an impact on transport planning? Lobbying, organizations?

Interview guide Hjortskov Jensen, Tedesjö

1. Background factors of today's urban planning/zoning and transport planning and traffic in general (history)

a. How do you look upon transport planning, and how has this planning developed? When and how did planning for bicycling enter the arena, and how do you look upon it?

b. How is transport planning incorporated in zoning and urban planning?

c. What had the major impact on planning, transport planning and traffic?

d. How do politicians influence planning? Are there conflicts between the different parties as regards planning for bicycling, for example?

e. What plans exist today for transport planning and planning for bicycling?

f. What is the role of economic development in planning? For example: Good economy = more cars, bad economy = fewer cars and more bicycles?

2. Other aspects of planning, such as cooperation with urban planners, citizen influence, gender etc.

a. How is cooperation with transport planners and bicycling planners in the other administration designed?

b. What is the interplay between transport planning and planning for bicycling in the overall planning?

c. As a traffic strategist, how do you look upon planning for bicycling?

d. How do you look upon your role within transport/urban planning?

e. How are citizens incorporated in planning processes?

f. Who has the major impact on the planning process?

g. What other actors have an impact on overall planning and transport planning? Lobbying, bicycle organizations?

Interview guide Spolander

1. Background factors of today's planning for bicycling and bicycling in Stockholm

a. The history of bicycling in Stockholm – developments from 1900 to today, and what were things like at the time of the arrival of the motorcar in society (the 1950s, 60s and 70s)?

b. What was the major impact on planning for bicycling in Stockholm?

c. How did the oil crisis affect planning for bicycling in Stockholm?

d. What was the role of politicians in planning for bicycling in Stockholm? Strong individuals who pushed issues of bicycling (planners, civil servants as well as politicians)?

e. Were/are national politicians involved in these issues? Since it concerns the capital, national politicians may be interested in planning in the city.

f. What is the bicycling culture in Stockholm/Sweden like? Is identity creation part of the planning? Do you think planners want Stockholm citizens to

identify themselves as bicyclists, or should they rather regard bicycles as the easiest means of transportation? What is Stockholmers' attitude to bicycling, and how does it affect planning and processes?

g. What are today's plans? What is to be achieved, and what figures are there about bicycling in Stockholm?

2. Other factors that affect planning and politics for bicycling

a. To what extent does it have an impact that Sweden has a substantial car industry to take into account in planning and politics of bicycling? What lobbying groups exist that influence the outcome of planning, in favor of as well as against bicycling? The costs of owning a car (purchase + tax and insurance), which are likely to be fairly low in Sweden as compared to e.g. Denmark and, possibly, other countries as well? See Pucher et al.

b. How do economic developments affect planning for bicycling? Good economy = more cars, bad economy = fewer cars and more bicycles?

c. Do Swedish laws give priority to bicyclists?

d. What is the interplay between motorcars and bicyclists like in Stockholm?

e. How is giving priority to bicycling promoted in Stockholm? What is done to make bicyclists feel that they are prioritized?

f. How do the media regard policies for bicycling in Stockholm?

3. Other aspects of planning, such as cooperating with urban planners, citizen influence, gender etc.

a. How is cooperation with urban planners and other transport planners designed?

b. How are citizens incorporated in planning processes?

c. How safe do bicyclists feel at various hours?

d. Who has the strongest impact on the planning process?

e. Do you think bicycling and planning for bicycling are adequate as they are today?

f. What is the situation like in other aspects?

Interview guide Aaberg

1. Background factors of today's transport planning in Copenhagen (organization)

a. The organization – how is it related to transport planning and planning for bicycling?

b. Do transport planners cooperate with, for example, urban development etc.?

c. How is transport planning related to other areas of administration? Do transport planners cooperate with, for example, urban development etc.?

d. What is your opinion of transport planning in Copenhagen in relation to the other departments?

e. What had the strongest impact on transport planning/ planning for bicycling and the organization in Copenhagen?

f. How have politicians influenced the organization around transport planning? Are there any conflicts between the parties involved?

g. What is your opinion of planning for bicycling in relation to transport planning and other departments?

2. Other aspects of planning, e.g. cooperation with urban planners, citizen influence, gender etc.

a. How does cooperation take place with urban planners, planners for bicycling and other transport planners? Is planning for bicycling included in other planning processes, e.g. overall planning?

b. How do you, as administrative head, look upon transport planning and planning for bicycling? What are your priorities?

c. How are citizens included in planning processes?

d. Who exerts the strongest influence on the planning process?

e. What other actors have an impact on transport planning and planning for bicycling?

Interview guide, Törslöv, Forsell

1. Background factors of today's transport planning and organization

a. How do you look upon transport planning, and how has this planning developed?

b. What had the major impact on transport planning?

c. How do politicians influence transport planning?

d. Were/are national politicians involved in transport issues?

e. What plans exist today for transport planning?

2. Other factors that influence transport policy

a. How do the media regard transport policy?

3. Other aspects of planning, such as cooperation with urban planners, citizen influence, gender etc.

a. How does cooperation with urban planners, planners for bicycling and other transport planners take place?

b. What is the interplay between transport planning and planning for bicycling? What is assigned top priority within the area of transport planning?

c. In your capacity of the transport planning division, how do you look upon planning for bicycling?

d. How are citizens incorporated in planning processes?

e. Who has the major impact on the planning process?

Interview guide Bondam, Fare

Thoughts:

Discourses on (bicycle) politics – what does the future involve?

What are the visions?

How do you make decisions and assign priorities?

1. Background factors of today's bicycling policies

a. How did you previously regard transport planning/policies, and how has your view of politics and decision-making developed? How has politics in general developed? When and how did bicycling policy enter the arena?

b. You based your election campaign on issues of bicycling. Why did you, and how did you experience that people perceived it? (Bondam)

c. You and your party tipped the balance of power and promoted issues of bicycling above all. How did you experience that people reacted, and, in your opinion, how did things turn out? (Fare)

d. As a politician, how did you affect transport planning and planning for bicycling?

2. Other factors affecting planning for bicycling and bicycling policies

a. How did the media look upon transport policies and bicycling policies?

3. Other aspects of politics, such as cooperation within the party, between the parties within a bloc, between majority and minority, between politicians and committees

a. As a politician/assistant mayor for transport policy, how did you cooperate with other politicians within the party, with politicians in other parties, with committees, authorities, boards?

b. What did the interplay between political government and administration look like? What was the relationship like?

c. In what way did you take citizens' opinions into account, and how does that affect transport policy?

d. As a transport politician, how did you look upon planning for bicycling? Does the policy look any different today?

e. To what extent did you influence transport planning and planning for bicycling?

