

Transitions for People

Locating Inequality in Sustainable Urban Mobility Transitions

Lindberg, Malene Rudolf

DOI (link to publication from Publisher):
[10.54337/aau521482687](https://doi.org/10.54337/aau521482687)

Publication date:
2022

Document Version
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

Citation for published version (APA):

Lindberg, M. R. (2022). *Transitions for People: Locating Inequality in Sustainable Urban Mobility Transitions*. Aalborg Universitetsforlag. <https://doi.org/10.54337/aau521482687>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

Take down policy

If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.



TRANSITIONS FOR PEOPLE

LOCATING INEQUALITY IN SUSTAINABLE
URBAN MOBILITY TRANSITIONS

BY
MALENE RUDOLF LINDBERG

DISSERTATION SUBMITTED 2022



AALBORG UNIVERSITY
DENMARK

TRANSITIONS FOR PEOPLE

LOCATING INEQUALITY IN SUSTAINABLE URBAN
MOBILITY TRANSITIONS

by

Malene Rudolf Lindberg



AALBORG UNIVERSITY
DENMARK

Dissertation submitted 2022

Dissertation submitted: December 2022

PhD supervisor: Prof. Malene Freudendal-Pedersen
Aalborg University

Assistant PhD supervisor: Associate Prof. Theresa Scavenius
Aalborg University

PhD committee: Associate Professor Jens Iuel-Stissing (chairman)
Aalborg University, Denmark

Professor Lesley Murray
University of Brighton, United Kingdom

Associate Professor Maria Figueroa
Copenhagen Business School, Denmark

PhD Series: Technical Faculty of IT and Design, Aalborg University

Department: Department of Planning

ISSN (online): 2446-1628

ISBN (online): 978-87-7573-784-0

Published by:
Aalborg University Press
Kroghstræde 3
DK – 9220 Aalborg Ø
Phone: +45 99407140
aauf@forlag.aau.dk
forlag.aau.dk

© Copyright: Malene Rudolf Lindberg

Printed in Denmark by Stibo Complete, 2022



CV

Malene Rudolf Lindberg (born 1986) is a sociologist who was trained at the University of Copenhagen, Denmark, and the Humboldt University in Berlin, Germany. She obtained her master's degree in sociology from the University of Copenhagen in 2015. Before joining the Department of Planning at Aalborg University, she held positions at the Department of Political Science at the University of Copenhagen and VIVE – The Danish Center of Social Science Research.

ENGLISH SUMMARY

Cities must adapt to the inescapable fate that climate change represents. This involves finding ways to de-carbonize the variety of urban lifestyles and radically changing pollutive everyday mobility practices. But how to do this? And who stands to win and lose from sustainability interventions in the urban landscape? Who are we planning for when we plan for urban sustainability? These questions are crucial for the future of cities. They are decisive for who will inhabit them and how inhabitable they will be.

This thesis starts from a concern with the role inequality plays in sustainable transitions and how to break away from the tendency in sustainability studies and planning to neglect the social dimensions of transition such as inequality (Walker, 2013; Bullard, Agyeman and Evans, 2002; Agyeman & Evans, 2004) in favor of the technological or behavioral dimensions (Freudenthal-Pedersen et al., 2020; Shove, 2010; Samson et al, forthcoming). In the Brundtland report from 1987, a sustainability is considered as having three dimensions: economic, social, and environmental (Brundtland, 1987). To achieve sustainability in the social and economic dimensions, any sustainable transition must consider the landscape of inequality in which new sustainable solutions are to be implemented, and which might transition as sustainability interventions unfold. By placing inequality in studies of sustainable transitions, this dissertation raises the question: how can we understand the role inequality plays in sustainable urban transitions - theoretically, empirically, and methodologically?

Bearing in mind Michel Foucault's advice to never let a concrete example out of sight (Foucault in Flyvbjerg 2009: 160), the dissertation investigates the question through analyzing experiments with implementing Mobility-as-a-Service (MaaS) solutions in different urban areas in Copenhagen as examples of sustainable interventions in an unequal urban landscape. The

dissertation thus addresses the question of inequality and sustainable change in relation to urban mobility. The focus on mobility is inspired by the mobilities turn in social sciences (Urry, 2000; Sheller & Urry, 2006; Cresswell, 2011), which emphasizes the importance of “the systematic movements of people for work and family life, for leisure and pleasure, and for politics and protest” (Sheller & Urry, 2006: 208) for contemporary society and urban communities. The dissertation adopts an everyday life perspective, which emerges in the interaction between the conditions of everyday life and the way they are handled (Bech-Jørgensen, 1994). In everyday life in cities, a multitude of mobility practices play out, and this is where inequalities are experienced.

The question of transitioning unequal cities and their mobility systems is explored through six sociological inquiries into obstacles, mechanisms, possible tipping points, and directions for future studies of sustainable transitions of unequal cities and their mobility systems.

DANSK RESUME

Klimaforandringer er en uundgåelig skæbne for byer. De kræver, finde måder at skabe bæredygtighed i de mange forskellige hverdagsliv og mobilitetspraksisser, som udspiller sig i byer. Men hvordan omstilles byer? Hvilke veje skal byer gå for at nå en bæredygtig fremtid? Og hvem vil vinde og tabe i takt med forandringer byens landskab? Hvem planlægger vi for, når vi planlægger for bæredygtighed? Det er spørgsmål, som er afgørende for byers fremtid. De er afgørende for, hvem der kan bebo dem, og hvor beboelige de vil være.

Udgangspunktet for denne afhandling er i en interesse for den rolle, ulighed spiller i forhold til bæredygtige transitioner, og hvordan vi kan gøre op med tendensen til at negligere de sociale dimensioner af grøn omstilling, inklusive spørgsmål om ulighed, som har præget forskning og praksis (Walker, 2013; Bullard, Agyeman og Evans, 2002; Agyeman & Evans, 2004). I stedet har fokus ofte været på teknologiske eller adfærdsmæssige ændringer, som skal bane vejen for bæredygtig forandring (Freudenthal-Pedersen et al., 2020; Shove, 2010; Samson et al., under udgivelse). For 35 år siden, i 1987, udkom Brundtland-rapporten, som definerede bæredygtighed som bestående af tre dimensioner: den økonomiske, den sociale og den miljømæssige (Brundtland, 1987). For at opnå bæredygtighed i de sociale og økonomiske dimensioner må omstillingstiltag tage højde for det landskab af ulighed, hvori nye bæredygtige løsninger skal implementeres. For det landskab vil ændre sig i takt med, at bæredygtighedsinterventioner udrulles.

Afhandlingen rejser spørgsmålet: Hvordan kan vi forstå den rolle, ulighed spiller i forhold til bæredygtig bytransition - teoretisk, empirisk og metodisk?

Michel Foucault råder forskere til aldrig at lade et konkret eksempel ude af syne (Foucault i Flybjerg 2009: 160). Med det in mente undersøger afhandlingen spørgsmålet ved at analysere et eksperiment med dele-baserede mobilitetsinterventioner i forskellige byområder i København som et eksempel på bæredygtige indgreb i et ulige bylandskab.

Spørgsmålet om ulighed og bæredygtig forandring undersøges altså i forhold til byens mobilitet. Fokus på mobilitet er inspireret af mobilitetsvendingen inden for samfundsvidenskab (Urry, 2000; Sheller & Urry, 2006; Cresswell, 2011), som understreger vigtigheden af "menneskets systematiske bevægelser for arbejde og familieliv, for fritid og fornøjelse, og for politik og protest" (Sheller & Urry, 2006: 208) for det moderne samfund og bysamfund. Afhandlingen anlægger et hverdagslivsperspektiv, som fokuserer på, hvordan mobilitet og mobilitetsforandring udspiller sig i krydsfeltet mellem hverdagens vilkår og måden, de håndteres på (Bech-Jørgensen, 1994). I hverdagslivet i byerne udspiller der sig et væld af mobilitetspraksisser, og fra hverdagen opleves variationer, forskelligheder og uligheder i mobilitetsmuligheder.

Spørgsmålet om bæredygtig omstilling af ulige byer og mobilitetssystemer udforskes gennem seks sociologiske undersøgelser af forhindringer, mekanismer, mulige vendepunkter og retninger for fremtidige undersøgelser af bæredygtig mobilitetsomstilling i en ulige verden.

ACKNOWLEDGEMENTS

Research is a joint effort, and I am deeply grateful to the people who supported me in realizing this doctoral work. Thank you to my co-supervisor, Theresa Scavenius, who introduced me to the field of climate change mitigation and studies of sustainable change. Our many deeply inspirational conversations and the fact that you saw potential in me made this dissertation possible. Thank you to Nanna Finne Skovrup for being a fantastic office partner during the first years of the Ph.D. Thank you to Lars Botin, Tom Børsen and the rest of the Techno-Anthropology and Participation group for fun events. Thank you to Jette Egelund Holgaard for being a supportive and action-taking personnel manager. Thank you to Pia Bøgelund for helping me find my direction in the PhD process. Thank you to my supervisor, Malene Freudendal-Pedersen, for your extensive engagement and encouragement, and for introducing me to many of the people who became important for the dissertation. What I have learned from you – professionally and personally – has enriched my work and my world. Thank you to all members of the Sustainable Innovative Mobility (SIMS) research team: Katrine Hartmann-Petersen, Toke Haunstrup Christensen, Freja Friis, Nikolaj Grauslund Kristensen, and Thomas Skou Grindsted. I feel privileged to have been a part of this very giving research community, which provided fertile ground for many of the ideas in this dissertation to sprout. Thank you to Morten Elle for your style of management. Thank you to all my colleagues in the Planning for Urban Sustainability (PLUS) group for your efforts in creating an inclusive and inspirational environment. Thank you to Nikolaj Grauslund Kristensen and Caroline Samson for being wonderful office partners in the last part of the Ph.D. Thank you to Sven Kesselring and Julian Bahnsen from Hochschule für Wirtschaft und Umwelt Nürtingen-Geislingen, Germany, for welcoming me to the university, for inspiring conversations, and for excellent feedback.

Thank you to my family and friends for being who you are, for all our fantastic conversations, and for your infinite support and encouragement during this process and in life in general. I am extremely grateful for you all and proud of how we always manage to find a set of hands ready to catch as we take turns slipping in life.

Thank you to Adam, a key figure in my life and in the process of this dissertation coming into existence. So many things have become possible because you believed they could be. Life with you is interesting, easy, super chaotic, and fun - and only trivial when we collapse on the couch out of exhaustion. I look forward to seeing what life has in store for us next and to sharing a toast on the journey. You are the glue that keeps sh*t together. You taught me so many things, including to curse.

Thank you to everyone who fought and is still fighting for free education, funded parental leave and affordable childcare. All three things are preconditions for an equal society and for the existence of this dissertation. During the PhD process, I gave birth to two wonderful and funny creations, Torbjørn and Ingvild. You two have been key in keeping things in perspective, helping me to focus on what is important, and discovering the lower boundaries of sleep needs. You make my heart explode daily. Thank you for existing. I can't wait to see who you become.

As I am writing this, children, women, and men are being hurt and killed in Iran asking peacefully for freedom and equality. No woman is free before all women are free. Women. Life. Freedom.

TABLE OF CONTENTS

Chapter 1.	17
1.1. Transition as a question of inequality	18
1.2. Urban mobilities as a prism	22
1.3. Problem statement and research questions	23
1.4. Everyday life and practice theory as a pathway	24
1.5. Innovative Sustainable Mobility Solutions	26
1.6. A mobile risk society	27
1.7. Contributions	28
Chapter 2. Composition	33
2.1. Part I: Introduction	34
2.2. Part II: Obstacles	35
2.3. Part III: Empirical inquiries	37
2.4. Part IV: Directions	41
2.5. Part V: Closing	43
Chapter 3. Philosophy of science	45
3.1. The construction of social phenomena	46
3.2. What about the materials of mobility?	47
3.3. Materialities and normativity from critical realism	48
3.4. Summation	50
Chapter 4.	53
4.1. Pathways for understanding the social dimensions of transition	53
4.2. From behavior to practices in everyday life	55
PAPER ONE: From planning practice to urban practice: Integrating everyday life in planning for urban sustainability	57
4.3. Second obstacle: From technology to cultures of mobilities	72
PAPER TWO: Sustainable Mobility in the Mobile Risk Society— Designing Innovative Mobility Solutions in Copenhagen	74
4.4. Sub-conclusion part II	102

Chapter 5.....	106
5.1. The SIMS project design	106
5.2. The PhD Project design	107
5.2.1. Nordhavn	109
5.2.2. Folehaven	110
5.3. Reflections on sites and generalizability	111
5.4. Actors and access	113
Chapter 6. Methods.....	115
6.1. Household interviews	115
6.2. Recruitment and participants.....	116
6.2.1. Interviewing during a pandemic	118
6.3. Mobility operator interviews	119
6.4. Focus groups.....	121
6.5. Workshops	122
6.5.1. The visionary workshop	123
6.5.2. The stakeholder workshop.....	124
6.6. Timeline and adaptations.....	125
Chapter 7. Empirical inquiries.....	127
PAPER THREE: Urban mobility injustice and imagined	
sociospatial differences in cities - A study of two Copenhagen	
neighbourhoods	128
7.1. Second empirical inquiry	156
PAPER FOUR: Pandemic Detours or New Sustainable Pathways?	
Post-pandemic Mobility Futures in Danish Cities	158
7.2. Sub-conclusion part III	182
Chapter 8.	187
PAPER FIVE: Despite the best of intentions: Inequality in the	
search for mobility justice	189
8.1. From methodology to theory	219
PAPER SIX: Developing a theoretical framework for capturing	
inequality in transitions.....	220

8.2. Sub-conclusion part IV	242
Chapter 9.	245
Chapter 10. Conclusion	257
Literature list.....	261
Appendices	272

PART I: INTRODUCTION

CHAPTER 1.

Today cities are embroiled in a Greek tragedy in the sense that they are facing an inescapable fate, which cannot be reversed. This fate is called climate change. Climate change is overwhelming in the sense that we cannot buy or build our way out of it. This was the message of urbanist Richard Sennett, who recently visited Copenhagen, and who was a central figure in cultivating my passion for urban questions as a sociology bachelor student many years ago. We must adapt, Sennett continued. We must adapt to our fate and find ways to manage the suffering that climate change causes to the inhabitants of cities.

But what to do? Which green transition pathways should decision-makers pursue? And who stands to win and lose from green interventions in the urban landscape? What kinds of social life do these plans support, and what kinds become marginalized? Who are we planning for when we plan for urban sustainability? These questions are crucial for the future of cities. They are decisive for who will inhabit them and how inhabitable they will be.

The Paris agreement of 2015 (United Nations, 2015) was a landmark in strengthening global responses to the threat of climate change, committing all nations to the pursuit of efforts to keep the global temperature increase this century below 2 degrees Celsius¹. It marked a radical shift after decades of stagnant debate on whether anthropogenic climate change was really happening (Scavenius, 2014; Beck, 2015). However, the radical transitions needed to achieve the goals of the Paris agreement are currently far from being realized. Instead, as the Intergovernmental Panel on Climate Change (IPCC) have documented, total net anthropogenic emissions have continued to rise, as have cumulative net CO₂

¹ <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement/key-aspects-of-the-paris-agreement>

emissions since 1850 (IPCC, 2022). An increasing share of emissions can be attributed to cities due to an increase in urban activities such as industry, energy supply, transport, and construction with estimates suggesting that 75% of the world's CO₂ emissions derive from cities (IPCC, 2022; UNEP, 2022).

For many years, politicians, practitioners, and scholars have been looking to technological solutions to mitigate climate change (Scavenius & Lindberg, 2016; 2018). However, the tempting idea of quick technological fixes that would allow cities to refrain from embarking on radical transitioning to mitigate climate change has in recent years been challenged from many sides (Morozov, 2014; Freudendal-Pedersen et al., 2020). Inspired by Ulrich Beck's influential *Risk Society: Towards a new Modernity* (Beck, 1992 [1986]), anthropogenic climate change is in this dissertation perceived as the destructive side-effect of the modern way of living and organizing (Beck, 1992; 2015; 2016). The thesis, therefore, starts from the stance that approaching this severe threat as if it were a mere technological issue is naïve at best.

This is in line with the Brundtland report from 1987, which established a consensus on sustainability as having three dimensions: economic, social, and environmental (Brundtland, 1987). To achieve sustainability in the social and economic dimensions, sustainable transitions must be fair and reduce inequalities between people and places (Bartiaux et al., 2019). Therefore, any transition must consider the landscape of socio-economic inequalities in which new sustainable solutions are to act.

1.1. TRANSITION AS A QUESTION OF INEQUALITY

I had been preoccupied with questions of inequality for many years when in 2018, I got the chance to join a project on Green Transition Pathways at Aalborg University's Department of Planning². It

² <https://www.en.greentransitionpaths.aau.dk/>

marked a shift from a mono-disciplinary to a cross-disciplinary research environment in which the joint mission and normative drive centered on the pressing sustainability challenge and creating sustainable futures.

In this cross-disciplinary environment, I encountered many interesting new discussions and approaches including new theoretical perspectives for addressing sustainable transitions. A prominent example is the Multi-Level Perspective (Rip & Kemp, 1998; Geels, 2004; 2010; Schot & Geels; 2008), which suggests that niche technological innovations in productive interaction with landscape dynamics can cause existing polluting regimes to change. I resonated with the analytical awareness of the perspective regarding the multiple dynamics at different levels that must come together to foster substantial societal change. However, what I found lacking was an eye for the social life that plays out on an everyday basis and in which green innovations are to act. For niche innovations to become 'regime' normality, they must be implemented in people's everyday lives. This is no neutral task. It depends on changes in the social life of cities. It demands resources, access, and power, all of which is unequally distributed in the social. However, the social dimensions of change appeared to be marginalized in many studies of sustainable transition, for example, in analyses adopting the popular MLP perspective. I thus resonate with scholars such as Hargreaves, Longhurst, & Seyfang (2013), who argue that we need to develop better understandings of the social practices in everyday life and how they change. Along the same lines, Gordon Walker (2013) has called for raising awareness of the inequalities in terms of who can perform which practices. In everyday life in cities, a multitude of mobility practices play out, and this is where inequalities relating to who can practice what kinds of mobility are experienced.

Sustainable transitions in the urban sphere will not leave the social landscape of cities untouched. Rather, the current landscape of unequal mobilities will transition with sustainable interventions

(Docherty, Marsden, & Anable, 2018). Addressing the social implications of pursuing different transition pathways is, therefore, crucial – both in research and planning. In this dissertation, I argue that identifying feasible green transition pathways demands an understanding of the everyday lives with which new green solutions must integrate. Importantly, this means understanding the variation in everyday lives, and how variation, differences and inequalities influence transition efforts – and are influenced by them.

Mitigating the devastating consequences of climate change, we are aiming for sustainable transitions in a world that is fundamentally unequal. Nevertheless, sustainability is often framed as a question of respecting planetary boundaries and tackling pollution challenges, while social inequalities are often considered as something external rather than profoundly intertwined with the climate challenge (Agyeman and Evans 2004; Beck 2015). Lacking from the conversation is how climate change and social inequality are inextricably linked (Csutora, 2012; Gore, 2021; Chancel et al., 2022). We can talk about the following three types of inequality in the Anthropocene: 1) inequality in contribution to climatic changes; 2) inequality in exposure to climate change-induced risks; and 3) inequality in inclusion in sustainable transition efforts.

First, social groups have contributed differently to the problem of climate change due to diverse lifestyles and not least economic inequality. Responsibility for climate change is extremely unequally distributed. For example, Oxfam has documented that the carbon footprints of the richest 10% of people in the world are, on average, 11 times higher than the footprints of the poorest half of the world population (Oxfam, 2015). Projections show that by 2030, the world's richest 1% are set to have per capita emission levels that are 30 times higher than the level compatible with the 1.5 degrees goal of the Paris agreement (Gore, 2021). By contrast, the poorest half of the global population is set to remain several times below that level (ibid). Zooming in on Denmark, the richest

1% has a per capita emission level that is 10 times higher than the average Dane, and – to zoom out again - 912 times higher than the average Ethiopian (Chancel et al., 2022).

Secondly, people are unequally exposed to climate change and the related risks (Singer, 2019). The 3.5 billion poorest people in the world, responsible for only around 10% of global emissions from consumption, live in areas that are most vulnerable to climate change (Oxfam, 2015). And in low- and lower-middle-income countries, inhabitants are around five times more likely to be displaced by extreme weather disasters compared to the inhabitants of high-income countries (David Gardiner & Associates, 2012). The devastating effects of droughts, flooding, and storms such as crop failures, increasing food prices, and the destruction of housing hit the poor and marginalized communities first and hardest (David Gardiner & Associates, 2012).

Thirdly, the capacity of different social groups to respond to climate change varies. The power structures and social logics of climate change attribute the production of risk, exposure to risk and the management of risk to completely different people, resulting in what Ulrich Beck has coined “organized irresponsibility” (Beck 1992: 19; 2015: 132-137). The people deciding what to act upon, and which transition pathways to pursue, belong to other social groups or communities than those who are experiencing the consequences first and most fatally. This organized irresponsibility is the context, premise, and condition of efforts to prompt sustainable transition and design alternative futures. Depending on which transition paths are pursued, current equality and inclusion gaps in society and in cities will increase or decrease. It is important that neither scholars nor practitioners sidestep questions of inequality, hierarchies, and power because our choices will impact the inclusiveness and justice of future cities and societies.

The dissertation starts from the premise that it is crucial for transition scholars to develop sensitivity to social inequality. This dissertation explores pathways for scholars and planners to better consider the landscape of inequality when aiming for sustainability in cities and their mobility systems. It explores theoretical, methodological, and empirical ways of bringing the social dimensions of change to the fore. These have too often been neglected in technology-oriented approaches to a sustainable transition.

In his posthumous book *The Metamorphosis of the World* (2016), Ulrich Beck questions who will win and lose as climate change unfolds and sustainable transition initiatives are implemented. To facilitate answers, this dissertation aims to provide insights, tools and lenses for sustainability scholars and practitioners to scrutinize the role of inequality in sustainable transitions and address the social implications of transitioning cities and their mobilities in a world that is becoming more unequal by the day (Chancel et al., 2022).

1.2. URBAN MOBILITIES AS A PRISM

This dissertation explores inequality and sustainable transition while zooming in on urban mobility. Inspired by the mobilities turn in social sciences (Urry, 2000; Sheller and Urry, 2006), which emphasizes the growing importance of movement for people, cities, and societies, the dissertation regards mobility as something crucial for “the constellations of power, the creation of identities and the microgeographies of everyday life”, as Tim Cresswell put it (2011: 551).

Mobility is – like all other goods in society – unequally distributed. In Denmark, the most affluent people with an annual income of over DKK 500,000, travel, on average, 49.5 km per day, which is more than twice as far as low-income people with annual incomes under DKK 150,000, who travel, on average, 21.1 km per day (Christensen & Baescu, 2021: 28). However, all income groups

travel further by car than by all other means of transport combined. For the lowest income group, 16.1 of the average 21.1 daily kilometers are traveled by car, whereas the high-income group travels 44.4 kilometers by car out of the 49.5 kilometers of daily travel (Christensen & Baescu. 2021: 28). These figures tell a story about great mobility inequality even in Denmark, which is a relatively equal country with a low Gini coefficient (The World Bank, 2022 [2019]). The figures tell us that unsustainable, car-reliant everyday mobility practices are predominant across social groups, which is not surprising in the light of the established system of automobility (Urry, 2004), which has been dominant in cities across the globe since its development in the 20th century.

This renders mobility transition an important and interesting prism for investigating the relationship between social inequality and sustainable transitions, which are urgently needed in relation to mobility. The transport sector is today responsible for more than a third of the EU's CO₂ emissions, and levels are continuing to increase (European Environment Agency, 2020). It is also an area where the dominant response to the need for a sustainable transition has been a reliance on new technologies to decarbonize cities and their mobilities (Freudendal-Pedersen et al, 2020) and where the social dimensions of change have historically been overlooked.

1.3. PROBLEM STATEMENT AND RESEARCH QUESTIONS

To locate inequality in sustainable mobility transitions, this dissertation explores: 1) why the social dimensions of change have historically been marginalized, 2) what we can learn about mobile tipping points (Urry, 2004) and the role played by inequality from empirical studies of urban mobility transitions, and 3) which theoretical and methodological approaches are most appropriate for including the dimensions of inequality in future transition studies.

The following problem statement guides this dissertation:

How can we understand the role of inequality in sustainable urban transitions - theoretically, empirically, and methodologically?

The research questions are:

1. Why has inequality often been marginalized in studies of sustainable transition?
2. Does inequality influence efforts to intervene in unsustainable mobility practices and if so, how?
3. What creates tipping points in relation to sustainable urban mobility?
4. How do we incorporate sensitivity towards inequality (theoretically and methodologically) in sustainable transition research?

I approach these questions from the everyday life perspective. To capture the mobility practices of everyday urban life and how they change and to understand not only social variation in this regard, but also inequalities, I combine insights from practice theory, reflexive modernization, the mobilities paradigm, and critical realism. The next section introduces the key theoretical perspectives that inform this study. Critical realism is discussed in the philosophy of science chapter.

1.4. EVERYDAY LIFE AND PRACTICE THEORY AS A PATHWAY

I started by exploring theories of practice as a way to conceptualize everyday life, all the different unsustainable practices that we engage in every day, and how they can transition. The practice perspective emerged as an alternative to the dominant behavior-oriented approaches, which, for example, Elisabeth Shove (2010)

has criticized for being too narrowly focused on individuals' attitudes, behaviors, and choices, thereby overlooking all the opportunities for understanding and guiding sustainable change offered by social theory (Shove, 2010). Similar to policy responses and scholarly work that rely on green technologies to deliver sustainability, environmental policies that rely on the behavior paradigm have been criticized for neglecting phenomena that occur at aggregate levels, thereby failing to appreciate how social and spatial settings in which technologies and behaviors occur influence what we do (Scavenius and Lindberg 2016, 2018) and how we may utilize green technologies.

As an alternative, an increasing number of scholars are advocating practice theories as an alternative ontology to better inform transition efforts (Røpke, 2009; Shove & Spurling, 2013; Shove & Walker, 2007; Shove, Watson, & Spurling, 2015). Contrary to behavior-oriented approaches, practice scholars are only concerned with individual actors insofar as they are carriers of social practices. Replacing rational individuals as the unit of analysis, *social practices* become the focus of analysis. Practices are routinized types of behavioral activities that bring together and connect a range of elements, which form the 'backdrop' for a multitude of concrete actions in which practices are reproduced across time and space.

If sustainable transitions are approached as a question of individual behavior or technological solutions, we will remain blind to the role of inequality in sustainable transition. Issues of inequality are only visible when we apply a lens that places individual behavior and new technologies into their social context. I was thus dedicated to using this PhD as an opportunity to investigate the role inequality plays in a sustainable transition from a perspective concerned with everyday life and to explore whether theories of practice could inform such effort and if so, how?

1.5. INNOVATIVE SUSTAINABLE MOBILITY SOLUTIONS

To explore the potential of approaching transition from this perspective, I needed to engage empirically with what this might look like. I needed to get close to everyday life because this is where the polluting practices that need to transition occur, and this is also where social variation, differences and inequalities are experienced. I also needed to get closer to mobility stakeholders and decision-makers and efforts to intervene in unsustainable urban mobility practices. For these reasons, I was lucky enough to become involved in the Sustainable Innovative Mobility Solutions (SIMS)³ project early in my doctoral work.

SIMS was a three-year demonstration project aimed at experimenting with multi-modal mobility solutions at three different sites in Greater Copenhagen. The project gathered mobility stakeholders, planners, providers, and researchers together with the aim of contributing to a sustainable mobility transition leading to a reduction in the negative impact of climate change, less congestion, an improved environment, and increased liveability in cities. The idea was to experiment with developing new sustainable mobility solutions that were tailored to the everyday lives of citizens in the urban areas and would, therefore, become attractive alternatives to existing resource-intensive mobility patterns (SIMS, 2018). The framework was informed by the everyday life perspective, the mobilities paradigm, and practice theory. Therefore, in the SIMS project, I resonated with the theoretical approach, and I also found a platform for empirically exploring what a sustainable transition and possible mobile tipping points (Urry, 2004) would look like from this perspective.

³ www.sims.aau.dk

1.6. A MOBILE RISK SOCIETY

The SIMS project also offered me an opportunity to engage more exhaustively with the mobilities tradition established by John Urry in his book *Sociology Beyond Societies: Mobilities for the Twenty-First Century* from 2000. According to this perspective, society is not a fixed entity which is there for us to study, instead, the social should be understood through its numerous mobilities. This is very much in line with Ulrich Beck's idea of cosmopolitanism (Beck, 2006). Within the mobilities paradigm, movement is thus understood as something broader than transportation, focusing not on the apolitical logistics involved in moving from A to B, but on the mobilities of people, objects and ideas across different scales and the politics and cultures of mobility (Creswell, 2011).

This dissertation is especially inspired by the work of sociologist Sven Kesselring, who I was lucky enough to visit at the Hochschule für Wirtschaft und Umwelt (HfWU) Nürtingen-Geislingen during my PhD and who synthesizes the mobilities paradigm and reflexive modernization in "The Mobile Risk Society" (2008). According to this perspective, coping with climate change and systemic risk starts by understanding mobilization and globalization as general principles of modern life (Freudendal-Pedersen et al., 2020; Kesselring, 2019; Kesselring, 2008). The risk-inducing and carbon-reliant mobility system is an integral part of contemporary everyday life. It is entangled with practices of modern everyday life including commuting to work, consuming goods, meeting friends, sharing ideas, picking up children, etc. Modern life is thus permeated by cultures of mobilities (Freudendal-Pedersen et al., 2020).

Taking social practices in modern everyday life as the scale of observation, I find a perspective for understanding mobilities in a fundamentally unequal world at risk. This also provides a lens for viewing sustainable mobility innovations as more than just technological innovation or individual behavioral change.

1.7. CONTRIBUTIONS

The contribution of this dissertation can be summed up in six points. It has two empirical tracks, a methodological track, and three theoretical tracks.

With regards to the research question: Why has inequality often been marginalized in studies of sustainable transition? My answers and theoretical contributions are:

1. Theoretically, I contribute by pointing out that because transition scholars have been prone to focus on individual behavior and technological innovation, important social dimensions of change including inequality have been neglected. A preoccupation with behavior and technology has prevented transition scholars, politicians, and planners from engaging with the question of inequality and the social implications of sustainable transitions. By acknowledging the importance of the social sphere and how it changes, we can begin to engage with questions of inequality.
2. Taking everyday life as the scale of observation presents a rich alternative to simplistic approaches. One way of exploring everyday life in transition research and planning is via theories of practices, understanding (un)sustainable urban lifestyles from the outset of routinized everyday practices. Larger social phenomena such as inequality can be understood by adopting practices as the unit of analysis and analyzing how they form larger patterns of social activity. I further suggest that mobility scholars engage with the everyday life perspective in light of the mobile risk society (Kesselring, 2008), which reveals that many attempts to transition mobilities are examples of technology-reliant responses. Acknowledging that a

mobility transition is interlinked with everyday practices to form cultures of mobilities, which are deeply rooted in the mobile risk society, presents a rich starting point for understanding the social dimensions of transition and creating sustainable and socially coherent mobility systems in cities.

With regards to the research question: Does inequality influence efforts to intervene in unsustainable mobility practices and if so, how? I contribute with the following answer, which is based on empirical investigations of two very different urban areas in Copenhagen, Denmark:

3. Empirically, I contribute by identifying one of potentially several mechanisms through which inequality and transition efforts multurally shape eachother. Through a comparative analysis of two different urban areas in Copenhagen, Denmark, existing inequalities in the social and spatial composition of the areas was identified. Further, the analysis showed how they shaped unequal mobilities and unequal mobility futures. The paper found that mobility inequality was reproduced and exacerbated because positive narratives about the affluent area and negative narratives about the marginalized area framed private operators' decisions about whether to invest in the areas. The affluent area fit better with the semi-private mobility investors' idea of a good business case for their mobility solutions. The finding illuminates one way in which inequality influences sustainable transition efforts: through the power of neighborhood narratives, shaping investors' decision-making processes.

The second empirical contribution lies in the identification of possible mobile tipping points in relation to public transportation

induced by the global pandemic. It responds to the research question: What creates tipping points in relation to sustainable urban mobility?

4. Empirically, I contribute by identifying mobile tipping points that might be emerging in the wake of Covid-19 lockdowns with severe consequences for public transportation systems in cities. I identify new pandemic-induced imaginaries and conversations that are gaining ground among Danish stakeholders and providers of public transportation services. In recognition that the “business as usual” approach to public transportation no longer suffices if we are to avoid the unwanted consequences of pandemic fear-induced increases in automobility, new conversations and initiatives centered on flexibility, user needs, and mobility-as-a-service solutions are spreading, arguably heralding mobile tipping points (Urry, 2004). On this basis, the paper argue that the pandemic may present a portal to a third modernity and new phase in the mobile risk society. Covid-19 has highlighted how mobilities impact modern economies, cultures, and cities. This provides a new backdrop for experimenting with sustainable alternatives to the current carbonized system of automobility.

Part four of the dissertation answers the research question: How do we incorporate sensitivity towards inequality (theoretically and methodologically) in sustainable transition research? It contains the methodological contribution and the final theoretical contribution, identifying directions for future transition researchers to engage with issues of inequality:

5. Methodologically, I contribute by suggesting that because research is not neutral or resistant to issues of inequality, we need strategies for handling the potential

production and reproduction of inequality in research. Working actively with the interview guide throughout the qualitative research process presents such a strategy. It is a way to handle the issues of non-neutrality, normativity and positionality, which are always present in qualitative mobility research. Utilizing the interview guide as a tool to continuously reflect on experiences and interpretations can assist researchers in approaching epistemic justice (Fricker, 2007) and equal representation. Inequality may be produced and reproduced through methodological choices, which have consequences for the representation of different social groups and mobility experiences. Reflexivity at all stages of the research process helps us discover blind spots and avoid the unintentional reproduction of inequality.

6. Theoretically, my final contribution consists of proposing a set of theoretical lenses, which I argue have potential for addressing questions of inequality in future sustainable transition studies. I pick up on the theoretical suggestions put forward in the first part of the dissertation - that practice theory and the risk society comprise rich starting points for sustainable change. I argue that to capture inequality there is an explicit need for an ontology of power and hierarchies, and a normativity for pinpointing issues of power, injustice, and inequality in sustainable transition. I create a 'patchwork' lens which is original in that it combines insights from the Multi-Level Perspective (Rip & Kemp, 1998; Schot & Geels, 2008), practice theory (Shove, Pantzer, and Watson 2012), reflexive modernization (Beck, Giddens & Lash, 1994; Beck 1992), and critical realism (Sayer, 2007, 2011, 2014). Rather than trying to perfect existing theories of transition, I suggest combining these traditions to

enable future scholars of a sustainable transition to consider the social implications of sustainable transitions.

Each of these contributions are connected to an article included in the dissertation. The next chapter describes the composition of the thesis, including the different articles and where they can be found in the work.

CHAPTER 2. COMPOSITION

The dissertation is complex, unusual in its composition, and consists of many different elements, including one book chapter, four journal papers, and one unpublished manuscript. Most of these are co-authored with colleagues from the SIMS project and from the Planning for Urban Sustainability (PLUS) research group at the Department of Planning.

The many joint publications reflect my dedication to collaborative research and the many talented people I have been lucky enough to meet and collaborate with. However, in addition to personal, professional, and processual preferences, it also reflects the philosophy of science underpinning this work and how I think about thinking (Alvesson & Sköldbberg, 2020). This dissertation starts from the position that knowledge is socially constructed. Because meaning is co-created, we can only acquire new knowledge by interacting with texts, people, and empirical material. In the SIMS project, I was lucky enough to encounter like-minded colleagues, and the empirical investigations, analytical interpretations, methodological reflections, and paper writings were conducted jointly. These cooperative work processes have been extremely rewarding and this is, naturally, reflected in the composition of the PhD thesis.

Further, the dissertation is co-constructed by a range of events occurring during my PhD. An important one was the Covid-19 pandemic. Almost overnight, the world froze, research activities were postponed, fear spread, and everything felt risky. Experiencing the complete stand-still of urban mobilities, it was impossible as a PhD researcher in the field not to speculate about the long-term effect of Covid on urban mobilities. What would the mobile risk society (Kesselring, 2008; Kesselring & Freudendal-Pedersen, 2021) look like after this new risk of infection had disrupted everyday life as we knew it? Would it send cities out on

pandemic detours in terms of reinforced car-dependence, or would pandemic induced mobile tipping points pave the way for sustainability in urban mobilities? One of my empirical papers takes a detour from direct engagement with inequality to explore these questions, particularly in relation to public transportation in Danish cities. Public transportation witnessed a decline in passenger numbers of up to 90 percent (Lindberg et al, 2022), which hit low-income groups disproportionately hard as public transportation is a crucial source of mobility for them (Christensen & Baescu, 2021). Therefore, restoring and rethinking public transportation in the wake of the pandemic (Cusack, 2021) and exploring possible mobile tipping points in this relation (Urry, 2004) appeared to be a crucial task from my place at the dining table in our apartment, where I worked during lockdowns with my then 1-year old son on my lap.

Another important event that shaped the dissertation was the fact that the mobility providers involved in the SIMS mobility experiment withdrew from the low-income project site at an early stage. Consequently, no intervention was implemented in the area. Albeit postponed due to Covid-19 constraints, the sustainable mobility experiments were introduced at higher income project sites. This gave rise to an empirical need to better understand what happened and urged me to methodologically and theoretically attempt to develop better tools and lenses to explore inequality in sustainable mobility studies. The unusual composition of the dissertation, placing methodological and theoretical articles towards the end, is a consequence of an empirically identified need to better equip scholars to discover issues of inequality.

2.1. PART I: INTRODUCTION

The philosophy of science that underpins the dissertation is elaborated on in the next chapter on the philosophy of science. Together with the introduction and this chapter on the

composition and contributions, it comprises the first introductory part of the dissertation.

The three core parts of the dissertation follow. The first of these, entitled “Obstacles”, includes a book chapter and an article, both of which address the first research question: Why has inequality often been marginalized in studies of sustainable transition? The next core part, “Empirical inquiries”, includes two articles that provide answers to the research questions: Does inequality influence efforts to intervene in unsustainable mobility practices and if so, how? And what creates tipping points in relation to sustainable urban mobility? The last of the core parts, “Methodological and theoretical directions” includes an article and an unpublished manuscript. It answers the research question: How do we incorporate sensitivity towards inequality (theoretically and methodologically) in sustainable transition research? Lastly, a closing chapter including recommendations sums up the key findings of the dissertation and reaches a conclusion in terms of the problem statement.

The next paragraphs elaborate on the content of the different parts.

2.2. PART II: OBSTACLES

The second part of the dissertation addresses the first research question, exploring what hinders engagement with the social dimensions of change and issues of inequality. Why does inequality represent a blind spot in many sustainable transition studies?

As argued, a precondition for developing analytical sensitivity towards social inequality in transition studies is that we shift the analytical focus away from individual behavior and technological innovation, which have dominated sustainable transition studies. We need to reject the traditional reliance on technology or behavioral change to deliver a sustainable transition because it leaves us short on tools for understanding the social sphere and

how it changes, including the landscape of social inequality and how it changes as climate change occurs and our attempts to mitigate it unfold. The discussion about the inadequacy of the behavioral and technological perspective in sustainability studies is developed further in relation to planning and designing sustainable urban futures in the book chapter “From planning practice to urban practice: Integrating everyday life in planning” and in the article “Sustainable Mobility in the Mobile Risk Society—Designing Innovative Mobility Solutions in Copenhagen”. Together, the two papers point to historical circumstances and theoretical trends that obstruct scholars’ and practitioners’ opportunities for discovering the important social dimensions of change, including issues of inequality. Their contribution is that they accentuate the importance of adopting lenses that are indispensable for transition scholars and practitioners if they are to address questions on the social implications of sustainable transitions.

First, the book chapter “From planning practice to urban practice: Integrating everyday life in planning” takes the debate on individual behavior as the outset for a discussion of how an alternative approach based on practice theories and the sociology of everyday life could inform planning for sustainable urban futures. The chapter explores what the task of planning for urban sustainability involves from the everyday life perspective and argues that scholars should adopt theories of practice as an alternative tool for planning sustainable urban futures. The chapter is based on an example of how the practices of waste sorting and taking the bus interlock in urban residents’ everyday lives to demonstrate how all the elements in planning – in this case, waste management and traffic planning – interlink into wider patterns of urban practices. Applying theories of practice in planning, it is argued, highlights these patterns for the planner and makes new ways of intervening in urban unsustainability possible.