Appendix 2 Surveys for Copenhagen and Stockholm

Survey in Copenhagen

Help us understand and improve the transport system in the city!

Copenhagen is growing. Transport is one of the biggest challenges in large cities. Therefore, transport is very important. This questionnaire deals with your transport within the city of Copenhagen and Frederiksberg and your experience of traffic in Copenhagen and Frederiskberg. The map below shows the area covered by the questionnaire. This questionnaire only investigates **transport within the city of Copenhagen and Frederiksberg** and does not take other municipalities into account.

It is your experiences as a user of transport in Copenhagen and Frederiskberg that are in focus!

It takes about 10 min. to fill in the survey.

If you have questions, please contact us.

Contact:

Thomas Sick Nielsen

Forskare

DTU Transport

Tel. 4525 6547

Adresse: Bygningstorvet 116 V; 2800 Kgs. Lyngby

1.) What year were you born?

19_____

2.) Are you

- ❑ Female
- ❑ Male

3.) How many people live in your household (including yourself)?

_____ nursery age children (1 – 3 years)

_____ kindergarten age children (4 – 6 years)

_____ elementary school children (7 – 16)

_____ high school children (16 – 19)

_____ people 19 and above

4.) What part of Copenhagen do you live in?

- ❑ Amager Øst
- ❑ Amager Vest
- ❑ Bispebjerg
- ❑ Brønshøj/Husum
- ❑ Frederiksberg Kommune
- ❑ Indre by/Christianshavn
- ❑ Vesterbro/Kgs. Enghave
- ❑ Nørrebro
- ❑ Vanløse
- ❑ Østerbro
- ❑ Valby

5.) What is your highest level of education?

- ❑ Primary 7th-10th class (elementary school, middle school, secondary school)
- ❑ Secondary Education (e.g. HF, HH, HTX, student course)
- ❑ Vocational education (e.g. Trade school, technical school, craftsman)
- ❑ Short higher education (1-2 years, for example. Laboratory, computer science)
- ❑ Medium-cycle higher education (2-4 years, for example. Bachelor, nurse, teacher)
- ❑ Long higher education (minimum of 5 years, for example. University education)
- ❑ Other:_____

6.) What is your present main occupation?

- ❑ Work (employee/own business)
- ❑ Student
- ❑ Retired
- ❑ Retirement receiver
- ❑ Unemployed and looking for work
- ❑ Other:_____

7.) What is your present annual income before tax?

- ❑ Less than 100 000 DKK
- ❑ 100 000 DKK – 200 000 DKK
- ❑ 200 000 DKK – 300 000 DKK
- ❑ 300 000 DKK – 400 000 DKK
- ❑ 400 000 DKK – 500 000 DDK
- ❑ 500 000 DKK – 600 000 DKK
- ❑ More than 600 000 DKK

8.) Do you have a driver's license?

- ❑ Yes
- ❑ No

9.) How often do you have access to a car?

- ❑ Always
- ❑ Sometimes
- ❑ Seldom
- ❑ Never

10.) Do you have access to a functioning bicycle?

- ❑ Yes
- ❑ No

11.) How much do you use the following means of transport on a typical workday and on a typical Saturday and Sunday in the city of Copenhagen/Frederiksberg?

Check the appropriate time interval. Please note that every type of transport during the day should be considered, including walks, walks to public transport, bicycle trips etc.

a) During summer (ca. April through September)

Workdays

	0 min	1-20 min	21-40 min	41-60 min	61-80 min	81-100 min	More than 100 min
Public Transport							
Car							
Bicycle							
Walking							
Other:							

Saturdays

	0 min	1-20 min	21-40 min	41-60 min	61-80 min	81-100 min	More than 100 min
Public Transport							
Car							
Bicycle							
Walking							
Other:							

Sundays

	0 min	1-20 min	21-40 min	41-60 min	61-80 min	81-100 min	More than 100 min
Public Transport							
Car							
Bicycle							
Walking							
Other:							

b) During winter (ca. October through March)

Workdays

	0 min	1-20 min	21-40 min	41-60 min	61-80 min	81-100 min	More than 100 min
Public Transport							
Car							
Bicycle							
Walking							
Other:							

Saturdays

	0 min	1-20 min	21-40 min	41-60 min	61-80 min	81-100 min	More than 100 min
Public Transport							
Car							
Bicycle							
Walking							
Other:							

Sundays

	0 min	1-20 min	21-40 min	41-60 min	61-80 min	81-100 min	More than 100 min
Public Transport							
Car							
Bicycle							
Walking							
Other:							

12) State your opinion about the following statements by checking the appropriate alternative for each of the means of transport:

a) I feel safe (from threat, violence etc.) in Copenhagen/Frederiksberg traffic <u>in the daytime</u> when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

b) I feel safe (from threat, violence etc.) in Copenhagen/Frederiksberg traffic <u>at night</u> when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

c) I feel safe (from traffic accidents) in Copenhagen/Frederiksberg traffic when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

d) I find it fast and efficient to move around in Copenhagen/Frederiksberg traffic when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

e) I can reach my most important destinations in Copenhagen/Frederiksberg when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

f) I experience stress as a problem in Copenhagen/Frederiksberg traffic when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

g) I feel prioritized in Copenhagen/Frederiksberg traffic when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

h) I think cooperation with other road user functions well when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

i) I find transport planning for the following means of transport in Copenhagen/Frederiksberg good ("transport planning" refers to, for example, road and rail planning, running, maintenance, work to improve traffic safety and planning for transport in the future)

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

13.) I am an active participant in discussions about traffic in Copenhagen/Frederiksberg (associations, demonstrations, letters to newspapers, for example)

1 Don't agree at all	2	3 Neither nor	4	5 Totally agree
❑	❑	❑	❑	❑

14.) Rank from 1 (most) to 4 (least) the means of transport you feel are generally prioritized in Copenhagen/Frederiksberg <u>today</u>

___ Public Transport

___ Car

___ Bicycle

___ Walking

15.) Rank from 1 (most) to 4 (least) which means of transport you think <u>should</u> be prioritized in Copenhagen/Frederiksberg

___ Public Transport

___ Car

___ Bicycle

___ Walking

16.) Rank from 1 (most) to 4 (least) which categories of road user you think create the greatest problems in Copenhagen/Frederiksberg

___ Public Transport

___ Car

___ Bicycle

___ Walking

17.) I essentially see myself as a:

- ❑ Public Transport user
- ❑ Car driver
- ❑ Bicyclist
- ❑ Pedestrian
- ❑ Car driver and bicyclist
- ❑ Public Transport user and bicyclist
- ❑ Pedestrian and Public Transport user
- ❑ None of these

And finally

We are planning to arrange a focus group discussion with participants interested in further discussions about traffic and transport planning in Stockholm, to be held in Stockholm. Check the box below if you are interested.

❑ Yes, I may be interested in participating, and you can contact me in the following way – state your name, phone number and/or e-mail address:

Thank you for completing the questionnaire!

Survey in Stockholm

A questionnaire on traffic in Stockholm

Contact:
Till Koglin
Doktorand
Lunds Tekniska Högskola
046-222 91 35
Institutionen för Teknik och samhälle
Box 118
221 00 Lund
-Sweden-

This questionnaire deals with your transport within the city of Stockholm and your experience of traffic in Stockholm. The map below shows the area covered by the questionnaire. This questionnaire only investigates **transport within the city of Stockholm** and does not take other municipalities into account.

It is your experiences as a user of transport in Stockholm that is in focus!

1.) What year were you born?

19_____

2.) Are you

- ❑ Female
- ❑ Male

3.) How many people live in your household (including yourself)?

_____ preschool children (0-5 years old)

_____ children in compulsory school (6-15)

_____ adolescents in upper secondary school (16-19)

_____ number of people over 19 years of age

4.) What part of Stockholm do you live in?

- ❑ Bromma
- ❑ Enskede-Årsta-Vantör
- ❑ Farsta
- ❑ Hägersten-Liljeholmen
- ❑ Hässelby-Vällingby
- ❑ Kungsholmen
- ❑ Norrmalm
- ❑ Rinkeby-Kista
- ❑ Skarpnäck
- ❑ Skärholmen
- ❑ Spånga-Tensta
- ❑ Södermalm
- ❑ Älvsjö
- ❑ Östermalm

5.) What is your highest level of education?

- ❑ Compulsory school
- ❑ Upper secondary school
- ❑ College/university
- ❑ Other:_____

6.) What is your present main occupation?

- ❑ Work (employee/own business)
- ❑ Student
- ❑ Retired
- ❑ Unemployed and looking for work
- ❑ Other:_____

7.) What is your present annual income before tax?

- ❑ Less than 100 000 SEK
- ❑ 100 000 SEK – 200 000 SEK
- ❑ 200 000 SEK – 300 000 SEK
- ❑ 300 000 SEK – 400 000 SEK
- ❑ 400 000 SEK – 500 000 SEK
- ❑ 500 000 SEK – 600 000 SEK
- ❑ More than 600 000 SEK

8.) Do you have a driver's license?

- ❑ Yes
- ❑ No

9.) How often do you have access to a car?

- ❑ Always
- ❑ Sometimes
- ❑ Seldom
- ❑ Never

10.) Do you have access to a functioning bicycle?

- ❑ Yes
- ❑ Nej

11.) How much do you use the following means of transport on a typical workday and on a typical Saturday and Sunday in the city of Stockholm?

Check the appropriate time interval. Please note that every type of transport during the day should be considered, including walks, walks to public transport, bicycle trips etc.

a) During summer (ca. April through September)

Workdays

	0 min	1-20 min	21-40 min	41-60 min	61-80 min	81-100 min	More than 100 min
Public Transport							
Car							
Bicycle							
Walking							
Other:							

Saturdays

	0 min	1-20 min	21-40 min	41-60 min	61-80 min	81-100 min	More than 100 min
Public Transport							
Car							
Bicycle							
Walking							
Other:							

Sundays

	0 min	1-20 min	21-40 min	41-60 min	61-80 min	81-100 min	More than 100 min
Public Transport							
Car							
Bicycle							
Walking							
Other:							

b) During winter (ca. October through March)

Workdays

	0 min	1-20 min	21-40 min	41-60 min	61-80 min	81-100 min	More than 100 min
Public Transport							
Car							
Bicycle							
Walking							
Other:							

Saturdays

	0 min	1-20 min	21-40 min	41-60 min	61-80 min	81-100 min	More than 100 min
Public Transport							
Car							
Bicycle							
Walking							
Other:							

Sundays

	0 min	1-20 min	21-40 min	41-60 min	61-80 min	81-100 min	More than 100 min
Public Transport							
Car							
Bicycle							
Walking							
Other:							

12) State your opinion about the following statements by checking the appropriate alternative for each of the means of transport:

a) I feel safe (from threat, violence etc.) in Stockholm traffic <u>in the daytime</u> when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

b) I feel safe (from threat, violence etc.) in Stockholm traffic <u>at night</u> when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

c) I feel safe (from traffic accidents) in Stockholm traffic when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

d) I find it fast and efficient to move around in Stockholm traffic when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

e) I can reach my most important destinations in Stockholm when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

f) I experience stress as a problem in Stockholm traffic when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

g) I feel prioritized in Stockholm traffic when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

h) I think cooperation with other road user functions well when I use

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

i) I find transport planning for the following means of transport in Stockholm good ("transport planning" refers to, for example, road and rail planning, running, maintenance, work to improve traffic safety and planning for transport in the future)

	1 Don't agree at all	2	3 Neither nor	4	5 Totally agree	Never use it
Public Transport	❑	❑	❑	❑	❑	❑
Car	❑	❑	❑	❑	❑	❑
Bicycle	❑	❑	❑	❑	❑	❑
Walking	❑	❑	❑	❑	❑	❑

13.) I am an active participant in discussions about traffic in Stockholm (associations, demonstrations, and letters to newspapers, for example)

1	2	3	4	5
Don't agree at all		Neither nor		Totally agree
❑	❑	❑	❑	❑

14.) Rank from 1 (most) to 4 (least) the means of transport you feel are generally prioritized in Stockholm <u>today</u>

___ Public Transport

___ Car

___ Bicycle

___ Walking

15.) Rank from 1 (most) to 4 (least) which means of transport you think <u>should</u> be prioritized in Stockholm

___ Public Transport

___ Car

___ Bicycle

___ Walking

16.) Rank from 1 (most) to 4 (least) which categories of road user you think create the greatest problems in Stockholm

___ Public Transport

___ Car

___ Bicycle

___ Walking

17.) I essentially see myself as a:

- ❑ Public Transport user
- ❑ Car driver
- ❑ Bicyclist
- ❑ Pedestrian
- ❑ Car driver and bicyclist
- ❑ Public Transport user and bicyclist
- ❑ Pedestrian and Public Transport user
- ❑ None of these

And finally

We are planning to arrange a focus group discussion with participants interested in further discussions about traffic and transport planning in Stockholm, to be held in Stockholm. Check the box below if you are interested.