The article “Sustainable Mobility in the Mobile Risk Society—Designing Innovative Mobility Solutions in Copenhagen” discusses

how perspectives from mobilities research and everyday life present an alternative to technology-occupied approaches to a sustainable transition. In the paper, we discuss pathways towards the decarbonization of cities and their mobilities and assert that the current transformation of automotive mobilities is a technology-reliant response to the decarbonization of cities with its emphasis on, e.g., electrification, new battery technologies, automation, and smart mobility. We argue that this approach will only perpetuate the current automobile-reliant system because too little attention is being paid to environmental and social externalities. Instead, the focus should be on the mobility cultures in which everyday urban mobilities are embedded and which can support sustainable innovation. These cultures, it is argued, are deeply rooted in the risk society (Beck, 1992), which within the mobilities paradigm is transformed into the mobile risk society (Kesselring, 2008). Therefore, in the paper we call for a new understanding of mobility transition as interlinked with cultural transition in a modern society that is deeply rooted in the mobile risk society. We need robust, socially coherent, and inclusive mobility systems that are more than just transportation systems and connections if we want to create sustainable mobility practices. To exemplify how such mobility transitions can be pursued, the paper presents the empirical example of a visionary workshop on designing “Sustainable Innovative Mobility Solutions” in three urban areas in Copenhagen. In the workshop, a cross-disciplinary space was created for actors to meet across silos and discuss intervention framings focusing on innovation as a matter of interlinking sustainable mobilities practices in the mobile risk society.

2.3. PART III: EMPIRICAL INQUIRIES

Having cleared behavior and technology framings of sustainability from the roads, we can begin to empirically analyze the social dimensions of transition, including the role of inequality.

Part three sets out to answer the following two research questions: Does inequality influence efforts to intervene in unsustainable mobility practices and if so, how? And: What creates tipping points in relation to sustainable urban mobility?

The third part of the dissertation presents the empirical approach and research conducted in connection with the SIMS project, which is an example of an intervention in unsustainable urban mobility practices. Furthermore, we attempt to identify mobile tipping points, understood as shifts and displacements that will generate mobility system transitions, disassociating pollutive mobilities from other everyday practices (Graham & Thrift, 2007: 5; Urry, 2004: 27; Budd & Ison, 2020).

Part three starts by describing the research design and the methods utilized, namely qualitative interviews, focus groups and workshops. It also touches upon other activities in SIMS, such as meetings and conversations with different stakeholders, and how they influenced the project and the knowledge produced. The chapter also describes the research design, including case selection, and how the Covid-19 pandemic necessitated a serious rethink and redesign of the research.

Inequalities are often more easily discovered in comparisons (Wacquant, 2007; Candea, 2019). Differences surface when people and places are juxtaposed. The SIMS project sought to experiment with sustainable mobilities in three very different urban areas, of which two, Nordhavn and Folehaven, were particularly interesting for my purpose. The first, Nordhavn, is a newly developed neighborhood situated on the harbor front close to the city center primarily inhabited by upper-middle-class families and couples. The second, Folehaven, is a former working-class district located in the middle of heavily trafficked roads with a mix of one-family detached houses and public housing built in the late 1940s and early 1950s. The two areas differ significantly in terms of socio-economic and spatial resources and, thus, represent two very different forms

of urban living and contexts for sustainable mobility change. Would mobility interventions unfold differently in the two areas? And if so, how? The aim was to explore what the (different) processes could teach us about inequality in relation to a sustainable transition.

As mentioned, the SIMS intervention did indeed unfold very differently in the areas, albeit not in ways I had imagined. The intervention was dropped in the former working-class neighborhood of Folehaven before it even got started as two key mobility providers decided to withdraw from investing in the area. The first empirical paper “Urban mobility injustice and imagined sociospatial differences in cities - A comparative study of two Copenhagen neighbourhoods”, examines why.

The paper compares inequalities in mobility and mobility transition in Folehaven and Nordhavn based on interviews and focus groups with inhabitants from both areas and the private mobility investors involved in the SIMS sustainable mobility intervention. Based on the empirical study, we argue that the experience of immobility most often results from the co-occurrence of physical and reputational factors. Sociospatial conditions played a central role in shaping the experience of mobility, and territorial narratives were dominant factors in creating experiences of immobility. Interestingly, this was intensified by people outside the area (investors/stakeholders), whose planning decisions were influenced by the reputation of the area. The very different dominant narratives of the two neighborhoods were decisive in the provider’s decision to withdraw from Folehaven. The article demonstrates that very different experiences of (im)mobility occur in relation to diverse social and spatial neighborhood structures and that paying attention to the narratives of neighbourhoods provides a lens for understanding how these inequalities are produced and reproduced and play a decisive role in planning decisions.

In Nordhavn, the SIMS mobility intervention also did not unfold as planned, albeit for other reasons. In early 2020, I was approximately one year into my PhD and the intervention was about to start when the global COVID-19 pandemic hit, and everything came to a stand-still. Overnight, streets were silenced, busses emptied, and practices such as teleworking and teleshopping increased to an extent that had been unimaginable just days earlier. Like much other work conducted during this time, the lockdown conditions significantly altered this project. The SIMS sustainable mobility intervention was postponed until 2022, which meant that studying it was no longer an option because it is still ongoing at the time of writing. At the same time, new pressing questions arose: What would the pandemic shock imply for urban mobilities? Would the pandemic disruptions lead to mobile tipping points?

The second paper in part three of the dissertation on empirical inquiries addresses the research question: What creates tipping points in relation to sustainable urban mobility? I was especially concerned with the long-term effects of COVID-19 on public transportation because our empirical research in Folehaven indicated that public transportation was particularly important for these areas and for mobility equality. It soon became clear that the pandemic had consequences for public transport, in particular, as fear of becoming infected caused those who could to flee to the car and, therefore, we saw the re-emergence of car-dependent urban mobility cultures. An important factor in this was that in Denmark, public transportation was the first place where masks were obligatory, and for months, it was also the only place with a mask mandate. Consequently, the mask came to signify the use of public transportation as the riskiest of all practices during the pandemic.

In the paper “Pandemic Detours or New Sustainable Pathways? Post-pandemic Mobility Futures in Danish Cities”, we discuss the impact of COVID-19 on urban mobilities and, especially, public transport based on an online workshop with mobility stakeholders. The paper is the result of an effort to understand the spreading fear

and pervasive flight away from public transportation but also investigate whether the pandemic could be invoking new pathways towards sustainability in mobilities and mobile tipping points through the theoretical lenses of mobile risk society and practice theory specifically related to new mobility practices as tipping points. By analyzing the discussions held during the workshop, the paper uncovers new imaginaries and emerging discussions about the need to incorporate flexibility in solutions and invest in the integration of mobility services, which arose because of the disruption caused to public transportation systems by the pandemic. If utilized properly, the innovations and lessons learnt from COVID-19 can lead cities onto more sustainable mobility pathways than what was previously perceived as possible. However, as routinized practices are deeply embedded in existing institutions and infrastructure, which do not necessarily change with COVID-19, we might not expect such changes to happen “by themselves”. Rather, the realization of such positive benefits will need continued investments and active policymaking. This is especially true for public transportation. After suffering severe passenger losses during multiple lockdowns, reviving this source of mobility is crucial for ensuring future sustainable mobilities for the less mobility advantaged inhabitants and areas of cities.

2.4. PART IV: DIRECTIONS

While the pandemic challenged my research and led to the cancellation of many activities, it also resulted in new opportunities for insights for my doctoral work and this project. I found time to reflect more deeply on the material we did manage to gather. Having identified how general narratives about the different neighborhoods – “the first movers receptive to habitual change” in Nordhavn and “the renters who, in terms of sustainability awareness, are from another planet” in Folehaven (Kristensen, Lindberg & Freudendal-Pedersen, forthcoming) – influenced mobility providers’ decision-making, it became relevant to also

explore the researcher's decision-making and the consequences it had for the (re)production of inequality.

These questions guide the first of two papers included in the fourth part of the dissertation. Together, they provide answers to the last research question: How do we incorporate sensitivity towards inequality (theoretically and methodologically) in sustainable transition research?

Inequality may be produced and reproduced in all sorts of societal activity – research included. Researchers' social positions and methodological choices have implications for the representation of people and places, which can be more or less equal and just. This is the argument in the paper "Despite the best of intentions: Inequality in the search for mobility justice", which investigates whether inequality dynamics were at play in the qualitative interviews we conducted in Folehaven and Nordhavn and if so, how, to exemplify that it is impossible (also) for researchers to treat everything equally despite the best of intentions. The baggage we bear with us, personally and professionally, influences our ability to emphasize, understand, discover, and interpret. To handle this – rather than trying to "fix" it – the paper recommends actively and consistently using the interview guide as a tool for maintaining reflexivity at all stages of the research process and discusses what this might look like. Throughout the stages of *preparing*, *interviewing*, and *rethinking*, the interview guide helps identify new aspects of the empirical material – not *despite* the researchers' normativity but *because* of its explicit use. The interview guide thus raises awareness of epistemic injustice in research, which again enables researchers to critically examine their own practice and understandings because collectively shared and taken-for-granted understandings must be constantly reevaluated in order to avoid blindly reproducing inequalities and instead achieve epistemic justice. The recommendation is, therefore, that sustainability studies scholars utilize these methodological practices to raise their awareness of inequality in transition.

The last paper in the dissertation “Developing a theoretical framework for capturing inequality in transitions” outlines a theoretical framework for future studies of sustainable transitions, which pays attention to inequality and normativity. It gathers insights from the multi-level perspective, practice theory, reflexive modernization, and critical realism to create a framework that underpins scholarly sensitivity to the social and normative implications of transition. The multi-level perspective provides the complex and multi-layered backdrop of sustainable transitions, practice theory provides insights into everyday life and how it changes, while reflexive modernization provides an understanding of social inequality and how it alters as climate change and efforts to mitigate its consequences unfold. Lastly, critical realism reveals the normative aspects of transition studies. The aim is to enable transition scholars to conceptualize key elements and dynamics in transition processes and assess the social implications and normative ideas that underpin them. The result is a framework for future transition studies that highlights researchers’ and planners’ normativity and the potentially very different implications a sustainable transition may have for people and places. As such, the paper responds to the identified need to develop greater scholarly and practical sensitivity to inequality and normativity. Sustainable transition has the power to redistribute resources in cities and thus their social landscapes. Transition scholars, therefore, need to develop greater sensitivity toward who stands to gain or lose from different initiatives to avoid locking societies and cities into inequality-exacerbating and inefficient transition pathways. The ideas in the paper for new theoretical directions in transition studies concludes the fourth part of the dissertation.

2.5. PART V: CLOSING

The last part of the dissertation gathers the key findings in the dissertation and summarizes them in six key points. The implications of each point are discussed in terms of future recommendations for scholarly work, and for politicians and

practitioners. Lastly, I reach a conclusion regarding the problem statement.

The dissertation's introductory part has almost reached an end. Before moving on to part two, a last chapter introduces the philosophy of science underpinning my work.

CHAPTER 3. PHILOSOPHY OF SCIENCE

Within many scientific traditions – including some branches of the social sciences – the ideal is that research creates objective knowledge and generalizable truths. This ideal dominates quantitative social research, in particular. Although some qualitative researchers do subscribe to the objectivity ideal (Alvesson & Sköldberg, 2020: 19), it probably will not come as a surprise to the reader at this point to learn that the author of this dissertation is not one of them. My work with this dissertation has been a journey that started with a purely sociological approach but then moved towards a more pragmatic and cross-disciplinary stance, which had consequences in terms of the philosophy of science.

This chapter tells the story of this journey and reflects upon it. I approach the philosophy of science as a resource for understanding different elements in a complex world, which allows me to combine insights from different traditions. The dissertation draws on moderate versions of social constructionism to understand why social phenomena have become what they are and critical realism to understand the role of materialities in the processes of becoming.

The latter parts of the dissertation engage in discussions of normativity in the activities of mobility providers, planners, and researchers. Important to this dissertation is therefore adoption of a philosophical stance, which captures the evaluative and normative dimensions involved in research and change. It is impossible to avoid talking about normativity when we talk about inequality and transition: It activates ideas of whether inequality is good and motivating or bad and unjust, and how much or how little inequality we find acceptable. Both constructionism and critical

realism capture the inherent normativity in human activity, but in this dissertation, I have especially been inspired by critical realism in this regard.

3.1. THE CONSTRUCTION OF SOCIAL PHENOMENA

Coming from sociology, I have been carefully trained in the analytical discipline of “demasking” social phenomena and challenging common sense. These are key elements of research within social constructionist. For social constructionists, the reality is not naturally given – things do not have to be how they are (Berger & Luckmann, 1992: 13 [1966]). Studying how reality is socially constructed, therefore, becomes a central concern (Alvesson & Sköldberg, 2020: 29). Approaching reality as something that is socially constructed has the ontological implication that there is no access to a reality ‘out there’, outside human interpretation, because reality is created in social interactions between humans.

Hacking (1999) breaks social constructionist research down into a process consisting of at least two steps. Social constructionist inquiries often start by scrutinizing a phenomenon that is taken for granted; a truth that appears inevitable and self-evident. The point is then to dispel self-evidence by demonstrating how, for example, historically, the phenomenon has not existed or has not been at all as it is today (Hacking, 1999). In this way, the phenomenon is demasked. This gives an ‘aha experience’, which Alvesson & Sköldberg (2020: 30) highlight as the main point of social constructionist work.

My social constructionist backlist cannot be taken out of the equation. It serves as a backdrop for my thinking and, therefore, social constructionist understandings and phrasings also permeate this dissertation. They surface, for example, when I talk about inequality as something that is socially produced and reproduced, and about narratives that frame investors’ and planners’ decision-making. As such, interpretations influence any rationality and

rationalization (Berger & Luckmann, 1992) including those of the researcher, the urban planner, and the mobility provider.

The social constructionist philosophy of science informs this research in the sense that it does not seek objective truths about social phenomena but instead seeks to illuminate how the phenomena become what they are because of what we do with them and how we talk about them. In other words: how social inequalities, mobilities, transitions and urban futures are socially constructed. How we understand and create meaning around these phenomena and what this means for what we do with them is of central concern.

3.2. WHAT ABOUT THE MATERIALS OF MOBILITY?

To better capture normativity and make more room for change and the role of materiality herein, it made sense to move away from especially “hard” constructionism and adopt a more pragmatic, multi-faceted gaze. This also emancipates me from some of the challenges of hard constructionism. An important one is, I would argue, that in perceiving reality as a social construction, the researcher’s investigations are directed exclusively towards uncovering how this construction has come into being, rather than towards how the construction functions or why people construct society in the way they do. These are crucial questions when engaging with transition and they call normative horizons into question, as I do in this dissertation. I, therefore, agree with Pierre Bourdieu (Bourdieu in Alvesson & Sköldberg 2020:45), who was himself inspired by social constructionism, but found that their micro-sociological investigations tended to “stop where the fun begins”.

A new direction in the philosophy of science which I encountered during my work with this PhD is critical realism. This resonates with the basic idea that normativity permeates all aspects of human life including scientific activities. This newer philosophy of science was developed by the philosopher, Roy Bhaskar, and emerged in

the 1970s (Alvesson & Sköldbberg, 2020:48; Bhaskar, 1998). It may seem odd to draw on both constructionist and realist philosophies of science in the same piece of work as constructionist and realist positions are often presented as polar opposites. For example, my textbook on constructionism says:

“When we, e.g., look at an object, it reflects rays of light into our eyes. This gives rise to various neural processes in the brain, and in the end, a state is formed in our consciousness that *represents or depicts* the external, physical object. Constructionism denies both elements of realism, both that reality exists independently and that our cognition reflects it.” Collin, 2003: 13 (my translation)

In this quote, social constructionism is presented as anti-realist and as perceiving reality without qualities. I would argue that viewing everything, even the physical reality, as a social construction applies only to the most radical branches of the tradition, what I have called “hard” constructionism. The constructionism I am inspired by is a more moderate version, which focuses more on how social phenomena take shape as a result of how we think about them, what we do with them, and the contexts in which they are embedded. Because I start from an everyday perspective and practice theory, not only do I want to engage with socially constructed phenomena and meanings, but I also want to include space and materiality and skills that are often very practical and ‘real’.

3.3. MATERIALITIES AND NORMATIVITY FROM CRITICAL REALISM

The interaction between materialities and the making of meaning (semiosis) is also the outset for the critical realists, Jessop and Sayer, to engage with the discourse theorist, Fairclough, in their (2002) article “Critical realism and semiosis”. Here they describe materialities as carriers of specific potential in terms of power and possibilities. They can do different things and change in specific ways. They, therefore, give materialities a certain amount of

leverage in a world that is still understood as consisting of processes and phenomena that are socially shaped.

Critical realists, like social constructionists, do not accept the existence of objective truths that structure the world. They do, nevertheless, acknowledge that structures exist and hold opportunities and power to create new futures. However, they are perceived as more deeply lying mechanisms that generate empirical phenomena (Alvesson & Sköldbberg, 2020: 48). As such, structures can exist without always being prominent (Sayer, 1992). In this ontology, there is a latency which is interesting for researchers who are engaged with change and transition because, due to structural latency, what has happened does not preclude that something else might happen in the future (Sayer, 2000: 12).

The ‘critical’ in critical realism relates to the idea that humans are evaluative beings, who are always relating and responding to their relationships and contexts (Sayer, 2011). The researcher cannot avoid evaluating and influencing what is researched. Therefore, studying, understanding and explaining social phenomena always involves critical evaluating the phenomena under study (Sayer, 1992:6).

Understanding people and researchers as evaluative beings who care about their relationships and contexts and are capable of flourishing or suffering depending on how our world develops has consequences in terms of the role normativity plays in research and change. With his evaluative stance (Sayer, 2007, 2011, 2014), Sayer emphasizes how people – social scientists included - are sentient, evaluative beings, who do not just think and interact with the world, but also evaluate things, including the past and the future (Sayer, 2011; 1-2). In our everyday lives as well as professional lives, we cannot avoid engaging with normative questions of good and bad and what to do for the best – the matters of practical reason (ibid). When social scientists pay close attention to social arrangements such as different transition paths, how they come about and what

futures they can facilitate, we can hardly avoid normativity. Therefore, it is better to embrace it.

Normativity is an important perspective in this research. In the dissertation's part four I argue that a sustainable urban transition, in essence, involves designing the good future life in cities. Visions of green urban futures and the efforts to realize them hold the promise of a better life for inhabitants. Sustainable transition relies on a normative core and, therefore, answering normative questions about who will flourish and suffer hold a central position in transition work.

3.4. SUMMATION

This section has engaged with the trends in the philosophy of science that inspire my work. I have particularly been inspired by the two philosophies of science: social constructionism and critical realism. Although they are sometimes framed as opposites, I draw on both and consider them as resources for understanding different elements in a complex world.

The social constructionist philosophy of science informs this work in the sense that it does not seek objective truths about social phenomena, but instead seeks to illuminate how the phenomena become what they are because of what we do with them and how we talk about them.

In critical realism, I found a way to include materialities as things that are neither fixed nor constructed, but somewhere in between. Here, materialities carry specific potential – they can do different things and change in specific ways. Furthermore, something that is advantageous for this dissertation is the idea that humans are perceived as evaluative beings who care about their relationships and contexts and are capable of flourishing or suffering depending on how our world develops. Therefore, normativity is placed center stage because critical evaluation is perceived as something that is ever-present.

PART II: OBSTACLES

CHAPTER 4.

This part of the dissertation engages with the first research question, exploring the obstacles to engagement with social dimensions of change and issues of inequality. Why are these dimensions of change not more prominent in transition studies? I argue that at least two obstacles can be identified. These are overstating the importance of: 1) individual behaviors and 2) technological innovations and their prominence for a sustainable transition at the expense of more thorough engagement with the social dimensions of transition, hereunder social inequality.

4.1. PATHWAYS FOR UNDERSTANDING THE SOCIAL DIMENSIONS OF TRANSITION

Since the Brundtland report (1987), there has been general agreement that sustainability has three dimensions: economic, social and environmental (Brundland, 1987; Bartiaux et al., 2019). Sustainability in the social and economic dimensions means that a sustainable transition must consider the current landscape of inequality; it ought to be fair and reduce inequalities between people and places (ibid).

Around the millennium, scholars called for the improved integration of social inequality and sustainable transitions. Agyeman & Evans (2004) and Bullard, Agyeman and Evans (2002) called for a link to be made between sustainability and justice in, for example, the book *Just Sustainabilities: Development in an unequal world* (2003). Before them, other scholars, for example, Torras and Boyce (1998) and Morello-Frosch (1997), worked with linking environmental quality and human equality. Bullard, Agyeman & Evans argue that sustainability, “cannot be simply an ‘environmental’ concern, important though ‘environmental’ sustainability is. A truly sustainable society is one in which wider questions of social needs and welfare, and economic opportunity,

are integrally connected to environmental concerns" (Bullard, Agyeman & Evans, 2002:2).

These calls resulted in the Just Transitions framework, which is a relatively new and innovative framework for addressing climate change, focusing on making decarbonizing transitions socially just processes (Stevis and Felli 2015; Morena et al. 2020; Velicu & Barca 2019). However, as the perspective developed at the intersection between environmental justice movements and labor politics (Velivu & Barca, 2019), understanding inequality and transition in everyday life has not been a key concern for just transition scholars. Therefore, a search for theoretical support for the inclusion of everyday life in transition studies began. The outset of the search was that everyday life is where inequalities are experienced, and it is where new fair sustainable solutions need to be implemented.

The first stop was the multi-level perspective (Geels, 2004; Schot & Geels, 2008), which entails an awareness of cross-level dynamics in transition. The last paper included in the dissertation discusses its potential for future studies of inequality in sustainable transitions. Despite the sensitivity of the perspective to cross-level dynamics, an awareness of how different dynamics play out in everyday life is not present in the MLP framework. Differences in everyday life opportunities and inequalities are experienced on a daily basis. The fact that the MLP perspective cannot capture this is also very apparent as few MLP authors have attempted to understand the social dimensions of the transitions (Hargreaves, Longhurst, & Seyfang, 2013; Walker, 2013). Instead, the analytical focus in MLP-informed studies remains primarily on technological innovations.

To capture the social dimensions of a sustainable transition, I started looking in the direction of practice theory (Shove, Pantzar, Watson, 2012; 2013; Shove & Spurling, 2013). Several ways of approaching everyday life exist, but I decided to explore theories of practice as a way to develop an understanding of the social dimensions of sustainable change in everyday life.

However, some obstacles that block the way must be removed to make way for engagement with the social dimensions of transition.

4.2. FROM BEHAVIOR TO PRACTICES IN EVERYDAY LIFE

Practice theorist, Elisabeth Shove (2010), has prominently argued that one key obstacle in relation to engaging with the social and how it changes is that, historically, social science studies of a sustainable transition have tended to frame a green transition as a question of behavior (Shove, 2010). Consequently, scholarly research has tended to focus on individuals, their behavior and choices, while neglecting structural phenomena appearing at more aggregate levels (Scavenius and Lindberg 2016, 2018). The behavioral change approach focuses on individual attitudes, behaviors and choices, which Elizabeth Shove termed the ABC framework (2010).

Relying on individual behavioral changes to deliver sustainable futures reflects a failure to acknowledge and recognize the role of institutions, routines, conventions, cultures, and infrastructure in shaping the activities that make up everyday life (Southerton, Chappells and Vliet, 2004). As such, the behavioral models are “sociologically naïve” according to Spaargaren (2011, p. 814). When institutions and questions of equality and social justice are bypassed, opportunities for governing and guiding sustainable change become limited. As such, it constitutes the first of the two obstacles to engaging with social change and inequality in sustainability studies.

What the everyday life perspective and practice theory have to offer is examined in relation to urban planning in the first paper included in the dissertation, the book chapter “From planning practice to urban practice: Integrating everyday life in planning”. It shows how this approach stands in opposition to and illuminates blind spots of the behavioral approach, which has traditionally informed planners’ promotions of sustainability in the urban sphere.

PAPER ONE: FROM PLANNING PRACTICE TO URBAN PRACTICE: INTEGRATING EVERYDAY LIFE IN PLANNING FOR URBAN SUSTAINABILITY

Caroline Samson, Malene Rudolf Lindberg, Malene Freudendal-Pedersen, Daniel Galland

Abstract: This chapter delves into the role of *everyday life practices* in planning for urban sustainability. Whilst knowledge about practices in planning research mainly emerges from planning processes or the planner's own professional practice, less attention has been paid to understanding people's everyday practices, which are complex and bundled together and are produced and reproduced in and by the urban context. Through the lens of theories of practice, we argue that planning for urban sustainability demands a shift away from the traditional behavioral rationalist approach (promoting sustainable consumption) towards a more integrated approach focusing on everyday urban practices. Using an example of a young adult's everyday life, we show how the bundling of everyday life practices interacts with waste management, illustrating how the latter is not an isolated practice but is rather connected to several other urban practices. We conclude by discussing the need for an increased focus on everyday urban practices in contemporary urban sustainability planning research.

1. Introduction: Behavioral planning approaches for urban sustainability changes

Planning for sustainable urban futures has long been on international governance agendas but it has only produced limited results, especially concerning changing unsustainable consumption patterns. As part of the sustainability governance agenda, consumption is typically equated with consumer behavior (Southerton, Chappells and Vliet, 2004; Evans, Welch and Swaffield, 2017). Here, the aim of promoting sustainable consumption

through behavioral change has focused on encouraging certain kinds of lifestyles or purchases (Shove, 2010). In recent years, this approach has been criticized for failing to capture the fact that practices are embedded in complex everyday lives and urban structures (Evans, Welch and Swaffield, 2017) and for neglecting the interaction between the system of provision and the system of consumption.

Elisabeth Shove (2010) terms it the “ABC framework” in which “*social change is thought to depend upon values and attitudes (the A), which are believed to drive the kinds of behaviour (the B) that individuals choose (the C) to adopt*” (Shove, 2010, p. 1274). Planning with the ABC framework means that the primary task is about providing enough information for behavioral changes. It becomes a cognitive matter that relies on the idea that knowledge creates action, what Spaargaren (2011, p. 814) calls “*sociologically naïve*”. Furthermore, relying on consumers’ behavioral changes to deliver sustainable urban futures reflects a failure to acknowledge or recognize the role of institutions, routines, conventions, cultures, and infrastructure in shaping processes of consumption (Southerton, Chappells and Vliet, 2004).

Contemporary urban landscapes remain highly influenced by physical design and rational planning paradigms, both of which embed behavioral approaches in change (Rydin, 2021). Rational planning became a widely subscribed approach in the aftermath of WWII (Faludi, 1973; Alexander, 1984), which was aligned with technological optimism and capacity of technology to change behavior, which has made very visible imprints on today’s cities. The technical rationality of planning accentuated its ‘scientific’ and ‘objective’ qualities: A professional discipline characterized by formal rationality that separated means from the ends (Faludi, 1973). The ‘objective’ view of knowledge thereby justified the procedural approach of planning: From problematizing and setting objectives to generating, evaluating, and deciding upon alternatives. This is showcased by how transportation planning has significantly shaped the form and function of cities: By prioritizing the automobile combustion engine technology and its infrastructure defining urban life (Newman and Kenworthy, 1999).

The rational planning paradigm approaches behavior with a ‘predict and provide’ outset using quantitative data to model urban and regional futures, “*and as the rational choice perspective assumes rationality on the part of actors, exploring motivations and values through qualitative research is not really required*” (Rydin, 2021, p. 59). This view of actors has evolved, and rational choice and ‘evidence-based planning’ has been supplemented by planning approaches that include cultural and institutional perspectives, e.g., new institutionalism,

and embrace complexity and uncertainty, e.g., transactive planning (Friedmann, 1973), deliberative planning (Forester, 1999), and collaborative planning (Healey, 2006).

Despite this development, the need to plan for humans instead of systems and technology remains an urgent discussion. As early as 1961, Jane Jacobs criticized urban planning for its rationalistic approach in her book *The Death and Life of Great American Cities*. Jacobs (1961) specifically focused on the role highways were playing in the destruction of urban life. This discussion primarily inspired architects who focused on the materiality of buildings and the spaces in between. In an urban planning context, Jan Gehl's *Life Between Buildings* was very influential amongst urban planners. Gehl (2011) also adopts a behavioral approach in his analysis, but he also focuses on the built environment and its influence on behavior (Tigran, Littke and Elahe, 2020).

Recognizing the comprehensiveness of practices has been on the agenda within planning studies. This has contributed to theoretical and empirical studies on planners' practices and practices in planning processes (Verma, 1995; Watson, 2002; Davoudi, 2015; Kurath *et al.*, 2018; Alexander, 2022). Planners' practices have been discussed, for instance, within Science and Technology Studies (STS), Actor-Network Theory (ANT), or Social Construction of Technology (SCOT) (Pinch and Bijker, 1984; Hommels, 2018; Kurath *et al.*, 2018). In particular, Patsy Healey's seminal article *A Planners' Day* (1992) explored planners' different roles and practices in their everyday work. When planning research and theories of practice have been combined, the focus has been on planners' practices (Alexander, 2016, 2022; Gram-Hanssen, 2022), conceptualizing planning processes (Harders, 2015; Luukkonen, 2017), or organizational relations and work studies (Gherardi, 2012).

These discussions have been essential in that they have helped the planner handle the important role of solving societal problems (Rydin, 2021) – not least concerning practices of public and commercial actors seeking to mobilize the consumer. However, these approaches that combine planning and practice (both the vaguer understanding of practice as well as the version within theories of practice) primarily address the way planners *plan* and not the practices of those they plan *for*. In this chapter, we put the emphasis on the latter: The need to develop an understanding of everyday practices *in* planning. We suggest that theories of practice should be applied as an approach to understand how materials, meanings, and competences that reproduce everyday practices can be changed in order to encourage more sustainable consumption.

This chapter is structured as follows: Sections two and three provide conceptual reviews of everyday life and theories of practice. Section four combines theories of practice in planning. Next, section five uses an empirical example related to waste management and sorting to show how bundles of everyday practices influence each other. The final section discusses how theories of practice as a methodology can help planning for sustainable futures.

2. Centering everyday life

The climate change challenge, which is putting pressure on cities and planners' ability to incorporate sustainability in urban everyday life is, as Ulrich Beck (1992) puts it, a self-produced challenge: Our modern lifestyles are creating the risks of flooding, congestion, and pollution. Today, change is propelled by the need to limit the negative side-effects of everyday life and the unintended consequences of how we live, consume, and move around the city. Taking modern everyday life as the scale of observation enables planners to understand polluting urbanism in a world at risk and to recognize that sustainable urban planning involves more than behavior change and technological innovation.

In his book *Critique of Everyday Life*, Henri Lefebvre (2014) argues that the importance of everyday life has been relegated due to the abundance of uncertainties and complexity in everyday life that complicates the 'simplicity' of capitalism and political economy. In the face of the sustainability challenge, however, it is important to formulate alternatives to simplistic approaches and develop alternative tools so that planners can identify measures that will support sustainable transitions rather than generate a profit. Placing everyday life at center in planning, we argue, presents such an alternative.

Everyday life is where urban infrastructure, institutions, and cultures meet individual doings and sayings. Everyday life provides a theoretical and methodological framework for understanding what urban citizens do with and in their city and why they do it. Only once this has been understood, can planners begin to consider how to intervene in polluting activities in the city. Charlotte Bloch (1988) highlights everyday life as a place for creating an understanding of the connection between 'the little' and 'the big' story (Bloch, 1988, p. 125), that is, the connection between people's everyday life and the urban structure. It is advantageous for engaging with the many unsustainable urban phenomena such as pollution from combustion-engine vehicles, insufficient waste sorting, and congestion, which are appearing in the

everyday lives of citizens and which are deeply rooted in the urban infrastructure, which planners plan.

Birthe Bech-Jørgensen (1994) asserts that everyday life comes into being in the interaction between the conditions of everyday life and the way they are handled. As such, everyday life is something that is constantly changing and is never static or finished. It is enacted and re-enacted every day and is always in the process of becoming. The materials, the spaces, and how they are planned are decisive for how everyday life unfolds in cities, and how (un)sustainable it is. For example, the prevalence of bike lanes or parking spaces in the cityscape influences how people practice mobility in everyday life. By creating spaces for sustainable everyday practices, planners can prompt sustainable urban futures. This can be achieved if planners understand the dynamics of everyday life and how it changes.

3. Using theories of practice to approach everyday life

Several ways of approaching everyday life and including it in research, policies, and planning for sustainability exist, but here the focus is on theories of practice as a perspective for planning for sustainability in everyday life.

As previously mentioned, theories of practice started as a critique of the individual-oriented approaches to sustainability. When governing and attempting to solve environmental issues, the focus has been on 'luring' or 'manipulating' people to make sustainable choices by using tools such as pricing, persuasion, and advising (Spaargaren, 2000; Shove, 2010). However, when they do not understand everyday life, planners fail to understand why people do what they do: Why are urban citizens still driving combustion-engine vehicles and performing inadequate waste sorting when they know it is unsustainable? If citizens know that these activities produce risks and contribute to climate change, such practices may be perceived as irrational. From this viewpoint, the planner's job is to redeem the urban masses:

"If humans are seen as slaves of their emotional selves, it appears that only those choice architects who design public policy can be trusted to design the rational default environments in which we are to live (with, of course, the exception of the 'rational elite' for whom these policies are not really meant in the first place)"

(Whitehead, Jones and Pykett, 2011, p. 2834)

An influential critique of climate policies that is based on this understanding of people and their practices was formulated by Shove (2010) and denoted the "ABC" framework" as already mentioned in the introduction. "A" stands for "attitude", "B" for "behavior" and "C" for "choice", exposing the overly

simplistic idea that attitude affects behavior and hence choice. The ABC framework leaves all phenomena that do not occur at the individual level out of the equation, and delivering sustainable change becomes a question of formulating rationalistic and individual-oriented policies and plans. Therefore, it also individualizes the responsibility for sustainable change.

In response, a movement to include insights from sociology in sustainability policies and research emerged. This was informed by the practice turn in social science (Spaargaren, 2011). By de-centralizing individual action and instead taking routinized everyday practices as the starting point for understanding (un)sustainable living, moving, and consuming, theories of practice result in a more nuanced discussion that goes beyond the obsession with the individual of the ABC framework. As Alan Warde (2014) puts it: *“Against the model of the sovereign consumer, practice theories emphasize routine over actions, flow and sequence over discrete acts, dispositions over decisions, and practical consciousness over deliberation”* (Warde, 2014, p. 286). Logics such as homo economics are discarded, and cultural logic and practices replace them (Reckwitz, 2002).

Practice is the unit of analysis against which social phenomena can be understood (Schatzki, 2001; Reckwitz, 2002). Social practices are repeated and recognizable social activities and, consequently, not results of autonomous individual's activities. Individuals are only of concerns insofar as they are carriers of these practices (Reckwitz, 2002). Social practices activate bodies, materials, humans, words, and interpretations: *“A practice is thus a routinized way in which bodies are moved, objects are handled, subjects are treated, things are described and the world is understood”* (Reckwitz, 2002, p. 250). This emphasizes the fact that practices may be performed by individuals, but they are collectively produced and reproduced (Shove, Pantzar and Watson, 2012).

Definitions of what combinations of elements that constitute a practice vary (see Gram-Hanssen (2009) for a summary) but one frequently used definition was put forward by Shove, Pantzar, and Watson (2012). They argue that a practice consists of three elements: Materials, meanings, and competences. Meanings are shared ideas and values that underpin a practice, competences are know-how and skills needed for conducting the practice, and materials are the objects, technologies, tools, and infrastructure that are activated. Practices are centered on the organization of everyday life, where for example the practice of cycling connects practices of working, picking up children, doing the grocery shopping, and meeting friends. In this way, everyday activities interlock and form larger patterns of social practices.

Repeatedly activating the materials, meanings, and competences that constitute specific practices reproduces those practices (Shove, Pantzar and Watson, 2012). The fate of a practice thus depends on the enactment and re-enactment of that practice – on the putting together of the elements involved – on an everyday basis. This takes place in the everyday life. In oppose to the ABC framework, theories of practice argues that attitudes, meanings, and norms cannot be understood as attributes of individuals (Shove, Pantzar and Watson, 2012). Instead, they exist in the practices and are (re)produced in social relations and the enactment of practices in urban everyday life. These understandings are included in what we term urban practices.

4. Planning for renewed urban practices

Cities are composed of social, institutional, and infrastructural elements. Therefore, it makes sense for urban planners to move beyond rationalistic and individual-oriented approaches and experiment with other frameworks for approaching sustainability in urban planning, for example, through a more nuanced focus on the texture of everyday life. Understanding urban life as large patterns of interlocked everyday practices presents a new way of understanding urban infrastructure and urban mobility systems, waste systems, etc. The perspective suggests that the way the systems are currently configured is the result of specific historical conditions that resulted from previous practices which were transformed into present practices (Gherardi, 2012) and which can be transformed again into future sustainable practices. Nothing is set in stone (metaphorically speaking) even if we often perceive urban infrastructure and systems as unchangeable.

According to this perspective, the task of planning for urban sustainability becomes a task of understanding social life as routinized everyday practices and identifying how planning can support sustainable changes in urban everyday life. If the linking of elements in practices is done differently or stops being done, practices can transition or terminate. Herein lies a range of opportunities for planners to intervene.

Change is possible when one or more of the elements involved in practices change, or when other practices in the larger pattern of urban everyday life change. Spurling et al. (2013) have developed three framings for intervention in consumption practices. These are: 1) Recrafting practices, 2) substituting practices, and 3) changing how practices interlock. The three intervention frameworks differ in terms of ambition levels, institutional scale, and type of policy activated. Whereas the first involves changing one or more elements involved in a practice, e.g., replacing a combustion engine vehicle

with an electrified vehicle, the second involves substituting a practice altogether, e.g., shifting from car-driving to bike-cycling. The third, changing how practices interlock, means targeting the larger pattern of social practices, for example, by making it more or less difficult to use the car when shopping, for example, through the way supermarkets and the parking and infrastructure surrounding them are planned.

In the following section, we illustrate through an empirical example related to waste management how one everyday practice interacts with many other practices. Illustrating how elements are shared and practices interlock gives planners an understanding of how to change practices through altering their different materials, meanings, and competences and the way they interlock.

5. Empirical example: Urban practices of waste management and sorting

The following example is derived from the research project *Food, mobility, and housing in the sustainable transition of everyday life*. Food, mobility, and housing are the main CO₂ consumption emitting domains and they are, therefore, essential to understand to make a transition towards a more sustainable everyday life possible. Empirically, the project was based on qualitative interviews with young adults (between 25-35 years old) living in the four largest cities in Denmark. The theme of the interviews was everyday life practices within food, mobility, and housing. The following example of an everyday practice, managing and sorting waste, is used to show the interlinkages between different everyday practices.

In a Danish context, sorting waste correctly is the responsibility of the individual ('correctly' refers to sorting waste in the most sustainable way). The individual consumer is in charge of discarding what they consider as waste as well as sorting the waste into the right fractions before it is collected and handled by professionals. This behavioral approach to waste sorting has been the norm. It is believed that if individuals have access to waste bins that contain different fractions, waste sorting will be conducted. But despite a willingness among urban citizens to sort waste 'correctly', the potential for better waste sorting is still high (Katan, 2022). The following example unfolds the practice of managing and sorting waste to highlight that understanding the practice as a simple behavior overlooks the nuances needed for changes to occur.

Applying Shove, Panzar, and Watson's (2012) elements of materials, meanings, and competences in the practice of managing waste reveals that the practice is not as trivial and simple as it may at first seem. The **competences**

that constitute the practice include the ability to choose the correct bin, the ability to sort the waste into fractions, the ability to bring out the waste, the ability to carry the waste, or the ability to distinguish between what is waste and what is not, among others. The **meanings** behind the practice could be to simply get rid of the waste, environmental concerns, not throwing waste on the streets, or economic reasons. There are also many **materials** such as the waste itself, waste bags for different fractions, wastebins in the house, waste containers in the urban fabric, infrastructure for the waste bins (indoor and outdoor), and garbage trucks for picking up the waste, among others.

These are all examples of materials, meanings, and competences that have been identified among the young adults in the research project. Elements could also be concern about why the practice of managing waste has not been prioritized, e.g., a lack of covered shelters for the waste bins (so the people conducting waste management do not get wet), a lack of keys to access the correct waste bins, or a lack of trust that waste is going to be disposed of correctly, among others. Some of these materials, meanings, and competences are global while others are more context specific. In Denmark, for instance, there was a short period of three weeks during the initial phase of sorting new fractions when all the waste was disposed at one incineration plant. This almost 20-year-old scandal still forms and replicates meanings of waste sorting.

As such, this highlights how several materials, meanings, and competences are at play when facilitating sustainable waste management. By using practices as the unit of analysis, we see the complexity of a single practice. However, as practice theoretical researchers assert, practices are often related to and co-exist with other practices (Schatzki, 2010; Shove, Pantzar and Watson, 2012; Hui, Schatzki and Shove, 2017). It is in the arrangement of several practices where doings are produced and reproduced – or intervention could happen as presented in the framework of Spurling et al. (2013).