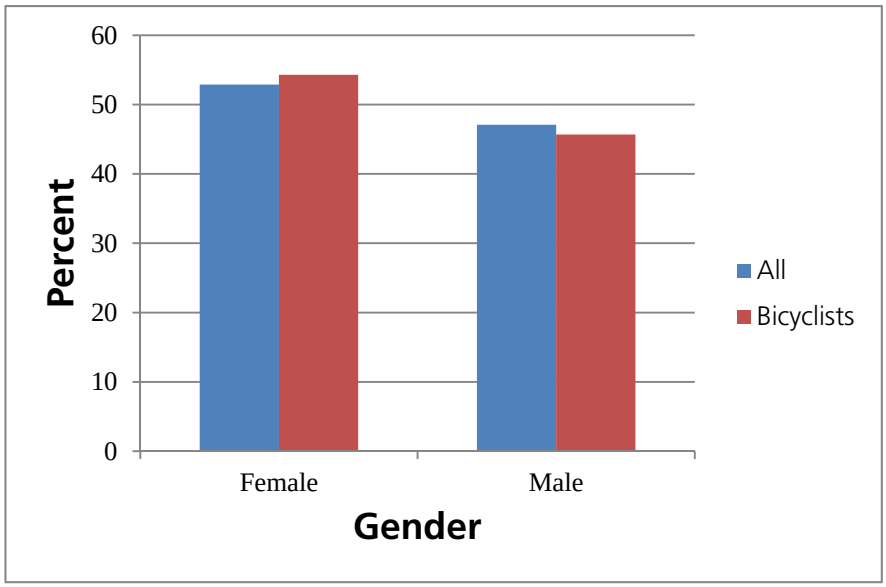
❑ Yes, I may be interested in participating, and you can contact me in the following way – state your name, phone number and/or e-mail address:

_____

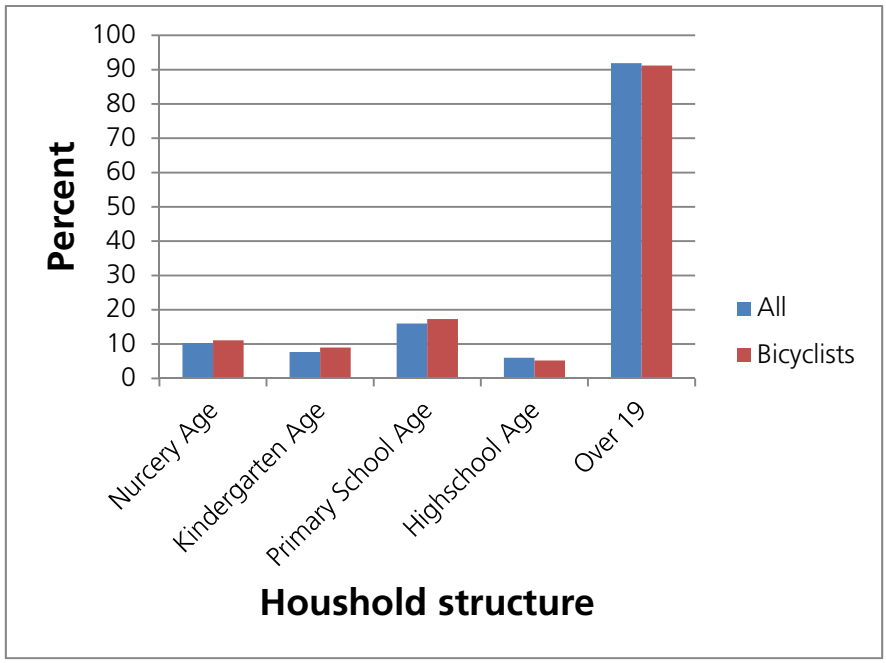
Thank you for completing the questionnaire!

Appendix 3 Background data from the survey for Copenhagen

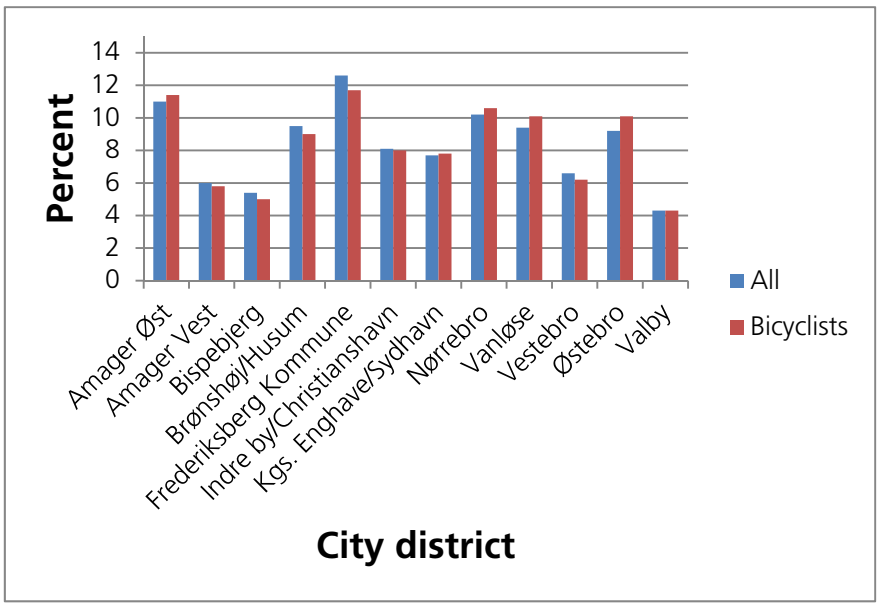
Distribution of gender among all respondents and cyclists



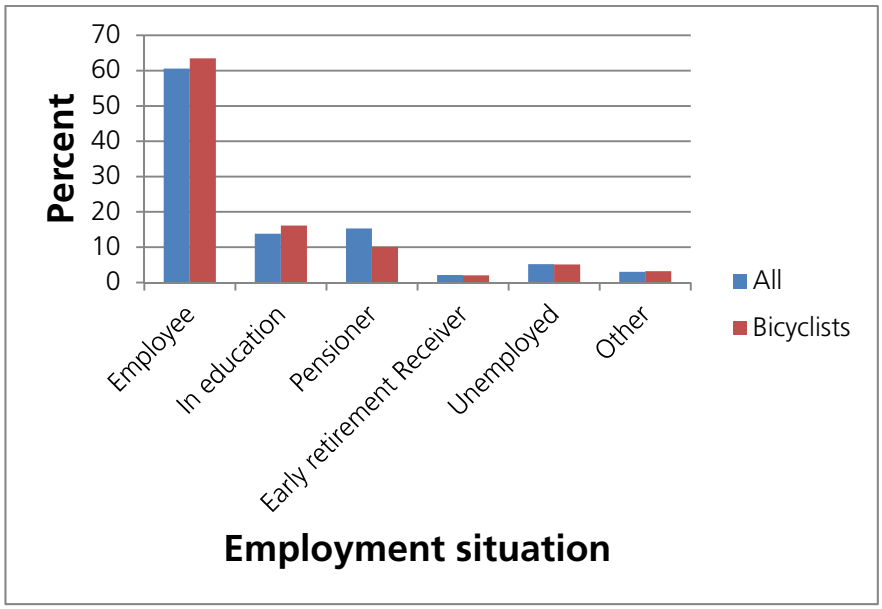
Household structure among all respondents and cyclists



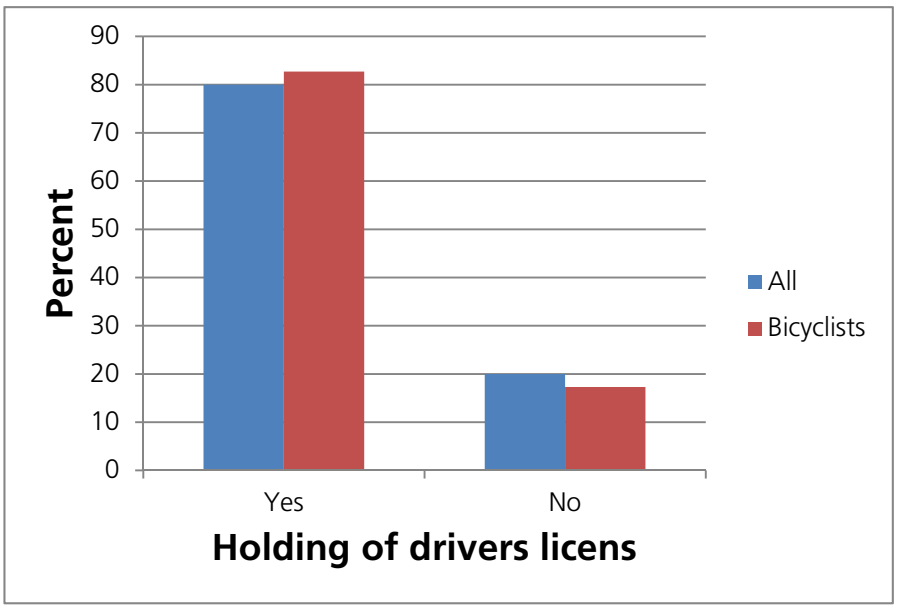
Distribution of all respondents and cyclists according to city district



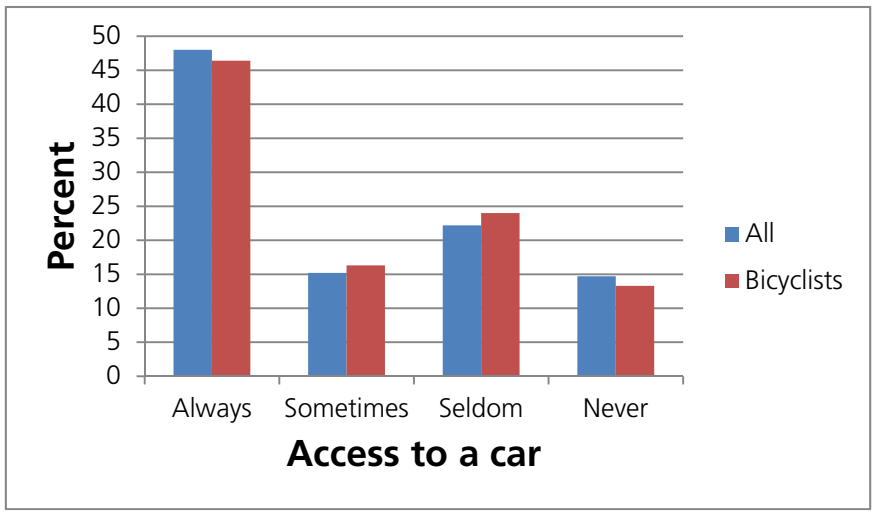
Employment situation for all respondents and cyclists



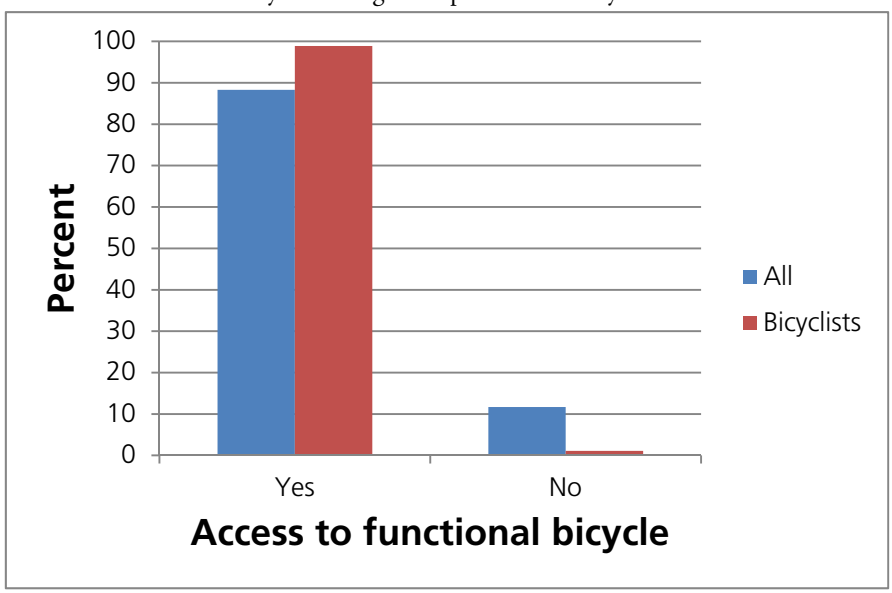
Holding of driver license among all respondents and cyclists