In one of the interviews, a couple mentioned that their waste management system was located under ground level and was equipped with a heavy hatch that springs back powerfully. They did not talk about their waste management infrastructure in a positive way, which led the interviewers to ask whether that meant that they did not sort their waste, to which they answered:

“Yes, definitely yes. Also, it is a longer way for me to, kind of, go around the building. It’s not like... in relation to the bus I take every day, it’s not on the way to that. You kind of have to go all the way up this way, and then you have to spend

time opening the hatch and it also takes a lot of time to like sort your waste into all those fractions, especially for those hatches that are way too small. And because I'm often in a hurry, I do not have that much time, I prioritize catching the bus instead of, yes, sorting the waste" (Nor & Annika, interview September 2021, translated by authors).

Not managing or sorting waste is not only limited by 'bad' material (the heavy and small hatches) in the practice itself, but it is also limited by the physical urban infrastructure – the road. Infrastructure that is shared between the practice of managing waste and the practice of taking the bus to work. The same material (the road) makes it possible to take the bus to work while at the same time limiting the practice of managing waste.

Moreover, what this quote shows is that waste management does not only involve disposing waste in the designated bin. Managing waste interlocks with other elements of everyday life. An everyday life that includes practices that must be coordinated and negotiated with other competing practices:

"Some days I just place the waste bag in front of the door if I'm in a hurry. Often, I take out the waste when I'm on the move anyway. Then I'll leave the house earlier to dispose it because you need time to put the waste in the right bins. When I do not have the time to do that, I just place the waste in front of the door, and then perhaps, my husband takes it when he goes to work. If not, I'll take it the following day or the next time I'm out the door, sometimes when I go to pick up my daughter. That depends." [...] "I would never go out with the waste just for the sake of disposing of it. Or not unless I have a lot of waste after a dinner party or something" (Afia, interview December 2021, translated by authors).

To bring out the waste is thus something that needs to be coordinated with the partner and their child. Also, prioritizing waste management only happens if there is sufficient time that can be allocated to it and catching the bus is seen as more important than sorting waste when they are not two easily connected practices. These examples show that practices share elements. These elements can be shared but can mean that practices compete with one another. For instance, the common material in the form of the same infrastructure (the road), which is used for the waste management system, and the route to work or meaning in terms of being environmentally concerned and aiming to take the bus as well as sort the waste.

By applying theories of practice and using everyday practices as the unit of analysis, we see that functions (e.g., waste management and transport systems) in the city need to be considered and planned together. To enhance

sustainable practices, focusing on these interlinkages is essential. Following the framework of Spurling et al. (2013) for sustainable interventions, a simple recrafting of practices would not enhance waste sorting for these young adults, the focus should instead be on changing how the practices interlock in everyday life. The application of theories of practice leads to the understanding that all practices in everyday life, even the insignificant ones, matter in transitions towards sustainable futures.

6. Concluding remarks: From behavioral planning to a practice approach

In this chapter, the focus has been on how to move away from a behavioral approach to individuals' consumption and instead use theories of practice, which represents a more comprehensive approach that is needed when planning for urban sustainability. As Luukkonen (2017) argues, giving priority to practices in planning processes denotes a methodological shift to a focus on studying everyday practices, 'wheres', 'whens', and relational practices. For planners, we suggest they adopt the framework of materials, meanings, and competences introduced by Shove et al. (2012) to better understand practices, and the three framings for intervention: Recrafting practices, substituting practices, and changing how practices interlock, introduced by Spurling et al. (2013).

With the example of waste sorting and management, it became clear that this practice is interlocked or bundled together with other practices. The example also highlighted the role of urban planning in relation to which access roads are created around housing units, for instance. Therefore, when adopting a theories of practice approach, change becomes possible when one or more of the elements involved in waste sorting changes. With the three intervention framings by Spurling et al. (2013), there is a difference in ambition levels as well as the involvement of different institutions and policies. Recrafting the practice of waste sorting could involve a focus on changing the materials of sorting waste, access to it, and its location in relation to other everyday practices such as mobility or grocery shopping. Substituting the practice altogether may, for instance, involve a focus on policies with packing materials used for food so that the amount of waste would be minimized in households and less sorting would be necessary. Lastly, changing how waste sorting interlocks with other practices means targeting the larger pattern of social practices by, for example, rethinking urban planning along the lines of the 15-minute city and creating more sustainable interactions between everyday activities, thereby creating a different pace and

more time to handle sustainable practices (Samson and Freudendal-Pedersen, 2022).

The inclusion of everyday practices in future planning paints a more comprehensive picture of the effect of the different tools planners can use. Kontokosta (2021) argues that: *“The increasing complexity of urban life also requires that planners bring to bear new data and new computational methods to understand the dynamics of urbanism, forecast and predict future needs, and comprehensively evaluate policy alternatives”* (Kontokosta, 2021, p. 392). These are significant demands for planners, but a good place to start is to ask questions that entail these considerations. This calls for a more comprehensive understanding of what constitutes everyday life and that questions related to materials, meanings, and competences are asked.

References

- Alexander, E.R. (1984) ‘After Rationality, What? A Review of Responses to Paradigm Breakdown’, *Journal of the American Planning Association*, 50(1), pp. 62–69. Available at: <https://doi.org/10.1080/01944368408976582>.
- Alexander, E.R. (2016) ‘There is no planning—only planning practices: Notes for spatial planning theories’, *Planning Theory*, 15(1), pp. 91–103. Available at: <https://doi.org/10.1177/1473095215594617>.
- Alexander, E.R. (2022) ‘On planning, planning theories, and practices: A critical reflection’, *Planning Theory*, 21(2), pp. 181–211. Available at: <https://doi.org/10.1177/14730952211066341>.
- Bech-Jørgensen, B. (1994) *Når hver dag bliver hverdag*. 2. opl. København: Akademisk Forlag.
- Beck, U. (1992) *Risk Society: Towards a New Modernity*. 1st edn. London; New York: SAGE Publications Ltd (Published in association with Theory, Culture & Society).
- Bloch, C. (1988) ‘Om forskel mellem det kendte og det “endnu-ikke-kendte”’, in C. Bloch et al. (eds) *Hverdagsliv, kultur og subjektivitet*. København: Akademisk Forlag, pp. 124–145.
- Davoudi, S. (2015) ‘Planning as practice of knowing’, *Planning Theory*, 14(3), pp. 316–331. Available at: <https://doi.org/10.1177/1473095215575919>.
- Evans, D., Welch, D. and Swaffield, J. (2017) ‘Constructing and mobilizing “the consumer”: Responsibility, consumption and the politics of sustainability’, *Environment and Planning A: Economy and Space*, 49(6), pp. 1396–1412. Available at: <https://doi.org/10.1177/0308518X17694030>.

- Faludi, A. (1973) *Planning Theory*. 1st ed. Oxford, New York: Pergamon Press (Urban and regional planning series, v. 7).
- Forester, J. (1999) *The Deliberative Practitioner: Encouraging Participatory Planning Processes*. Cambridge, Mass: MIT Press.
- Friedmann, J. (1973) *Retracking America: A Theory of Transactive Planning*. Garden City, New York: Anchor Press.
- Gehl, J. (2011) *Life between buildings: Using public space*. Translated by J. Koch. Washington, DC: Island Press.
- Gherardi, S. (2012) *How to conduct a practice-based study: problems and methods*. 1st edn. Cheltenham, UK; Northampton, MA, USA: Edward Elgar Publishing.
- Gram-Hanssen, K. (2009) 'Standby Consumption in Households Analyzed With a Practice Theory Approach', *Journal of Industrial Ecology*, 14(1), pp. 150–165. Available at: <https://doi.org/10.1111/j.1530-9290.2009.00194.x>.
- Gram-Hanssen, K. (2022) *Bæredygtig praksisomstilling: I teori og handling*. 1st edn. København: Hans Reitzel.
- Harders, A.K.B. (2015) *Stædige infrastrukturer og genstridige praksisser: Et praksisorienteret studie af byudviklingsprojekter mellem vision og realitet*. PhD. Aalborg University & Danmarks Tekniske Universitet.
- Healey, P. (1992) 'A Planner's Day: Knowledge and Action in Communicative Practice', *Journal of the American Planning Association*, 58(1), pp. 9–20. Available at: <https://doi.org/10.1080/01944369208975531>.
- Healey, P. (2006) *Collaborative Planning: Shaping Places in Fragmented Societies*. 2nd ed. Basingstoke, Hampshire; New York: Palgrave Macmillan (Planning, Environment, Cities).
- Hommels, A. (2018) 'Re-Assembling a City: Applying SCOT to Post-Disaster Urban Change', in M. Kurath et al. (eds) *Relational Planning: Tracing artefacts, agency and practices*. Cham: Springer International Publishing, pp. 205–227.
- Hui, A., Schatzki, T.R. and Shove, E. (eds) (2017) *The nexus of practices: connections, constellations, practitioners*. 1 Edition. London; New York: Routledge, Taylor & Francis Group.
- Jacobs, J. (1961) *The Death and Life of Great American Cities*. New York: Random House.
- Katan, L. (2022) *Affaldssortering: Fra uoverkommeligt besvær til ubemærket rutine*. PhD Dissertation. Aalborg University.
- Kontokosta, C.E. (2021) 'Urban Informatics in the Science and Practice of Planning', *Journal of Planning Education and Research*, 41(4), pp. 382–395. Available at: <https://doi.org/10.1177/0739456X18793716>.

- Kurath, M. et al. (eds) (2018) *Relational Planning: Tracing artefacts, agency and practices*. 1st edn. Cham: Springer International Publishing. Available at: <https://doi.org/10.1007/978-3-319-60462-6>.
- Lefebvre, H. (2014) *Critique of Everyday Life*. One. London: Verso Books.
- Luukkonen, J. (2017) 'A practice theoretical perspective on the Europeanization of spatial planning', *European Planning Studies*, 25(2), pp. 259–277. Available at: <https://doi.org/10.1080/09654313.2016.1260092>.
- Newman, P. and Kenworthy, J.R. (1999) *Sustainability and Cities: Overcoming Automobile Dependence*. Washington, D.C: Island Press.
- Pinch, T.J. and Bijker, W.E. (1984) 'The Social Construction of Facts and Artefacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other', *Social Studies of Science*, 14(3), pp. 399–441.
- Reckwitz, A. (2002) 'Toward a Theory of Social Practices: A Development in Culturalist Theorizing', *European Journal of Social Theory*, 5(2), pp. 243–263. Available at: <https://doi.org/10.1177/1368431022225432>.
- Rydin, Y. (2021) *Theory in Planning Research*. Palgrave Macmillan (Planning, Environment, Cities).
- Samson, C. and Freudendal-Pedersen, M. (2022) 'Restructuring urban planning to facilitate sustainable consumption', *Frontiers in Sustainability*, 3. Available at: <https://doi.org/10.3389/frsus.2022.918546>.
- Schatzki, T. (2010) 'Materiality and Social Life', *Nature and Culture*, 5(2), pp. 123–149. Available at: <https://doi.org/10.3167/nc.2010.050202>.
- Schatzki, T.R. (2001) 'Introduction: Practice theory', in Knorr Cetina, K. et al., *The Practice Turn in Contemporary Theory*. London/New York: Routledge, Taylor & Francis Group, pp. 10–23. Available at: <http://public.ebookcentral.proquest.com/choice/publicfullrecord.aspx?p=235322> (Accessed: 17 December 2021).
- Shove, E. (2010) 'Beyond the ABC: Climate Change Policy and Theories of Social Change', *Environment and Planning A: Economy and Space*, 42(6), pp. 1273–1285. Available at: <https://doi.org/10.1068/a42282>.
- Shove, E., Pantzar, M. and Watson, M. (2012) *The Dynamics of Social Practice: Everyday Life and How it Changes*. London: SAGE Publications Ltd. Available at: <https://doi.org/10.4135/9781446250655>.
- Southerton, D., Chappells, H. and Vliet, B.V. (eds) (2004) *Sustainable consumption: The implications of changing infrastructures of provision*. Cheltenham (GB): Edward Elgar Publishing.

- Spaargaren, G. (2000) 'Ecological modernization theory and domestic consumption', *Journal of Environmental Policy and Planning*, 2(4), pp. 323–335. Available at: [https://doi.org/10.1002/1522-7200\(200010/12\)2:4<323::AID-JEPP61>3.0.CO;2-W](https://doi.org/10.1002/1522-7200(200010/12)2:4<323::AID-JEPP61>3.0.CO;2-W).
- Spaargaren, G. (2011) 'Sustainable Consumption: A Theoretical and Environmental Policy Perspective', *Society & Natural Resources*, 16(8), pp. 687–701. Available at: <https://doi.org/10.1080/08941920309192>.
- Spurling, N. et al. (2013) 'Interventions in practice: re-framing policy approaches to consumer behaviour', University of Manchester, Sustainable Practices Research Group, p. 57.
- Tigran, H., Littke, H. and Elahe, K. (2020) 'Urban Form and Human Behavior in Context of Livable Cities and their Public Realms', *Scholarly Journal of Psychology and Behavioral Sciences*, 3(4), pp. 325–339. Available at: <https://doi.org/10.32474/SJPBS.2020.03.000167>.
- Verma, N. (1995) 'What is Planning Practice? The Search for Suitable Categories', *Journal of Planning Education and Research*, 14(3), pp. 178–182. Available at: <https://doi.org/10.1177/0739456X9501400306>.
- Warde, A. (2014) 'After taste: Culture, consumption and theories of practice', *Journal of Consumer Culture*, 14(3), pp. 279–303. Available at: <https://doi.org/10.1177/1469540514547828>.
- Watson, V. (2002) 'Do We Learn from Planning Practice? The Contribution of the Practice Movement to Planning Theory', *Journal of Planning Education and Research*, 22(2), pp. 178–187. Available at: <https://doi.org/10.1177/0739456X02238446>.
- Whitehead, M., Jones, R. and Pykett, J. (2011) 'Governing Irrationality, or a More Than Rational Government? Reflections on the Rescientisation of Decision Making in British Public Policy', *Environment and Planning A: Economy and Space*, 43(12), pp. 2819–2837. Available at: <https://doi.org/10.1068/a43575>.

4.3. SECOND OBSTACLE: FROM TECHNOLOGY TO CULTURES OF MOBILITIES

“From planning practice to urban practice: Integrating everyday life in planning” focused on how to move away from framing sustainable change as a question of behavior and suggested that it be replaced by practice theory to capture everyday life and how it changes. In practice theory, according to the version introduced by Shove et al. (2012), everyday life is understood as consisting of multiple and interlocked practices, for example, waste sorting, taking the bus, and going to work. Each of these practices represents specific combinations of three elements: materials, meanings, and competences. Applying this perspective, intervening in practices and evoking sustainable transitions in everyday life can be framed in three ways: by recrafting the elements in a practice, substituting a practice altogether, or targeting how practices interlock in everyday life (Spurling et al, 2013). It is argued that including everyday practices in planning gives a more comprehensive picture of the effects that different tools in planning may have (Samson et al, forthcoming).

The advantages of applying a practice-informed everyday life perspective also apply to other change-makers and transition scholars. Regardless of the field, it facilitates engagement with social life and how it changes. This is because the everyday perspective enables planners, practitioners, and scholars to pursue the social dimensions of change.

However, behavioral approaches to a sustainable transition were not the only obstacle to engaging with the social dimensions of sustainable change I encountered in the early days of working on this thesis. A second obstacle, which I found important to address and identify alternatives to, is the focus on technological innovation that dominates some branches of sustainable transition studies.

Technological niche innovations are the starting point of many theories of sustainable transition including, for example, the aforementioned and influential Multi-Level Perspective (Rip & Kemp 1998; Geels, 2004). This makes sense because, historically, technological advancements have changed our way of living and acting in areas such as transportation, consumption and living. The fate of our societies is entangled with our technological capabilities (Børsen and Botin 2013), and today new green technologies offer new possibilities for transitioning to a future sustainable society. However, as Ulrich Beck (1992) has argued, along with the growing capacity of technologies comes incalculable consequences, which have emerged as a dominant force in history and society. In Beck's view, the result was a new stage of modernity; what he termed the *risk society* (Beck, 1992).

If too little attention is paid to the social dimensions of change, while too much is dedicated to the technological dimensions, it can lead to technology iteration rather than sustainable transitions in society. Technologies may operate as salient and often unacknowledged barriers to a transition to a sustainable future. The next paper, “Sustainable Mobility in the Mobile Risk Society – Designing Innovative Mobility Solutions in Copenhagen” discusses how perspectives from sociology and everyday life present an alternative to technology-integrating approaches. In the paper, the discussion centers on the decarbonization of cities and their mobilities.

PAPER TWO: SUSTAINABLE MOBILITY IN THE MOBILE RISK SOCIETY—DESIGNING INNOVATIVE MOBILITY SOLUTIONS IN COPENHAGEN

Malene Freudendal-Pedersen ^{1,*}, Katrine Hartmann-Petersen ², Freja Friis ³, Malene Rudolf Lindberg ¹ and Thomas Skou Grindsted ²

¹ Department of Planning, Aalborg University; malene@plan.aau.dk

² Department of People and Technology, Roskilde University; katrineh@ruc.dk (K.H.-P.); tskoug@ruc.dk (T.S.G.)

³ Department of the Built Environment, Aalborg University; frf@build.aau.dk

* Correspondence: mfp@plan.aau.dk

Received: 17 July 2020; Accepted: 31 August 2020; Published: date

Abstract: The issue of creating more sustainable mobility systems has been revisited during the past 50 years. So far, we are still waiting for an innovative systemic change that is not simply an iteration of existing technologies. This standstill is largely due to the hegemonic mobility paradigm, working under a “predict and provide”-driven approach, with little attention paid to environmental and social externalities. This paper calls for a new understanding of mobility transition interlinked with the cultural values of modern societies, deeply rooted in the mobile risk society. To create sustainable mobility practices we need robust, socially coherent, and inclusive mobility systems that are more than just transportation systems and connections. The empirical starting point is a visionary workshop on designing “Sustainable Innovative Mobility Solutions” in three urban areas in Copenhagen. The workshop created a cross-disciplinary space for actors to meet across dominant silos and acknowledge the need for intervention framings to focus on innovation as a matter of interlinking sustainable mobilities practices within everyday living in a mobile risk society.

Keywords: mobility; mobile risk society; innovation; iteration; visionary workshop

1. Introduction

Ongoing discussions about sustainable mobility systems underline that climate change mitigation requires the decarbonization of the mobility sector [1]. The Agenda 21 blueprint from the UN Rio Summit in 1992 was the first to outline transportation as an important focus, and in 2004, this was further developed in the report “Mobility 2030: Meeting the Challenges to Sustainability” by the World Business Council for Sustainable Development. So far, these attempts have not resulted in the change needed. Instead, in the EU the overall growth in energy consumption due to transportation increased by 34% from 1990 to 2016, alongside lower passenger cars prices encouraging a growth in private vehicles [2]. According to Beck [3], the dynamics of post-industrial societies are increasingly challenged by “self-produced” risks such as climate change, carbon pollution, and congestion. Socio-cultural change, therefore, is not so much the consequence of intended policies and strategic decisions; rather, change is propelled by the need to limit the negative side effects or unintended consequences. This is what Beck [3] termed the “risk society”.

Within mobilities research, this is further developed into the concept of the “mobile risk society” [4,5], that sees these self-produced risks as unintended consequences of the ongoing mobilization of modern societies. In public debate, mobility is often seen as synonymous with transportation. Within the mobilities paradigm, the focus is on understanding the multitude of physical and virtual movement in connection with its social and cultural impact. The plural in “mobilities” underlines the interconnectedness. The mobilities turn within social sciences was initiated by John Urry in his book *Sociology Beyond Societies: Mobilities for the Twenty-First Century* from 2000, which strongly encouraged moving beyond the idea of society as a fixed container to instead understand it through its immense mobilities, very much in line with Beck’s idea of cosmopolitanism [6,7].

This creates an opposite to the dominating response to the decarbonization of the mobility sector that is based purely on the implementation of new technologies to make cities and their mobilities more sustainable. The transformation of the automotive industry, currently taking place all over the world, is an example of this by its emphasis on electrification, new battery technologies, automation, smart mobility, etc., which all stand for an iteration of the current system. It is a continuation of the “system of automobility” [8]. The innovation in sustainable mobility systems lies in changing mobility cultures towards less car-dependency and a smaller part of the automotive industries’ transformation where sharing

mobilities—Mobility-as-a-Service (MaaS)—can play a role here. This is also a focus in the Sustainable Development Goals, in which some recommendations have altered the focus and suggest using “a tailored ‘Avoid-Shift-Improve’ approach... to promote a combination of multimodal, collective-shared mobility solutions and sustainable transport systems.” [9]. In other words, the innovation lies in changing the automobility system and culture which has dominated urban and rural landscapes for the last 100 years.

In this article we discuss sustainable innovation approaches and the mainstream approaches of iteration in the mobile risk society. The assumption is that the current standstill in achieving a sustainable mobility situation demands more than waiting for ground-breaking technological solutions. Instead, innovation in many ways is also about harvesting the “low-hanging fruits” of existing innovative mobility- and non-mobility-related solutions. The emergence and reinvention of sustainable mobility cultures often happens unplanned and uncontrolled at different levels and in different places and niches. Mobility culture is embedded in socio-technological environments and highly influenced by planning and the quality and structures of built environments. The making of sustainable cities and communities (SDG goal 11) is based on combining the technocratic planning ideal with all the things mobilities in cities also are, apart from speed, efficiency, and accessibility [10]. If we are to take the sustainable development goal seriously, efficiency alone will not do the job.

How to structure existing and future cities, and their mobilities, is also a question of how to “design” the social layout and human interactions, and this needs to have a greater influence on transportation and mobility planning [11,12]. When planning urban mobility, there is a tendency to focus on the societal and political acceptance and legitimacy of the measures required. This is most often done based on existing data, models, and calculations. By investigating urban projects, emphasis is instead placed on the modifications of social configurations within neighborhoods and everyday life through the implementation of urban projects. These kinds of “data” do not show up in data sets, models, or simulations. This lack of data when planning cities was already highlighted by Jan Gehl in 1966 (2011 in the English version) in his book *Life Between Buildings* [13], which addressed the importance of holistic (sustainable) planning for urban life.

What is most often either overlooked or taken for granted is the change in everyday practice that needs to follow when transforming current mobility practice or adjusting to new technologies. The everyday slow time and

rhythms are rarely consciously reflected or dealt with and, as such, are difficult to handle at the planning stage [14–17]. The organization of urban space and access to it go hand in hand with changing the relationships between people and mobility artefacts. Instead of searching for the “one-best-way” solution, this might provide an opening to experiment with possible solutions at a time where mobilities have an even greater impact on modern economies, cultures, and cities [18,19].

As an example, to discuss how innovation can take place, the article presents data from a visionary workshop on “developing innovative sustainable mobility solutions” in three urban areas in Copenhagen. This is part of the “Sustainable Innovative Mobility Solutions” (SIMS) project (funded by Innovation Fund Denmark, 2019–2023), which aims to understand the multiple social practices, perceptions, and patterns on which everyday life in the mobile risk society is organized. The workshop focused on developing non-car-dependent, sustainable urban mobility solutions, with specific focus on interlinked mobilities in urban everyday life. The workshop showed that alternative mobile futures need to think across silos and interlink the multitude of mobilities practices. The results do not represent a radical change in the distribution of transportation modes on the streets—however, then again, it does indicate a shift in not placing private cars at the top of the hierarchy and lays out new ground for interactions between mobility and the city by acknowledging the great potentials of urban everyday life and communities. For many outside observers, Denmark is perceived as a place that already have a high amount of sustainable mobilities and a unique mobility culture. We are not trying to argue this is not so. However, even with the high amount of cycling (61% of the daily commute for Copenhageners) the car ownership is still increasing, and the commute on cycling decreases when moving away from the central Copenhagen. In this sense we argue that the car culture is still very prevalent in Denmark and stands as the biggest challenge when working towards sustainable mobilities. The SIMS research project and the workshop, used as an example in this paper, addresses this by thinking together with stakeholders on how to alter the perception of car ownership as a necessary element in everyday life.

The article starts by discussing the relation between innovation and iteration, in what constitutes the majority of suggestions for creating more sustainable mobility, that is to a large degree due to a hegemonic mobility paradigm, working under a “predict and provide”-driven approach, with little attention to environmental and social externalities. This is followed by a discussion of how mobility cannot be defined primarily as an issue of new

technologies, but instead needs to be interlinked with the cultural values of modern societies, deeply rooted in living in a mobile risk society. Before moving on to the workshop, a discussion on participatory planning and storytelling places the workshop in the Copenhagen context. This forms the background for understanding what makes the workshop in the SIMS project an interesting example of alternative problem framings that could challenge the hegemonic dominant approaches. The article concludes with reflections on specific means for opportunities to create sustainable, socially coherent, and inclusive mobility systems that are more than just transportation systems and connections.

2. Innovation and Iteration in Mobility Systems

During the past 40 years, mobility systems have hardly been subjected to radical sustainable innovations [20]. Rather, mobility systems follow the trajectories of the great acceleration [21] in which transportation accounts for around one quarter of the total greenhouse gas emissions globally [22–24]. Given the huge CO₂ emissions accompanied by a trebling of petroleum consumption [21,25], the talk about innovation in sustainable mobilities seems somehow mostly polemic. Rather, William Stanley Jevons' paradox [26] applies, where greater energy efficiency of the steam engine leads to an overall increased demand. "Now the same principles apply, with even greater force and distinctness, to the use of such a general agent as coal. It is the very economy of its use which leads to its extensive consumption. It has been so in the past, and it will be so in the future. Nor is it difficult to see how this paradox arises" [26] (p. 6). Of the total consumption of petroleum products in the EU, in 2016 the transport sector consumed 66%, or 345 Mtoe (million tons of oil equivalent), and it continues to increase approximately 2% per year [27]. Since the invention of the car, scientists, car manufactures, and entrepreneurs have made iterations that have improved cars in relation to energy efficiency, reliability, safety, etc., over the course of the past four decades. For the entire mobility system, however, the pile of iterations has not exceeded the energy-related "demand for mobility" [16]. While each niche innovation becomes more energy efficient, the net demand has increased 48% since 1985 in the EU alone [2]. These actors signify "environmental innovation", and yet extend anthropogenic climate risk by iterating path dependencies of carbon use. To achieve the climate goals from the 2020 Paris agreement [27,2], transportation emissions must be reduced by 66%–94% from 2005 levels and this is difficult to imagine as long as iterations in automobilities orchestrate mobility cultures of organized climate path dependencies. They reproduce the system of

automobility [8] and in this way iterations can operate as salient and often unacknowledged barriers to low-carbon transitions when they deploy culturally appropriate solutions to the climate crises. Thus, contemporary mobility cultures interlock “silos of techno innovations”, and the deeply culturally embedded belief in technological innovation and energy efficiency produces solutions that remain structurally organized into their silos (niches of iterations).

It can be argued that smart cities, digitalization, and artificial intelligence (AI) combined with autonomous vehicles (AVs) and multiple mobilities—physical, digital, virtual, communicative, imaginative, etc.—create mobilities systems significantly different from earlier days. In addition, the combination of AI and AVs are presented as radical sustainable mobility system innovations, as dominant discourses around smart cities merge with political governance of sustainable cities and green growth [28]. Worldwide, AVs in combination with smart cities promises great potential to fix the existing unsustainable mobility regime. Such technologies endeavor to manage, monitor and optimize areas of city operations. Transportation flows are progressively being translated into codes and data, forming a software-defined platooning paradigm for urban mobility. While smart cities and AVs prove radical innovations of their own, at system level they might be subject to mobility iterations only—iterations that substitute Jevons’ paradox [3] by shutting in the automobility system further, as they encrypt, predict, and provide imperatives. Smart city technologies and AVs clearly optimize many aspects of urban mobility. Nevertheless, smart city developments have few mechanisms (if any) to ensure radical system innovations. The history of urban planning demonstrates how smart cities, digital cities, cyber cities, intelligent cities, and other techno-idealistic conceptualizations [29,30] have embarked on sustainable, resilient, and eco-friendly cities. Nevertheless, the past 40 years of techno-idealistic discourses for energy-efficient mobility, smart cities, etc. [28], follow the trajectories of the Jevons paradox. In consequence, we argue that smart cities—and associated mobility trajectories—risk continuing the automobility system (whether automated, electrified, or not) rather than cutting across silo thinking. Existing modeling approaches cannot extrapolate this due to the uncertain nature of AVs [31], but the cultural politics of predicting and providing model projections suggest that AVs increase transportation work and carbon emissions by up to 20% [32], shifting more people from walking, cycling, and public transportation towards an AV mobility service with negative health effects as a result [32–34].

Systematic risk in mobility systems seem contradictory in itself and it becomes increasingly clear that these linear modernization strategies of techno-optimism create social inequalities, negative side effects, and counterproductive impacts [35]. Instead, technology innovation or iterations need a shift toward radical social and cultural innovations. This calls for the automobility system to also engaging with mobility cultures and policies for a low-carbon transition.

3. Cultures of Mobility in the Mobile Risk Society

Theories of risk society [3,36,37], the new mobilities paradigm [7,38] and the mobile risk society [4,6] argue that coping with climate change and systemic risk starts from understanding mobilization and globalization as general principles of modern life. The risk-inducing and carbon-reliant mobility system is an integrated part of contemporary everyday life and the mobility system's materials and cultures are essential for the commute to work, consumption of goods, meeting with friends, sharing ideas, picking up children, etc. Modern life is thus permeated by cultures of mobilities. By taking modern everyday life as the scale of observation, there emerges a perspective for understanding mobilities in a world at risk and for engaging with sustainable mobility innovations as more than just technology inventions. In everyday life, current cultures of mobilities appear as a mixture of technologies, social practices, and structural patterns deeply rooted in the mobile risk society [4,5]. The concept of mobile risk society was first developed by Kesselring [4] and synthesizes theories of reflexive modernization and the risk society [3,36] and the new mobilities paradigm framed by Sheller and Urry [38]. The formulation of risk society followed Beck's analysis of contemporary technological and ecological natural and self-produced risks just before the Chernobyl accident in 1986 [3]. The uncertainties, insecurities, and unintended consequences of political decisions and technological development have become a driving force in modern societies, because risks demand urgent political and social action to limit the negative side effects of economic, political, and social activities. Just recently, we experienced how risks induced radical social and economic changes with the breakout of COVID-19 and the world-wide societal lock-down that followed. However, even just before the Chernobyl accident, Beck argued that extensive risks were transforming society towards a new modernity [3]. Whereas the first modernity was characterized by stability, unambiguity, ideology, class distinctions, and other familiar demarcation lines providing life with direction, orientation, and predictability, the second modernity is

characterized by risk, ambivalence, and insecurity [3,4,39]. Certainty is replaced by a condition of general insecurity, uncertainty, and ambivalence, forcing individuals to navigate a risky world without the social markers and clear guidance of previous times. Beck is not arguing that the conditions of first modernity are disappearing in the second modernity, rather they co-exist, overlap, and merge with the second modernity.

Members of the risk society are not necessarily confronted with more risks than their ancestors. However, in a world of dissolving institutions, responsibility for tackling socially produced risks is passed on to individuals, and it follows that risks are present in new ways in everyday life [40]. Risks of first modernity was embedded in the life path structured by tradition. In the second modernity old and new risks are constantly assessed by the reflexive individual: Is my gender and class the reason my wages are lower? Are local greenhouse vegetables less harmful to the environment than foreign ones? Is it safe enough to use public transportation during the Corona crisis? Can I trust this article on Facebook? Are diesel cars better than gasoline cars? The risk bombardment creates a high demand for expert knowledge, reflexivity, and rapid decision-making. Coping with risks becomes part of the everyday apparatus, a permanent condition of the reflexive, compressed everyday life in the risk society [3,40].

The mobile risk society emerges from combining the uncertainty, insecurity, and ambivalence of the risk society with the new mobilities paradigm's idea of movement as the general principle of modernity and concern with flows and networks of people, objects, and ideas [7,38]. Synthesizing these traditions, Kesselring develops a tripartite scheme of modernity [4,39], schematizing how mobility has transitioned through the different phases of modernity, from a first to a second and even a third phase. Kesselring's mobile risk society; thus, elaborates on Beck's ideas about a society transitioning towards new forms of modernity in combination with mobilities research's perception of mobility as a fundamental principle of modernity. In the first phase of modernity, the train is the ideal typical transportation mode with its stable connections, clear structures and timetables and ability to move masses [4,39]. The train provided a "one-best-way" solution for fast, direct, and calculable transportation of people and goods, qualities that mirror general socio-cultural tendencies in the first modernity such as heteronomy, stability, clear-cut societal institutions, and a search for clearness and unambiguity by purification [4,39]. In the second phase of modernity, direct connections and linear progress are substituted with non-directional change propelled by risk management, inconsistency,

transience, and liquidity. Individual modes replace collective solutions for moving and organizing, and the privately owned car is the paradigmatic mobility mode. The second phase of modernity is socially and culturally structured around the individual, possession, autonomy, fluidity and suboptimal solutions, and the private car is a transportation mode embracing such lifestyles [4,39]. A third framing of modernity relies on “motile hybrids” [4,39]. These are constellations of bodies, technologies, physical spaces, knowledge, and skills in constant flow, where digital tools and technologies melt together with humans in a modernism characterized by pluralism, networks, air travel, internet, and fragmented mobilities. In this phase of modernity, ambivalence has become normality, and paradox solutions and temporality dominate political and planning efforts [4,39]. The radical changes in modernity in the mobile risk society stressed by Kesselring underline why mobility innovation is crucial at this time: though new phases of modernity and mobile living are emerging, the modes and solutions of previous stages in modernity keep iterating, for example when private cars—even if electrified—remain a dominant transportation mode in spite of developments towards a more flowing and networked modernity. The changing conditions of the second modernity, however, render possible new ways of mobile living and new cultures of mobilities.

Simultaneously with the massive transformations of the mobile risk society, awareness of climate change as the fundamental challenge in present time has arisen. Climate change profoundly questions modern lifestyles in the mobile risk society and amplifies the urgency of innovative sustainable solutions. Imminent climate disasters, carbon pollution, and massive urban congestion problems exhibit the crisis of modern mobility and the need for alternative and sustainable mobility systems beyond mass transportation, suboptimal individual solutions, and paradoxes preventing proper sustainable innovation. For decades, a dominating response to climate change and the need for creating alternative mobility futures has pointed to emerging technologies as the innovation that will transform mobilities. However, in the light of the mobile risk society and mobilities research, technology interventions such as electrified vehicles can be understood as iterating the existing carbonized system of automobility [38], because the socio-cultural practices and patterns sustaining the current carbonized mobility are not scrutinized [16].

One way to include cultures of mobilities in sustainable innovation is by engaging with everyday life in the mobile risk society as the scale of observation. Today, carbon-reliant motile hybrids permeate everyday life; we

rely on them to commute to work, share ideas, consume goods, meet with friends, educate ourselves, pick up our children, etc. Everyday life is made up of social practices, perceptions and patterns that are deeply rooted in living in a mobile risk society. Zooming in on everyday life establishes a lens for exploring how habits, technologies, relations, communities, opportunities, practicalities, exclusion processes and ideas of what it means to work, live, consume and play enter into socio-technical networks and form cultures of mobilities. In an area where mobilities are interwoven with risks and no “one-best-way” or optimal solutions seems reachable, engaging with cultures of mobilities establishes a platform for experimenting with other possibilities for transitioning modern mobilities. We argue that a prerequisite for prompting lasting sustainable innovation is replacing technology fetishization with innovative engagement in the social and cultural processes and wider networks surrounding mobile everyday lives. Understanding urban cultures of mobility and their extensions in time and space is an essential part of stimulating sustainable innovation, both when aiming at picking the “low-hanging fruits” in sustainable mobility transition—which will be exemplified through the SIMS visionary workshop later in this article—and when planning sustainable mobilities for the livable city.

4. Planning Sustainable Mobilities for the Livable City

Having argued that technological innovations in the mobile risk society produce iterative mobilities, it is relevant to discuss how it is possible to transform this tendency into more innovative processes in urban mobilities planning. From the outset, an inclusive planning approach is adopted that emphasizes that future visionary urban living builds on transdisciplinary and cross-structural bottom-up planning practices [41,42], to paraphrase Friedmann [43] in his later works that stressed that planning should be transactive, communicative, collaborative and engage in continuous social learning. Furthermore, he describes planning processes as acts of dynamic balancing, “[Planning] seeks dynamic balances between the part and the whole, the technical and normative, the empirical and theoretical, the pragmatic and utopian, the near present and the distant future, exchange values and use values” [43]. Understood this way, urban planning processes should develop innovative solutions within the complexity of the mobile risk society. When planning moves towards increased collaboration and engagement of multiple actors in the process, instead of the usual suspects, the process becomes more open-ended [41,44]. In the case of urban mobilities planning, the open, innovative approach relates to the level of engagement

among a multitude of actors involved in the development of future urban mobilities [45]. Instead of planning for actors and stakeholders, planning practices aim at planning with actors and stakeholders [42] as the entry point for sustainable development [46]. This entails an openness where mobility solutions in cities is not only relevant for transportation planners, but also for stakeholders and citizens engaged in the social and cultural aspects of what makes a city.

The argumentative turn in planning [47–49] for sustainable urbanities means that visions of the future city and its mobilities need to be transformed into specific frames, shapes, texts, and aesthetics where they become relevant and applicable for policies and everyday life [50]. Sandercock emphasizes the power of stories and storytelling because “stories are central to planning practice: to the knowledge it draws on from the social sciences and humanities; to the knowledge it produces about the city; and to ways of acting in the city. Planning is performed through story, in a myriad of ways” [51]. With this starting point, storytelling in relation to the framing of sustainability and livability in cities plays a significant and powerful role not least in relation to future changes of perceptions and perspectives on mobilities [18,50]. This can be seen when cities around the world, throughout the last decades, have integrated sustainability in multiple parts of the planning arenas through stories and storytelling, not least on sustainable mobility [51,52]. Sustainability has become an essential and inevitable perspective of transforming cities into livable and innovative urban hubs that are attractive to citizens, guests, private and public investors, etc. [53,54]. They capitalize on performance criteria as livability, building upon the notion that a livable city is a prerequisite for modernity, and paradoxically enough, here the automobility system is not seen as essential for economic growth. In 2019 the list of most livable cities in the world included Vienna/Austria, Zurich/Switzerland, Vancouver/Canada, Auckland/New Zealand, Munich/Germany and Denmark/Copenhagen (<https://www.archdaily.com/914233/these-are-the-20-most-livable-cities-in-the-world-in-2019>). Rankings like these are numerous and so are the estimates of the outcome of such listings. Seen in this context, the eagerness to develop cities within a broad conceptualization of sustainability, where other mobilities than automobility dominate urban spaces, generates potential alternative innovative collaborations across different sectors. Planning for livable cities thereby also includes developing strategies and practices within the field of sustainable mobilities that do not favor car ownership and conventional car use as superior to alternative modes of mobilities. This

implies that visions on sustainability and livability in urban areas are building on holistic approaches, methodologies, and practices [46].

The Story of Copenhagen as Innovation Lab for Sustainable Change?

Since 2012 the Municipality of Copenhagen, Denmark, has incorporated the goal of being the first carbon-neutral capital in the world by 2025 [55]. This is an ambitious vision involving rhetoric and reality. The vision is integrated into the majority of municipal plans, and sustainable mobility schemes are developed in the green mobility plan [56,57], in the action plan for implementation of SDGs within the existing policy field of the Municipality in 2018 [58], and in the overall municipal plans that set the general targets and guidelines for municipal development. As a lever for realizing the overall goal on carbon neutrality, the Municipality has moderated numerous collaborative processes that connected both internal, public partners and external, private stakeholders at multiple levels. Different types of cooperation have emerged combining individual agendas with common milestones and trans-sectorial practices within the existing structural framework. In the newest municipal plan from 2019, the City of Copenhagen approved the adjustment of their former goals on use of mobility modes. For a decade, the City of Copenhagen has worked strategically with the use of different modes: a minimum of one-third of trips by bicycle, a minimum of one-third of trips on public transportation, and a maximum of one-third of trips by car. For a long period that has been considered as a utopian—if not impossible—vision to fulfil, especially because the political maturity towards limiting the use of cars in the urban area was not clear and unequivocal. However, in 2019, the municipal plan of Copenhagen set out a new minimum with one-quarter of trips by bicycle, one-quarter of trips on public transportation, one-quarter of trips by pedestrians, and a maximum of one-quarter of trips by car [59]. Even if Copenhagen has quite a way to go to reach this goal, it nevertheless indicates a will to work towards new and more innovative distribution of urban mobilities, which allows for more approaches in planning without the car being center stage [10].

Despite the high-ranked sustainable profile and continuing ambitious visions and policies, Copenhagen is still far from reaching its ambitious goals. Copenhagen is witnessing a growth in car ownership of around 30% since 2000 [60]. Congestion in and out of the city center is still growing, estimated to reach almost 150% by 2030 [61], and the increased amount of traffic generates increased pressure on the roads with critical influence on livability

and sustainability measures. Despite these planning innovations and mobility governance, the Jevons paradox is constantly challenging planning objectives.