Access to a car among all respondents and cyclists

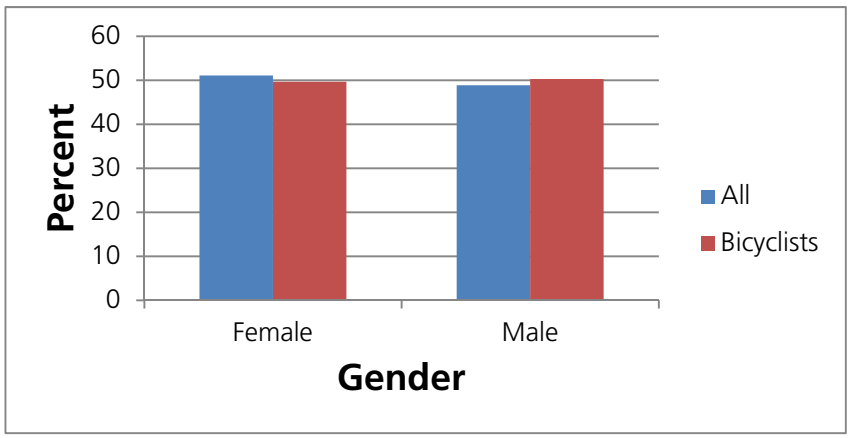


Access to a functional bicycle among all respondents and cyclists

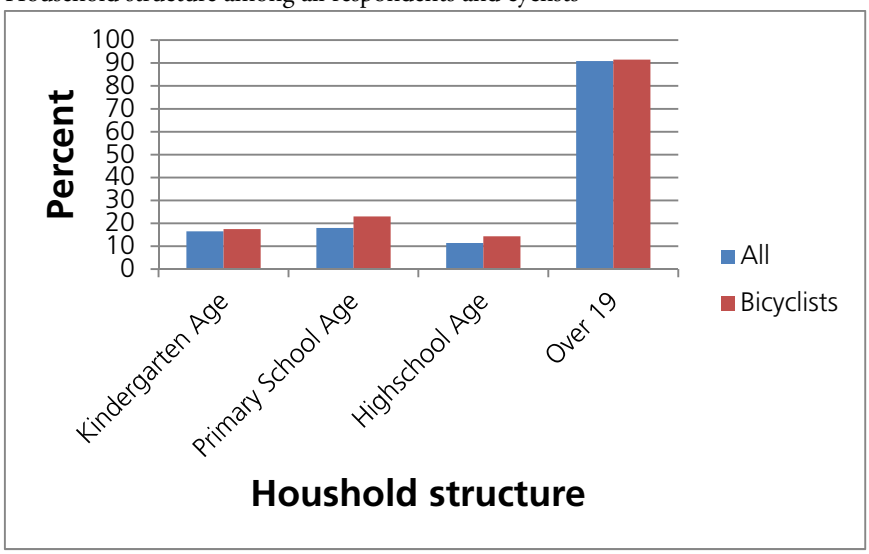


Appendix 4 Background data from the survey for Stockholm

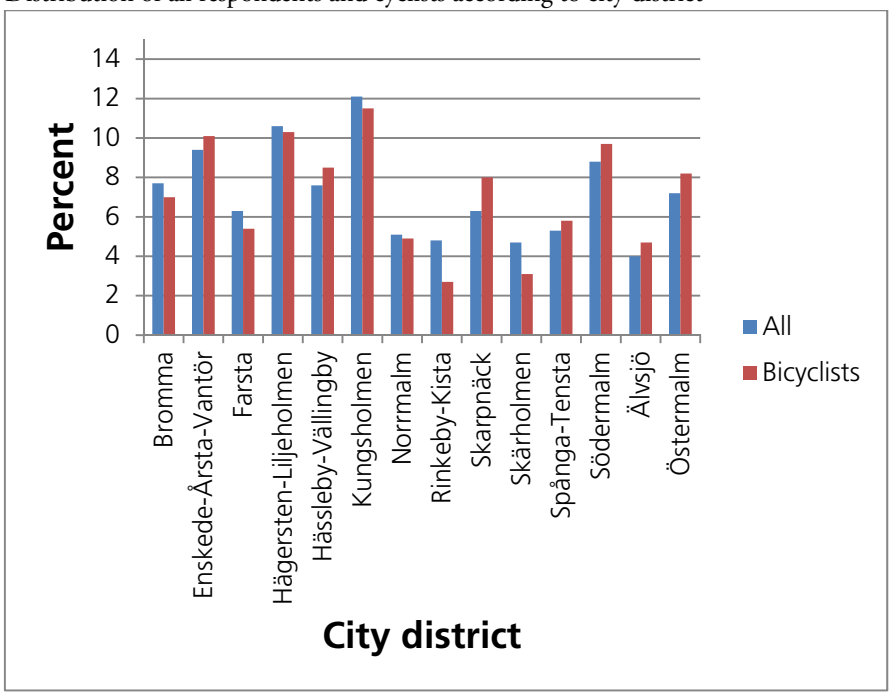
Distribution of gender among all respondents and cyclists



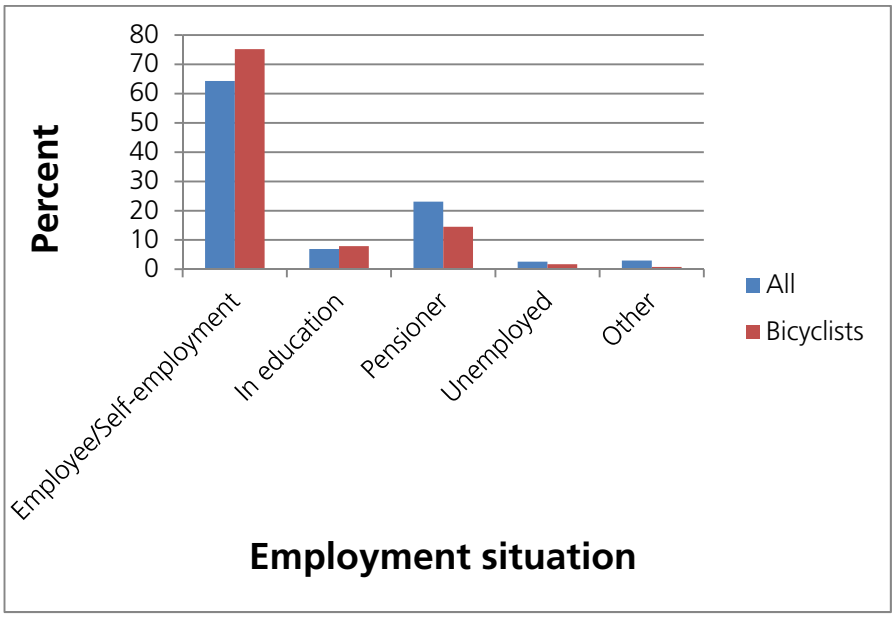
Household structure among all respondents and cyclists



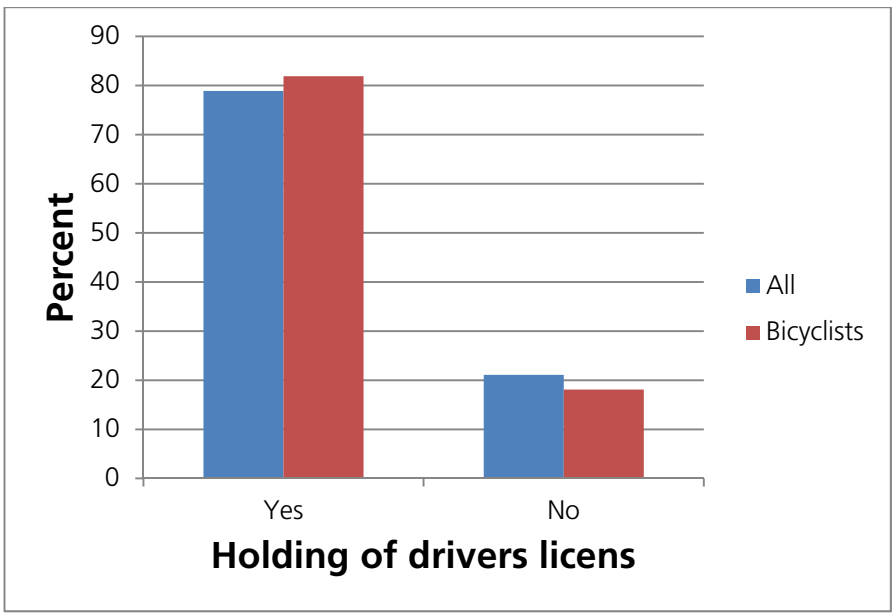
Distribution of all respondents and cyclists according to city district



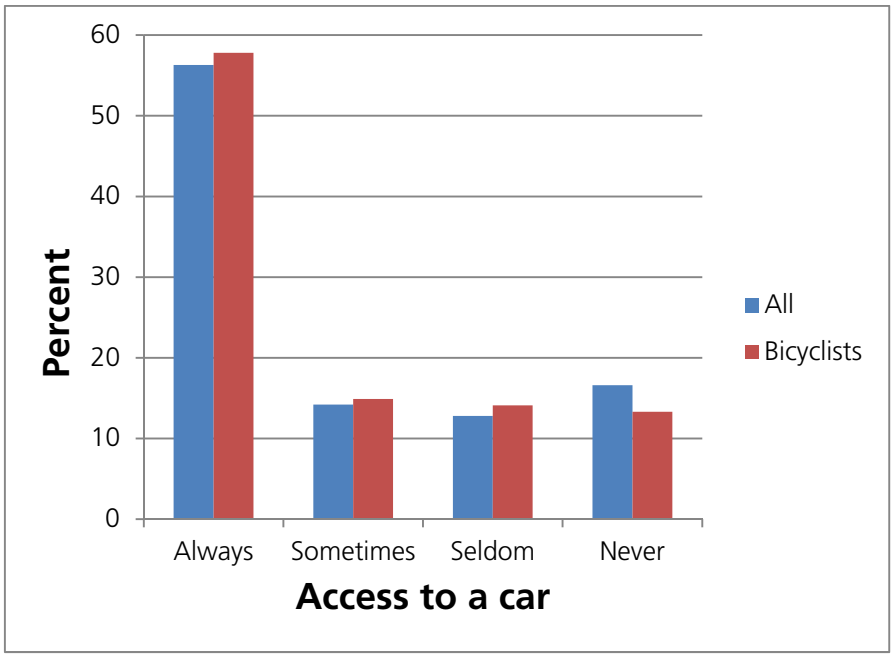
Employment situation for all respondents and cyclists



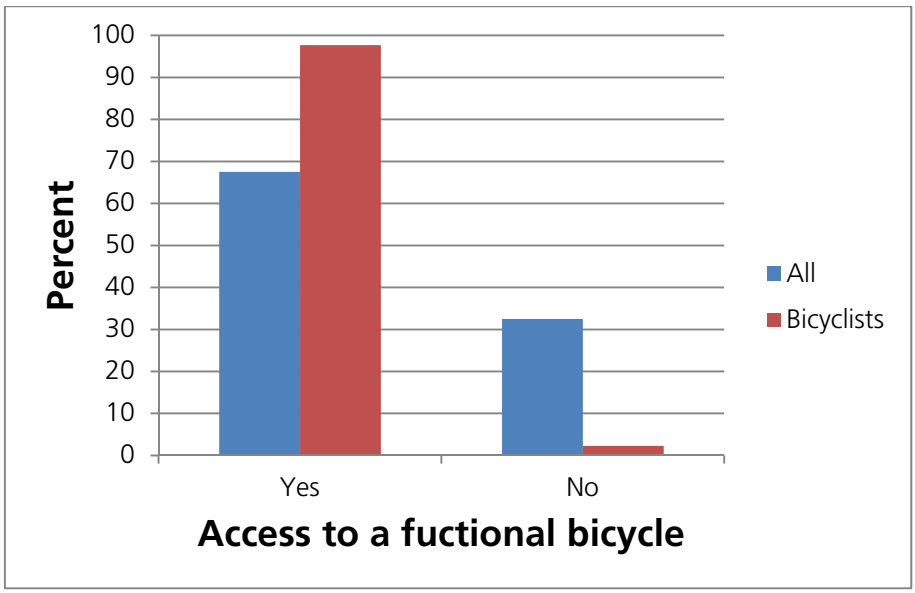
Holding of driver license among all respondents and cyclists



Access to a car among all respondents and cyclists



Access to a functional bicycle among all respondents and cyclists



Appendix 5 Results from Chi 2 test

Statement 1	Odds with 95% confidents interval								
	Groups	no	yes	total	odds	S.E.(log-odds)	CI(odds)		
	Stockholm	46	328	374	7,13	0,16	5,24	9,71	
	Copenhagen	37	805	842	21,76	0,17	15,65	30,25	
	Total	83	1133	1216	13,65	0,11	10,92	17,06	p-value 0,000***
Statement 2	Odds with 95% confidents interval								
	Groups	no	yes	total	odds	S.E.(log-odds)	CI(odds)		
	Stockholm	46	342	388	7,43	0,16	5,46	10,11	
	Copenhagen	118	357	475	3,03	0,11	2,46	3,73	