This calls for planning processes that are moving strategically from “traditional” iterative transportation planning with a sustainable vision (but still within silos) to a more holistic, innovative mobilities planning with sustainability as its starting point. The political goals in Copenhagen are operationalized through the implementation of traditional small-step initiatives that are continuously related to better public transportation, reduced parking norms, even better cycling infrastructures, better infrastructure for EVs, etc. However, it could be argued that the initiatives are not radical innovations insofar as the vision of carbon neutrality is far from being implemented. However, there is a growing political awareness about challenging more traditional measures, experimenting with cultural aspects such as car-free areas in the city, autonomous test busses, MaaS, etc. The interconnectedness between mobility and perspectives of growth (and speculations on how radical interventions related to mobility in the urban context can affect growth negatively) often still seem to challenge the sustainability discourse. So, what is still an open-ended and tricky question is how innovative processes can improve the connectivity between more individualized iterative initiatives—even in a sustainable and visionary bicycle-friendly capital like Copenhagen.

With this in mind, it can be argued that there is a momentum in Copenhagen and other western cities with a clear and fundamental sustainable profile for understanding and developing strong, decarbonized, and socially inclusive mobility systems. Livability in practice calls for creative solutions that enable sustainable everyday life in a globalized, reflexive modernity [5,51]. These aspects can be emphasized in dynamic planning approaches that are strategically thinking across structural traditions and organizational boundaries and acknowledging collaborative open-ended experiments as innovative and mandatory in sustainable urban development. In the following we use an example of a visionary workshop on MaaS solutions for three urban areas in Copenhagen that outlines a way to start experimenting with innovative approaches towards sustainable mobilities.

5. Mobility Innovation by Harvesting the Low-Hanging Fruits: Experiences from a Visionary Workshop

In March 2020, a visionary workshop was conducted as part of the Sustainable Urban Mobility Solutions (SIMS) project funded by the Innovation Fund Denmark. The overall purpose with SIMS is to provide

comprehensive knowledge and experiments that offer substantial alternatives to private cars, by designing solutions whose point of departure is the complex of social practices and mobilities within the everyday life of citizens. The test sites for SIMS are Nordhavn (a newly developed urban area close to the city center), Nærheden (a newly developed area 30 km from Copenhagen), and Folehaven (an old working-class area outside the city center). These three areas are three quite different socio-geographical city districts within the capital region. As part of the empirical work in SIMS, we are conducting interviews and focus groups with the inhabitants of these areas and involving a variety of stakeholders in designing solutions for a test period. The visionary workshop we are using as an example in this article had the aim of gathering urban planning and mobility stakeholders to create a free space for them to imagine different solutions on the test sites. Essentially, the visionary workshop attempted to challenge mainstream techno-fixed “one-best-way” solutions by stimulating reflections and discussions about alternative and more comprehensive solutions designed with a starting point in contextual everyday mobilities. Thus, the three different case areas formed the empirical point of departure for discussions in the workshop.

The workshop was prepared, scheduled, and run in order to facilitate discussions on alternative cultures of mobilities and imaginations of innovative future mobility solutions [46,62]. The framework condition about challenging the iteration of existing socio-technic automobility systems was clearly expounded to the participants in advance. In order to qualify comprehensive problem framings and solutions, workshop participants comprised a combination of interdisciplinary and prominent change agents within the Danish mobility scene. We invited 30 participants from different fields: city developers from the three test sites, urban planners from the Municipality of Copenhagen, public servants from the Ministry of Transportation, public and private mobility operators, sustainability experts, and researchers. The group was organized to obtain the widest possible spread of interdisciplinary professional backgrounds. The discussions were centered around the core questions How can we change the existing (unsustainable) infrastructures and cultures/norms through social and physical/material interventions? and more specifically, How can we change from individual car ownership to mobility sharing schemes, walking and cycling and public transportation? The workshop was organized around the three test sites with two hours allocated to discuss each site. We divided the participants into groups representing different disciplines. Each group was equipped with a big map of the test sites and a stack of symbolic probes like

traffic signs, urban activities, materials, green areas, etc., which acted as a challenge kit to stimulate creative imagination for developing innovative solutions. Each workshop round was introduced by the responsible test site developer, including a brief status outline of the key mobilities opportunities and obstacles within the specific site. Following the group discussions, a common discussion with all workshop participants centering around a “fresh” map gathered together the various ideas.

The workshop discussions spurred a variety of fruitful inputs to the design of interventions. In opposition to smart techno-fixed innovation, the workshop created a kind of emancipatory space for elaborating already existing initiatives and practices in new urban configurations. The following extract from the workshop outlines the ideas for accommodating a sustainable mobility transition that are feasible thanks to manageable and accessible changes within existing material and social structures and practices. The ideas gathered from the workshop inform a reframing of the current “structural storytelling” [63,64] and have the potential to influence future policy interventions and enhance innovative solutions in sustainable mobilities planning. The following is a summary of the essential findings.

5.1. Stimulating and Cultivating Contextual Communities

All three sites of intervention are home to a diversity of distinctive communities. Social relations between and across actors and networks (e.g., citizens, workers, employees, associations, etc.) offer a vast amount of resources, which can be profitably stimulated and activated in processes of change. Therefore, a prerequisite for designing interventions is to identify the prevailing community networks through mapping the specific characteristics of urban sites by investigating the essential contextual historical, cultural, social, and economic values. Mapping networks and identifying key actors and their significant role as drivers or front-runners was in general stated as a valuable strategy to promote, convey, and anchor new mobility schemes. Thus, a recurring highlighted strategy is to pinpoint potential actors to act as ambassadors for the innovative solutions. Network-stimulating activities to fertilize social interrelations are crucial core drivers to create the persuasive stories of experiences, which are anticipated to be mandatory for increasing recruitment and propelling new cultures of mobilities. This is very much in line with Beck’s concept of sub-politics, which is a way for actors to work around the established political system in a risk society [65].

For example, the “blue-green” harbor and coast area, Nordhavn, branded as a sustainable and innovative urban district in Copenhagen, has

attracted multiple small creative enterprises, public-private partnerships and a wide range of associations or networks (including architectural firms, a club for winter swimmers, the EnergyLab, etc.) which identify with a sustainable profile. Framing common interests between these actor networks was highlighted as a promising strategy to ensure robust business cases for shared mobility schemes. Nordhavn is an area with a very high socio-economic profile and has from the start been built with a lot of infrastructure for private cars. In this context, the network of small creative enterprises is seen as one that can show that successful businesses do not go hand in hand with individual car ownership and infrastructures to facilitate it.

In Folehaven, the context is completely different from Nordhavn. The socio-economic profile is very different, and parts of the area have been put on the Danish Ghetto list. In order to design sharing schemes for the local community, mobility solutions need to identify and consider the informal networks such as the card game or knitting clubs for elderly people living in homes belonging to non-profit housing associations as well as the young families moving out of the inner city to a one-family house. In the suburban area Nærheden (which in Danish means “nearby”), the socio-economic profile is closer to the one in Nordhavn and the area does not have any non-profit housing associations. Here the suggestion was to approach context-specific community networks, such as those concerning communal eating or running clubs. These context-specific communities are highlighted as potential springboards for launching alternative ways of mobilities.

5.2. Testing and Experimenting as Windows of Opportunity

Testing alternative mobility solutions for a temporary period is acknowledged as a powerful way to give citizens an experience that can create permanent change. Through strategies and storytelling about the sustainable and livable city, where urban spaces are redesigned for use other than by private cars, the experience of living in car-free areas can pave the way for experiencing alternative uses of urban spaces. This can be framed under the umbrella of tactical urbanism [66], in which experimentations in urban spaces are used to stimulate new urban cultures arranged and driven by multiple actors and users. In central Copenhagen this has already been used when redeveloping neighborhood streets with more emphasis on urban dwelling, cycling, walking, and public transportation [10]. Tactical urbanism exemplifies how user-driven micro-spatial strategies are relatively low-cost and straightforward to implement, such as the substitution of existing private parking places with ride-sharing schemes for a temporary period. Concerning

the regeneration plans for Folehaven, temporary uses of the space are acknowledged as simple, feasible low-cost changes. At the workshop it was suggested that lines on the asphalt reserved for private car parking be replaced by alternative symbolisms allocating the spaces to car-, ride- or bike-sharing schemes, or by simple physical rearrangements such as flower pots and benches that are motivating recreational use and social encounters for citizens. Alternative uses can potentially reflect other purposes such as leisure, health, comfort, and convenience. These are purposes that are rarely mentioned in mobility planning processes and perhaps missing within existing everyday-life practices. Thus, the current challenges in Folehaven such as residents' loneliness, isolation, and discomfort when staying outside (due to a feeling of insecurity amongst elderly people) could possibly be met by producing new and more inclusive spaces for valuable social interactions and sharing (of mobility schemes).

Another example occurred within discussions about specific mobility interventions in Nærheden. Instead of privileging individual driving, the main road to the local school ought to prioritize soft and slow mobility modes. Instead of efficiency, acceleration, and speed, the problem framing aims to change the focus to how to ensure a desirable, delightful, and physically active beginning of the day for children on their way to school. In general, interventions like setting up signs or illustrations such as "no cars allowed", "one-way traffic", "car-free zones", and "pick-up zones" are anticipated as effective and simple low-cost operational tools to challenge existing infrastructures of private automobility. Thus, user testing and experiences with livability and alternative innovative approaches could certainly develop a new storytelling of greener, slower, and more sustainable everyday life.

The workshop discussions underpinned the effort to design innovative sustainable mobility modes as tightly incorporated in existing collectively-based transportation means. Recurrent recommendations were to upcycle public transportation modes by establishing sharing schemes in proximity, preferably within just a few minutes' walking-distance, from the present hubs. In all three sites of intervention, existing modes of public transportation are considered as obvious physical points for establishing sharing schemes. The specific interest in getting access to existing transportation hubs is in line with the overall municipal plan of Copenhagen where developing multi-modal stations is mentioned. Multi-modal stations offer a variety of functionalities such as shopping, having a coffee, workspaces, shipping points for products, collections point for vegetable, playgrounds for children. Adding to existing infrastructures in the form of enlarged hubs hosting, for

example, car- and bike-sharing, electric scooters, and charging stations for electric cars would be strategically significant developments of sustainable multi-modal mobility. Alongside the mainstream assumption of MaaS as a matter of developing a smart user-friendly app that combines seamless mobility through profitable subscriptions (which is an idea that also came up during the workshops), expansion, and improvement of alternative substitutions within existing infrastructures are acknowledged as substantial within the discussions.

5.3. Sustainable Mobilities Demand Alternative Powerful Intervention Framings

In addition to harvesting the low-hanging fruits, the discussion among participants also touched upon a need for ambitious policy framings to discourage current individual car driving [67] by shifting the balance between competing practices. The idea of developing multi-modal public stations combined with a variety of social and material functions could obviously illustrate how ambitious policy interventions would take advantage of the increasing flexibility of work and work life (partly supported by digitalization and the internet) by developing infrastructures and cultures for reducing travel and stimulating new mobile practices [4,39].

An example of radical discouragement of existing automobility infrastructures is proposed by a former city planner when discussing interventions in Folehaven. She suggested blocking the non-stop car traffic surrounding the city area, perhaps the most intensive main roads in Copenhagen, combined with a 20-km/h speed limit in general. In addition, she recommended thoroughly upgrading public transportation connections, which should go beyond the enlargement of the metro system in this specific area. Accordingly, a crucial and general recommendation was to acknowledge the need for economic regulations. Moreover, profitable mobility subscriptions, increased stringent regulation of car driving and parking taxes supplied with subsidies earmarked for sharing schemes are acknowledged as powerful, efficient tools. At the visionary workshop, there was a strong consensus among the actors that achieving carbon neutrality in 2025 involves massive and radical decisive regulation and legislation on current mobility structures.

Significantly, *timing* is also regarded as a key factor. Certainly, all the mobility operators agreed that sharing schemes in general take a long time to break even. Thus, a significant Danish car-sharing scheme participating in the workshop claimed a need for city planners and developers to allocate physical space to sharing schemes and facilities in the early pre-planning phases.

Timing to attract and adopt newcomers is also crucial. However, changes or shifts in life phases and everyday-life practices such as relocations, having children, getting divorced, change of work place, etc., are recognized as significant moments for introducing alternative sharing schemes. The developer of Nærheden supports this strategy, and henceforth expects to promote car-sharing schemes within the future city branding. Specifically, the developer confirms they will focus on communicating the car-sharing opportunity as a valuable part of the future sales promotion. Overall, sustainable transportation solutions could more strategically strengthen a location's brand as a common sustainable identity, for instance by specific branding narratives such as "Nærheden is the place we are sharing".

5.4. Summary of the Visionary Workshop Discussion

Broad interdisciplinary cooperation is critically needed to add new significant impetus to support sustainable transformation changes in urban mobilities. The workshop challenged powerful hegemonic assumptions, including silo thinking and technology-reliant responses to climate change, by facilitating a space for elaborating innovative solutions rooted in everyday life in three different urban sites in the Greater Copenhagen area. Many of these solutions actually appear to be within reach in the near future, and thus comprise "low-hanging fruits" in sustainable mobility transition. Thus, the workshop approach illustrates the potential of contesting dominating assumptions to develop alternative approaches, and that interdisciplinary knowledge exchange across different knowledge systems and contexts (space and actors) is fundamental for the critical need to reframe current material infrastructures and cultures (norms and values).

In general, stimulating and activating the context-based community spirit is highlighted as a "game changer" to cause ripple effects for alternative cultures of mobilities, which is why identifying links and connections of arrangements for common sharing and meeting is underlined as crucial when designing future intervention points. User experiences are anticipated as essential in order to recruit people to test new modes of transportation, and to develop comprehensive designs for all kinds of needs. Allocating spaces for recreational, social, and cultural meeting points is fundamental for increasing community spirit and sharing facilities, which is why this is an agreed workable and powerful city-planning device for long-term alternative solutions. Sharing transportation modes with other people could simultaneously strengthen and improve social configurations. Technology innovation and user-friendly profitable subscriptions are decisive for future

transformation, but story-telling occurred from the everyday perspective, and clear sets of overarching governance goals that ensure the enhancement of public value to change dominant automobility cultures are essential. Therefore, familiarity and know-how of sharing mobilities (access), instead of privatization (owning), are essential to break down prejudices and to merge new cultures that support alternative solutions. That this was on the agenda in the workshop could indicate a beginning of a move from a second to a third modernity as framed by Kesselring [39]. Certainly, the mobility operators agreed that sharing schemes in general requires a long time to break even. Therefore, the sharing schemes demand that city planners and developers allocate physical space to car-sharing schemes and sharing facilities in the early city planning phases.

6. Conclusions

This article began by arguing that technology iterations can operate as salient and often unacknowledged barriers to transitions towards sustainable mobilities. Iterations deploy culturally appropriate solutions to the climate crisis, and thereby form systemic anthropogenic risks, subject to what we call structural risk iterations. The structural risks iterations are grounded in the underlying imperatives around capitalism as a mode of organizing that leaves no other option than constant mobility. Iterations continue the mobile risk society by ways in which mobility cultures and the demand for mobility interlock “silos of techno-innovations”. Rather than system innovations that aim to challenge Jevons’ paradox and orchestrate the ambivalences of the mobile risk society, the deeply culturally embedded belief in technological innovation and energy efficiency as salient, climate-mobility risk solutions structurally impedes silo iterations. Hence, we argue that iterations do not address the ambivalences and risks of mobilities. Everyday mobilities practices, patterns and cultures are often left untouched by technological innovation. New decarbonized technologies often mime their carbonized predecessors in terms of design, appearance, and use (e.g., AI, AVs, and EVs), and therefore, cultural iteration persists in spite of novel technology innovation. The habits, structures and ideas of current carbonized mobility systems iterate systemic risks are not handled and any discussion of decreasing mobility as a way towards sustainable mobility is left out. The current challenge is therefore not merely to develop technologies capable of replacing the current monoculture of combustion-engine vehicles, but to understand cultural ideas of modern living, and how to enhance new sustainable cultures of mobilities and immobilities.

One way to include cultures of mobilities in sustainable innovation is by engaging with everyday life in the mobile risk society as the scale of observation. Today, carbon-reliant motile hybrids permeate everyday life; we rely on them to commute to work, share ideas, consume goods, meet with friends, educate ourselves, pick up our children, etc. Everyday life is made up of social practices, perceptions and patterns that are deeply rooted in living in a mobile risk society. Zooming in on everyday life establishes a lens for exploring how habits, technologies, relations, communities, opportunities, practicalities, and exclusion, as well as ideas of what it means to work, live, consume and play, enter into socio-technical networks and form cultures of mobilities. In an area where mobilities are interwoven with risks and no “one-best-way” or optimal solution seems reachable, engaging with everyday manifestations of cultures of mobilities establishes a platform for experimenting with other possibilities for transitioning modern mobilities and tackling systemic risks. We therefore argued that a prerequisite for prompting lasting sustainable innovation in mobility systems is ending the collective fetishization of new electrified technologies and engaging innovatively in the social and cultural processes and wider networks, in which modern everyday life is embedded.

Seen in the context of this article, the eagerness of developing cities within a broad conceptualization of sustainability, among several other perspectives, generates potential alternative innovative collaborations across different actors. Planning for sustainable livability in cities also includes developing strategies and practices within the field of sustainable mobilities that do not consider car ownership and conventional car use as superior to alternative modes and mobilities. This implies that the visions on sustainability and livability in urban areas are not only idealistic, brand-strengthening strategies on paper but also holistic approaches building upon new mindsets, methodologies, and practices in the planning system. In order to make an even more ambitious goal achievable, this calls for planning processes that move strategically from “traditional” iterative transportation planning with a sustainable vision (but still within silos) to a more holistic, innovative mobilities planning with sustainability as its premise/point of departure.

To discuss how innovation can take place, the article presented insights from a visionary workshop on “developing innovative sustainable mobility solutions” in three urban areas in Copenhagen. The themes identified in the workshop discussions show a willingness to elaborate on (and add to) existing knowledge and experience among the actors. Due to a worldwide

climate change agenda and burning platforms of achieving specific, local goals, we argue that there is a momentum for identifying new forms of systemic innovation. Main findings were related to the need for stimulating and cultivating (contextual) communities, testing and experimenting as windows for opportunities, developing additions to existing infrastructures, and the notion that sustainable mobilities demand alternative powerful intervention framings. The open-ended process, which is a premise in this kind of workshop, is its strength, because planners and actors were set free to think across silos, but also (seen from a more traditional/short-term point of view) its structural weakness because the results are fuzzy and related to a change in mindsets around contexts, everyday-life complexities, and the mobile risk society (innovative thinking), rather than specific realizable plans and solutions with predictable outcomes measured in CO₂, reduced number of trips, reduced number of parking lots, increased number of bicycles and passengers using the public transportation system, etc. Did the visionary workshop then create innovation? Of course, there are no clear answers here, partially because the specific interventions at the three sites are still not implemented, but the workshop identified possibilities for pushing iterative solution-based positions to more common alternative perspectives on local contexts and values that are identifiable across the actors' predictable interests and structurally dictated positions.

While it is crucial to consider the needs and actions within existing cultures of mobilities when designing successful substitutions [62,67], it seems more decisive than ever to reframe the contemporary increasing levels of "mobility need". Hence, forthcoming mobility transition forces us to interrupt conventional assumptions and reframe notions of norms and freedom connected to alternative mobilities. Despite the growing acknowledgement of the need to transform mobility norms, values and cultures, these issues were only superficially touched upon during the workshop discussions. Nevertheless, a workshop like this one also creates a common storytelling—a storytelling that, through influential actors within the mobility field, can begin to challenge existing meanings and notions around "the good life" and discuss alternative meaningful ways to perform and organize everyday lives with limited mobilities.

And moving on from this, true innovation could be to initiate a discussion on limitations as something positive and not solely as reducing freedom. Instead of iterating the dominant notions and cultures of mobilities embedded in the risk society, a slower pace of life, with limits, could contain more freedom to do other, perhaps more meaningful things in everyday life.

In many ways the COVID-19 crisis has created a momentum for exactly this. Not that the total standstill that COVID-19 produced is a positive vision for most, but it opens up the opportunity to be specific about what new versions of sustainable everyday life in new surroundings with new goals, meanings, and values are like. Alternative problem framings include questions such as: Where do we travel? How do homes look? Where and how do we live? With whom, when and why? How do we work? Where and how much? How do we feel? Instead of focusing on iterative technology-fixated innovation driven by green growth and liberal commercial interests, forthcoming intervention framing needs alterations to the urban landscape of what fertilizes and constitutes good livable urban places.

Author Contributions: All the authors of the article work together on the SIMS project and have contributed equally to the article.

Funding: This research was funded by Innovation Foundation Denmark.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Kahn Ribeiro, S.; Kobayashi, S.; Beuthe, M.; Gasca, J.; Greene, D.; Lee, D.S.; Muromachi, Y.; Newton, P.J.; Plotkin, S.; Sperling, D.; et.al. Transport and Its Infrastructure. In *Climate Change 2007*; Metz, B., Davidson, O.R., Bosch, P.R., Dave, R., Meyer, L.A., Eds.; Cambridge University Press: Cambridge, UK, 2007.
2. European Environment Agency. *Final Energy Consumption by Mode of Transport*; Copenhagen, Denmark, 2020.
3. Beck, U. *Risk Society: Towards a New Modernity*; SAGE Publications Ltd.: London, UK, 1992.
4. Kesselring, S. The Mobile Risk Society. In *Tracing Mobilities*; Canzler, W., Kaufmann, V., Kesselring, S., Eds.; Ashgate: Aldershot, UK, 2008; pp. 77–102.
5. Freudendal-Pedersen, M.; Kesselring, S. Networked Urban Mobilities. In *Exploring Networked Urban Mobilities: Theories, Concepts, Ideas*; Freudendal-Pedersen, M., Kesselring, S., Eds.; Routledge: New York, NY, USA, 2018; pp. 1–19, doi:10.4324/9781315201078-1.
6. Beck, U. Mobility and the Cosmopolitan Perspective. In *Exploring Networked Urban Mobilities: Theories, Concepts, Ideas*; Freudendal-Pedersen, M., Kesselring, S., Eds.; Routledge: New York, NY, USA, 2018; pp. 140–152.

7. Urry, J. *Sociology beyond Societies: Mobilities for the Twenty-First Century*; Routledge: London, UK, 2000.
8. Urry, J. The “System” of Automobility. *Theory Cult. Soc.* **2004**, *21*, 25–39.
9. UN High-Level Advisory Group on Sustainable Transport. *Mobilizing Sustainable Transport for Development*; New York, NY, USA, 2016.
10. Freudendal-Pedersen, M. Sustainable Urban Futures from Transportation and Planning to Networked Urban Mobilities. *Transp. Res. Part D Transp. Environ.* **2020**, doi:10.1016/j.trd.2020.102310.
11. Bertolini, L. *Planning the Mobile Metropolis: Transport for People, Places and the Planet*; Palgrave Macmillan: London, UK, 2017.
12. Freudendal-Pedersen, M.; Kesselring, S. *Exploring Networked Urban Mobilities: Theories, Concepts, Ideas*; Routledge: London, UK, 2018.
13. Gehl, J. *Life Between Buildings: Using Public Space*; Island Press: Washington, DC, USA, 2011.
14. Amin, A.; Thrift, N. *Cities: Reimagining the Urban*; Polity Press: Cambridge, UK, 2002.
15. Lyubomirsky, S.; Sheldon, K.M.; Schkade, D. Pursuing Happiness: The Architecture of Sustainable Change. *Rev. Gen. Psychol.* **2005**, doi:10.1037/1089-2680.9.2.111.
16. Friis, F. An Alternative Explanation of the Persistent Low EV-Uptake: The Need for Interventions in Current Norms of Mobility Demand. *J. Transp. Geogr.* **2020**, *83*, 102635, doi:10.1016/j.jtrangeo.2020.102635.
17. Hartmann-Petersen, K. Providing and Working in Rhythms. In *Handbook of Urban Mobilities*; Jensen, O.B., Lassen, C., Kaufmann, V., Freudendal-Pedersen, M., Lange, I.S.G., Eds.; Routledge: Abingdon, UK, 2020.
18. Freudendal-Pedersen, M.; Hannam, K.; Kesselring, S. Applied Mobilities, Transitions and Opportunities. *Appl. Mobilities* **2016**, *1*, 1–9.
19. Hannam, K.; Sheller, M.; Urry, J. Editorial: Mobilities, Immobilities and Moorings. *Mobilities* **2006**, *1*, 122.
20. Sovacool, B.K.; Griffiths, S. The Cultural Barriers to a Low-Carbon Future: A Review of Six Mobility and Energy Transitions across 28 Countries. *Renew. Sustain. Energy Rev.* **2020**, *119*, 109569, doi:10.1016/j.rser.2019.109569.
21. Steffen, W.; Crutzen, P.J.; McNeill, J.R. The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature? *AMBIO* **2007**, *36*, 614–621, doi:10.1579/0044-74472007.36[614:TAAHNO]2.0.CO;2.
22. Sims, R.; Schaeffer, R.; Creutzig, F.; Cruz-Núñez, X.; D’Agosto, M.; Dimitriu, D.; Meza, M.J.F.; Fulton, L.; Kobayashi, S.; Lah, O.; et al. Transport. In *Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the*

- Intergovernmental Panel on Climate Change*; Edenhofer, O.R., Pichs-Madruga, Y., Sokona, E.F., Kadner, S., Seyboth, K., Adler, A., Baum, I., Brunner, S., Eickemeier, P., Kriemann, B., Eds.; Cambridge University Press: Cambridge, UK, 2014.
23. Heinold, A.; Meisel, F. Emission Rates of Intermodal Rail/Road and Road-Only Transportation in Europe: A Comprehensive Simulation Study. *Transp. Res. Part D Transp. Environ.* **2018**, *65*, 421–437, doi:10.1016/j.trd.2018.09.003.
 24. Helmers, E.; Leitão, J.; Tietge, U.; Butler, T. CO₂-Equivalent Emissions from European Passenger Vehicles in the Years 1995–2015 Based on Real-World Use: Assessing the Climate Benefit of the European “Diesel Boom”. *Atmos. Environ.* **2019**, *198*, 122–132, doi:10.1016/j.atmosenv.2018.10.039.
 25. Davis, S.J.; Caldeira, K.; Matthews, H.D. Future CO₂ Emissions and Climate Change from Existing Energy Infrastructure. *Science* **2010**, *329*, 1330–1333, doi:10.1126/science.1188566.
 26. Jevons, W.S. *The Coal Question: An Inquiry Concerning the Progress of the Nation, and the Probable Exhaustion of Our Coal-Mines*, 2nd ed.; Macmillan: London, UK, 1866.
 27. Transport & Environment. *CO₂ Emissions from Cars: The Facts*; Brussels, 2018.
 28. Kitchin, R. *Getting Smarter about Smart Cities: Improving Data Privacy and Data Security*; Dublin, 2016.
 29. Kitchin, R. The Real-Time City? Big Data and Smart Urbanism. *GeoJournal* **2014**, *79*, 1–14, doi:10.1007/s10708-013-9516-8.
 30. Neirotti, P.; De Marco, A.; Cagliano, A.C.; Mangano, G.; Scorrano, F. Current Trends in Smart City Initiatives: Some Stylised Facts. *Cities* **2014**, *38*, 25–36, doi:10.1016/j.cities.2013.12.010.
 31. Mladenović, M.N. How Should We Drive Self-Driving Vehicles? Anticipation and Collective Imagination in Planning Mobility Futures. In *The Governance of Smart Transportation Systems*; Finger, M., Audouin, M., Eds.; Springer: New York, NY, USA, 2019; pp. 103–122.
 32. City of Copenhagen. *Analyse Af Københavns Kommunes Muligheder Og Udfordringer i Forbindelse Med Udvikling Af Selvkørende Køretøjer*; Copenhagen, Denmark, 2017.
 33. City of London. *Mayor’s Transport Strategy*; Greater London Authority: London, UK, 2018.
 34. Crayton, T.J.; Meier, B.M. Autonomous Vehicles: Developing a Public Health Research Agenda to Frame the Future of Transportation Policy. *J. Transp. Health* **2017**, *6*, 245–252, doi:10.1016/j.jth.2017.04.004.

35. Urry, J. *Societies Beyond Oil: Oil Dregs and Social Futures*; Zed Books Ltd.: London, UK, 2013.
36. Beck, U.; Bonss, W.; Lau, C. The Theory of Reflexive Modernization: Problematic, Hypotheses and Research Programme. *Theory Cult. Soc.* **2003**, *20*, 1–33.
37. Curran, D. Risk Society and Marxism: Beyond Simple Antagonism. *J. Class. Sociol.* **2016**, *16*, 280–296, doi:10.1177/1468795X15600929.
38. Sheller, M.; Urry, J. The New Mobilities Paradigm. *Environ. Plan. A* **2006**, *38*, 207–226.
39. Kesselring, S. Reflexive Mobilitäten. In *Das Risiko—Gedanken übers und ins Ungewisse. Interdisziplinäre Aushandlungen des Risikophänomens im Lichte der Reflexiven Moderne. Eine Festschrift für Wolfgang Bonß; Pelizäus, H., Nieder, L., Eds.; Springer: Wiesbaden, Germany, 2019; pp. 165–204.*
40. Freudendal-Pedersen, M. Searching for Ethics and Responsibilities of Everyday Life Mobilities: The Example of Cycling in Copenhagen. *Sociologica* **2014**, *8*, 1–23, doi:10.2383/77045.
41. Healey, P. *Collaborative Planning*; UBC Press: Vancouver, BC, Canada, 1997.
42. Sandercock, L. Transformative Planning Practices: How and Why Cities Change. In *Multiculturalism, Political Concepts in Sociology*; Baumann, G., Vertovec, S., Eds.; Routledge: Abingdon, UK, 2011; pp. 157–179.
43. Friedmann, J. *Insurgencies: Essays in Planning Theory*; Routledge: Abingdon, UK, 2011.
44. Fischer, F., Gottweis, H. (Eds.) *The Argumentative Turn Revisited: Public Policy as Communicative Practice*; Duke University Press: Durham, NC, USA, 2012.
45. Hartmann-Petersen, K.; Bennetsen, N. Mobilities Policies: Exploring Momentums as Urban Tipping Points in Practice. In *Handbook on Methods and Applications for Mobilities Research*; Büscher, M., Freudendal-Pedersen, M., Kesselring, S., Kristensen, N.G., Eds.; Edward Elgar Publishing: Northampton, UK, 2020; pp. 231–240.
46. Freudendal-Pedersen, M.; Hartmann-Petersen, K.; Kjærulff, A.A.; Nielsen, L.D. Interactive Environmental Planning: Creating Utopias and Storylines within a Mobilities Planning Project. *J. Environ. Plan. Manag.* **2017**, *60*, doi:10.1080/09640568.2016.1189817.
47. Fischer, F.; Forester, J. (Eds.) *The Argumentative Turn in Policy Analysis and Planning*; Duke University Press Books: Durham, NC, USA, 1993.
48. Healey, P. Planning through Debate: The Communicative Turn in Planning Theory. In *The Argumentative Turn in Policy Analysis and Planning*;

- Fischer, F., Forester, J., Eds.; Duke University Press: Durham, NC, USA, 1993; pp. 233–253.
49. Hajer, M.; Dassen, T. *Smart about Cities: Visualising the Challenge for 21st Century Urbanism*; Nai010 Publishers: Rotterdam, The Netherlands, 2014.
 50. Freudendal-Pedersen, M.; Kesselring, S. Mobilities, Futures and the City. Repositioning Discourses—Changing Perspectives—Rethinking Policies. *Mobilities* **2016**, *11*, 573–584.
 51. Sandercock, L. Out of the Closet: The Importance of Stories and Storytelling in Planning Practice. *Plan. Theory Pract.* **2003**, *4*, 11–28.
 52. Freudendal-Pedersen, M.; Kesselring, S.; Servou, E. What Is Smart for the Future City? Mobilities and The Technical and Environmental Administration, City of Copenhagen, Copenhagen, Denmark Automation. *Sustainability* **2019**, *11*, 221, doi:10.3390/su11010221.
 53. Campbell, S. Green Cities, Growing Cities, Just Cities?: Urban Planning and the Contradictions of Sustainable Development. *J. Am. Plan. Assoc.* **1996**, *62*, doi:10.1080/01944369608975696.
 54. Campbell, S.D. The Planner's Triangle Revisited: Sustainability and the Evolution of a Planning Ideal That Can't Stand Still. *J. Am. Plan. Assoc.* **2016**, *82*, doi:10.1080/01944363.2016.1214080.
 55. City of Copenhagen. CPH 2025 Climate Plan: A Green, Smart and Carbon Neutral City; Copenhagen, Denmark, 2012.
 56. City of Copenhagen. Handlingsplan for Grøn Mobilitet (Action Plan for Green Mobility); Copenhagen, Denmark, 2012.
 57. City of Copenhagen. Handlingsplan for Grøn Mobilitet Opfølgning (Action Plan for Green Mobility—Follow Up); Copenhagen, Denmark, 2017.
 58. City of Copenhagen. The Capital of Sustainable Development. The City of Copenhagen's Action Plan for the Sustainable Development Goals; Copenhagen, Denmark, 2018.
 59. City of Copenhagen. Kommuneplan 2019. Verdensby Med Ansvar. (Municipal Plan 2019. World City with Responsibility, English Version Late 2020); Copenhagen, Denmark, 2019.
 60. City of Copenhagen. København Får Flere Personbiler (Copenhagen Has an Increased Number of Private Cars); Copenhagen, Denmark, 2016.
 61. Boligministeriet, T.-B. *Mobilitet for Fremtiden*; Copenhagen, Denmark, 2018.
 62. Christensen, T.H.; Friis, F.; Freudendal-Pedersen, M.; Grindsted, T.S.; Hartmann-Petersen, K. *Analytical Framework on Everyday Mobility Practices and Guidelines for Interventions*; Copenhagen, Denmark, 2019.
 63. Freudendal-Pedersen, M. *Mobility in Daily Life: Between Freedom and Unfreedom*; Ashgate Publishing, Ltd.: Farnham, UK, 2009; Volume 2012.

64. Freudendal-Pedersen, M. Cyclists as Part of the City's Organism: Structural Stories on Cycling in Copenhagen. *City Soc.* **2015**, 27, 30–50.
65. Beck, U. The Reinvention of Politics: Rethinking Modernity in the Global Social Order; Polity: Cambridge, UK, 1997.
66. Lydon, M.; Garcia, A. *Tactical Urbanism: Short-Term Action for Long-Term Change*; Island Press: Washington, DC, USA, 2015.
67. Spurling, N.; McMeekin, A. Interventions in Practices: Sustainable Mobility Policies in England. In *Social Practices, Interventions and Sustainability: Beyond Behaviour Change*; Strengers, Y., Maller, C., Eds.; Routledge: London, UK, 2015.

4.4. SUB-CONCLUSION PART II

The article, “Sustainable Mobility in the Mobile Risk Society—Designing Innovative Mobility Solutions in Copenhagen” begins by arguing that framing a sustainable transition as merely a question of technological innovation may result in technology iterations that operate as barriers to a transition to sustainable mobilities. This is because social life, including everyday practices and mobility cultures, is often left untouched by technological innovation. Therefore, cultural iteration persists despite technological innovation. It is argued that the current challenge is to understand the mobility cultures in modern everyday living and address the social and cultural landscape in which new technologies are to act when promoting sustainable change.

The paper, therefore, argues that the scale of observation should be everyday life in the mobile risk society. A prerequisite for prompting lasting sustainable innovation is ending the collective fetishization of new technologies and engaging innovatively in the social and cultural processes of modern everyday life. This implies that visions of sustainability and livability in urban areas should be holistic and built upon new mindsets, methodologies, and practices in the planning system.

To discuss how innovation can take place, the article presents insights from a visionary workshop, which are used to argue that there is momentum for identifying new forms of systemic innovation. The workshop format set planners and actors free to think across silos. However, harvesting the fruit from it is still far out in the future because the results are related to a change of mindset concerning contexts, everyday-life complexities, and innovative thinking, rather than pursuing specific plans.

To summarize part two of dissertation, we can say that in order to develop sensitivity towards inequality, sustainability scholars and professionals need to adopt a more thorough understanding of the social sphere and how it changes than has been the case in the past

when there has been a preoccupation with individuals' environmental behavior and technological innovation.

The chapter started by arguing for an exploration of what taking an everyday perspective can offer in terms of engaging with the social dimensions of sustainable transitions, including the role of inequality in transition processes. The everyday life perspective, I have argued, helps to avoid two key barriers to an inclusive sustainable transition, which I encountered in studies of sustainable transition. These two barriers, or obstacles, relate to overstating the importance of individuals' behavior and technological innovations for a sustainable transition.

The dissertation has argued that the first step towards placing inequality in focus when working with sustainability is that scholars, politicians, and planners aiming for sustainable transitions need to move on from behavioral approaches. Instead, it is suggested that theories of practice need to be applied to achieve a more complex understanding of social life and how it changes. This is one way of shifting attention from rational behaviors to the complexity of everyday life, thereby capturing important aspects of social change.

A second crucial step for developing sensitivity towards the social dimensions of transition is to shift some analytical awareness from technological advancements to changes in the social and cultural landscapes in which new mobility technologies are to be implemented. Taking everyday life in the mobile risk society as the scale of observation presents a fruitful alternative to the unsustainable iterations of the status quo, which is preserved when transition is merely framed as a question of technological innovation.

PART III: EMPIRICAL INQUIRIES

CHAPTER 5.

The two papers in the previous part of the dissertation argue for applying practice theory and the mobile risk society as alternative frameworks for understanding transitions, particularly mobility transitions. Through two inquiries, this part of the dissertation empirically explores: 1) the role inequality plays in urban everyday mobilities and sustainable mobility transitions, and 2) how we can use a practice theoretical and mobile risk society-informed framework to analyze possible mobile tipping points in the wake of Covid-19. This creates the empirical background for understanding the role of inequality, specifically in relation to urban mobility transitions, and for applying the suggested framework in relation to mobile tipping points induced by the global pandemic. The results of these empirical inquiries support the call for new methodological and theoretical directions, which is made in part four.

Much of the empirical work was conducted with my colleagues in SIMS. The next pages outline the research design and methods of the SIMS project and highlight how my project differs from it.

5.1. THE SIMS PROJECT DESIGN

Yin (2018) suggests that every study has an implicit, if not explicit, research design. He defines a research design as “(...) a logical plan for getting from here to there, where *here* may be defined as the set of questions to be addressed, and *there* is some set of conclusions about these questions” (Yin, 2018: 26). Substantial parts of this PhD study path from here to there was travelled together with my colleagues from the Sustainable Innovative Mobility Solutions project. The empirical research was no exception. It was conducted collaboratively as part of the SIMS project.

The SIMS project aimed to contribute to a sustainable urban mobility transition leading to a reduced climate change impact, less congestion, a healthier environment, and increased livability in cities. This was to be achieved by increasing knowledge about and developing and testing sustainable mobility interventions that are tailored to the everyday lives of citizens, thereby making them attractive alternatives to current carbonized mobility patterns (SIMS, 2018). The focus was on sustainable intervention in the mobility needs and patterns in urban and suburban areas of large Danish cities.

The deliberate decision to focus on sustaining urban mobilities was made in recognition of the fact that large cities, in particular, are facing challenges from increased traffic and related air pollution and congestion (SIMS, 2018). Therefore, there are significant environmental, social, and economic benefits to be gained from successful sustainable transitions in mobility systems in cities. Three distinctly different urban areas were selected as sites for investigation (SIMS, 2018) to ensure that the developed knowledge covered a variety of needs and settings and to guarantee the representativeness of the results.

The three sites for experimenting with new mobility solutions in SIMS were Nordhavn, Folehaven and Nærheden, all of which are located in Greater Copenhagen, Denmark. Folehaven and Nordhavn represent two different types of urban areas, while Nærheden represents a new suburban area which is expected to be highly dependent on commuting to the inner city of Copenhagen.

5.2. THE PHD PROJECT DESIGN

In the SIMS project as in my PhD project, closeness to materialities, contexts, and everyday life situations and their variety were important elements to capture. This is because, as described in the chapter on the philosophy of science, context and its materialities matter (Fairclough, Jessop & Sayer, 2002). Therefore, it made sense

to work with specific areas as examples of what urban areas and urban life are.

Working with concrete examples is a powerful research strategy applied by, for example, Michel Foucault, who worked with the dictum, “Never let the connection to a concrete example out of sight” (Foucault in Flybjerg 2009: 160). Examples are powerful because they are strong in supporting the creation of new knowledge (Flybjerg 2005; 2009). As psychologist and case study methodologist, Hans Eysenck, phrased it, “sometimes we simply have to keep our eyes open and look closely at the individual case... not in the hope of proving something, but in the hope of learning something!” (Eysenck, 1976: 9). With this statement, he emphasizes that studying concrete cases or examples is beneficial for developing nuanced insights into social phenomena.

A few differences exist between the SIMS research design and the research design of my PhD project. One is that I focus solely on the two urban areas, Folehaven and Nordhavn. In my PhD, I focus solely on urban mobilities and varieties in mobility and sustainable transition in these urban areas. Although important and interesting, commuting in and out of the city is beyond the scope of this dissertation. Behind the choice to focus on Folehaven and Nordhavn is my interest in inequality because the areas represent two very different parts of the city in terms of their social and spatial composition, and they, therefore, constitute suitable sites for a comparative urban study, which Wacquant (2007), amongst others, has recommended as a beneficial strategy for researchers seeking to answer questions about urban inequality and

marginalization (Wacquant, 2007; Larsen, 2018; Alvesson & Sköldbberg, 2020).



Figure 1 – Map of Copenhagen and the two areas. From Kristensen, Lindberg & Freudendal-Pedersen, forthcoming.

The following sections describe the areas after which I return to some of my reflections and reasonings for engaging with these two areas in Copenhagen, Denmark, and the generalizability of the findings.

5.2.1. NORDHAVN

Once a traditional harbor area with ferry berths, a container terminal, and a marina, Nordhavn is now a developing city district comprising a mix of residential and business buildings. By&Havn, the developer of Nordhavn, envision the area as a sustainable neighborhood, where buildings are certified by Green Building

Council Denmark⁴. During its development, several smart energy and smart city projects have been launched; the SIMS project on innovative sustainable mobilities and an autonomous bus service, which was part of the H2020 AVENUE project⁵, being two examples.

As of 2020, the area had 2,800 inhabitants and 1,500 jobs, but this is expected to increase to 40,000 inhabitants and 40,000 jobs once it has been fully developed⁶. 10 per cent of the current housing stock is public housing or student housing, while the rest is privately owned. 51 per cent of inhabitants are car owners, which is significantly higher than Copenhagen's average of 29 per cent⁷. What is exceptional for the area is that there is no street or basement parking; instead, cars are parked in expensive car parks, which means the streets are pedestrian friendly.

The area is well-connected to the rest of the city and surrounding areas. A newly built tunnel connects easily to motorways. In terms of public transportation, the area is served by a newly built metro line with 2 stops in Nordhavn while the S-train network connects Nordhavn Station to the suburbs.

5.2.2. FOLEHAVEN

Folehaven is both the name of a heavily trafficked part of a ring road leading traffic around Copenhagen's city center and onto one of the major highways out of Copenhagen and the city district which is located at the intersection of the ring road and two other heavily trafficked roads. The area is characterized by a mix of one-family villas and public housing built in the late 1940s and early 50s. The public housing comprises a total of 1,300 multi-story dwellings

⁴ <https://dk-gbc.dk/dgnb>

⁵ <https://h2020-avenue.eu/>

⁶ <https://byoghavn.dk/nordhavn/>

⁷ <https://byoghavn.dk/nordhavn/>

accommodating approx. 2,000 people⁸. The neighborhood has faced several challenges in recent years including physical isolation because the heavily trafficked roads separate the area from its surroundings and because the inhabitants stand out in terms of parameters such as employment, education, health, and safety compared to Copenhagen in general⁹.

The location of the area reinforces social isolation and hampers social mobility. In recent years, the closest S-train station was moved further away from the area, and bus routes have been rerouted, which has reduced the public transportation service of the area. In contrast, the car infrastructure is good when the rush hour does not cause congestion and a lot of public space is reserved for parking.

In response to challenges, the Folehaven neighborhood is currently the subject of several physical and social initiatives including public-funded area renewal at a cost of more than 1 billion Danish Kroner. Like Nordhavn, Folehaven was thus also the focus of efforts for change and transition processes prompted by the general urban development of the areas. Therefore, initially, the idea was that the SIMS innovation in mobilities could attach to and benefit from the existing change dynamics in the areas.

5.3. REFLECTIONS ON SITES AND GENERALIZABILITY

To me, the SIMS project presented a unique opportunity to conduct a comparative study of two very different areas facing a sustainable mobility transition. I consider the two areas to be maximum variation cases according to Bent Flyvbjerg's (2005; 2009) terminology because the neighborhoods are very different in terms of their social and spatial composition. Therefore, a comparative analysis of the two neighborhoods would help "to

⁸https://www.sims.aau.dk/digitalAssets/1002/1002457_deliverable-d2.2_final.pdf

⁹https://www.sims.aau.dk/digitalAssets/1002/1002457_deliverable-d2.2_final.pdf

obtain information about the significance of various circumstances for case process and outcome” (Flyvbjerg, 2005: 23). I seek to obtain information about the significance of socio-economical inequality for mobility and mobility transition in the comparison of two areas, which differ greatly in terms of socio-economical resources and spatial and geographical qualities.

Bent Flyvbjerg (2005) disputes the widespread conviction that studying concrete examples or cases cannot contribute to scientific development because it is situated, context-dependent and, therefore, lacks generalizability. In order to defend themselves against this widespread critique, he recommends that researchers strategically select the cases as this can increase the generalizability of findings (2005: 229). One way of doing this is by conducting an information-oriented selection, whereby cases are selected based on different lines of argumentation to identify those that provide the richest information about the topic in question.

Outlining different lines of argumentation for case selection, Flyvbjerg develops a typology of selection strategies (2005: 230). This study is inspired by two information-oriented strategies: selecting critical cases and maximum variation cases. As mentioned above, identifying cases that vary as much as possible regarding factors of importance to the research questions was why I chose to conduct a comparative analysis of Folehaven and Nordhavn.

The other strategy that has inspired me in terms of case selection and reflections on generalizability is the critical case selection strategy. Exploring a critical case is beneficial when the purpose of the research is to gather information that permits deductions of the type, “If this is (not) valid for this case, then it applies to all (no) cases” (Flyvbjerg, 2005: 230). A mobility intervention in Copenhagen, Denmark, can be argued to be a critical case as Denmark is one of the most equal countries in the world. Hence, if problems with inequality in relation to sustainable mobility transitions are found here, they may well apply to other cities.

Denmark has a relatively low Gini coefficient and, thus, a low level of economic inequality compared to most countries in the world (The World Bank, 2022 [2019]). Copenhagen, the capital, is viewed as a front-runner in terms of inclusive and sustainable city planning (C40 Cities, 2016; European Commission, 2014). In 2022, Copenhagen was ranked the most livable city in the world by Monocle magazine¹⁰ based on metrics such as crime, housing, transportation, carbon neutrality and pedestrian infrastructure. This was the fifth time that Copenhagen had topped the list, which reflects Copenhagen's pioneering position in relation to both equality (measured in terms of access to housing and low crime) and sustainable transitions of urban life and infrastructure.

I found Copenhagen, Denmark, an interesting setting because scrutinizing inequality in a sustainable transition in Copenhagen entails studying the phenomenon in a setting that is known as one of the least unequal and most sustainable urban settings in the world.

5.4. ACTORS AND ACCESS

Gaining access to the field is a prerequisite for conducting qualitative research (Yin, 2018). My PhD project benefitted from the unique opportunity of gaining access to all actors involved in the sustainable mobility intervention that the SIMS project provided.

These actors were:

- Let's Go – Car Sharing Service (A/S, partly fund-owned, partly joint-stock company)
- By- og pendercyklen – Shared electrified bike service (fund-owned, non-profit)
- Rejseplanen – The Danish public travel planner (public)

¹⁰ <https://monocle.com/> <https://copenhagensciencecity.dk/copenhagen-rated-worlds-most-liveable-city-again/>

- Ta' Med by FDM – Ride-sharing service (non-profit, operated by United Danish Motorized vehicle owners)
- By & Havn – The company developing Nordhavn (partly owned by the municipality of Copenhagen and partly by the state)
- Nærheden P/S – The company developing Nærheden (partly owned by the municipality, partly company-owned)
- Copenhagen Municipality – City renewal Folehaven (public)

Since I began my involvement with the SIMS project, I have been participating in project meetings with these partners. They represent the areas in the project and the mobility service providers involved in the intervention. Participating in these meetings has been crucial in shaping my understanding of how different actors involved in planning a mobility intervention perceive and negotiate different areas, their inhabitants, each other, and what comprises an interesting business case. In these meetings, I for example observed great variation in mobility providers' engagement and ways of talking about the intervention, depending on which area was in question. Intrigued to discover more about the mobility operators' understandings and their consequences for the mobility intervention in the areas, I decided to conduct interviews with mobility operators. The very information-rich interviews with mobility service providers were possible in part because I had gained access to and a certain level of trust with the mobility providers via the SIMS project meetings.

This is important for me to mention my participation in the project meetings and how it shaped my interest in providers' decision-making, because, as the paper "Despite the best of intentions: Inequality in the search for mobility justice" discusses in more detail, who we are and what we have experienced have consequences for the qualitative researcher's work (Budz & Cook, 2019). As Alvesson & Sköldböck point out in their book on *Reflexive Methodology* (2020), it has a shaping hand in terms of which interpretative options become available to the researcher (Alvesson & Sköldböck, 2020: 331). Awareness of who we are, and how this affects our understanding is, therefore, key (Jagger et al., 2011).

CHAPTER 6. METHODS

The interviews with mobility providers are one of four sources of empirical material upon which this dissertation draws. I conducted the interviews with the providers alone, while the remaining three empirical methods of data collection were conducted jointly with my colleagues in SIMS.

The empirical basis for the dissertation was generated using the following methods:

- Interviews with households from both areas
- Focus groups in both areas
- Mobility provider interviews
- Workshops with mobility stakeholders

All the empirical data included in this dissertation was collected before any sustainable mobility interventions were implemented. The reasons why post-intervention material could not be included, a key one being the global COVID-19 pandemic, are discussed in section 4.6. In the following section, the different methods are discussed.

6.1. HOUSEHOLD INTERVIEWS

Understanding the variety of interconnections between everyday life and mobilities requires open, explorative processes. The qualitative research interview is a popular method for gaining access to people's experiences in their everyday lives (Brinkmann & Tanggaard, 2020) and how they make sense of them and narrates them (Potter & Wetherell, 1987). Being inspired by constructionism, as described in the chapter on the philosophy of science, I perceive the interview itself as a social situation (Brinkmann & Tanggaard, 2020: 36), and I understand knowledge to be situationally negotiated and produced during the interview (Bourdieu & Wacquant, 1992). Thus, the interview gives access to

informants' stories about their everyday lives, their sense-making, and experiences of the phenomena in question, but these are not untouched by the situated interactions and negotiations between the interviewer(s) and interviewee(s). Rather, as Brinkmann & Kvale (2014) put it, the stories told in interview situations also bring aspects to the fore that did not exist beforehand but come into being as the interview situation unfolds.

This dissertation draws on semi-structured interviews with adults in households from the two areas, Nordhavn and Folehaven, to gain a deep understanding of everyday life in the areas, mobility patterns and experiences of community, connectedness, and approach to sustainable change. In total, eighteen semi-structured interviews (nine in each area) were conducted with households from the two areas, Folehaven and Nordhavn. We asked all the households' adult members to participate, which resulted in 1-3 participants in each interview. Participants were between 20 and 65 years old. One or two interviewers conducted the interviews.

6.2. RECRUITMENT AND PARTICIPANTS

In Folehaven, we recruited informants with the assistance of the area renewal office and via the snowball method, whereby interviewees helped us recruit new participants via their social network in the area. Challenges related to assisted and chain-referral recruitment methods include the sampling bias caused by people referring people they know who have similar traits. Also, the area renewal office was in contact with a group of inhabitants who were very engaged with the area and its development. However, it made sense to use the contacts of the project partners as a starting point for recruitment, especially because recruiting in the shadow of the pandemic was not the easiest of tasks. Also, we expected the interviews to be information-rich, which turned out to be the case. To counteract biases, we actively searched for families with

children towards the end of the recruitment process, as we experienced that c.f. the “law of diminishing returns” (Kvale, 2007: 41), single households were already very well represented in the material.

As a result of the recruitment process, we spoke to two different groups of residents in Folehaven: Single residents and families with children. The single residents (30-60 years old) had typically lived in Folehaven for many years and had originally moved to the area after being rehoused by the municipality due to divorce, homelessness or other circumstances resulting in an acute need for housing. They lived in small rental apartments in the social housing complexes, and they typically used public transport or bicycles and did not own cars (Christensen et al., 2021). Many, especially the male interviewees, were unemployed. The families with children (parents 30-50 years old) had also lived in the area for many years and typically lived in owner-occupied single-family housing, either detached houses or terraced houses. They used a wide range of mobility modes including cars, bicycles, and public transport. They typically owned cars, but the bicycle was their preferred form of transportation (Christensen et al., 2021). All were full-time employed.

The Nordhavn interviewees were recruited via a neighborhood meeting in September 2020, the landowner association board network, an article in the local newspaper, the snowball method, and resident groups on Facebook. While the neighborhood meeting, snowball method, and landowner association board were effective at recruiting couples aged 50+ and families with children who owned their own homes, they were less effective at recruiting young people and inhabitants from rental and social housing. Again, after having interviewed a few couples and families who owned their own homes, the “law of diminishing returns” (Kvale, 2007: 41) prompted us to seek younger people and renters, for

which purpose Facebook groups and the local newspaper turned out to be helpful.

In Nordhavn, we encountered three groups of residents during the recruitment process. The first was couples aged 50+ who had sold their homes in the suburbs and had moved back to Copenhagen. They owned their homes and used a wide range of mobility modes. Typically, the couples owned two cars before moving, but having moved to Nordhavn, they were considering selling one of their cars if they had not done so already (Christensen et al., 2021). The second group was young families with small children who had moved to Nordhavn from smaller apartments in other parts of the city. They also owned their apartments and used a wide range of mobility modes. This group felt that owning a car was becoming increasingly necessary and was considering purchasing one if they had not done so already. The third group was young people aged between 20 and 30 years who were living in small rented housing. This group also used many different mobility modes and did not own cars but used shared cars when necessary (Christensen et al., 2021).

6.2.1. INTERVIEWING DURING A PANDEMIC

On average, the interviews lasted for approximately one and a half hours. Most of the interviews took place at the participants' homes, and were conducted in the early fall of 2020, when a prolonged window between pandemic-induced lockdowns allowed small in-person gatherings. However, some of the interviews were conducted online through Zoom or TEAMS as infection rates increased during the interview period. Conducting interviews both online and in-person highlighted what is lost when interviews are mediated by technology. Many interesting discussions about research interviews have emerged from the COVID-19-induced challenges facing qualitative research (see, e.g., Sedysheva, 2020). I will not go into a long discussion here. Instead, I will just mention that in our case, challenges were especially related to the artificial experience of interviewing people about (and negotiating) places

without being there in-person or being able to sense their qualities and materiality.

Paper 3 of the dissertation, “Urban mobility injustice and imagined socio-spatial differences in cities - A study of two Copenhagen neighborhoods”, draws on household interviews, as does paper 5. “Despite the best of intentions: Inequality in the search for mobility justice” analyzes and reflexively engages with the interviews and the interview guide, which forms the basis for suggesting directions for future mobility studies in relation to handling inequality and its reproduction in research.

The interview guide is included in appendix A. Besides the interview themes and questions, the interview guide also features the preunderstandings and theoretical frameworks that inform the specific questions.

6.3. MOBILITY OPERATOR INTERVIEWS

As mentioned, in addition to the SIMS household interviews, I conducted interviews with mobility operators who were partners in the SIMS project and were working with shared mobility. Being a participant in the SIMS project meetings during which the design and scope of the sustainable mobility intervention were discussed, I found that the mobility operators’ attitudes and willingness to invest varied significantly depending on whether the meeting concerned Nordhavn or Folehaven. I was curious to discover why. My intuition told me that the operators’ perceptions of the areas would play a crucial role in determining what was possible in terms of sustainable mobility interventions in the areas.

This notion was reinforced when two of the mobility operators withdrew from investing in Folehaven, thereby de facto abandoning the sustainable mobility intervention in the area. Interestingly, these were the two operators who were offering shared car services and electrified shared bike services, and they would have had to invest in infrastructure such as docking stations,

bikes, chargers, and cars to make the services available in the areas. Thus, the two operators who withdrew from the Folehaven intervention were those who needed to invest in the area. However, the same two operators were advocating the upscaling of the intervention in Nordhavn, and from the meetings, I got the sense that they used the SIMS Nordhavn meetings as a lever to win more space for their equipment in the streetscape of Nordhavn, maybe even securing funding for the purpose. Was I right, or was I being overly critical and suspicious because I was indignant about what I considered to be the discriminatory treatment of the already marginalized area of Folehaven? I decided to conduct one-to-one interviews with the providers to challenge my interpretation and, as Deetz referring to Foucault and Weedon (1987) demands of qualitative researchers, to engage with “communication as a social act (...) to overcome one’s fixed subjectivity, one’s conceptions, one’s strategies to be opened to the indeterminacy of people and the external environment” (Deetz 1992: 341).

I invited the two mobility operators to participate in a semi-structured interview, framing it as more of a private setting for me, as a PhD student, to gain insights into their perceptions of their role in sustainable mobility transitions, their business models, their background for joining SIMS, the areas in SIMS, and how the areas are seen by external transport professionals, especially in terms of the area's social and spatial profile and what it meant for mobility development. The interviews thus focused on the providers’ business models and the areas they found viable to invest in. Certain stories and narratives about the neighborhoods emerged in these interviews and played a key role in reasoning investment decisions.

The interviews with the two mobility operators were conducted virtually due to the Covid-19 lockdown in the spring of 2021. The third mobility partner in the project, the ride-sharing service provider Ta’ Med, joined the project later than the first two, and did

not engage in the discussion. However, Ta' Med also did not have any initial costs in connection with making their service accessible as it is app-based. Still, it would be very interesting to conduct more interviews with mobility operators to cover a greater variety of services and settings and to explore the representativeness and prevalence of the results based on the two provider interviews. These results suggest that neighborhood narratives play a role in framing investment decisions and as such, they shape what becomes possible in terms of sustainability transitions – at least if transition efforts rely on investments from (semi)private operators. The results appear from the paper “Urban mobility injustice and imagined socio-spatial differences in cities - A study of two Copenhagen neighbourhoods”.

The interview guide, which of course guided me during the interviews, but also detailed the preconceptions I took into the interviews appears in appendix B.

6.4. FOCUS GROUPS

Focus groups with residents also inform the paper “Urban mobility injustice and imagined sociospatial differences in cities - A study of two Copenhagen neighbourhoods”. Eight adults participated in the Folehaven focus group, which was conducted in a local charity shop. The participants were aged between 60 and 80 years old and were mostly in part-time employment, pensioners, or unemployed. My colleagues in SIMS conducted an additional focus group with residents from Nordhavn at the headquarters of By & Havn¹¹. Four adults aged 40-50 years old, all of whom had full-time jobs, participated.

In both focus groups, maps of all three neighborhoods in the SIMS project were provided and they served as the focal point for discussions about the differences between the neighborhoods and

¹¹ By & Havn is an urban development company owned by the Municipality of Copenhagen and the Danish State. The company is one of the partners in the SIMS project.

the identification of feasible mobility solutions. The discussions prompted forceful expressions of unequal opportunities, understandings, experiences, and narratives of the areas. As such, the knowledge created during the large focus groups differed from and added to the knowledge created during the household interviews, thereby highlighting the advantages of producing empirical knowledge on a group level (Morgan, 1997; Halkier, 2020).

The focus group guide appears in appendix C.

An implication of taking a moderate social constructionist approach to qualitative research is that all types of empirical material are understood as being socially constructed and negotiated. Thus, as Halkier (2020: 168) puts it, the hierarchical distinction between interviews and focus groups is dissolved. However, we found that the larger social situation of the focus groups produced new insights into the narratives of the neighborhoods and the experiences of (mobility) inequality compared to the semi-structured household interviews. The focus group is a research method that places group-level interactions and negotiations center stage. As such, it produces insights into phenomena that are “more complex” (Halkier, 20220: 170) because participants with similar contextual preunderstandings interact and question each other, which creates other discussions than those possible in a semi-structured interview, in which the interlocuter is a researcher who comes from outside the area with preunderstandings shaped by a different context.

6.5. WORKSHOPS

Several workshops, two of which are relevant to this dissertation, were included in the SIMS research design. First, a visionary workshop conducted in March 2020 (a week before the first lockdown) is used as an example in the paper “Sustainable

Mobilities in the Mobile Risk Society – Designing Innovative Mobility Solutions in Copenhagen”. It outlines a way to start experimenting with changing urban cultures of mobilities. Second, a stakeholder workshop was conducted in November 2020 (going into the second lockdown) to understand the challenges facing public transportation in the light of Covid-19 and to determine whether only pandemic detours or also new sustainable pathways in urban public mobility lay ahead. This workshop comprises the empirical foundation for the paper “Pandemic Detours or New Sustainable Pathways? Post-Pandemic Mobility Futures in Danish Cities”.

As Ørngreen & Levinsen (2017) have argued, workshops provide a platform for researchers to identify and explore relevant factors in the domain by providing means for understanding, for example, the complexity and contexts of planning processes. The approach supports the identification of factors that are not obvious to either the participants or the researchers before the workshop (Ørngreen & Levinsen 2017: 70), and as such, they are a means for creating new knowledge and imaginaries across people, disciplines, professions, and dominant silos.

6.5.1. THE VISIONARY WORKSHOP

The visionary workshop sought to create knowledge about alternative cultures of mobilities and new solutions and interventions that could be integrated into the three SIMS areas. Urban planners, mobility stakeholders and mobility providers were invited to the one-day workshop which attempted to challenge mainstream technological solutions by creating a free space for them to imagine different sustainability interventions in the areas with a starting point in everyday mobilities.

In total, 30 participants from different fields participated. These included developers from the three areas, urban planners, the Ministry of Transportation, public and private mobility operators, sustainability experts, and researchers. Participants were divided

into groups representing different disciplines. Two hours were allocated to discuss each of the three areas, and large maps of the areas were provided. Each round was introduced by the developer of the area in focus and included an outline of key mobility opportunities and obstacles. Group discussions were followed by a plenary session, which produced a new map that gathered the ideas for accommodating a sustainable mobility transition which could be implemented in the areas with their distinct social and material composition. The visionary workshop comprise the empirical example of the dissertation's paper 2: "Sustainable mobility in the Mobile Risk Society – Designing Innovative Mobility Solutions in Copenhagen, Denmark".

6.5.2. THE STAKEHOLDER WORKSHOP

The stakeholder workshop sought to create knowledge and stimulate the development of new imaginaries especially public transportation in the light of devastating disruptions caused by the global Covid-19 pandemic hitting Denmark in March 2020.

The stakeholder workshop was a hybrid event conducted in November 2020 at Aalborg University with most participants participating online. Twelve key private and public mobility stakeholders from Denmark were invited to discuss mobility trends during the pandemic with a special emphasis on public transportation. Participants included two regional companies responsible for local trains and busses, a car-sharing company, a ride-sharing company, the metro and light rail company, a large consultancy firm, the Confederation of Danish Industry, the public transportation ticketing provider DOT, and researchers from three universities.

The workshop had an open form with plenty of time for reflection and discussions to express frustrations with the current situation and imagine possible futures following it (Lindberg et al, 2022). The workshop was divided into two sessions. Each of them was opened with a brief presentation to kick off discussions. In the first

presentation, a speaker from the Swedish Knowledge Centre for Public Transport talked about the decline in passengers, new work practices and alterations in mobility patterns. In the second session, a speaker from the Swedish Association of Green Motorists initiated discussions about rethinking stakeholder cooperation, integrating public and shared mobilities, and focusing on consumer needs.

This workshop forms the empirical basis for paper 4 of the dissertation “Pandemic Detours or New Sustainable Pathways? Post-Pandemic Mobility Futures in Danish Cities”.

6.6. TIMELINE AND ADAPTATIONS

All the empirical data included in this dissertation was collected before any sustainable mobility interventions were implemented. This was because, as mentioned in the introduction, the mobility providers withdrew from Folehaven and thus no intervention was deployed in the area. In Nordhavn, an intervention was eventually implemented, although it was postponed due to Covid-19 constraints. Unfortunately, due to the combination of these postponements and the limited time of my scholarship, it was not possible to include post-intervention empirical data in this dissertation.

However, Covid-19 also provided an opportunity for more careful reflection about what happened in the family interviews than would probably have been the case if we had been occupied with evaluating the intervention. Methodological reflections on what happened in the interviews with the families from the two areas, and what it meant in terms of inequality, representation of different experiences and justice in terms of whose reality is epistemically conspicuous is provided in the paper “Despite the best of intentions: Inequality in the search for mobility justice”, which is included in part four of the dissertation.

Before we come to that, the two empirical inquiries are included. These draw on the material generated, as I have described in the past sections, to search for answers to my second and third research questions: Does inequality influence efforts to intervene in unsustainable mobility practices, and if so, how? And what creates tipping points in relation to sustainable urban mobility?

CHAPTER 7. EMPIRICAL INQUIRIES

The first inquiry seeks to collect empirical knowledge on whether inequality influences a sustainable transition and if so, what mechanisms are possibly involved. It is a comparative study of inequality, mobilities and sustainable transitions in the two urban areas of Folehaven and Nordhavn. In contrast to many studies of sustainable transition, it does not start with technology innovation or environmental concerns, rather, it starts from a concern with the social and unequal dimensions of current urban mobilities in Copenhagen, Denmark, and then moves on to question their implications for sustainable intervention in urban mobility. The study demonstrates that mobility capacity varies remarkably between places, even in Copenhagen, which is a relatively equal city, and shows how inequality intensifies when territorial narratives of deprivation frame inhabitants' and decision makers' approaches. In the paper, we argue that paying attention to neighborhood narratives increases understanding about how mobility inequalities are reproduced in sustainable planning decisions.

PAPER THREE: URBAN MOBILITY INJUSTICE AND IMAGINED SOCIOSPATIAL DIFFERENCES IN CITIES - A STUDY OF TWO COPENHAGEN NEIGHBOURHOODS

**Nikolaj Grauslund Kristensen, Malene Rudolf Lindberg, Malene
Freudendal-Pedersen**

Abstract

Cities today are confronted with pressing issues of mobilities - not only concerning greener movement but also more just movement. This article explores the physical and imaginary aspects of urban mobility inequality and its (re)production through a study of two neighbourhoods in Copenhagen. It illustrates the interplay between city dwellers' experiences of (im)mobility and the social and spatial structure of neighbourhoods that shape and are simultaneously shaped by negative images of these places. Through interviews and focus groups, residents' mobility capacity and mobility providers' decision-making are scrutinized. The study demonstrates that mobility capacities vary remarkably between places in a relatively equal city and this is intensified by territorial narratives of being deprived. The paper argues that paying attention to neighbourhoods' narratives helps to understand how these sociospatial mobility inequalities are reproduced in planning decisions. Thus, the paper provides an example of mobility inequality manifesting itself in the material and narrated environment.

1. Introduction

Urbanisation and increased mobility characterise contemporary societies, and cities have become an arena for increasingly mobile human subjects. However, this does not mean that everyone has become empowered by the mobility advanced city. In Denmark, segregation by income in the largest

cities has increased in recent decades (Juul & Blicher, 2016). In this paper, we explore whether it is possible to identify relationships between urban inequality and mobility inequality.

Much literature has studied the socio-spatial division in cities from a perspective of housing policy, the allocation of accommodation and the distribution of residents (Marcinćzak et al., 2016; Larsen & Hansen, 2009; Haandrikman et al. 2021; Andersen, 2002). However, urban segregation does not only depend on residential patterns but also on the opportunities provided by being mobile, i.e., access to services, institutions and social activities. Urban inequality and social exclusion related to access and opportunities to maintain social relationships have been studied both in the fields of spatial and transport research (Lucas, 2012; Martens, 2006; Soja, 2010). Since 2000, when John Urry published the book *Sociology Beyond Societies: Mobilities for the Twenty-First Century*, an increasing number of authors have focused on mobilities as a concept that better captures the multitude of physical and virtual movements and the social and cultural impacts these new connections and movements entail (Freudendal-Pedersen et al., 2020; Sheller & Urry, 2006; Urry 2000). Expanding the approach to uneven mobilities beyond a focus on the journey from A to B (transportation) provides an opportunity for scholars working with social inequality and segregation in the city to advance the understanding of a field that has historically mainly been studied from a static perspective (Cook & Butz, 2019). Mobility is essential for citizens' participation in society as it allows social relationships to be maintained and provides access to socioeconomic opportunities. The capacity to move in space is enabled and constrained depending on the political, social, and physical landscape where everyday life plays out, and the freedom of some is often dependent on the immobility of others (Jensen, 2019; Freudendal-Pedersen, 2009, 2015). Many aspects influence city dwellers' mobility capacity. As stated by Hidayati et al. (2021), this includes individual abilities that are intricately interlinked with the spatial environment, political discourses, cultural norms, etc. Being mobile in this sense does not only entail access to transportation, welfare institutions and services in the city, it also includes the individual's capacity to appropriate these opportunities. In some cases, the social factors may be dominant while in other cases the specific context may be decisive for immobility. The specific interactions between social and spatial factors are here decisive and often related to urban segregation.

Studies outside the mobilities literature have illustrated that social exclusion and segregation extend beyond internal and external physical and

social attributes. Public and shared narratives of some social groups and places are factors that contribute to social marginalisation (Wacquant, 2013). Stigmatisation based on a territory narrative, as Loïc Wacquant puts it, has a strong negative influence on how residents are perceived by others and even on how they perceive themselves (*ibid.*). Negative public narratives translated into images of places play an essential role in shaping and maintaining inequalities in cities and the resulting consequences. While scholars have recently begun paying attention to the imaginary aspect of mobility (Salazar, 2020), the marginalisation of urban neighbourhoods through public narratives and negative images and the resulting consequences for residents' mobility still remain under explored.

Some urban neighbourhoods may have a negative reputation that has little to do with the physical environment. It may, for example, be due to a high density of one ethnic group while, conversely, no negative labels may be attached to a poorly maintained area. However, based on an empirical study, we argue that critical experiences of immobility most often result from the co-occurrence of physical and reputational factors. In our study of neighbourhoods in Copenhagen, it seems that the existing sociospatial conditions played an essential role in shaping the experience of (im)mobility while the territorial narratives were a dominant factor in creating these conditions. This was intensified by external operators whose planning decisions were influenced by the reputational profile of the areas.

Denmark has a relatively low degree of economic inequality compared to most other countries in the world (The World Bank, 2022 [2019]) and Copenhagen, the capital, is viewed as a front-runner in terms of inclusive and sustainable city planning (C 40 Cities, 2016; European Commission, 2014). However, as this paper emphasises, despite the city's well-planned infrastructure systems and the promotion of planning on a human scale (Copenhagen Municipality, 2017), mobility inequality remains a problem in the city. The paper analyses residents' experiences of constrained and enabled movement in the city in relation to the social and physical infrastructure of their neighbourhoods, which reveals larger structural inequalities in the city (Sheller, 2018b). The paper illustrates the significance of the spatial and reputational profile of an urban neighbourhood for citizens' experience of (im)mobility through an empirical study of two socioeconomically different areas in Copenhagen. It does so by paying attention to both residents' individual experiences of sociospatial mobility and external transport operators' view of areas of interest. The paper highlights the danger of

mobility inequality being reproduced in investment decisions defining private and public planning strategies.

The empirical focus on sociospatial mobility inequality has its origins in a research project on sustainable mobility. Although sustainability is not the focus here, the article demonstrates that sustainable development cannot be separated from its consequences for social life and, thus, it cannot be examined without being vigilant to social inequality (Beck, 2016).

The paper begins by presenting the theoretical framework for the analysis as well as the methods used to generate the empirical material which forms the basis for the analysis. Following this, we present the two neighbourhoods in Copenhagen and their social and physical layout. The empirical study results in the following two aspects of mobility.

1. Firstly, differences in urban mobility to the extent that they can be defined as mobility inequality do exist in Denmark despite it being a relatively equal country. This inequality not only exists between rural and urban areas - an issue which has already received political attention and has, thus, been widely covered by the media - it is also an issue between areas within cities, which conversely is an aspect that has not received much political attention.
2. Secondly, this inequality and experiences of immobility in cities are closely related to territorial narratives, which are derived from their sociospatial context and simultaneously produce this context. In our case, this is illustrated by unequal investment in mobility, which was founded on prejudiced perceptions of neighbourhoods. Thus, the territorial narratives were decisive in determining which mobility futures became possible and where.

We argue that it is important that public and private urban planners are made aware of these two aspects for future planning strategies.

2. Uneven mobilities in cities

Urban neighbourhoods are not just defined by their administrative boundaries but also by residents' different spatial histories and social relationships (Massey, 1994), which extend beyond the areas and are shaped and maintained by mobilities (Sheller, 2015). Urban inequality is, therefore, also a matter of inequality in terms of mobility. Uneven mobilities are created by the different social and spatial elements, which promote some social

groups and forms of movement over others. In their literature review, Hidayati et al. (2021) demonstrate that research on mobility inequality focuses on the '*differences in the ability and capacity to move, investigating the causes and impacts of such differences*' (Hidayati et al., 2021: 2). The authors illustrate that mobility inequality studies consider both the intrinsic factors such as age and social class and extrinsic factors including spatial conditions such as location, material formation and access to transportation (ibid.). They argue that awareness of the various factors influencing mobility capacities facilitates an understanding of the scales and complexity of unjust structures of mobilities *experienced by individuals in different contexts* (ibid.: 4). Marginalised groups are highlighted as experiencing immobility to a greater extent and are frequently not involved in decision-making that affects them, which makes them more vulnerable to social isolation and exclusion (ibid.). It is not uncommon for marginalised groups to suffer in city planning and design, which Sheller suggests often favours the upper middle-class, healthy, white male body (Sheller, 2018a: 55). The difference in individual mobility capacities cannot be separated from the imagined, spatial and cultural context as unjust mobility regimes '*are also expressed in the built environments*' (ibid.: 54). Analyses of specific socio-spatial contexts can reveal physical and imagined mobility inequality in cities and how it is (re)produced in planning. Studying the interplay between factors and the complexity of the specific socio-spatial contexts facilitates an understanding of injustice on a larger scale (Soja, 2010; Flyvbjerg, 2003) while at the same time making it more tangible.

Sheller (2018) investigates mobility (in)justice on interrelated scales, which provides an opportunity to investigate specific sociospatial contexts. Movement is considered a '*foundational condition of being, space, subjects, and power*' in Sheller's concept of justice (Sheller, 2018a: 9), and it is, thus, fundamental to understanding the relational geographies of urban transformation (McFarlane, 2020). In this paper, two levels of mobility justice related to the *spatial layout of neighbourhoods* and the *narratives of neighbourhoods* are presented. This analytical division is inspired by Sheller's conceptualisation of bodily and street scale and concepts of place-based narratives and imagined geographies (Salazar, 2020; Wacquant, 2013; Soja, 2010), which ought to be incorporated in order to identify the root causes of mobility injustice.

Spatial level of neighbourhoods: At this scale, we examine the sociospatial layout of neighbourhoods and the way in which it is experienced by residents in relation to their mobility capacity. Sheller refers to the *street scale* as '*the shaping of built environments by infrastructures and land use*' (ibid.: 24), which

forms movement in space. The environment, infrastructure and places frame bodily movements, capacities and limitations, which result from this interplay between bodies and space. The movement of some bodies is often favoured over others in specific urban spaces. Hidayati et al. (2021) emphasise that bodily inscribed differences in movement capacity are often neglected in conventional traffic planning as such *'planning often succumbs to providing physical infrastructures by assuming that all individuals have similar mobility levels'* (Hidayati et al., 2021.: 2). This type of planning runs the risk of unintentionally reproducing or even reinforcing mobility inequality as it fails to consider the fact that the spatial layout favours certain bodies more than others. The spatial environment in which we move is not detached from the people who move in space, thus "[t]he problem of mobility injustice begins with our bodies" (Sheller, 2018b.: 24). Devoting analytical attention to the bodily scale reveals that mobilities are socially differentiated in relation to hierarchies such as gender, culture, and social class. (ibid.). This does not imply that an individual's movement capacity is determined by such factors alone, but rather that identity and individual experiences have a hand in shaping our movement capacities.

Imagined level of neighbourhoods: This scale refers to the imaginary and symbolic aspects of different settlements, which shape and are simultaneously shaped by the social and physical landscape. Neighbourhoods are not just defined by the built environments *'materialized through planning and building'* (Gorman-Murray, 2006), they are also *imagined places*. Multiple scholars have examined this relationship between the material and imagined place (Lynch, 1961; Soja, 2010; Said, 1978). From a sociological perspective, negative territorial narratives have been shown to negatively affect other people's perceptions of areas and their residents and sometimes even the residents' sense of identity (Wacquant, 2013). According to Wacquant, a stigma becomes attached to an area from the bottom during everyday interactions and conversations and from the top through media and political representation, which results in some areas becoming tainted (Wacquant, 2013). Salazaar has studied mobilities and finds that they are shaped by and shape processes of imagination (Salazaar, 2020: 774). Images or imaginaries of others interact with the individual imagination and *'are used as meaning-making devices [...]* [o]nce imaginaries are formed it becomes very hard to change them, precisely because they are culturally shared and socially transmitted' (Salazaar, 2020: 770-71). Images and narratives of urban neighbourhoods and mobilities are relational and play an active role in shaping decision-making and planning strategies as well as being shaped by them. Whereas the *first*

scale focuses on how different elements in the sociospatial environment shape the experience of movement, this scale refers to the physical and imaginary relationships that exist between areas in cities and how they influence local mobility. The scale ought to be considered in order to understand mobility injustice.

In this article, based on these two scales, we analyse mobility injustice in the following two neighbourhoods in Copenhagen: Folehaven and Nordhavn.

3. Methodology

This study is part of the research project Sustainable Innovative Mobility Solutions (SIMS). The focus of the SIMS project is to investigate how to facilitate the sustainable transition of everyday urban mobilities through experiments with multi-modal mobility services in two urban areas in Copenhagen. The Danish capital is a relatively well-connected and socio-economically equal city. The proportion of non-western descendants and the level of employment are two of the most significant socioeconomic differences between the two areas scrutinized in this paper. The residents of the two neighbourhoods are characterised by different social positions that shape their experiences of mobility and immobility. The class division is distinctive for the two areas, but, as Sayer explains “we occupy different positions, not only according to class, gender and race, but in terms of age and relations to parents and dependants...” (Sayer, 2005: 140). In this paper, we mainly focus on the socio-economic differences between the residents in the two neighbourhoods, which means that other factors such as gender, ethnicity and culture are not investigated. The empirical data that was generated during the interviews and focus groups with residents from the two neighbourhoods were permeated by mobility inequality. While the focus of the interviews was on everyday movement, neighbourhood and sustainability, the focus group was dedicated to participants’ visions of future mobility in their area and in the city at large. The interviews and focus groups were carried out in the autumn of 2020 and 2022, and participants were recruited through email requests or phone calls.

Interviews with residents: In this paper, we draw on eighteen semi-structured interviews with households from the two neighbourhoods, Folehaven and Nordhavn; nine in each area and two focus groups, one with residents from each neighbourhood. In the household interviews, one to three of the households’ adult members between 20-65 years old participated. Around half of the interviewees in Folehaven were unemployed. In

Nordhavn, all except one student were in full-time employment. On average, the interviews lasted for approximately one-and-a-half hours, and the majority of the interviews were conducted in the participants' homes. Due to the Covid-19 pandemic, some of them were also conducted online through Zoom or TEAMS as infection rates had increased during the interview period.

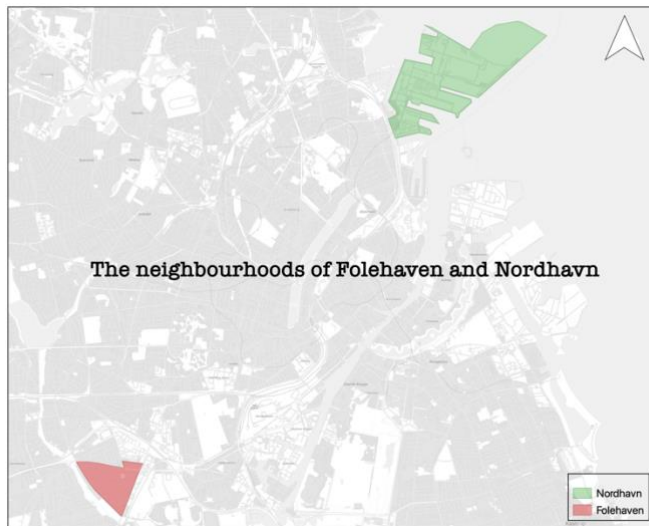
Focus groups with residents: In Folehaven, the focus group had eight adult participants and was conducted in a local charity shop. The participants were aged between 60 and 80 years old and were mostly in part-time employment or were unemployed. The focus group with residents from Nordhavn was conducted at the headquarters of By & Havn¹² and had four adult participants who were aged 40-50 years old. All of them had full-time jobs. Maps of the three neighbourhoods in the SIMS project provided the focal point of discussions about the differences between the neighbourhoods and the identification of feasible mobility solutions. While the empirical material generated in Folehaven and Nordhavn was being processed, unequal opportunities, understandings, experiences and narratives in the areas came to the forefront. The interlocutors in the interviews and focus groups were primarily Danish descendants. This is not representative of Folehaven residents as the area contains a large group of non-Danish descendants. In the recruitment phase, we were not able to get a more equal representation which raises a bias when investigating the residents' experience of mobility in the area. For further research, this would be an important aspect along with other social factors to include. In addition, to the interviews and focus group in Folehaven, we set up a stall for a local event in the area, where the residents walking by had the opportunity to explain what they thought about the area through posters and maps and here the representation was more equal.