	Total	164	699	863	4,26	0,09	3,6	5,05	p-value 0,000***
Statement 3	Odds with 95% confidents interval								
	Groups	no	yes	total	odds	S.E.(log-odds)	CI(odds)		
	Stockholm	158	172	330	1,09	0,11	0,88	1,35	
	Copenhagen	334	384	718	1,15	0,07	0,99	1,33	
	Total	492	556	1048	1,13	0,06	1	1,28	p-value 0,682 n.s.
Statement 4	Odds with 95% confidents interval								
	Groups	no	yes	total	odds	S.E.(log-odds)	CI(odds)		
	Stockholm	182	104	286	0,57	0,12	0,45	0,73	
	Copenhagen	169	444	613	2,63	0,09	2,2	3,14	
	Total	351	548	899	1,56	0,07	1,37	1,79	p-value 0,000***
Statement 5	Odds with 95% confidents interval								
	Groups	no	yes	total	odds	S.E.(log-odds)	CI(odds)		

	Stockholm	189	137	326	0,72	0,11	0,58	0,9	
	Copenhagen	228	455	683	2	0,08	1,7	2,34	
	Total	417	592	1009	1,42	0,06	1,25	1,61	p-value 0,000***
Statement 6	Odds with 95% confidents interval								
	Groups	no	yes	total	odds	S.E.(log-odds)	CI(odds)		
	Stockholm	196	123	319	0,63	0,12	0,5	0,79	
	Copenhagen	189	468	657	2,48	0,09	2,09	2,93	
	Total	385	591	976	1,54	0,07	1,35	1,75	p-value 0,000***
Statement 7	Odds with 95% confidents interval								
	Groups	no	yes	total	odds	S.E.(log-odds)	CI(odds)		
	Stockholm	153	145	298	0,95	0,12	0,76	1,19	
	Copenhagen	252	389	641	1,54	0,08	1,32	1,81	
	Total	405	534	939	1,32	0,07	1,16	1,5	p-value 0,001***

Appendix 6 Results from the Mann-Whitney test

Cyclists answers to the question how much the bicycle is prioritized in general in Stockholm/Copenhagen

Bicycle prioritized today					
	Most	Second most	Second least	Least	Total
Stockholm	32 (7 %)	89 (21 %)	181 (42 %)	128 (30 %)	430
Copenhagen	245 (30 %)	249 (31 %)	225 (28 %)	86 (11 %)	805

Cyclists answers to the question how much the bicycle should be prioritized in Stockholm/Copenhagen

Bicycle should be prioritized					
	Most	Second most	Second least	Least	Total
Stockholm	78 (18 %)	201 (47 %)	117 (27 %)	34 (8 %)	430
Copenhagen	374 (46 %)	315 (39 %)	103 (13 %)	16 (2 %)	808

Results from the Mann-Whitney test for question 8 and 9

Ranks

		N	Mean Rank	Sum of Ranks
Bicycle prioritized today	Stockholm	430	783.22	336783
	Copenhagen	805	529.75	426447
	Total	1235		
Bicycle should be prioritized	Stockholm	430	762.61	327921
	Copenhagen	808	543.34	439020
	Total	1238		

Results from the Mann-Whitney test for question 8 and 9

Test Statistics(a)

	Bicycle prioritized today	Bicycle should be prioritized
Mann-Whitney U	102032	112184
Wilcoxon W	426447	439020
Z	-12.354	-10.995
Asymp. Sig. (2-tailed)	0.000	0.000

Appendix 7 Frequencies and percentage for modes of transport that create problems for cyclists

Frequencies and percentage for modes of transport that create problems for cyclists in Copenhagen

Public Transport		
	Frequency	**Percent (ca.)**
Most	39	4%
Second most	165	17%
Second least	358	38%
Least	249	26%
Missing	141	15%
Total	952	100%
Cars		
	Frequency	**Percent (ca.)**
Most	513	54%
Second most	195	21%
Second least	67	7%
Least	36	4%
Missing	141	15%
Total	952	101%
Bicycles		
	Frequency	**Percent (ca.)**
Most	232	25%

Second most	374	39%
Second least	183	19%
Least	22	2%
Missing	141	15%
Total	952	100%
Pedestrians		
	Frequency	**Percent (ca.)**
Most	28	3%
Second most	77	8%
Second least	203	21%
Least	503	53%
Missing	141	15%
Total	952	100%

Frequencies and percentage for modes of transport that create problems for cyclists in Stockholm

Public Transport		
	Frequency	**Percent**
Most	20	4%
Second most	113	23%
Second least	140	29%
Least	146	30%
Missing	66	14%
Total	485	100%
Cars		
	Frequency	**Percent**
Most	304	63%
Second most	78	16%
Second least	26	5%
Least	11	2%
Missing	66	14%
Total	485	100%

Bicycles		
	Frequency	Percent
Most	83	17%
Second most	186	38%
Second least	130	27%
Least	20	4%
Missing	66	14%
Total	485	100%
Pedestrians		
	Frequency	Percent
Most	16	3%
Second most	42	9%
Second least	123	25%
Least	238	49%
Missing	66	14%
Total	485	100%

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The purpose of this doctoral study is to bring a spatial dimension into the research on urban mobilities and connect the spatial dimension to the marginalisation of cyclists in urban space. This is been done by exploring the role of urban bicycling and transport planning. The theoretical frame of space, mobilities and power is used for analysing that role through case studies in two Scandinavian cities, Copenhagen and Stockholm. Urban bicycling is a good example of showing the relation between space and mobilities, since cyclists often suffer from marginalised space in cities around the world. The philosophical foundation of the thesis is in critical realism and critical theory. For background data, observations and document studies have been conducted in Stockholm and Copenhagen. The main data collection for this thesis was done both qualitatively, in the form of interviews with planners and politicians, and quantitatively, in the form of survey studies among the citizens of Copenhagen and Stockholm. The data is analysed with the help of the theoretical framework that builds on mobility studies, spatial theory by Lefebvre, and Harvey and power theories deriving mainly from Lukes' three dimensions of power. The materialisation of power relations is analysed with the example of modern planning in Sweden and Denmark. Overall this thesis manages to show how cycling as a mode of transport is marginalised in urban space, and that urban space wars between cyclists and car drivers and among cyclists are fought in Copenhagen as well as in Stockholm. The conclusion is that different factors, such as the economic situations in Denmark and Sweden, have affected urban and transport planning and thus have created two very different transport systems, where cycling plays a large role (Copenhagen) and a smaller role (Stockholm). Nevertheless, this thesis shows that even in cities that are very good for cycling, like Copenhagen, the motorised modes of transport create many problems and are still dominating urban space.

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