Interviews with mobility operators: Interviews with operators working with shared mobilities were conducted to gain additional information on how the areas are seen by external transport professionals, especially around the area's social and spatial profile and what it meant for mobility development. The interviews focused on the providers' business models and the areas they found relevant to invest in. Narratives of the neighbourhoods were also present amongst the mobility providers, which results in a different interest in the areas. The operators were selected because they were active in Nordhavn but withdrew from Folehaven. The interviews were conducted virtually due to the Covid-19 lockdown in the spring of 2021.

¹² By & Havn is an urban development company owned by the Municipality of Copenhagen and the Danish State. The company is one of the partners of the SIMS project.

All interviews and focus groups were transcribed and analysed through NVivo using 13 different codes. The codes were set up after several preliminary readings and discussions of transcribed interviews among researchers in the SIMS project around everyday mobility, differences in neighbourhoods and attached local experiences and narratives. In this paper, we draw on four of these codes (1) *physical, material, and infrastructural conditions*, (2) *socio-economic parameters*, (3) *perceptions of freedoms* and (4) *stories of your neighbourhood*. All the transcripts were anonymised, and the interviewees were given pseudonyms. Before turning to the analysis, a short description of the two neighbourhoods is provided.

Like many cities around the world, Copenhagen is constantly being developed. The capital consists of a historical city centre and a number of districts, which were built in different periods. Its built neighbourhoods are undergoing a process of regeneration and former industrial and green areas are being turned into expensive residential neighbourhoods. Although the



Map 1: Basemap of the neighbourhoods Folehaven and Nordhavn

city is by and large wealthy and well connected, the last 20 years' growth has not benefitted all parts of the city equally. Increasing housing prices are excluding low-income groups from a growing number of neighbourhoods in the city and, while it has not yet reached the scale of other major cities, uneven investment, gentrification and inadequate infrastructure are producing increasingly uneven geographies.

The two neighbourhoods used as empirical examples in this paper are Nordhavn and Folehaven. Nordhavn is a newly developed and combined residential and business area located on the harbour front, where some of the most expensive housing in Denmark is currently found (Realkreditrådet, 2021). While it contains both rental and student housing, most of the housing stock is privately owned. Nordhavn is situated just a few kilometres from the city centre. In contrast, Folehaven¹³ is an old working-class area on the outskirts of Copenhagen, which contains both single family houses and social housing apartments, where the state has the right to assign citizens to 30% of the housing units. Until recently, Folehaven was listed on the Danish police's SUB-list of 'special disadvantaged neighbourhoods' (Mouvielle, 2021). Nordhavn is portrayed as the new sustainable city district (By&Havn, n.d.). It is pedestrian and cycle-friendly with easy access to public transport and also easy access for cars, making it well-connected both locally and regionally, not least due to in the opening of a new Metro line to the area and a tunnel for cars, which connects Nordhavn to the motorway system surrounding Copenhagen. Folehaven is demarcated by three large access roads to inner Copenhagen, which generate heavy traffic. Accessing public transport mostly involves having to cross one of the large roads. Within Folehaven itself, conditions are good for cyclists and pedestrians, but the area is less well-connected to the rest of the city due to a lack of pedestrian and cycle infrastructure. However, a comprehensive urban renewal plan including mobility related initiatives is currently being prepared by the local authorities (Copenhagen Municipality, 2018a). The neighbourhoods are very different and represent two different renewal strategies of the city. In the areas, it is evident that services, shopping facilities and transportation are favoured and concentrated in certain city spaces over others.

4. Differences in physical and imagined urban mobility

In our study, the socio-spatial division between urban areas is illustrated by differences in mobility experiences. Feelings of immobility are related to the reputation of an area and not just its physical attributes in terms of services and transportation. These profiles are enhanced by narratives of disadvantaged groups, values, types of living and choice of transportation. The study highlights the danger of reproducing mobility inequality in planning and decision-making through a study of two neighbourhoods in

¹³ The neighbourhood of Folehaven encompasses both Folehaven and Elleparken but, in the remainder of this paper, it is just referred to as Folehaven.

Copenhagen. The analysis is divided into two interrelated levels of mobility injustices:

The first scale concerns mobility inequality with a focus on the sociospatial differences between the areas and how they are related to the residents' experiences of mobility capacity.

The second scale concerns narratives of the neighbourhoods and how they enhance experiences of (im)mobility and re-produce spatial and mobility injustice because they have a shaping hand in planning and decision-making.

4.1. Spatial level: Sociospatial differences and the experiences of (im)mobility

When interviewing residents about their movement patterns and experiences of mobility, we discovered that the capacity to move varies significantly between the neighbourhoods despite the fact that both areas are located in a relatively well-connected and socio-economically equal city. This is related to the physical infrastructural layout of the areas.

Differences in road infrastructure: The physical infrastructure of Folehaven was seen as an obstacle to the interviewed residents' mobility. The three heavily trafficked roads that fence the neighbourhood were highlighted as being problematic in almost all the interviews and were identified as a dominant factor for the area, causing a feeling of isolation. As illustrated on the map of Folehaven, the roads, especially the intersection, were clearly marked as being critical by the residents. The roads impaired both the quality of living and movement in the area. A feeling of stress and discomfort due to pollution and noise inside and outside the interviewees' homes was a recurrent theme in the interviews, especially in those held with the residents living closest to the roads in the social housing of Folehaven. Furthermore, the roads were highlighted as being problematic as they result in a feeling of insecurity amongst residents when they walk or bike in and to/from the neighbourhood. As one interviewee living in the social housing



Map 2: A map was set up in Folehaven where the residents could point out what they liked and did not liked in the area by using stickers

explains *'it can be hard to cross the road in one attempt if you don't walk quickly'* (Interview with Halfdan, Folehaven, 2020). In the following quote, a resident who lives in the single-family houses in Folehaven explains that the residents of Grønttorvet, a new neighbourhood bordering Folehaven, are worried about sending their children to school in Folehaven due to the large roads.

'They say like: 'Then we have to let our children cross [the road] Folehaven'. The thought of if there was a path system where you could bike, you would be comfortable as a parent sending your children off.

(Interview with Ella, Folehaven, 2020).

It follows that social integration is hindered by the roads as inclusive and sustainable mobility modes such as walking and biking are discouraged. Instead, the roads function as exclusion fences. These consequences are experienced most intensely by the elderly, people with disabilities and children, the interviewees explained, as they identified these groups as suffering the most from inadequate and perilous mobilities. One resident thus explained:

'I can't stop thinking that you as an elderly mobility-impaired person, you do not even reach the middle [of the road Folehaven]. So, [the road] cut off [the neighbourhood] like that [...] Some of us hope that we will get a cycling bridge which preferably connects all four corners [of the intersection]'

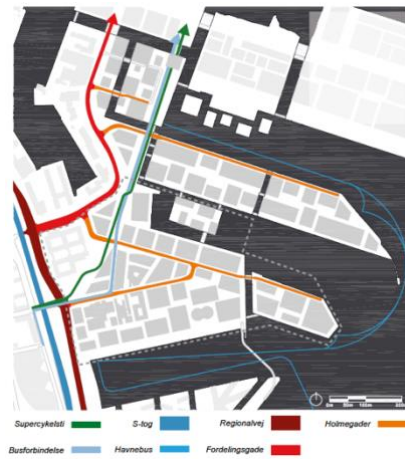
(Interview with Halfdan, Folehaven, 2020).

Although it is not uncommon that the elderly and people with disabilities suffer due to planning designs and feel that their mobility is restricted, the differences between the areas in terms of conditions for inclusive mobility modes were conspicuous when talking to the residents.

Experiencing discomfort in terms of excessive noise and insecurity in relation to road infrastructure was also brought up in the focus group with the Nordhavn residents. The participants considered that one particular road in Nordhavn limited non-car-based mobility in the area. One resident explained that she was a little worried about her child crossing that road, *'she is six years old, so she knows how to behave when crossing a road, but I think if there were no cars – you can move more freely without any traffic as a child'* (Focus group with residents, Nordhavn, 2022). However, when we asked how the annoyances connected to the road, insecurity and pollution compared with other places they had lived, the problem was moderated. The same residents

said: *'No, where we live, there is not much traffic'* (Focus group with residents, Nordhavn, 2022). Another resident added *'No, we used to live on Østerbrogade [another part of CPH], so that cannot be compared. It was also the reason we moved to [an area, Nordhavn, with] some air and water'* (Focus group with residents, Nordhavn, 2022). Besides this one remark, no one in Nordhavn complained about immobility for any social groups related to the physical infrastructure of the area or in general.

The case of Folehaven is an example of how feelings of insecurity and exclusion are amplified in a car-oriented environment (Hidayati et al., 2021). Often some people's freedom of movement is at the expense of others because it limits or forces the movement of others. Within Folehaven, this is illustrated by the so-called 'barrier effect' (Jensen, 2019: 118). One of the interviewees, a car-owner from the single-family housing part of Folehaven, considered the roads to be beneficial because of the easy access they gave to other places by car, especially outside Copenhagen: *'No, I don't really feel it [disconnected living in Folehaven], but many out here feel that way'*. In Nordhavn, car infrastructure is also present, but the strategy for the area is that at least one-third of the infrastructure should be for biking, one-third should be for public transportation and not more than one-third should be for cars (By&Havn, n.d.). This includes car parks that limit



Map 3: Traffic structure map of inner Nordhavn (Copenhagen Municipality, 2018b)

car parking in public spaces and pedestrian and bicycle-friendly zones around the housing. These differences in infrastructural planning did, obvious as it may seem, have a significant influence on the way in which the residents experienced their moveability. Compared to Folehaven, where the road infrastructure limits mobility, the mixed infrastructure and no-car zone meant greater flexibility for the residents of Nordhavn. Studies also suggest that low-income neighbourhoods, such as Folehaven, are more frequently exposed to dangerous roads (Sheller, 2018a) including being more exposed to negative externalities such as air pollution than wealthier neighbourhoods.

Differences in access to service opportunities: In Nordhavn, there is easy access to many services, workplaces, modes of public transport, shared

mobilities, car-infrastructure, and there is a pedestrian friendly environment around the housing. In the interviews and focus group with the Nordhavn residents, several of them explained that they valued the fact that Nordhavn offers a variety of shopping and transportation opportunities. For example, access to a variety of food retail outlets was brought up during the focus group in Nordhavn:

‘There is a Netto, Lidl and MENY, so there are different levels of quality and price groups, and you can get a bit of everything.’

(Focus group with residents, Nordhavn, 2022).

‘I’m the type who buys food while I’m cooking, so that you can just run down the stairs [for groceries] I love everything about it [...] So having a store close by that you want to shop in is important’

(Focus group with residents, Nordhavn, 2022).

The experience of freedom of movement; of a physical and social infrastructure that empowers mobility and allows a variety of needs to be met permeated the narratives from Nordhavn, which was in contrast to the material generated by the Folehaven residents. In Folehaven, access to shopping facilities such as a sufficient supermarket and a pharmacy was problematised. According to one of the interviewees:

‘It would be a really good idea to implement that [minibus] again because you need to look at what kind of people live in Folehaven and what kind of needs they have. The pharmacy is closed; what are the elderly going to do? It would be nice if they could take a bus to the pharmacy in Valby

(Interview with Benedicte, Folehaven, 2020).

As the quote highlights, the issue concerns access to important services in Folehaven such as a pharmacy. She thinks that the restructuring of the public transportation is awful and feels that the planners ‘*do not care about people’s needs*’ (Interview with Benedicte, Folehaven, 2020). She further stresses that several shops in Folehaven have been closed and that no attention is being paid to this or the problem of accessing services elsewhere. Referring to the lack of awareness of the residents’ needs, she strongly emphasises the relationship between the distribution of service facilities and access to modes of mobility, specifically public transportation.

Differences in transportation opportunities: In Folehaven, many of the interviewed residents experience limited mobility opportunities, while in Nordhavn, the residents are able to choose between multiple modes of mobility. All the Nordhavn interviewees expressed a feeling of being very flexible in their everyday lives. They feel that they can move with ease and can switch between mobilities in order to negotiate the challenges that arise in everyday life.

'It is just a huge benefit that there is a metro right here in Nordhavn, and then it is so easy to bike to the city. It is something I thought about, maybe it is mostly in my subconscious, but the biking route from here to work is really good'.

(Interview with Frederikke, Nordhavn, 2020).

Another interviewee preferred to bike or run to work even though he owned a car:

'[biking is] a nice distraction, if you don't want to run or your legs hurt [...] Biking is fun, but sometimes it is also nice just to take the train and get going.'

(Interview with Carsten, Nordhavn, 2020).

This interviewee explained that he switches effortlessly between running, biking or using public transportation to commute to work depending on the weather and his daily tasks. Many residents in Nordhavn can be said to experience a high capacity for mobility, which is not only related to the physical attributes of the area but also a social surplus to engage in different mobilities such as being in a job, being economically stable and physically fit. Again, this is in contrast to Folehaven, where many felt insufficient access to public transportation. Although bus lines and a train station are available in or close to the area, the access to public transportation was considered insufficient partly due to the road infrastructure and partly the lack of services in the area. The high level of dependence on public transportation meant that the interviewees considered the recent years of restructuring of public transportation as problematic. The restructuring involved the relocation of a train station, the rerouting of several bus lines, and the discontinuance of a local minibuss route. It is important, however, to acknowledge the potential asymmetry between citizens' experience of mobility capacity and the actual mobility opportunities in different urban neighbourhoods (Kaufmann et al., 2004). The experienced mobility capacity amongst the interviewees in Folehaven is not critical but compared to Nordhavn it can be considered as low both due to the difference in physical attributes in the areas and the

resident's social positions such as unemployed, low-income and physically impaired. Next to the sociospatial conditions, it seems that the most dominant factor of experiencing immobility, including isolation and social exclusion, was related to the public narratives of living in a *deprived area* versus an *affluent area*.

4.2. Imagined level: Narratives of urban areas and their consequences for mobility

The contrasting cases of Nordhavn and Folehaven in terms of individual experience of mobility in relation to the sociospatial layout with some residents feeling enabled movement and others feeling fenced-in were reflected in different narratives of the neighbourhoods.

Narratives of urban neighbourhoods: Without having it as a pre-defined question in the interviews, the residents told stories about how they perceived their area and how they thought others perceived it. Thus, to varying extents, the residents reflected on the identity connected to where they lived. A similarity between the two neighbourhoods was that residents of both areas talked about a village atmosphere, although this was more pronounced in Nordhavn. A resident here explains:

You come to a little oasis when going from Østerbro to Nordhavn, which feels like its own little part of the city, which I found quite nice.

(Interview with Frederikke, Nordhavn, 2020).

In Nordhavn, this was partly because many of the current residents moved to the area at the same time. For this reason, they felt that they had taken part in defining it. Also, they quickly got to know each other, as another resident explained:

Then you come out here and then you are suddenly in a village. Especially because we have been part of it from the beginning and I think that others feel the same way. People say hello to each other and pick up garbage. It's a little strange to live in the middle of the city and still it's like a village, but with the benefit of living in a metropolis.

(Interview with Holger, Nordhavn, 2020).

As the residents further explained, another reason why they moved to the area was to be a part of Nordhavn's green profile. Something that resonated in many of the interviews. The feeling of living in a little local community was

also expressed by some of the interviewees from Folehaven, although, residents also felt physically disconnected and isolated. This can partly be ascribed to being cut off by main roads; thus, traffic planning in the past continues to leave its mark on mobility in the present. A resident who was assigned accommodation in Folehaven by the municipality describes how he *'felt it was a deportation to come to this middle of nowhere'* and that the area was like *'the back door of Copenhagen'* (Interview with Gustav, Folehaven, 2020). The narrative of Folehaven as being social and physically disconnected from the rest of the city emerged in many of the interviews. The neighbourhood has a label of being deprived attached to it, which was mentioned during interviews with both residents and outsiders:

It's so frustrating that Folehaven has a very mixed reputation. It's like a village in the city [...] When you live here, you have the feeling of community. It's just everyone outside [the neighbourhood] that seems to have problems with Folehaven.

(Interview with Ella, Folehaven, 2020).

Such stigmatisation of Folehaven as deprived and disconnected is not surprising considering its previous inclusion on the Danish police's list of *special disadvantaged neighbourhoods* which may enhance a negative public image of the area (Wacquant, 2012). However, as the interviewee expressed, the residents feel that there is a mismatch between the predominant narrative about the area and what it is actually like to live there.

It is marginalized for other [people, but] it is not a marginalized [place] for the people living here.

(Interview with Emilie, Folehaven, 2020).

How a neighbourhood is perceived from the outside often deviates from how it is perceived from the inside. A young resident who grew up in the single-family housing part of Folehaven stated that she *'never felt insecure, which is a little strange because when I got older, I understood that [Folehaven] is what you would call a ghetto or something like that'* (Interview with Emilie, Folehaven, 2020). These perceptions of Folehaven, she said, represent an inappropriate, frustrating and sad narrative. Instead of hiding where they are from, she and her family embrace the feeling of belonging to a diverse and inclusive community. In line with some of the residents' wishes, Copenhagen municipality initiated a regeneration project (2018) to address the negative stigma and convert the neighbourhood into a place where people would like

to live (Copenhagen Municipality, 2018a; 2019). Currently, the neighbourhood is still struggling with problems connected to inadequate safety and mobility and various social challenges. In particular, almost all interviewees identified the infrastructure that prioritises the car as having a negative effect on liveability in the area.

A lot of people you encounter say [Folehaven is far away] and it is not that far away [...] But it is clear that it does feel disconnected from the rest of the city, also for people living here, and I blame the 46,000 cars on Folehaven (road) to a large extent.

(Interview with Franz, Folehaven, 2020).

A resident living in the single-family housing part of Folehaven blames the cars and the supporting infrastructure for the prevailing perception of the neighbourhood as being disconnected. In literature, car-centric planning and policies have often been associated with segregation of urban neighbourhoods and with negative side effects for the lived life (Sheller & Urry, 2006; Kesselring & Freudendal-Pedersen, 2021; Gehl, 2010), while Szell (2018) refers to a history paved with social injustice (Szell, 2018). As previously mentioned, many of the residents in Folehaven felt that the problems connected with the cars and the related infrastructure resulted in stress and isolation.

The narratives of Folehaven and Nordhavn are both related to the socio-economic and material composition of the areas, which influences their connectedness to the rest of the city. Comparing the neighbourhoods reveals how different places are materially and imaginatively intertwined. Furthermore, the comparison emphasises that sociospatial and mobility conditions influence the way an area is perceived, which in turn, influences these conditions. It seems that there is a tendency for areas that are already mobility poor and segregated to receive less investment in new and sustainable mobility solutions.

Awareness of differences between the areas: The placement and size of various infrastructures is clearly a factor in relation to uneven mobility and the narratives between the neighbourhoods. The difference in how residents view their opportunities for mobility is not only a consequence of urban development taking place in the individual neighbourhoods. The areas in the city mutually construct each other physically and imaginary (Soja, 2010). This relational aspect was discussed in the focus group in Folehaven. We asked the participants to discuss the mobility of Folehaven and Nordhavn, and the contributions were really intense when these two locations were being

compared. In comparison, most of the interviewees in Nordhavn did not know of Folehaven and had never visited the area. When Nordhavn was brought up, the focus group participants expressed a feeling of unequal treatment between their own neighbourhood and more prosperous parts of the city as illustrated below.

E: You would think it wasn't necessarily because Nordhavn is extremely central in relation to out here in Valby. So, they don't need a car.

D: Right and they just got a station next to the housing buildings.

E: And a metro. So, they can just use that.

O: It's a little further to things from here [Folehaven]. We've got a little longer. They take our busses and everything from here.

Y: Yes, they do.

E: And we're the ones who are the last [place] to get the metro.

O: Yeah, but also the buses. They have reduced them [the busses].

(Excerpt from focus group with residents, Folehaven, 2020)

As the extract indicates, the residents of Folehaven felt overlooked in terms of investment in local transport infrastructure. They felt that Nordhavn had attracted a lot of investment, such as the metro, whereas Folehaven experienced disinvestment and cuts in public transport. While discussing transportation, one participant added '*we are the most deprived one*' (Focus group, Folehaven, 2020). Such a statement, of course, depends on which areas are being compared. As illustrated in the next section, territorial narratives of being deprived seem to impact mobility (dis)investment. Pre-conceived notions of the two neighbourhoods were incorporated into decision-making re-producing mobility inequality.

Consequences of territorial narratives for mobility development: So far, we have examined mobility inequality from the residents' perspective. In the following, we explore decision-making in relation to mobility investments and how they are influenced by narratives of neighbourhoods. This point is important for understanding neighbourhood narratives' role in producing and reproducing mobility inequality.

Narratives shape identity, experiences and community within the neighbourhoods, but they also have a life outside the area. They live outside the neighborhood when they comprise the framework of planning decisions made on the aggregate level (Freudendal-Pedersen, 2020; Freudendal-Pedersen, Kesselring, & Servou, 2019). They produce and reproduce in planning and policies and thereby influence what mobility futures becomes possible where. This became clear in our case, where mobility operators were unequally dedicated to investing in the two areas Folehaven and Nordhavn, and tapped into very different narratives of the neighbourhoods when reasoning investment decisions. The interviews with mobility operators reveal that providers actively tried to avoid engaging with areas such as Folehaven. One provider stated:

I: It's no secret that I made quite an effort to persuade [the project owners] to find some other areas to look at other than Folehaven. Nordhavn is interesting, because there, people are in a life phase where they are more receptive to changing habits. But when you look at Folehaven, our experiences are just not very good in more socially challenged areas.

M: What experiences did you have there?

I: We have a car placed in Sydhavn and we can also see that, for example, the parts of Nørrebro where we do not have cars placed are the areas with social housing. It seems that when you don't own your own home, you might want to buy your own car.

(Interview with Car-Sharing-Operator, 2021).

This is an example of mobility providers having a clear idea about which neighbourhoods are suited for investment and which are not. According to this perception, Folehaven ticks the box of a "socially deprived area". Once put into this box, the experiences the mobility company has had from other areas also put in the box – in this case, Sydhavnen and parts of Nørrebro – are transferred to Folehaven. Their previous experiences were used as a reason not to invest, and thus the decision seems to have been largely influenced by the perception of the neighbourhoods as similar and the stigma attached to them when described as deprived areas and areas with much social housing. The mobility provider expressed disappointment that other neighbourhoods in Copenhagen, more affluent ones, were not chosen for the SIMS project, as they considered people living there to be "*first movers*" (Interview with Sharing-Car-Operator, 2021). The above quote is also an example of a decision

being rationalised by a professional tapping into territorial narratives and coupling them to stories of mobility practices. In this case, a story of ownership of cars and housing is introduced by the phrase: “it seems that when you don’t own your own home, you might want to buy your own car”. The mobility operator formulates this as a generalized story, referring to “you” rather than specific people or experiences. In his reasoning, the story appears as a general, shared truth that the mobility provider does not see a need to elaborate. This story rationalises a decision to not invest in social housing neighbourhoods and reflects a resource-oriented territory-based perspective.

In contrast, the mobility provider expects the already privileged neighbourhood, Nordhavn, to represent a *good business case*. In an interview with another mobility operator offering shared electric bikes, more affluent inner-city neighbourhoods are also highlighted as promising cases because:

‘(...) it is something about values and life approach, while the other area [Folehaven], they have completely different challenges in their lives than the way of transport and whether it is sustainable and healthy; they are from another planet’.

(Interview with Sharing-Bike-Operator, 2021).

In this narrative, the two neighbourhoods are not only five kilometres apart, they are worlds apart, or, as the provider states, even planets apart. Again, neighbourhood narratives and stories about what residents in different areas prioritise in their life come into play. This seems to play a decisive role for the mobility providers resulting in their decision not to invest in Folehaven, which in turn has an influence on which mobility solutions become available to whom. In Nordhavn, the providers linked the residents with a higher capacity to live a sustainable lifestyle. The reverse story was told about residents in deprived neighbourhoods:

‘You don’t care about living healthily or sustainably if you have other troubles in your life’ (Interview with Sharing-Bike-Operator, 2021).

Interestingly, and in contrast to these stories, the interviews in Folehaven revealed predominantly positive attitudes towards the new mobility solutions that the mobility operators provide. However, the operators did not survey the attitudes among residents. Rather than investigating the potential, decisions about whether to invest were based on territorial narratives and prejudiced stories about peoples’ mobility practices based on where they lived.

Existing mobility inequalities between the areas are likely to be strengthened when providers rationalise decisions on the basis of narratives of neighbourhoods and residents' lifestyles. Furthermore, it can be misleading to lump together "disadvantaged" neighbourhoods as they are socially and spatially different, and marginalised groups are heterogeneous with different lifestyles and needs (Uitermark & Nicholls, 2017). Therefore, the general dichotomy of rich and poor neighbourhoods is likely to be misleading. Furthermore, when it is utilised to rationalise decisions not to invest in mobility and other planning decisions, it may also result in insufficient traffic planning. The interviews with mobility operators explicitly illustrate the territorial narratives' influence on private investment decisions making. These examples are not generally representative of public or private mobility planning but do highlight the potential danger of reproducing sociospatial mobility inequality by uncritically adopting preconstructed images of different places.

5. Concluding remarks on unequal mobilities in Copenhagen

In this paper, we have studied the segregation of areas in Copenhagen from a mobility capacity perspective. The investigation of two urban neighbourhoods revealed that the way residents perceive their capacity to move varies significantly between neighbourhoods even though Copenhagen is a relatively equal city in socioeconomic terms. This has been explored by focusing on residents' experiences of mobility related to the sociospatial disparity between the areas and how these contexts produce and are simultaneously produced by different territorial images.

The differences between the neighbourhoods examined were clear: The neighbourhood of Nordhavn is a well-connected area with many facilities, and it supports more mobility and flexibility. In contrast, Folehaven is considered to be an isolated and deprived part of Copenhagen, which is especially due to the car infrastructure which dominates the area. Mobility capacity is reflected in the local conditions in the two neighbourhoods and the residents living there (such as income and employment) and their ability to appropriate the mobility landscape. Hence, the disparity in terms of mobilities between the areas is defined by the intersection of their social, spatial and reputational context. This meant that residents of Nordhavn experienced high mobility capacities and felt that the area was a well-integrated part of the city compared to Folehaven. The physical and imagined sociospatial mobility differences of the areas seem to intensify each other and to be an aspect of segregation in Copenhagen.

The narratives connected to the neighbourhoods had an influence on the mobility operators' decisions about whether to invest in the case study areas and thus play a role in the sustainable mobility possibilities in the areas. Although these mobility operators are not representative of private or public transportation decision-making, they illustrate that pre-conceived notions about neighbourhoods are incorporated into planning and decision-making, which eventually re-produces spatial and mobility injustice. As such, this reveals some of the mechanisms involved in the production and reproduction of existing spatial and mobility inequalities in the city. Analysing the narratives about the neighbourhoods has provided a lens for understanding how these rationalisations emerge. Neighbourhood narratives about the good and sustainable urban life will probably result in urban strategies that benefit affluent neighbourhoods when urban mobility services and infrastructure are the priority. Besides, the difference in opportunities the mobility investment entails, uneven development may contribute to an increasingly polarised image of city areas, stigmatising some while idealising others.

To avoid reproducing current mobility inequalities in urban planning, it is crucial to pay attention to citizens' experienced mobility capacity and how it is linked to the dynamics and distribution of mobility in the city. Achieving more just mobility planning and urban development is not only about providing equal opportunities - distributive justice - the needs of the mobility deprived must also be included. Thus, the contextual differences between areas of the city need to be in focus. Also, understanding the power of narratives in planning is crucial (Fischer and Gottweis, 2012) as is recognising the way neighbourhoods are imagined influences decisions about mobility planning. This also offers the opportunity to reconsider and replace existing territorial narratives with stories that open new perspectives and direct us towards more equitable and sustainable mobility futures in cities. However, as the mobility operators argued, small-scale transport planning cannot solely rely on private providers and experiments such as the SIMS intervention as it also depends on public investment in urban infrastructure. Public authorities need to invest in the basic infrastructure, which then makes an area attractive for investment from semi-private mobility providers. The finding that the mobility providers do not have an equal incentive to engage in the two areas underlines the need for public investments, especially in disadvantaged neighbourhoods, to nurture inclusive and sustainable mobilities across city spaces. However, as explained, neighbourhood narratives likely also shape rationalisations at these planning levels, which in our case, seem to favour

affluent neighbourhoods, thereby contributing to the (re)production of sociospatial mobility inequalities.

In summary, it is crucial to recognise the differences in experienced mobility capacities to understand what it means to live in different areas of cities. In essence, to understand the relationship between urban segregation and different mobility capacities that are shaped by the physical and imagined environment. Furthermore, it is important to recognise the power of predefined territorial narratives in planning to understand how mobility inequality is produced and reproduced. This includes being critical of existing territorial narratives while the provision of new narratives may help to change current uneven, exclusive and polluting urban mobilities. Highlighting differences in citizens' needs and counteracting stigmatising narratives of urban neighbourhoods and their mobilities in planning provides an opportunity to create more just urban mobility.

References

- Andersen. (2002). Excluded Places: The Interaction Between Segregation, Urban Decay and Deprived Neighbourhoods. *Housing, Theory, and Society*, 19(3-4), 153–169. <https://doi.org/10.1080/140360902321122860>
- Beck, U. (2016). *The Metamorphosis of the World: How Climate Change is Transforming Our Concept of the World*. Polity.
- By & Havn. (n.d.). Bæredygtig byudvikling i Nordhavn, available at: <https://byoghavn.dk/nordhavn/baeredygtig-byudvikling/> [Last accessed April 27, 2022]
- C40Cities (2016) C40 Awards the 11 Best Cities of 2016 for Addressing Climate Change, available at: <https://www.c40.org/news/c40-awards-the-11-best-cities-of-2016-for-addressing-climate-change/> [Last accessed April 27, 2022]
- Cook, N., & Butz, D. (2019). *Moving toward mobility justice*. (1st ed., pp. 3-21). Routledge. <https://doi.org/10.4324/9780815377047-1>
- Copenhagen Municipality. (2017). *Arkitekturpolitik København 2017-2025*, Københavns Kommune, available at: <https://www.kk.dk/artikel/arkitekturpolitik-koebenhavn-2017-2025> [Last accessed April 27, 2022]
- Copenhagen Municipality. (2018a). *Områdefornyelsen Folehavekvarteret Kvarterplan 2018-2023*, Københavns Kommune, Teknik og miljøforvaltningen, available at:

- <https://www.valbylokaludvalg.kk.dk/wp-content/uploads/2019/02/omrdefornlyelsen-folehavekvarteret-kvarterplan-2018-2023-1916.pdf> [Last accessed April 27, 2022]
- Copenhagen Municipality. (2018b). Århusgadekvarteret I Nordhavn, Teknik og Miljøforvaltningen, available at: <https://www.kk.dk/sites/default/files/agenda/11cc24646128842df830ba25becbdc84f33450c4/7-bilag-3.PDF> [Last accessed October 14, 2022]
- Copenhagen Municipality. (2019). Udviklingsplanen Folehavekvarteret, Københavns Kommune, available at: https://kk.sites.itera.dk/apps/kk_pub2/index.asp?mode=detalje&id=2085 [Last accessed April 27, 2022]
- European Commission (2014) Copenhagen Winner 2014 European Green Capital, available at: https://ec.europa.eu/environment/pdf/europeangreencapital/Copenhagen-Short-Leaflet_Web.pdf [Last accessed April 27, 2022].
- Fischer, F., & Gottweis, H. (2012). The argumentative turn revisited: public policy as communicative practice. Duke University Press.
- Flyvbjerg, B. (2003). Five Misunderstandings about Case Study Research. *Statsvetenskaplig Tidskrift*, 106(3), 185-206.
- Freudenthal-Pedersen M., Kesselring, S., & Servou, E. (2019). What is Smart for the Future City?: Mobilities and Automation. *Sustainability*. 11(1):221. <https://doi.org/10.3390/su11010221>
- Freudenthal-Pedersen, M. (2015). Whose commons are mobilities spaces? - the case of Copenhagen's cyclists. *ACME an International E-Journal for Critical Geographies*, 14(2), 598-621.
- Freudenthal-Pedersen, M. (2020). Sustainable urban futures from transportation and planning to networked urban mobilities. *Transportation Research.Part D, Transport and Environment*, 82, <https://doi.org/10.1016/j.trd.2020.102310>
- Freudenthal-Pedersen, M., Hartmann-Petersen, K., Friis, F., Rudolf Lindberg, M., & Grindsted, T. S. (2020). Sustainable Mobility in the Mobile Risk Society – Designing Innovative Mobility Solutions in Copenhagen. *Sustainability (Basel, Switzerland)*, 12(17), 7218. <https://doi.org/10.3390/su12177218>
- Freudenthal-Pedersen. (2009). Mobility in daily life : between freedom and unfreedom (Elektronisk udgave.). Ashgate.
- Gehl, J. (2010). Byer for mennesker. Bogværket.

- Gorman-Murray, A. (2006). Imagining King Street in the Gay/Lesbian Media: Imagining Sydney's Sexual Geography through the Gay/Lesbian Media. *M/C Journal*, 9(3). <https://doi.org/10.5204/mcj.2632>
- Haandrikman, Costa, R., Malmberg, B., Rogne, A. F., & Sleutjes, B. (2021). Socio-economic segregation in European cities. A comparative study of Brussels, Copenhagen, Amsterdam, Oslo and Stockholm. *Urban Geography*, ahead-of-print(ahead-of-print), 1–36. <https://doi.org/10.1080/02723638.2021.1959778>
- Hidayati, I., Tan, W., & Yamu, C. (2021). Conceptualizing Mobility Inequality: Mobility and Accessibility for the Marginalized. *Journal of Planning Literature*. <https://doi.org/10.1177/08854122211012898>
- Jensen, O. B. (2019). Dark design: Mobility injustice materialized. (1st ed., pp. 116-128). Routledge. <https://doi.org/10.4324/9780815377047-8>
- Juul J. S. and Blicher S. P. (2016) Øget forskel i indkomsterne deler de danske byer, AE Arbejderbevægelsens Erhvervsråd, available at: https://www.ae.dk/sites/www.ae.dk/files/dokumenter/analyse/ae_oget-forskel-i-indkomsterne-deler-de-danske-byer.pdf [Last accessed October 10, 2022].
- Kaufmann, V., Bergman, M. M., & Joye, D. (2004). Motility: mobility as capital. *International Journal of Urban and Regional Research*, 28(4), 745-756. <https://doi.org/10.1111/j.0309-1317.2004.00549.x>
- Kesselring, S., & Freudendal-Pedersen, M. (2021). Searching for urban mobilities futures. *Methodological innovation in the light of COVID-19. Sustainable Cities and Society*, 75, <https://doi.org/10.1016/j.scs.2021.103138>
- Larsen, H. G., & Lund Hansen, A. (2009). *Herskabeliggørelse: gentrification på dansk*. *Geografisk Orientering*, 39(Særnummer), 33-35.
- Lucas, K. (2012). Transport and social exclusion: Where are we now? *Transport Policy*, 20, 105-113. <https://doi.org/10.1016/j.tranpol.2012.01.013>
- Marcińczak, Musterd, S., van Ham, M., & Tammaru, T. (2016). Inequality and rising levels of socio-economic segregation: lessons from a pan-European comparative study. In *Socio-economic Segregation in European Capital Cities* (pp. 358–382). Routledge.
- Martens, K. (2006). Basing transport planning on principles of social justice. *Berkeley Planning Journal*, 19(1), 1-17. 10.5070/BP319111486
- Massey, D. B. (1994). *Space, place, and gender*. University of Minnesota Press.

- McFarlane, C. (2020). De/re-densification. *City* (London, England), 24(1-2), 314-324. <https://doi.org/10.1080/13604813.2020.1739911>
- Mouvielle, J. (2021). Folehaven blev streget fra dyster liste: Sådan skal den positive udvikling fortsætte, Valbyliv, available at: <https://valbyliv.dk/artikel/folehaven-blev-streget-fra-dyster-liste-sadan-skal-den-positive-udvikling-fortsætte> [Last accessed April 27, 2022]
- Realkreditrådet. (2021). BM011: Ejendomspriser på boligmarkedet efter postnr., ejendomskategori og priser på realiserede handler, FinansDanmark. available at: <https://rkr.statistikbank.dk/statbank5a/SelectVarVal/Define.asp?MainTable=BM011> [Last accessed April 27, 2022]
- Said E. (1978) *Orientalism*, Pantheon Books, New York
- Salazar. (2020). On imagination and imaginaries, mobility and immobility: Seeing the forest for the trees. *Culture & Psychology*, 26(4), 768–777. <https://doi.org/10.1177/1354067X20936927>
- Sayer. (2005). *The moral significance of class*. Cambridge University Press
- Sheller, M. (2015). Racialized Mobility Transitions in Philadelphia: Connecting Urban Sustainability and Transport Justice. *City & Society; City and Society*, 27(1), 70-91. <https://doi.org/10.1111/ciso.12049>
- Sheller, M. (2018a). *Mobility justice: the politics of movement in an age of extremes*. Verso.
- Sheller, M. (2018b). Theorising mobility justice. *Tempo Social: Revista De Sociologia Da USP; Tempo Soc*, 30(2), 17-34. <https://doi.org/10.11606/0103-2070.ts.2018.142763>
- Sheller, M., & Urry, J. (2006). The New Mobilities Paradigm. *Environment and Planning.A*, 38(2), 207-226. <https://doi.org/10.1068/a37268>
- Soja, E. W. (2010). *Seeking spatial justice*. University of Minnesota Press.
- Szell, M. (2018). Crowdsourced Quantification and Visualization of Urban Mobility Space Inequality. *Urban Planning*, 3(1), 1-20. <https://doi.org/10.17645/up.v3i1.1209>
- The World Bank (2022 [2019]) Gini index (World Bank estimate) - Denmark, Slovenia, Czech Republic, United Kingdom, Italy, United States, Norway, New Zealand, South Africa, Bulgaria, The World Bank Group, available at: <https://data.worldbank.org/indicator/SI.POV.GINI?end=2018&locations=DK-SI-CZ-GB-IT-US-NO-NZ-ZA->

[BG&most recent value desc=false&start=1969](#) [Last accessed April 27, 2022].

Uitermark, J., & Nicholls, W. (2017). Planning for social justice: Strategies, dilemmas, tradeoffs. *Planning Theory* (London, England), 16(1), 32-50.

<https://doi.org/10.1177/1473095215599027>

Urry, J. (2000). *Sociology beyond societies mobilities for the twenty-first century*. Routledge.

Wacquant L. (2012). A Janus-Faced Institution of Ethnoracial Closure: A Sociological Specification of the Ghetto. In *The Ghetto* (1st ed., Vol. 1, pp. 1–31). Routledge. <https://doi.org/10.4324/9780429496516-1>

Wacquant, L. J. D. (2013). *Byens udstødte: en komparativ sociologi om den avancerede marginalisering* (1st ed.). Nyt fra Samfundsvidenskaberne.

List of maps

Map 1: Picture of a map produced in QGIS by authors themselves

Map 2: Picture of a map taken by authors themselves

Map 3: Picture of a map taken from the district plan of Aarhusgadekvarteret in Nordhavn (Copenhagen Municipality, 2018b).

7.1. SECOND EMPIRICAL INQUIRY

We have now seen how inequality influences what is possible in terms of a sustainable mobility transition, and that one mechanism in this revolves around socially created neighborhood narratives. The example of mobility provider's decision to invest in Nordhavn and disinvest in Folehaven illustrates how pre-conceived notions about neighborhoods are incorporated into planning decisions, which eventually re-produces inequalities. As such, unequal perceptions functions as a barrier to a socially inclusive sustainable transition in urban mobilities.

Shifting the analytical focus away from barriers to possible mobile tipping points (Urry, 2004: 27; 2007), the second empirical inquiry addresses the research question: What creates tipping points in relation to sustainable urban mobility?

As key figure in the mobilities paradigm, John Urry (2007), has argued, a 'business as usual' approach dominates much planning and policy on transport and mobility (see also paper two in this dissertation: Freudendal-Pedersen et al, 2020). Urry asserts that no single factor can stimulate a mobility system transition, but rather many smaller shifts and displacements are necessary. He recommends that sustainable mobilities scholars look for tipping points in the current carbonized automobility system (Urry, 2007; Dennis & Urry, 2008). Thus, Urry's tipping points involve a 'many a little makes a mickle' approach to change. Examples of such tipping points, he suggests, are new technological solutions that support the use of public transportation, de-privatization of transportation in favor of sharing, or the replacement of physical transportation by cable-transmitted communication forms (Urry, 2007).

Changes of this type we experienced by the dozen during the global Covid-19 pandemic and the long periods of societal lockdowns, a key means for reducing the spread of the disease in populations with no immunity. Experiencing this sudden stand-still as a PhD

researcher in the field, it was impossible not to speculate about the long-term effect of the Covid-19 pandemic on urban mobilities, and what the mobile risk society (Kesselring, 2008) would look like after this new risk of infection had disrupted everyday life as we knew it (Kesselring & Freudendal- Pedersen, 2021). Would it send cities out on pandemic detours in terms of sustainable development, or are we looking at tipping points paving the way for new sustainable pathways? The paper “Pandemic Detours or New Sustainable Pathways? Post-pandemic Mobility Futures in Danish Cities” poses questions on what the pandemic’s disruption of mobility normality rendered possible.

The questions are explored particularly in relation to public transportation in Danish cities because public transportation faced a decline in passenger numbers of up to 90 percent (Lindberg et al, 2022), and because it is a crucial source of mobility especially for low-income groups (Christensen & Baescu, 2021), overrepresented in areas like Folehaven (Christensen et al., 2021). Restoring and rethinking public transportation in the wake of the pandemic and exploring possible mobile tipping points in this relation was a crucial task, which the following paper explores. It does so by applying the framework suggested in part II of the dissertation: An everyday life perspective drawing on practice theory and cultures of mobilities in the mobile risk society.

PAPER FOUR: PANDEMIC DETOURS OR NEW SUSTAINABLE PATHWAYS? POST-PANDEMIC MOBILITY FUTURES IN DANISH CITIES

Malene Rudolf Lindberg¹, Malene Freudendal-Pedersen¹, Katrine Hartmann-Petersen², Nikolaj Grauslund Kristensen¹, Toke Haunstrup Christensen³, Thomas Skou Grindsted²

¹ Department of Planning, Aalborg University, Copenhagen, Denmark

² Department of People and Technology, Roskilde University, Denmark

³ Department of The Built Environment, Aalborg University, Copenhagen, Denmark

Abstract: When mobility normality breaks down, new futures can emerge. This paper explores COVID-19 disruptions of everyday mobility in Danish cities and new emerging pathways toward less carbon-intensive mobility futures in the light of the mobile risk society and practice theory. It uses a stakeholder workshop with public transport providers as empirical outset to start conceptualizing new discussions that have emerged in the wake of COVID-19. Through four inquiries into pandemic-induced changes – including *reducing*, *removing*, *rescheduling* and *replacing* mobility practices – it discusses how a new critical view on ‘business as usual’ has emerged from the pandemic, especially in relation to public transport and linkage to other transport modes.

Keywords: Practice change, mobile risk society, mobility providers, public transport, Mobility-As-A-Service, COVID-19

Introduction

In early 2020, a global pandemic paralyzed cities around the world. The COVID-19 outbreak fundamentally challenged urban life as we knew it with dramatic disruptions of mobility normality (Campisi et al., 2020; Cresswell, 2021; Freudendal-Pedersen & Kesselring, 2021; Jensen, 2021). The swift and steady rhythms of urban everyday life were curbed for millions of urban

citizens overnight. Suddenly, one's usual spot on the bus or waiting at the underground platform became a place of risk and fear of spreading COVID-19. People were urged to stay at home and streets, trains, and undergrounds were emptied.

Approaching COVID-19 disruptions as sites of breakdown, repair and innovation in mobility provides unique possibilities for imagining sustainable innovation in urban mobility systems (Graham & Thrift, 2007; Doughty & Murray, 2018; Marsden et al., 2020). This paper critically engages with COVID-19 mobility disruptions, emerging discussions, and new directions for transport policies. It discusses pandemic abnormalities of reducing, remodelling, rescheduling, and replacing everyday mobilities in the light of the mobile risk society (Kesselring, 2008) and practice theory (Shove, Pantzar, & Watson, 2012). Special emphasis is put on public transportation and how the pandemic forced public transport providers to imagine innovative mobility policies. A stakeholder workshop with public transport providers is used to start conceptualizing new discussions that have emerged in the wake of COVID-19. The stakeholder workshop was arranged by the authors of this paper and was part of the Sustainable Innovative Mobility Solutions (SIMS) research project that works with sustainable mobility experiments. Examining the workshop allows us to discuss how a new critical view on 'business as usual' has emerged from the COVID-19 pandemic, especially in relation to public transport and linkage to other transport modes. Denmark is traditionally thought of as a country with a relatively well-developed public transportation system, but the pandemic especially had consequences for public transport, as fear of getting infected has favoured the car and a re-emergence of car-dependent urban mobility cultures. As such, the discussions here resemble the challenges of car-based mobility that cities around the world are fighting.

During the pandemic, new norms and practices were established. Many changes have turned out to be temporary, but others are pointing towards permanent transformations. Sheller & Urry (2006), and Freudendal-Pedersen & Kesselring (2018) suggest that while fluid interdependencies and mobilities are networked, they nevertheless operate based on car ownership. Car-based norms and practices are the starting point for negotiating path-dependent practices that are hard to return from. Insofar as pandemic mobilities established new permanencies and practices in favour of the car, it not only disconnects from pre-pandemic decoupling and decarbonizing planning discourses and policies (Budd & Ison, 2020), but these mobilities may also lead to new transport policies. In addition, the financial pressure due to fewer

passengers has forced the public transport sector to form new imaginaries and think about a radical change in their services and how these can be implemented. This we argue, may foster radical innovations from within the public transport sector, and may also bring about considerable changes in the policy framework for public transport.

To track pandemic mobility trends, this paper is structured around four concepts of adaptive travel behaviour presented in Parkes, Jopson, and Marsden (2016) and Marsden et al. (2020) as reducing, remodeling, rescheduling and replacing. While reducing is about making fewer trips or not conducting a trip at all, rescheduling and remodeling cover changing times and modes of transport. With replacing we explore changes in how or by whom movement is conducted. To analyze trends, the paper starts by broadening these somewhat simple concepts through the theoretical lenses of mobile risk society and practice theory specifically related to working from home and new mobility practices as tipping points. Following this, we present the empirical material from the stakeholder workshop with mobility providers in Denmark, which focused on COVID-19 impacts on public transport. Then, the four concepts are used to structure four discussions on possible post-pandemic mobility futures. We conclude by considering how pandemic experiences of mobility abnormality can lead cities onto new sustainable pathways.

The mobile risk society and practice research in the light of COVID-19

This paper takes its outset in an understanding of everyday life as being filled with numerous choices and consequent activities where mobilities are rarely reflected upon. Focus remains on activities and their importance. Drawing on practice theories, emphasis is not on individual behaviours, but rather on *practices* – collective entities that are constituted by heterogeneous and interrelated elements such as materials, competences and meanings (Shove, Pantzar, & Watson, 2012). An example is the practice of car driving, which is made possible through specific combinations of elements. These include *material* elements such as the car itself, filling stations, roads, and traffic lights; *competences* such as the ability to steer the car, judge distance and know traffic rules; and finally, *meanings* such as cultural conventions of the car as the epitome of freedom, convenience, comfort, and safety. How specific practices are performed is dependent on the elements and their combinations. For example, faster cars invite speedy driving, and changes in social norms on alcohol and driving have changed the mobility practices interconnected with social occasions involving alcohol.

Practices develop over time; they are essentially historically contingent, which means that they are open to re-evaluation and change. This key observation invites new ways of thinking about promoting sustainable practices, including sustainable mobility practices. Practice theories offer a conceptual framing of mobilities as a (dynamic) matter of “derived demand”. As such, sustainable mobility transitions are about the temporal and spatial relationships between social practices that can reconfigure and change the bundles and interconnections between mobility practice bundles (Spurling and McMeekin, 2015). As Watson (2012) describes it, sustainable mobility solutions require direct and/or indirect changes in the complexities of mobility practices, including changes in practices such as working, going to school, shopping, travelling etc.

This suggests that to the extent that COVID-19 have changed working, travel, and commuting practices permanently, the cities and mobility systems in which they are embedded will adapt accordingly. Following this line of thought, a possible post-pandemic scenario might be an increasingly hyper-digitalised, network-based future, where people, places and technologies melt together in what has been described as “motile hybrids” (Kesselring, 2008).

The idea of a future characterised by motile hybrids was developed by Sven Kesselring to capture how mobilities transform through different phases of modernity in the *mobile risk society* (Kesselring, 2008). With the mobile risk society, Kesselring builds on Ulrich Beck’s ideas in *Risk Society – towards a new modernity* (1992), and argues that the risk society in a world of global complexity and flows is a mobile risk society (Kesselring, 2008, 2019). He combines the risk society with the mobilities paradigm (Sheller & Urry, 2006; Urry, 2000) regarding mobility as a general principle of modernity (Kesselring, 2008; Bonß, Kesselring & Weiß, 2004).

Mobility alters due to the changing conditions of the different phases of modernity. In the first phase, the train was the symbolic transportation mode, as it represented stable connections, clear structures and timetables, and the capacity to move masses. The first modernity was a period characterised by “one best way” solutions for fast, direct, and calculable transportation of people and goods (Freudendal-Pedersen et al., 2020; Kesselring, 2008). In contrast, the second phase of modernity is characterised by non-directional change propelled by risk management, inconsistency, transience, and liquidity. Individual modes replace collective solutions for moving and organising, and the private car is the transportation mode embracing second modernity lifestyles that circle individuality, possession, autonomy, fluidity, and suboptimal solutions (ibid). The third phase of modernity, as Kesselring

sees it, relies on motile hybrids; that is, constellations of bodies, technologies, physical spaces, knowledge, and skills moving in a constant flow. In motile hybrids, digital tools and technologies melt together with humans in a modernism characterised by pluralism, networks, air travel, the internet and fragmented mobilities (Kesselring, 2008).

The technologies, infrastructures and materials of motile hybrids have been available for decades, and many expected motile hybrids to emerge with the spread of home computers, the internet, mobile phones, and e-mail services in the digital revolution in the late 20th century. However, practising the lifestyles of the third modernity has until now been limited to a small, global mobile elite. But the pandemic pushed the lifestyles of motile hybrids onto broader urban publics, with everyday lives increasingly characterised by pluralism, networks, internet cables, and fragmented commuting. Looking at COVID-19 through the lenses of the mobile risk society and practice theory, the difference between before and after is not so much our technological abilities, but that COVID-19 pushed the competencies and meanings of the third mobility modernity and altered everyday life and mobility practices around the world.

Methodology

To understand pandemic impacts on mobilities, a stakeholder webinar, *Mobility under COVID19*, was conducted in November 2020 at Aalborg University as part of the EU-funded project CCAMEU¹⁴ and in collaboration with the research project SIMS¹⁵. The stakeholder webinar was initiated to

¹⁴ Cooperative, Connected and Automated Mobility: EU and Australasian Innovations – research project: <https://www.unisa.edu.au/research/Hawke-EU-Centre-for-Mobilities-Migrations-and-Cultural-Transformations/CCAMEU-jean-monnet-Network/>

¹⁵ Sustainable Innovative Mobility Solution research project: www.sims.aau.dk

discuss the pandemic's impact on the use and reputation of public transport, and what this means for future sustainable mobility patterns.

With the workshop, we were especially interested in exploring perspectives from public transport providers as they had experienced extreme drops in passengers during the pandemic (up to 90% according to the participating providers). One factor in this was that in Denmark, a general enforcement notice on the use of masks was not issued with the lockdown in March 2020. The use of masks in Denmark was not introduced until August 2020, when masks were made compulsory during all journeys and transits with public transportation (Danish Health Authorities, 2020). Thus, public transportation was the first place where masks were obligatory, and for months, it was also the only place with mask injunction. It was not until the end of October 2020 that the mask requirement was extended to shops, public institutions, and cultural activities. The mask thereby came to signify the use of public transportation as the riskiest of all practices during the pandemic. In the workshop, the conversations thus circulated around questions of risk: Is it riskier to enter a bus than a supermarket? What did it mean in terms of loss of passengers? To which transportation forms did they remode? And how may public transportation rebound from risk perceptions and other COVID-19 disruptions?

The pivot of these conversations was the situation in Denmark and how it affected mobility systems in Danish cities. Denmark is a small country of 42,933 km² with 5.8 million inhabitants. The Ministry of Transport is the supreme authority for all transportation in Denmark, while various self-governing organisations and private operators provide public transportation through busses, trains, metro, and light-rail services. Denmark is administratively divided into five regions, and each region has a self-governing organisation responsible for the public infrastructure. Inter-regional trains, S-trains and local trains are run by Danish State Railways (DSB) and Arriva (who won tenders on several bus and train lines), while Banedanmark is responsible for the train tracks. Metros and light rails are also owned and run by companies. The coordination between the transport companies is primarily based on voluntary collaborations supported by the Ministry of Transport, about coordinating timetables, traffic information and pricing. Examples of this are the Danish travel card that can be used for all

public transport in Denmark and the travel planner that includes all public transport options, and which has recently included car- and bike-sharing options. In 2016, the company DOT was created to coordinate customer service across transport modes. Apart from this, organisations such as the Confederation of Danish Industry (DI) and Local Government Denmark (KL) and large consulting companies have departments working with transport. In these associations and consultancies, small-scale collection of data on the current development within transportation is ongoing, and together they can thus provide an overview of the current transport situation.

For the online stakeholder workshop discussed in this paper, we invited twelve key Danish private and public mobility stakeholders to gather perspectives on mobility trends during the pandemic. The participants included two regional companies responsible for busses and local trains, a car-sharing company, a ride-sharing company, the metro and light rail company, a large consultancy firm, the Confederation of Danish Industry, DOT, and researchers from three universities. As such, the participants provided a comprehensive picture of the situation for public transportation in Denmark during COVID-19 but does not however allow for a generalisation of the status of public transport.

The workshop aimed to allow the participants to openly express their frustrations with the current situation and think beyond the pandemic. Therefore, the workshop was an open forum with a lot of time for common reflection and discussion. The transportation network in Denmark is tight-knit, which provides fertile ground for open and trustful communication and makes this kind of setup possible. The participants were informed from the beginning that it was a closed space and that any use of the material from the workshop would be anonymised. The workshop was divided into two sessions and each session was opened with a brief presentation to start the discussions. In the first session, a speaker from K2, the Swedish knowledge centre for public transport, started a discussion on the challenges the stakeholders' organisations faced during the pandemic. Subjects such as the decline in public transport passengers, the new work situation and general alterations in mobility patterns were areas of lively debate. The second session started with a presentation from the Swedish Association of Green Motorists (Gröna Bilister) and initiated a fruitful discussion of rethinking stakeholder cooperation around integrated shared and public mobilities, placing the needs of the customer in the centre. As one of the participants argued, prioritising customer needs has been neglected by public transport providers for a long time. Several private and public mobility operators expressed a strong drive to

engage in a Mobility-as-a-Service (MaaS) cooperation with the ambition of enhancing flexible sustainable mobility in both rural and urban areas. The current situation should be used to rethink and organise simple pragmatic private-public collaborations, the participants argued.

The online workshop was conducted in Danish and Swedish. It was recorded, transcribed, and coded in NVivo. Marsden et al.'s (2020) four concepts of disruption were utilized in the coding process as tools to identify pandemic mobility trends, preparing the ground for the structure of the paper. Selected quotes have afterwards been translated into English.

Pandemic mobility trends

The stakeholder workshop is in this paper used as an example against which some of the key changes in mobilities practices during COVID-19 can be critically discussed. Structured around the analytical concepts of disruption and adaptation presented in Parkes, Jopson, and Marsden (2016) and Marsden et al. (2020) as *reducing*, *remoding*, *rescheduling*, and *replacing* the next parts of the paper use the workshop material to discuss pandemic mobility trends and new opportunities for urban mobility futures.

The four concepts are employed to support us in taking up the discussion from different perspectives. The pandemic offers a chance to rethink urban mobilities, and we are inspired by Marsden et al. (2020) exploring these four concepts fundamental for interpreting mobility under the drastically changing conditions of the pandemic. The pandemic forced us to break with the past and imagine mobilities anew, and in the next sections, we engage with the discussion of what broke down and which new mobility imaginaries arose from COVID-19 with a special focus on public transportation in Denmark.

Reducing

On 11 March 2020, the Danish Prime Minister announced a lockdown of Denmark due to the COVID-19 pandemic, initially for two weeks (Ottosen & Ancher-Jensen, 2021), but the first phase of lockdown in Denmark continued until the end of May 2020, entailing an unprecedented decline in all types of movement (Statistics Denmark, 2020a; 2020b). In many sectors, people worked either full- or part-time from home. In the second quarter of 2020, 40% of the total Danish labour force was working from home (50% in the capital region) (Statistics Denmark, 2020c). As many sectors strived for unaltered productivity, much activity was upheld but now transmitted through cables rather than streets. This pushed the lifestyles of third modernity's motile

hybrids onto broader publics, with everyday lives increasingly relying on internet cables and only fragmented commuting (Kesselring, 2008).

Much of the discussion in the stakeholder workshop centred on the dramatic increases in working from home and how it reduced both the use of public transport and traffic on the roads. Participants saw working from home as the main driver of dramatic drops in traffic numbers and passenger numbers in public transportation. As one participant noted:

“(...) we are struggling, of course, with the fact that there are no people in public transport (...). Some of them have of course taken other modes of transport, but most are working from home” (Public transportation provider)

Discussions of working from home as a way to reduce transport levels, pollution and congestion are not new. Since the rapid diffusion of information and communication technology (ICT) in the 1990s, there has been a focus on the potential of ICT to dematerialise the wider economy through new and less resource-intensive practices such as telemediated working and meeting practices. Thus, ICT-enabled services were in the early years of the “digital revolution” often wrapped in visions about the “information society as a ‘weightless economy’, in which ‘bytes replace kilograms’” (Heiskanen et al., 2001: 9). This “death of distance” (Cairncross, 1997) and the emancipation of modern life from the constraints of time and space was prophesied already in the last half of the 20th century when new digital computing and communication technologies provided the materials and infrastructures for a digitalised everyday life with teleworking, teleshopping, telebanking, telemedicine etc. The rise in virtual mobilities, fluidity, and flexible boundaries ushered in a new phase of modernity – what Ulrich Beck thematised as the second modernity in the risk society (Beck, 1992). But though the technological foundations for virtual everyday life were invented more than 20 years ago, they did not result in reductions in physical travel. Instead, historical data for Denmark shows that physical commuting increased by 35% from 2002 to 2017, with an increase in the average commuting distance from 34 km/day to 44 km/day (Dansk Byggeri, 2019). Rather than replacing physical travel, we saw a general rise in mobility and connectivity – both virtual and physical.

Before the pandemic, the frequency of teleworking in Denmark remained steady, with around 8-12% working from home at least half of the time and 27-30% working from home at least one day per four weeks (Statistics Denmark, 2021a). In 2020, the first year of the pandemic, these figures rose by 26% and 40%, respectively. While the materials for teleworking have long

been accessible, it was not until the pandemic hit that the competences and meanings for making use of these tools were broadly disseminated. The pandemic reengineered a long-standing debate on the end of geography (Graham, 1998). During lockdowns, car dependency turned into virtual dependency, and the end of geography became a temporary reality. Yet the extent to which disruptions lead to mobile tipping points (Graham & Thrift, 2007: 5; Urry, 2004: 27) disassociating mobility from other everyday practices is debatable (Budd & Ison, 2020). However, COVID-19 made practices of remote working and schooling accustomed to a large part of the population and to an extent that could transform mobilities permanently. Assessments made by the Confederation of Danish Industry (DI) suggest that private companies expect more than double the number of employees to work from home on an average day after the pandemic as compared to before (Sørensen & Kaldahl, 2021).

The possibility that urban mobilities could be steering towards a mobile tipping point following pandemic-induced teleworking practices is supported by the fact that for the first time in 30 years the City of Copenhagen is facing a net reduction in population (Risager, 2020). During the pandemic, people moved out of the city and settled further away from working places, indicating that employees, like their employers, expect working from home to become post-pandemic normality. In the workshop, we saw how key mobility stakeholders are planning for lasting changes in commuting practices:

“We assume that in any case, more flexibility is needed in the future. We must look at the [ticketing] products for people commuting to work, and if they only travel to work one or two days per week, then the traditional [pricing and ticketing] products are not attractive enough. That is one part of the future, [revising] the products...”
(Public transport provider).

Mobility stakeholders expect permanently distorted working, studying and commuting practices. Against this background, public transport providers are looking into new solutions for new mobility futures characterized by greater flexibility and less routinized mobility. In contrast to former ticketing products, providers are now looking into new solutions circling the changing needs and practices of commuters. Such initiatives exemplify innovation at sites of breakdown and recovery (Graham and Thrift 2007). It indicates that COVID-19 disruptions have generated a need to adopt new strategies, mobilize adaptive capacity, and adjust to the changed mobility practices following changed working and housing practices. Together, these trends indicate a move towards third modernity (Kesselring, 2008) with motile

hybrid working practices, less commuting and new mobility futures in cities, where physical movement is less based on where we need to go and more on where we want to go.

A future characterised by increased teleworking could have positive effects on the environment and liveability in cities. During lockdowns, urban inhabitants increasingly sought outdoors places to move and dwell in their neighbourhood – for instance in urban parks and squares. It created a growing demand for local urban spaces that invite activities of physical exercise, outdoor socialising, and recreation. To accommodate this, some cities have installed temporary tactical changes such as opening car lanes to bicycles and pedestrians (King & Krizek, 2021). In this way, the lockdown presented an opportunity to rethink the balance between different modes of transport and activities. This can be a first step in altering street spaces to serve people rather than cars, and it can be a valuable resource in sustainable mobility change (King & Krizek, 2021). COVID-19 revealed how much public space is devoted to private cars, and thus presents an opportunity to re-think car-dominated cityscapes. Redistributing public space in cities away from motorised transport could also support a further shift in means of transport. In this way, COVID-19 present an opportunity to revitalise the liveability of cities and steer urban transport systems towards less car-based futures.

Remoding

A related post-pandemic mobility trend encompasses remoding – especially to private cars. The outbreak of COVID-19 caused a general reduction in mobility across modes, but reductions in public transportation exceeded reductions in car traffic due to a trend of remoding from public transportation to private cars. One mobility provider expressed:

“There is a lot of talk about working from home. So, it is interesting that many cars are still on the roads. There is something there which we might also have to figure out. What does that mean?” (Public transportation provider)

This mobility provider had seen a drop in passenger rates of up to 90%, while car-related mobility in Denmark dropped only 22-48% (The Danish Road Directorate 2020a). Thus COVID-19 caused the general transportation mix in cities to take a detour towards automobility. Further, car sales grew by 5.1% for new cars and 22% for used cars compared to pre-pandemic car sales (The Danish Road Directorate 2020a: 2). By contrast, passenger rail transport dropped by 45-65% on average during the months of lockdown - with drops up to 80-93% (DSB, 2020). Similarly, public bus companies report a 75-90%

passenger drop during lockdowns (Hansen, 2020). Even more worrying is the fact that public transport passenger numbers did not stabilise between lockdowns and that cars absorbed some 30% of public transport in 2020 (Lindqvist & Rantorp, 2020). To the extent that COVID-19 is changing the patterns of settlement with more people deciding to move out of the major Danish cities, this could also affect the choice of mobility mode in unsustainable ways. As mentioned by participants in the workshop, moving out of larger cities also typically means moving to areas with a lower public transport service and/or to areas away from the main public transit routes to cities. COVID-19 has therefore probably caused some degree of permanent remodeling to private cars. This was a major concern in the workshop:

“We share the concerns of others in this group, including the concern that some of the passengers will not return. At least, that is what we have observed and measured. That around 11-13% of former passengers do not expect to use public transport again after COVID-19” (Mobility stakeholder)

These numbers were backed up with arguments on private cars:

“(…) You know, it does not take that long to get used to sitting in a car. And there we have probably lost some [passengers]. (...) After all, car ownership has only gone one way – and that is up. We are looking into a future where the Danish Energy Agency estimates that we will see around 600,000 new cars over the next 10 years. Even if they are electric vehicles, they will still occupy space in the streets” (Mobility stakeholder)

COVID-19 disruptions have changed the meaning of public transport and caused a share of passengers to be permanently recruited to other mobility practices. A remodeling trend prompting motorised transportation might steer urban mobility away from sustainable pathways and entail a re-emergence of unsustainable car-based mobility cultures in urban environments. Adding to this, stakeholders in the workshop expressed concerns about the long-term effects of school lockdowns and remote learning:

“(…) there is a lot of focus on changes in work-related commuting because people’s work habits are going to change. But I think an even bigger challenge to public transportation, in the long run, lies in the fact that educational institutions are going to change. A lot might happen here. Things like distance learning and universities that establish as online institutions” (Public transportation provider)

A private mobility stakeholder agrees:

“I agree, and we share the concern about the youth. It covers more than public transportation; it also covers cycling. For many years, we have seen fewer children biking to school. Then, when they enter secondary education and begin to commute longer distances, we are beginning to see more and more young people using the car.

But if they do not get used to using public transport in childhood and adolescence then (...) it is difficult to become public transport users later in life because they are used to something else” (Private mobility stakeholder)

To the extent that COVID-19 have caused children and adolescents to remode away from bicycles and public transportation, the long-term consequences for sustainable and inclusive mobility systems could be devastating. The skills needed for using cycling and public transportation are acquired early in life, and the children potentially become non-recruitable to sustainable travel practices as an adult. Thus, the “end of geography” (Graham, 1998) seems car resistant.

However, the above quotations also reflect another interesting tendency emerging in the workshop, namely the tendency to stage the private car as a common enemy. The car challenge unites public transport providers and mobility stakeholders. This broad consensus reflected in the workshop might suggest another future for urban mobilities and allow new solutions to surface. The shared perceptions created an atmosphere of being in the same boat, openness towards learning from other cities and mobility providers, and willingness to admit to previous failures and develop new solutions. A constituting element in practices is shared meanings. If the shared meaning of the private car as a common enemy is spreading among mobility stakeholders, it might provide momentum for mobility stakeholders to engage in new practices, i.e., organise in new ways, adopt new strategies, and allow for new MaaS solutions to develop and diffuse across cities. As such, it could support sustainable mobility transition in cities.

Rescheduling

During COVID-19, time structures have been radically changed. Instantaneous time is taking over (Hannam, Sheller and Urry 2006; Urry, 2000) and behind the screen, the individual is present in multiple places at the same time. That challenges the possibilities for readjustment in the in-betweens. When transport time is reduced or even eliminated, the time for adjustment in between tasks is also limited. Transition time can be used for preparing, for backstage time to be oneself, for ‘time to unwind’, for daydreaming and for other ‘activities’ that serve a reloading purpose in a compressed everyday life (Lyons 2014: 157). During COVID-19 transport was

removed from the sequence of everyday life, and the sequence of activities was thus fundamentally changed. According to Marsden et al. (2020) rescheduling is about changing when the trip is made and in which sequence activities are being done, and this is akin to what happened to many people under COVID-19 because of the decreased number of daily activities in general.

During the stakeholder workshop, the concepts of future rescheduling in everyday life were discussed about the increased tendency of working from home in the future. More houses being sold outside the biggest urban areas indicates that both employers and employees expect digital work routines to be an integrated part of working lives in post-pandemic times. This created a discussion about how public transport providers could develop a flexible product for commuters in the future and develop economic encouragement not connected to how often public transportation is used, which is the case in Denmark today:

“...economically speaking it is not that attractive to have a traditional commuter card right now because a lot of people are working from home. That is part of the explanation for why people are pushed out of the public transport system. When the price increases and their car is parked right outside their door, they might as well just take that to work. So, we are working on developing new price structures and products” (Public transport provider)

It was argued that this for instance could be targeted at people who are only commuting two or three days a week. Due to COVID-19, daily routines had to be reorganised overnight into the digital sphere that until now for most people was un-routinised. At the same time, the spatial fixation created a feeling of being inflexible in front of the screen within the household, while being physically immobile and virtually hypermobile at same time. This highlights the argument that COVID-19 has pushed modern societies in the direction of third modernity (Kesselring, 2008). The use of digital tools and technologies has melted daily work routines and become the window to the rest of the world – the social and logistical lifeline that connects the dots that the physical trips did before the pandemic. If developments towards practices rooted in third modernity are accepted (by society, by companies, in families, etc.) there might be a post-pandemic momentum for developing (self-controlled) retiming in everyday life. Restructuring the expectations of physical presence provides the opportunity to do physical travel detached from the rush hour and reduce congestion, or even replace the travel with virtual modes.

But rescheduling is not only a matter of people changing their schedules. The stakeholders also discussed how systems and structures are also reproducing inefficient mobility patterns because of the way they schedule. In both Denmark and Sweden, for instance, there are discussions on differentiated start times in the school system (Junge & Kring, 2012). More efficient urban mobility systems could result from a more dynamic or flexible model for scheduling school start times, it was argued:

“By changing the start time, the spreading of arrivals to school gets better. It is not a matter of moving it by hours. Only a few minutes will optimise the use of the public transport system. You can have quite remarkable effects only by changing it by a few minutes.” (Swedish researcher).

Rescheduling in this context is affecting the rhythms of everyday life at both individual and systemic levels, which could enable more efficient use of public transport systems in cities. The changes in rhythms in everyday life (Edensor 2010, 2011; Hartmann-Petersen, 2020), physically and virtually, following the pandemic have provided an occasion to discuss retiming and rescheduling in both daily routines and practices and the systems and structures upholding certain rhythms and sequences related to work and schooling. Even though flexible start times in schools and new ticketing structures in public transport may not be implemented tomorrow, increased flexibility and new approaches to timing, scheduling and physical and virtual presence are certainly occurring and spreading amongst stakeholders and planners. COVID-19 provided experiences of how these systems, often perceived as very static structures, could reschedule almost overnight. These experiences of flexibility in systems invite to creative thinking about policies for rescheduling everyday mobilities and the systems in which they are embedded.

Replacing

As previously mentioned, practices of everyday mobilities are highly routinised, so thinking about replacing practices requires different aspects of everyday life to be altered. The COVID-19 crisis has forced many changes upon everyday life and changed received notions of what is (im)possible. This has forced conversations previously on an abstract ‘nice to have’ basis closer to a ‘must have’ situation, especially among public transport providers who have been impacted heavily by the pandemic. There are different approaches to understanding what replacing entails. For Marsden et al. (2020) it is a

question of *relocating* and *rerouting* the planned route or destination of a journey.

Living in an autologous society formed by concepts including Le Corbusier's idea of the city as a space where the automobile cuts through like a projectile has given the car a dominant role and has dominated city planning for the last century. Only within the last 10 years have MaaS and the importance of public transport as the backbone in a MaaS system been considered as an alternative worth pursuing. Still, so far, there has been much talk but not a lot of action, with an acknowledgement that public transport plays an important role in this transition but with too many barriers to seriously pursue this. The loss of passengers due to the pandemic brought up discussions in the workshop that suggest that this might be changing. During these discussions, one mobility provider said:

"We are experiencing a greater interest in looking at other forms of mobility. It is about creating hubs in many more places and linking them with the super cycle paths, we just decided to spend DKK 2 million of the regional money on exactly that. It is all about how to get a better combination between bus and bike. Not necessarily to take the bike on the bus, but to be able to park it safely" (Public transportation provider)

While this provider is now investing heavily in integrating bus and bike infrastructures, another mobility provider is developing new MaaS solutions by cooperating with local carpooling services:

"We are in the process of integrating with the local carpooling service. It is integrated with public transport and the travel planner. We have developed this hub and works a lot with hubs. Then we can connect private carpooling with public transport around this hub and it can be accessed through the travel planner, which gives the users the full journey. You can also see it on our platform, where we put the user in the centre. That is because we do not have a principle that public transport must be first and everything else like scooters and carpooling must be last. We are focusing on giving the user what is the most optimal journey in relation to travel time." (Public transportation provider)

During COVID-19, fears imposed by "social distancing" have made the individual car the "safest" mode of transport and public transport an "incubator" of fear. The question is if the work on transforming the "system of automobility" (Urry, 2016) into a system of multiple mobilities is stalled when suddenly the concept of multiple mobilities implies enormous risks for individuals, governance, and the economy. In this sense, the previous

discussion on whether we are moving into the third modernity or retreating into the second is also very relevant in relation to replacing current mobility practices. With the above quotations in mind, it can therefore also be viewed as if the pandemic created an everyday experience with the digitalisation of routinised practices such as working, shopping, and socialising. New practices that previously seemed impossible are now something many people have experience with. COVID-19 caused the replacement of everyday practices and revealed flexibility in behaviours that were previously perceived as more or less inalterable.

Earlier in this paper, we exemplified how innovation after disruption was manifested in the workshop. The above quotations provide further insight into how new solutions emerged from the discussions on breakdowns and the response of public transport systems. While the public transportation providers disclosed that they had previously operated from an underlying basis of “public transport first”, they now advocate deploying alternative strategies centred around user needs, integration across transport forms, and optimal solutions. Examples are the integration of public transport with private mobility modes such as cycling and carsharing mentioned in the above quotations, encompassing the essence of MaaS solutions. The discussions continued in this direction, highlighting innovative multi-modal solutions as the future of urban mobilities. Though participants underlined the difficulty of developing and testing new strategies in an abnormal COVID-19-disrupted city, some of the solutions discussed were already mobility reality, for example, the integration of carpooling and public transportation in the city of Aalborg:

“If you have a monthly card for public transport in Northern Jutland, then you also have free use of Nabogo [carpool]. At least for a while. Why should it be so difficult, why can we not make it easy for people to switch completely freely between different modes? One day you take the train and the other day you take a carpool, and you can combine the two, without having to think of two systems. And that, of course, is just the beginning of getting it all connected.”

This public transportation provider argued that such innovations are crucial after the COVID-19 breakdown:

“Why have commuter products at all? Should we not just have some simple products in terms of doing these things, and here I am challenging the basic premise. How can we make it easy, simple, and attractive to get into the system to start with? I think this is something we can work on. Right now, in the current situation, it is the only right thing to look at those things.” (Public transportation provider)

Further, the provider argued that a return to mobility normality is undesirable:

“I don’t think we can just expect that the current situation and current structure can just be continued and then it becomes interesting. I think there are some fundamental structural things we need to look at to make it seriously interesting.”

It seems fair to speculate whether COVID-19 is creating a tipping point in the system of automobility (Dennis & Urry, 2009). The deceleration might push toward a future where the car is not as much in the centre of the new system as it was in the past. At this point, after two years of pandemic mobility abnormality, it seems that the future of mobilities is more open than ever. Instead of being stuck in a “one best way” solution, COVID-19 might provide an opening to experiment with possible solutions at a time where mobilities and their impact on modern economies, cultures, and cities have shown their vulnerability (Freudendal-Pedersen & Kesselring, 2016).

Conclusion

This paper explored COVID-19 disruptions of everyday mobility in relation to public transport use in Denmark and discussed if these new circumstances have provided momentum for better and more sustainable urban mobility systems. These post-pandemic years present a critical moment to evaluate what happened and exploit the previously unthinkable rise in new digitalised everyday practices to rethink urban mobilities and push for sustainable development.

To avoid unwanted consequences of pandemic fear-infused rises in automobility, public transport’s ‘business as usual’ no longer suffices. Using a workshop on ‘Mobility under COVID-19’ with key mobility operators and stakeholders from Denmark as an example provided insight into how new solutions emerged from the discussions on breakdowns and the response of public transport systems. For example, public transportation providers reflected on how they had previously operated from an underlying basis of “public transport first”, while they now pursue alternative strategies centred around user needs and integration across transport modes to create optimal solutions. New discussions placing MaaS and innovative multi-model solutions at the centre stage in the future of urban mobilities emerged in the wake of pandemic disruptions, as reflected in the paper’s four discussions on pandemic *reduction* in mobilities, *remoding* from public transport to private cars, *rescheduling* of everyday life, and *replacement* of practices and strategies.

Based on the discussions, we suggest the fragility of urban mobility systems disclosed by pandemic disruptions also reveals great agility in urban mobility practices. New practices that previously seemed impossible, such as remote working, learning, socialising, and shopping, spread and revealed flexibility in behaviours that were previously perceived as more or less inalterable. In this sense, the pandemic can be perceived as a portal to a third phase of the mobile risk society and a possibility for promoting sustainable mobility transitions in cities.

The future of mobilities is now more open than ever. With COVID-19, mobility breakdowns led to a newfound openness towards alternative mobility futures and an increased inclination for developing new solutions. Such tendencies could provide momentum for MaaS solutions to develop and diffuse across cities, and release formerly car-occupied urban spaces for human and climate-friendly purposes. In this sense, the radical disruptions that COVID-19 enforced on cities, planners, public transport providers and passengers gave a taste of urban mobilities as it could be. This provides a new backdrop for experimenting with alternative solutions, making it even more visible how mobilities impact modern economies, cultures, and cities.

We conclude that pandemic breakdowns have paved the way for a broadened scope of imaginaries, collaborations, and initiatives among public transport providers favouring new solutions that are promising in terms of sustainability in urban mobility systems in Denmark. If utilised properly, the innovations and learnings from COVID-19 can lead cities onto more sustainable mobility pathways than what was previously perceived as possible. However, as routinised practices are deeply embedded in existing institutions and infrastructures which do not necessarily change with COVID-19, we might not expect such changes to happen “by themselves”. Rather, the realisation of such positive benefits will need continued investments and active policymaking.

Further research and newer data are needed to determine how far the potential of the new initiatives identified in this paper reaches: To what extent do they herald post-pandemic normality in mobility systems? Exploiting the pandemic momentum for new sustainable pathways depends to a large degree on supportive political and financial initiatives. Therefore, we recommend policymakers support greater flexibility in the systems and infrastructures surrounding everyday urban mobilities. The recommendation concerns both policies specifically targeted at the transport area such as initiatives for strengthening the opportunities for establishing mobility hubs and investing in MaaS solutions. But, as the paper has emphasized, mobility

practices and mobility systems are networked and interwoven with other practices and systems, and therefore, it is also about policies supporting new imaginaries, investments, and flexibility in the interrelated systems, such as the school system and the labor market. This paper has touched upon the examples of differentiated start times in schools and policies supporting remote working practices. New policies in these areas have not yet been implemented in Denmark. But concludingly, we will emphasize that such measures are essential for supporting emerging mobility innovations triggered by the COVID-19 pandemic.

We are grateful to all participants in the *Mobility under COVID-19* workshop, conducted in November 2020 online from Aalborg University. We are also grateful to our funders, Innovation Fund Denmark, and Aalborg University's Talent Management Programme.

References

- Beck, U. 1992. *Risk Society - Towards a New Modernity*. London: SAGE Publications Ltd
- Bernhard, A. 2020. "The great bicycle boom of 2020", *BBC*. Accessed 6 April 2021: <https://www.bbc.com/future/ bespoke/ made-on-earth/ the-great-bicycle-boom-of-2020.html>
- Budd, L., & Ison, S. 2020. "Responsible Transport: A post-COVID agenda for transport policy and practice." *Transportation Research Interdisciplinary Perspectives*, 6: 100-151. doi.org/10.1016/j.trip.2020.100151
- Campisi, T., Basbas, S., Skoufas, A., Akgün, N., Ticali, D., & Tesoriere, G. 2020. The Impact of COVID-19 Pandemic on the Resilience of Sustainable Mobility in Sicily. *Sustainability*, 12(21): 8829. doi.org/10.3390/su12218829
- Cairncross, F. 1997. *The death of distance: How the new communications revolution will change our lives*. London: Orion Business.
- Cresswell, T. 2021. "Valuing mobility in a post COVID-19 world". *Mobilities*, 16(1): 51-65. doi.org/10.1080/17450101.2020.1863550
- Danish Construction Federation 2019: "Pendleranalyse [Commuter analysis]" Copenhagen: Danish Construction Federation. Accessed 6 April 2021: <https://www.danskindustri.dk/medlemsforeninger/dansk-infrastruktur/analysearkiv/2019/9/pendleranalyse/>
- Danish Health Authorities 2020. "Krav om mundbind i den kollektive trafik og særlige anbefalinger til personer i øget risiko [Requirements on masks in public transport and special recommendations for people at increased

- risk]". August 2020. Accessed 6 April 2021:
<https://www.sst.dk/da/nyheder/2020/krav-om-mundbind-i-den-kollektive-trafik-og-saerlige-anbefalinger-til-personer-i-oeget-risiko>
- Dennis, K., & Urry, J. 2009. *After the Car*. Cambridge: Polity.
- Doughty, K., & Murray, L. 2018. "Understanding Everyday Mobilities Through the Lens of Disruption." In *Experiencing Networked Urban Mobilities* edited by Freudendal-Pedersen, M., Hartmann-Petersen, K. & Fjalland, E. L. P.: 78–82. Routledge. doi.org/10.4324/9781315200255-14
- DSB 2020. "Interim report, Q1 2020". Accessed on April 6th 2021:
<https://www.dsb.dk/globalassets/arsrapport/2020/interim-report-1-q-2020.pdf>
- Edensor, T., 2010. *Geographies of Rhythm. Nature, Place, Mobilities and Bodies*. Aldershot: Ashgate.
- Edensor, T., 2011. "Commuter: mobility, rhythm and commuting." *Geographies of mobilities: Practices, Spaces, subjects*: 189-204.
- European Environment Agency. 2018. *Final energy consumption by mode of transport*.
- Freudendal-Pedersen, M., Hartmann-Petersen, K., Friis, F., Rudolf Lindberg, M., & Grindsted, T. S. 2020. "Sustainable Mobility in the Mobile Risk Society – Designing Innovative Mobility Solutions in Copenhagen." *Sustainability*, 12(17): 7218. doi.org/10.3390/su12177218
- Freudendal-Pedersen, M., & Kesselring, S. 2016. "Mobilities, Futures & the City: repositioning discourses – changing perspectives – rethinking policies." *Mobilities*, 11(4). 575-586. doi.org/10.1080/17450101.2016.1211825
- Freudendal-Pedersen, M., & Kesselring, S. 2018. "Networked Urban Mobilities." In *Exploring Networked Urban Mobilities: Theories, Concepts, Ideas* edited by M. Freudendal-Pedersen & S. Kesselring: 1–19. London: Routledge. doi.org/10.4324/9781315201078-1
- Freudendal-Pedersen, M., & Kesselring, S. 2021. "What is the urban without physical mobilities? COVID-19-induced immobility in the mobile risk society." *Mobilities*, 16(1): 81-95. doi.org/10.1080/17450101.2020.1846436
- Graham, S. 1998. "The end of geography or the explosion of place? Conceptualizing space, place and information technology." *Progress in Human Geography*, 22(2): 165–185. doi.org/10.1191/030913298671334137
- Graham, S., & Thrift, N. 2007. "Out of Order." *Theory, Culture & Society*, 24(3): 1–25. doi.org/10.1177/0263276407075954
- Guevara, M., Jorba, O., Soret, A., Petetin, H., Bowdalo, D., Serradell, K., Tena, C., Van Der Gon, H. D., Kuenen, J., Peuch, V. H., & Pérez García-Pando, C. 2021. "Time-resolved emission reductions for atmospheric

- chemistry modelling in Europe during the COVID-19 lockdowns." *Atmospheric Chemistry and Physics*, 21(2): 773–797. doi.org/10.5194/acp-21-773-2021
- Hannam, K., Sheller, M., & Urry, J. 2006. "Mobilities, immobilities, and moorings." *Mobilities* 1(1): 1–22. doi.org/10.1080/17450100500489189
- Hansen, M. 2021. "Kollektiv Trafik er på vågeblus [Public Transport is asleep]" *Danish Association of Public Transport*, March 2020. Accessed on April 6th 2021: <https://www.kollektivtrafik.dk/kollektiv-trafik-er-paa-Davaageblus/1252>
- Hartmann-Petersen, K. 2020. "Providing and working in rhythms." In *Handbook of Urban Mobilities* edited by Jensen, O. B., Lassen, C., Kaufmann, V., Feudendal-Pedersen, M. & Lange, I. S. G.: 163–170. London: Routledge. doi.org/10.4324/9781351058759-17
- Heiskanen, E., Halme, M., Jalas, M., Kärnä, A., & Lovio, R. 2001. *Dematerialization: the potential of ICT and services*. Helsinki: Ministry of the Environment
- Holtmark, B., & Skonhoft, A. 2014. "The Norwegian support and subsidy policy of electric cars. Should it be adopted by other countries?" *Environmental Science and Policy*, 42: 160–168. doi.org/10.1016/j.envsci.2014.06.006
- Jensen, O. 2021. "Pandemic disruption, extended bodies, and elastic situations - Reflections on COVID-19 and Mobilities". *Mobilities*, 16(1): 66–80. doi.org/10.1080/17450101.2021.1867296
- Junge, D & Kring, C. 2012. "Differentierede mødetider i skolen [Differented start times in schools]". Folkeskolen, November 7. Accessed 13 September 2022. <https://www.folkeskolen.dk/borneliv-folkeskolen-nr-20-2012-frederiksberg-kommune/differentierede-moedetider-i-skolen/1238438>
- Kesselring, S. 2008. "The mobile risk society." *Tracing mobilities* edited by W. Canzler, V. Kaufmann, & S. Kesselring: 77–102. Farnham: Ashgate.
- Kesselring, S. 2019. "Reflexive Mobilitäten." In S. VS (Ed.), *Das Risiko – Gedanken übers und ins Ungewisse: Interdisziplinäre Aushandlungen des Risikophänomens im Lichte der Reflexiven Moderne. Eine Festschrift für Wolfgang Bonß*: 155–193.
- King, D. & Krizek, K. 2021. "Visioning transport futures through windows of opportunity: Changing streets and human scaled networks." *Town Planning Review* 92(2):157–163. doi:10.3828/tpr.2020.60/
- Lindqvist, A. & Rantorp, C. 2020. "Imens kollektiv trafik og klimaet gisper: Biltrafikken stiger under Corona [While public transport and the climate are gasping: Car traffic is rising under Corona]": *Ingenøren*, September 7.

- Accessed 6 April 2021. <https://ing.dk/artikel/imens-kollektiv-trafik-klimaet-gisper-biltrafikken-stiger-under-corona-238361>
- Lindqvist, A. (2021). "Trafikforsker: Efter corona kan 10-20 procent have forladt offentlig transport for altid. [Traffic researcher: Following corona, 10-20 percent may have left public transportation forever]" *Ingenøren*, January 13. Accessed 6 April 2021: <https://ing.dk/artikel/trafikforsker-efter-corona-kan-10-20-procent-have-forladt-kollektiv-transport-altid-242291>
- Lyons, G. (2014). "Times". *The Routledge handbook of mobilities* edited by Adey, P., Bissell, D., Hannam, K., Merriman, P., & Sheller, M. London: Routledge: 154-163
- Marsden, G., Anable, J., Chatterton, T., Docherty, I., Faulconbridge, J., Murray, L., Roby, H. & Shires, J. (2020). "Studying disruptive events: Innovations in behaviour, opportunities for lower carbon transport policy?" *Transport Policy*, 94(April): 89–101. doi.org/10.1016/j.tranpol.2020.04.008
- Menut, L., Bessagnet, B., Siour, G., Mailler, S., Pennel, R., & Cholakian, A. (2020). "Impact of lockdown measures to combat Covid-19 on air quality over western Europe". *Science of the Total Environment*, 741, 140426. <https://doi.org/10.1016/j.scitotenv.2020.140426>
- Ottosen J. and Ancher-Jensen M. 2021. "Tidslinje over coronakrisen: hvad skete der og hvornår? [Timeline of the corona crisis: What happened and when?]" *Tænketanken Europa*. Accessed 6 April 2021: <http://thinkeuropa.dk/politik/tidslinje-over-coronakrisen-hvad-skete-der-og-hvornaar>
- Parkes, S. D., Jopson, A., & Marsden, G. 2016. "Understanding travel behaviour change during mega-events: Lessons from the London 2012 Games." *Transportation Research Part A: Policy and Practice*, 92: 104–119. doi.org/10.1016/j.tra.2016.07.006
- Risager, P. (2020): "Corona-effekt? Flere end nogensinde før flytter fra København [Corona effect? More people than ever before are moving out of Copenhagen]": Accessed on April 6th, 2021: <https://www.nb-nyt.dk/2020/11/18/56531/corona-effekt-flere-end-nogensinde-foer-flytter-fra-koebenhavn/>
- Ropkins, K., & Tate, J. E. 2021. "Early observations on the impact of the COVID-19 lockdown on air quality trends across the UK." *Science of the Total Environment*, 754, 142374. doi.org/10.1016/j.scitotenv.2020.142374
- Sheller, M., & Urry, J. 2006. "The new mobilities paradigm." *Environment and Planning A* 38(2), 207-226. doi.org/10.1068/a37268

- Shove, E., Pantzar, M., & Watson, M. 2012. *The dynamics of social practice. Everyday life and how it changes*. London: SAGE Publications Ltd
- Spurling, N., & McMeekin, A. 2015. "Interventions in Practices: Sustainable Mobility Policies in England." *Social Practices, Interventions and Sustainability: Beyond Behaviour Change* edited by Y. Strengers & C. Maller. London: Routledge.
- Statistics Denmark 2020a. "Stort fald i passagertransport grundet COVID-19 [Large drop in passenger transport due to COVID-19]". Accessed 6 April 2021: <https://www.dst.dk/da/Statistik/nyt/NytHtml?cid=37807>
- Statistics Denmark 2020b. "Drastisk fald i flypassagerer i 2020 pga. COVID-19 [Drastic drop in air passengers in 2020 due to COVID-19]". Accessed 6 April 2021: <https://www.dst.dk/da/Statistik/nyt/NytHtml?cid=32363>
- Statistics Denmark 2020c. "40% arbejder hjemme under nedlukningen [40% work from home during the lockdown]". Accessed 6 April 2021: <https://www.dst.dk/da/Statistik/bagtal/2020/2020-09-22-40-pct-arbejde-hjemme-under-nedlukningen>
- Statistics Denmark 2021: "Hjemmearbejde fordoblet i 2020 [Working from home doubled in 2020]". Accessed 6 April 2021: <https://www.dst.dk/da/Statistik/nyt/NytHtml?cid=32435>
- Sørensen A. & Kaldahl S. 2021 "90.000 flere vil arbejde hjemme efter coronakrisen [90,000 more will work at home after the corona crisis]". Danish Industry (DI). Accessed 6 April 2021: <https://www.danskindustri.dk/arkiv/analyser/2021/1/90.000-flere-vil-arbejde-hjemme-efter-coronakrisen/>
- The Danish Road Directorate 2020a. "Trafikken på Vejene. 3 kvartal 2020. [The traffic on the Roads. 3rd quarter 2020.]". The Danish Road Directorate. Accessed 6 April 2021: https://api.vejdirektoratet.dk/sites/default/files/2020-12/Trafikindikatorer_3-2020_UA.pdf
- The Danish Road Directorate 2020b. "Trafikkens udvikling i tal. [Traffic development in numbers.]". The Danish Road Directorate. Accessed 6 April 2021: <https://www.vejdirektoratet.dk/side/trafikkens-udvikling-i-tal>
- Urry, J. 2000. *Sociology beyond Societies mobilities for XXI Century*. London: Routledge.
- Urry, J. 2004. The 'System' of Automobility. *Theory, Culture & Society*, 21(4–5): 25–39. <https://doi.org/10.1177/0263276404046059>
- Urry, J. 2016. *What is the Future?* Cambridge: Polity Press.

7.2. SUB-CONCLUSION PART III

This part of the dissertation has focused on creating empirical knowledge on inequality in urban mobilities, how it influences sustainable interventions, and whether Covid-19 induced tipping points in relation to sustainability in urban mobilities.

First, the research design, the specific areas, and the applied methods were described, and rationales were given for their selection.

Then, the paper “Urban mobility injustice and imagined socio-spatial differences in cities” investigated inequality in relation to mobility capacity and its consequences for transition possibilities through a comparative study of two urban neighborhoods in Copenhagen. The study found that residents have diverse perceptions of their capacity to move even though Copenhagen is a relatively equal city in socioeconomic terms. Empirical inquiries into residents’ experiences of mobility revealed that socio-spatial disparity between the areas produces and is simultaneously produced by territorial narratives. The disparity between the areas, we found, was defined by the intersection of their social, spatial and reputational context. Consequently, the residents of Nordhavn experienced higher mobility capacities and felt that the area was a well-integrated part of the city compared to Folehaven.

The physical and imagined socio-spatial mobility differences between the areas seem to intensify each other and, interestingly, the narratives connected to the neighborhoods influenced what was possible in terms of a sustainable transition of the areas’ mobilities. This is because they framed mobility operators’ decisions to invest in the areas. Although these mobility operators are not representative of private or public transportation decision-making, they illustrate how pre-conceived notions about neighborhoods are incorporated into planning decisions, which eventually re-produces inequalities.

Therefore, the planning of a sustainable transition, in this case the SIMS mobility intervention, appears to be an important focus of study if we want to obtain a glimpse of what the landscape of inequality may look like in the future. In the planning and (lack of) execution of the sustainable transition, we encounter some of the mechanisms that produce and reproduce existing social, spatial and mobility inequalities.

Analyzing the narratives about the neighborhoods provided a lens for understanding the mechanisms involved, and how the rationalizations and decisions to invest or disinvest emerge. Against this background, the paper suggests that neighborhood narratives will probably result in urban strategies that benefit affluent neighborhoods more than marginalized ones. To avoid reproducing inequalities in planning for sustainable mobility futures, it is crucial to pay attention to citizens' experienced mobility capacity and how it is linked to the dynamics and distribution of mobility in the city and understand the power of narratives in planning (Fischer and Gottweis, 2012).

The second empirical inquiry explored possible mobile tipping points in the wake of the Covid-19 pandemic in four discussions of pandemic mobility trends: Reduction in mobility, remodelling from public transport to private cars, rescheduling everyday life activities and replacing practices and strategies.

Drawing on discussions in a workshop on 'Mobility during Covid-19' with key public transport stakeholders from Denmark, the inquiry identified new emerging imaginaries and solutions. For example, in the wake of the pandemic, public transportation providers are pursuing alternative strategies that focus on user needs and integration across transport modes to create optimal solutions as alternatives to their previous "public transportation first" approach.

In the paper, we suggested that the fragility of urban mobility systems disclosed by pandemic disruptions also reveals great agility

in urban mobility practices. New practices that previously seemed impossible spread and revealed that everyday practices, which had beforehand been perceived as being unalterable, were in fact flexible. In this sense, the pandemic may arguably be a portal to a third phase of the mobile risk society representing an opportunity to promote sustainable mobility transitions in cities. However, because everyday life is deeply embedded in existing institutions and infrastructure, which may not necessarily change as a result of the Covid-19 pandemic, we might not expect new practices to emerge “by themselves”. For pandemic trends to become mobile tipping points, continued investment and active policymaking are needed.

Many important questions about inequality, mobile tipping points, and how sustainable transitions create winners and losers persist. For example, prejudiced narratives about neighborhoods, which frame planning decisions, and funneling sustainability investments to already (mobility) rich areas, are probably not the only inequality-exacerbating mechanisms at work in a sustainable transition. It would be interesting to explore other interactions between inequality and transition empirically. In relation to pandemic induced mobile tipping points, following up by gathering post-pandemic data would provide valuable insights into the new pathways for public transportation identified, and verify whether we can talk about pandemic-induced mobile tipping points. Unfortunately, pursuing these questions was not possible within the scope of this dissertation. Instead, the next part of the dissertation provides a discussion of the methodological and theoretical directions for such future studies.

PART IV: DIRECTIONS

CHAPTER 8.

In this part of the dissertation, I identify possible directions for future research on sustainable transitions. Based on the insights from the two previous parts, methodological and theoretical positions for incorporating inequality in future studies of urban mobility transitions are proposed.

Part two of this dissertation argued that capturing the social and unequal dimensions of sustainable urban transition involves replacing behavior- and technology-oriented transition frameworks with a lens that focuses on everyday life in cities. Practice theory and the mobile risk society, I argued, are advantageous theoretical perspectives in this regard. In part three, these perspectives were applied in analyses of possible mobile tipping points induced by the Covid-19 pandemic, which hit during the genesis of this dissertation. It identified possible tipping points relating to, e.g., public transport providers' changed attitudes from 'public transportation first' to 'user needs first', and the development of new flexible solutions, for example, ticketing systems. Part three also empirically explored inequality in relation to mobility and sustainable mobility interventions and found that different experiences of mobility capacity emerge in the intersection of spatial, social, and imagined properties in urban areas and that imaginaries or narratives about the neighborhood not only have a shaping hand in relation to experienced mobility but also in framing investment and planning decisions on sustainable intervention. Different neighborhood narratives play a role in determining what sustainable interventions become possible and where.

Part four picks up on these insights and their consequences for future research on sustainable mobility transitions in two paper contributions. The first paper addresses the mobility researcher's decision making and its consequences. What frames the mobility

researcher's gaze? What are the consequences in terms of inequality? And how can we handle these issues in future research?

The second paper takes up theoretical discussions and proposals put forward in parts one and two of the dissertation. It discusses and highlights important insights from four perspectives: the transition framework MLP, practice theory for insights into the social and how it changes, reflexive modernity and the risk society for an ontology that captures the interconnectedness of inequality and climate change, and critical realism for the normativity involved in all change efforts. Against this background, it develops a framework for future transition studies incorporating the social implications and normative qualities engraved in all attempts to transition to urban sustainability.

PAPER FIVE: DESPITE THE BEST OF INTENTIONS: INEQUALITY IN THE SEARCH FOR MOBILITY JUSTICE

Malene Rudolf Lindberg¹, Nikolaj Grauslund Kristensen¹, Malene Freudendal-Pedersen¹, Katrine Hartmann-Petersen².

¹Department of Planning, Aalborg University, Copenhagen, Denmark

²Department of People and Technology, Roskilde University, Roskilde, Denmark

Abstract: Qualitative scholars' normativity and positionality have implications for the representation of people and places. Who we are and how we question shape the data and influence the understanding and intelligibility we attach to different mobility experiences. In this way, methodological decisions are interlinked with the production and reproduction of mobility inequality and epistemic injustices. With a point of departure in reflexive methodology, this article critically examines qualitative mobility research based on a research project in its final phases. Through this project, we exemplify how mobility inequalities and injustices are easily produced and reproduced in the research process. The empirical outset is research on two highly differentiated areas socio-economic areas in Copenhagen. With a focus on the interview guide, we show how it is a powerful tool for supporting reflexivity at all stages of the research process. The interview guide can support the handling of the researchers' normativity and positionality but is not a guarantee for equality and inclusiveness in the researchers' representation. Working with the guide before, during and after the qualitative interviews makes it possible to identify new perspectives and emphasises the importance of mobilities research characterized by epistemic justice.

Keywords: Reflexivity, Mobility justice, Epistemic justice, Inequality, Interview, Positionality, Qualitative methods

Introduction

Why do you live here? Where do you work? Do you know the visions for the area, and have they influenced your choice of residence and how you live

your everyday life? These questions were some of the first in a semi-structured interview guide designed to elucidate the everyday life and mobility patterns of inhabitants in different urban areas in Copenhagen, Denmark, as part of the research project, Sustainable Innovative Mobility Solutions (SIMS)¹⁶. Empirically, the project built upon qualitative interviews, focus groups and the involvement of citizens living in the three test areas and with actors in the mobilities field such as mobility providers, traffic operators, urban planners, etc. In this article, the empirical outset is 18 interviews with residents living in the following two areas in Copenhagen: Nordhavn and Folehaven. The interviews mainly focused on identifying stories about mobility practices, sustainable living, everyday lives, and the matter of place. In the interview situations, the questions would sound like: Why did you choose to live here? What is your job? And do you know the visions for the area?

The intention was to pose open questions to elucidate new perspectives on everyday mobility with a point of departure in reflexive methodologies. Inspired by Alvesson and Sköldböck (2020) and Clegg and Hardy (1996), we perceive reflexivity as being about, “ways of seeing which act back on and reflect existing ways of seeing” (Clegg and Hardy 1996, 4 in Alvesson and Sköldböck 2020, 329). It is about reflecting on the interactions with the empirical material as well as the interpretational options available to researchers inhabiting specific positions, which are informed by theories, paradigms, and personal frames of reference such as class affiliation, culture, gender, ethnicity, and personal experience (Alvesson and Sköldböck 2020, 331). Furthermore, reflexivity involves critically assessing the interpretative options open to the researcher and considering how they shape our research and language. This means scrutinizing the relationship between our interpretations and ruling ideologies, shared understandings, and power structures, posing questions such as: Are we breaking with or reproducing existing (mis)representations with this interpretation?

In other words, reflexivity is about acknowledging the researchers’ role in the research and exploring the consequences of being co-creators of the situations, research field, (in)equalities and (in)justices. As such, reflexivity is a powerful tool to avoid neglecting perspectives that diverge from our

¹⁶ SIMS (2019-2023) is funded by the Innovation Fund Denmark. The vision of the projects is to work with sustainable mobility solutions that are adapted to citizens’ everyday practices, incorporating future and existing resource-efficient transportation modes. The project work with three very different areas: Nordhavn (Copenhagen), Folehaven (Copenhagen) and Nærheden (in Hedehusene 25 km outside Copenhagen).

preconceptions and preunderstandings of the field and normative horizons. Miranda Fricker (2007) develops the concept of epistemic injustice to describe mechanisms of discrimination due to differences in social positions and gaps in our collective understanding of a field. Inequality in knowledge production is about researchers being structurally prejudiced, and leaving members of marginalized groups inadequately conceptualized, ill-understood and unrepresented (Fricker 2007).

In the preparatory phase of qualitative research, working reflexively involves reflecting on preunderstandings related to the researchers' positionalities and normativity and elucidating their relationship to both the overall research questions and hypotheses as well as concrete question formulations. However, preconceptions and positionality tend to emerge in interview situations regardless of how much work has been put into the preparatory phase of the qualitative research. Much of what occurs in interviews is spontaneous and is typically characterized by digressions and unforeseen influences (D'Andrea, Cioffi, and Gray 2011; Marcus 1998). This is because stories and meanings belong to neither the interviewer nor the interviewee but evolve and are negotiated in the social context (Finlay 1998; Denzin and Lincoln 1994; Kvale 1996). Qualitative interviews are social acts of communication involving escaping fixed forms of subjectivity, positionality, and normativity, and yielding to uncertainty, ambiguousness, and co-creation.

Rather than being taken as proof of inadequate preparation, unforeseen events are opportunities for including new perspectives in the research. Openness to uncertainties is what makes new meanings and understandings possible and new frameworks and action alternatives available (Alvesson and Skoldberg 2020, 68).

This article engages with experiences of digressions and linguistic dissonance in relation to our work with qualitative interviews in the SIMS project. We exemplify what working with reflexive methodology involves by reflecting on our interactions with the interviewees, the use of language, our interpretive options, and critical interpretations in relation to the production and reproduction of inequality and injustice in our work. First, the outset in reflexive methodologies is discussed followed by an outline of the abductive research process. After this, we discuss how working with the interview guide in the preparatory phases, during the interviews, and post-interviewing activates reflexivity by relating different aspects, interpretations, and phases in the research to each other. Following this, examples from the empirical research in the two neighborhoods are used to highlight how the

reproduction of mobilities inequalities could easily have occurred in this project. This provides insights into how inequality and injustice in terms of neglecting perspectives may emerge and be reproduced even in well-prepared and well-intentioned studies. The project used the same interview guide to elucidate everyday life and mobility patterns in very different neighborhoods, and it became obvious that it worked very differently in different contexts. In the discussion, the examples are related to epistemic injustice, discussing how to handle the fact that conducting research with human subjects will always involve implications for epistemic injustice. Thorough reflexivity, we argue, enables qualitative mobility research that is characterized by epistemic justice rather than adding to the reproduction of mobility inequalities and misrepresentations. Finally, the conclusion suggests that the interview guide should be used dynamically as an anchor for reflexivity and as a tool for handling the challenges of positionality, injustice, and representation, which are inherent in qualitative mobilities research. It also touches upon the challenge of creating the time for research to circle around outside and away from its core theme to engage with reflexivity.

Reflexive methodology

Conducting research always involves choices, from the initial project idea to the final text production and all these choices influence the role and impact of the research. To make this visible in the development of valid, rigorous, and relevant research, Alvesson and Sköldberg (2020 (first edition 2000)) suggest utilizing reflexive methodologies. Their approach focuses on qualitative research and how, “good qualitative research is not a technical project; it is an intellectual one.” (2020, 396). They distinguish between reflective and reflexive methodologies in that reflection is, “the *interpretation of the interpretation* and the launching of a critical self-exploration of one’s own interpretations of empirical material (including its construction).” (2020, 11). The reflexive approach goes beyond this and is based on the premise “that it is more or less impossible for researchers to clarify taken for granted assumptions and blind spots in own social culture, research community and language” (2020, 11). The advantage of reflexive research is its “ability to break away from a frame of reference and to look at what it is *not* capable of saying” (2020, 327). In this paper, we critically examine the conceptual frameworks and cultural understandings which had an influence on the methodological choices and empirical research in the SIMS project because, as Butz and Cook (2019, 81) emphasized: “Researchers’ methodological decisions have epistemic justice implications that matter for mobility justice”.

Combining theoretical components, analytical methods, and reflexive methodologies in a framework that can answer both predefined and emerging questions is key in just mobilities research (D'Andrea, Ciolfi and Gray 2011; Sheller 2003; Hidayati et al. 2021).

In a transdisciplinary research field that is highly engaged in empirical research, the reflexive contexts also help when we cannot make any:

...definite demands – at least not heavy ones – as regards theoretical consistency, in the sense that a particular ontological and epistemological position is strictly maintained throughout. The point of reflection is rather to break away from consistency and a narrow focus on a particular aspect, to question weakness inherent in the mode of thought one embraces (and is imprisoned within), to break up and change a particular language game rather than expanding it (Alvesson and Sköldberg 2020, 327)

Instead, reflexivity demands that researchers are explicit about their choices and de-selections in relation to the researched problem (Finlay 1998). This requires transparency, reflection and explicitness.

Alvesson and Sköldberg discuss the application of 'R-reflexivity', a concept which encompasses reconstruction, representation and rethinking as a way of opening new "avenues, paths and lines of interpretation to produce 'better research' ethically, politically, empirically and theoretically" (2020, 381). In this sense, R-reflexivity also means avoiding the blind reproduction of conventional ideas and traditions even though this may be quite difficult despite the adoption of a reflexive approach as we discuss later. Here we focus on the restricted repertoire of interpretations available to researchers, where Alvesson and Sköldberg (2020, 331) point to "...researchers' repertoire of interpretations limits the possibility of making certain interpretations". To handle this limitation, Alvesson and Sköldberg (2020, 331) suggest the following four aspects of interpretation that span across the interaction with the research field: Interaction with empirical material (being aware of the relationship), interpretation (understanding the underlying meaning), critical interpretation (understanding underlying power structures, ideologies and social reproduction), and last but not least, reflections (on the use of language, the selection of voices, and the claims we can make). Through an abductive research process, we have created a reflexive process when working with the interview guide which specifically focuses on the relationship between the empirical material and our interpretations. The interview guide is created in a way that we as researchers spend a lot of time discussing our

preunderstandings, normativity, and positionality. In the following, we discuss the abductive research process.

The abductive research approach

The research strategy behind making positioning transparent is constructed on an abductive understanding of knowledge production. Abduction is characterized by the interplay between the empirical material and the theoretical perspectives (Blaikie 1993; Freudendal-Pedersen 2007; Hartmann-Petersen 2009). The methodological purpose is to maintain a “creative process in which everyday concepts and understanding are transformed into social scientific concepts and theories. It involves an evolving process of deconstruction and reconstruction” (Blaikie and Priest 2019, 321). Maintaining reflexivity through different phases with the interview guide as a point of reference reflects this approach:

The method has some characteristics of both induction and deduction, but [...] abduction [is] neither formally [...] nor informally [...] any simple ‘mix’ of these, nor can it be reduced to these; it adds new, specific elements. During the process, the empirical area of application is successively developed, and the theory (the proposed overarching pattern) is also adjusted and refined (Alvesson and Sköldberg 2018, 4-5).

Alvesson and Sköldberg further assert that the abductive approach adds *understanding* to models of explanation. They emphasize the role of abduction as a source of inspiration in identifying new patterns: “The research process, therefore, alternates between (previous) theory and empirical facts (or clues) whereby both are successively reinterpreted in the light of each other” (Alvesson and Sköldberg 2020, 4).

In a research project with the purpose of understanding everyday life and perceptions of mobilities, the abductive approach is fundamental. As Blaikie & Priest (2019, 118) put it, abduction incorporates “the meanings and interpretations, the motives and intentions that people use in their everyday lives”. Abduction identifies the tacit knowledge that is integrated into everyday life routines and accounts. These accounts contain concepts, justifications, and rationalizations that individuals use when explaining values and practices in their social life (Blaikie and Priest 2019).

In the interaction between interviewee and interviewer, abduction accommodates the purpose of exploring social inequalities in everyday life practices. Blaikie and Priest stress that abduction emphasizes descriptions and understandings that “reflect the social actors’ points of view, rather than just the researcher’s point of view” (Blaikie and Priest 2019, 119). However, we

argue that the positioning and pre-understandings of the researchers may still potentially influence the thematic framing and the outcome of the specific interview. The interview guide mirrors – to a certain degree – the extent of this influence. The guide specifies the researchers' concerns and expectations (empirically and theoretically). As we argue in this article, being transparent in this respect does not avoid the reproduction of inequalities among researchers and the research field, although the abductive approach does minimize the unequal positioning. Abduction is interconnected with reflexivity at different stages of knowledge production. In this case, it is articulated through working explicitly with the interview guide before, during and after interviewing social actors in the field.

The interview guide – maintaining reflexivity

The interview guide is a fundamental cornerstone of the interview situation. It reflects the positioning and the normativity behind the interview situation (Brinkman and Kvale 2014). Understanding the interconnections between everyday life and mobilities requires open, explorative processes. However, putting the research hypothesis explicitly at the forefront increases the likelihood of identifying unexpected findings during the interview process. Being transparent requires explicit pinpointing of the empirical and theoretical preunderstandings on which the hypothesis is built. These preunderstandings lead the design of the interview guide. To be open to unforeseen interconnections in the research field means not only testing relevant hypotheses (Brinkman and Kvale 2014) but also identifying the normativity of the researcher, which potentially influences the interview situation and the interpretation of the field.

Building on previous work in several research projects (Freudendal-Pedersen et al 2017; Freudendal-Pedersen 2022; Hartmann-Petersen 2020), we have developed a format that gives the interview guide a key role in the research process. Not only does the guide *guide* the researcher while interviewing, it is also an important source of methodological knowledge before, during and after the interviews. To some extent, the following three stages of working with the interview guide correspond to Alvesson and Sköldberg's (2020) R-reflexivity terms reconstruction, representation, and rethinking.

Preparing the interview and constructing the guide helps the researcher focus on the key issues that are under examination. The guide is divided into three columns. The first states the thematic sections of the interview. The middle column elaborates the hypothesis and preunderstandings that are

under examination. As mentioned, this also includes possible empirical findings, theoretical concepts that might be at stake, open questions that the researcher has, etc. The third column contains the specific questions that are being posed. These questions explore whether/how the hypothesis in the second column is articulated. Structuring the guide systematically in these three steps forces the researcher to be reflexive and articulate what is expected and what is unexpected.

While *interviewing*, the guide obviously guides the interviewer in terms of the specific questions that need to be asked. It is possible to plan semi-structured interviews to a certain extent. However, a substantial part of the interview will be spontaneous, which means the researcher must react to the information given and explore lines of questioning as they arise. This may lead to unforeseen digressions that may potentially cast new light on the field. The second column of the guides allows the researcher to pinpoint the hypothesis or preunderstanding that led to the digression. The guide can bring the interviewer back on track by providing an overview, so it functions as a kind of checklist that can be used while interviewing. One of the intentions behind the guide is that it should help ensure that a balance is maintained between the expected, planned structure and any unexpected, potentially important digressions that may emerge.

Rethinking the guide after the interviews have been held is an important step to ensuring methodological reflexivity. Checking whether the questions worked well and if the thematic structure made sense in the situation is, of course, crucial. However, rethinking whether the researchers' position has influenced the interview is also fundamental to overcoming the unintentional reproduction of preunderstandings. The researcher needs to consider whether the experiences from the interview mean that adjustments need to be made to the interview guide – either by adding or removing specific questions or reframing themes or restructuring the guide.

Researchers tend to adhere to their original methodological designs. This may be due to a belief that the hypothesis continues to be appropriate or out of a desire to achieve comparability between all the interviews. Both things are, of course, important. However, if overcoming academic blind spots through reflexivity is ontologically fundamental, continually rethinking the interview guide – and thereby potentially also adjusting hypotheses and methodological design – is crucial.

Using the interview guide dynamically during the empirical phase of a study in the three previously discussed stages resonates with Alvesson and Skjöldberg's four levels of interpretation (2020, 331). The phases of *preparing*,

interviewing and *rethinking* all contain aspects of being aware of the relationships (interaction with empirical material), understanding the underlying meaning (interpretation), understanding underlying power structures and social reproduction (critical interpretation) and the use of language (reflections). In the following section, we illustrate how the interview guide played a role in the SIMS project and how the normativity of the researchers challenged the search for mobility justice.

Unintended production of inequalities - examples from the SIMS project

The SIMS project took an everyday life perspective as the basis for exploring urban mobilities. Semi-structured interviews with inhabitants from the two areas, Nordhavnen and Folehaven, were conducted to gain a deep understanding of the areas, the participants' everyday lives, and their mobility patterns.

The interview guide was constructed in the SIMS project research group. It was discussed by the seven researchers, whose experience within the mobilities field varied, although all possessed a high degree of professional expertise. Discussions about the guide included many personal experiences with everyday urban mobility, which was considered to be deeply entangled with a hectic everyday life with many activities and mobility options. This had an influence on the researchers' positions and the questions asked. The interviews were conducted by two of the researchers, either together or independently. One was a sociologist while the other was a geographer. All seven members of the research team belonged to the middle class, understood as the socio-economic strata that falls between the working class and the upper class. The middle class is relatively large in Denmark due to its relatively low Gini coefficient¹⁷ (Danish Ministry of Finance 2021), and people belonging to the middle class typically have college degrees and average incomes, and many own their own homes. The social position is relevant as it shapes our research, language, and the interpretative options open to the researcher, which is scrutinized in the examples.

The interviewees and sites

Nordhavn is a newly developed neighborhood situated on the harbor front in Copenhagen close to the city center with the inhabitants primarily being

¹⁷ <https://www.dst.dk/da/Statistik/emner/arbejde-og-indkomst/indkomst-og-loen/indkomststulighed;>

upper-middle-class families and couples. As of 2020, the area had 2,800 inhabitants and 1,500 jobs. However, when the development has been completed, there are expected to be 40,000 inhabitants and 40,000 jobs¹⁸. Ten percent of the current housing stock is public housing or student housing while the remainder is privately owned. 51 percent of the inhabitants are car owners, which is significantly higher than the average in Copenhagen, which is 29 percent¹⁹. Nordhavn is well-connected in terms of public transport as both S-trains (connecting Copenhagen and the capital region) and a newly built metro line serve the area, but it is also easily reached by car due to a newly constructed tunnel, which connects the area to the motorway network. However, cars are absent from the streets as Nordhavn was designed as Copenhagen's first street parking-free area, which means the neighborhood is very pedestrian- and bike-friendly.

Nine interviews were conducted with households in Nordhavn in the autumn of 2020. The informants were recruited via a neighborhood meeting (September 2020), the landowner association board network, resident groups on Facebook, an article in the local newspaper and the snowball method. We encountered three groups of residents during our interviews. The first was couples aged 50+ who had sold their homes outside Copenhagen and moved back to the city. They owned their homes and used a wide range of mobility modes. Typically, the couples owned two cars before moving, but having moved to Nordhavn, they were considering selling one of their cars if they had not done so already. The second group was young families with small children who had moved to Nordhavn from smaller apartments in other parts of the city. They also owned their apartments and used a wide range of mobility modes. This group felt that owning a car was becoming increasingly necessary and was considering purchasing one if they had not done so already. The third group was young people aged 20 and 30 years who were living in smaller rented housing. This group also used many different mobility modes and did not own cars but used shared cars when necessary (Christensen et al 2021).

Folehaven is a city district located at the intersection between a big ring road and two other heavily trafficked roads. The area is characterized by a mix of one-family villas and public housing built in the late 1940s and early 1950s. The public housing comprises a total of 1,300 multi-story dwellings, with approximately 2,000 residents (Christensen et al 2021). The

¹⁸ <https://byoghavn.dk/nordhavn/>

¹⁹ <https://byoghavn.dk/nordhavn/>

neighborhood has faced several challenges in recent years including social isolation because of the heavily trafficked roads, which separate the area from its surroundings, and because the inhabitants stand out markedly worse on parameters such as employment, education, and health compared to the Copenhagen average (Christensen et al 2021). In recent years, the closest train station was moved further away from the area, and buses have been rerouted, which has reduced the public transport service in the area. However, the car infrastructure is good when the rush hour does not cause congestion, and a lot of public space is reserved for parking. In response to these challenges, Folehaven is currently the subject of several physical and social initiatives including a publicly funded plan to thoroughly renew the area. Similar to Nordhavn, Folehaven is, therefore, also characterized by transition processes, which result from the general urban development of the areas.

Nine interviews were conducted with households in Folehaven in the autumn of 2020. The informants were primarily recruited with the assistance of the area renewal office and via the snowball method. We spoke to two different groups of residents: Single residents and families with children. The single residents (30-60 years old) had typically lived in the neighborhood for many years and had originally moved to the area after being rehoused by the municipality due to divorce, homelessness or other circumstances resulting in an acute need for housing. These residents live in small apartments, and they typically use bicycles and public transport and do not own cars. The families with children (parents 30-50 years old) have also lived in the area for many years and typically live in single-family housing, either detached houses or terraced houses. They use a wide range of mobility modes including cars, bicycles, and public transport. They typically own cars, but the bicycle is their preferred form of transport (Christensen et al 2021).

In this paper, we focus mainly on the implications for the research resulting from the socio-economic differences between the residents in the two neighbourhoods. Other factors such as gender, ethnicity and culture are equally interesting to consider, but they are beyond the scope of this paper.

The next section presents examples of how we used the guide reflexively at all three levels - preparing, interviewing, and rethinking. The examples illuminate how our social positions and pre-coding of the field shaped the material, as we could only handle reflexivity to a certain extent in the first phase. In the second and especially in the third phase, when rethinking the interviews, we came to understand how subjective and intersubjective attributes played a role in reproducing inequalities in the field. Even when researchers have the best intentions and are transparent about their positions,

it is not possible to eliminate bias. However, as we show, using the interview guide as a reflexive tool in all phases of the qualitative research process supports gaining new insights into the field.

Example 1: What does settling mean?

The first example of handling positionality with reflexivity raises questions about what it means to settle in an urban neighborhood and illuminates biased expectations concerning freedom of choice in relation to settlement and place.

Table 1 shows the first part of the interview guide. The second column states the aim of the specific questions appearing in the third column. One aim is: “To gain knowledge about the place, the use of the place, choice of residence, preferences, wishes and challenges”, reflecting an interest in creating material that can illuminate the impact of place on everyday life and mobility patterns, relying on the hypothesis that place matters (Soja 2010, 1996; Massey 1994). The formulation is more advanced than the one that appeared in our first draft: “Gaining knowledge about why they chose to live where they do” (see table 2), which reflects the preparatory reflexive work put into it. However, both quotes exhibit the preconception that living and settling is an outcome of deliberation and active choice.

Theme	Hypotheses and aim	Questions:
Everyday life and place	To get descriptions they feel safe in and see which themes they mention and are to be pursued	Try to describe a typical day for you Differences between weekdays and weekends? Where do you work? How would you describe your family relationships? What do you do in your spare time?
	<i>Understanding everyday life is crucial because this is where mobility activities play out (Bech-Jørgensen, 1994, Freudendal-Pedersen, 2015)</i> To gain knowledge about the place, the use of the place, choice of residence, preferences, wishes and challenges.	Why do you live here? How long have you lived here? What do you like best about living here?

	<p><i>Place matters (Soja, 2010, 1996; Massey, 1994)</i></p> <p>Insight into residents' everyday life, including typical chores and rhythms</p> <p><i>Mobilities are significant to lived lives and their activities (Urry, 2007; Freudendal-Pedersen, 2015)</i></p> <p><i>Mobilities are pivotal for organizing everyday life (Freudendal-Pedersen, 2015)</i></p>	<p>What is the most difficult thing about living here?</p> <p>If you could have exactly the everyday life you wanted, what would it look like?</p> <p>What is needed for it to be possible?</p> <p>Do you know the visions for the area?</p> <p>Have they influenced your choice of accommodation and how you live your everyday life?</p>
--	--	---

Table 1: Final version of theme one in the interview guide

Theme	Hypotheses and aim	Questions
Everyday life and place	<p>To get descriptions they feel comfortable with and see which themes they mention</p> <p>To gain knowledge about why they have chosen to live where they do</p> <p>Gaining knowledge of the place (which we hypothesize makes a difference)</p>	<p>Try to describe a typical every day for you?</p> <p>Where do you work?</p> <p>How would you describe your family relationships?</p> <p>What do you do in your spare time?</p> <p>How long have you lived here?</p> <p>What do you like most about living here?</p> <p>What is the most difficult thing about living here?</p>

		<p>Why did you move here?</p> <p>Try to describe your perfect everyday life?</p> <p>How much can you decide for yourself in relation to how your everyday life should look like?</p>
--	--	--

Table 2: First draft of theme one of the interview guide

As previously mentioned, it is possible to prepare some questions for the semi-structured interviews, but much of an interview is spontaneous. Therefore, during the interviews, the questions about settling, living and place were adjusted according to the information that emerged. The following is an extract from an interview with a middle-aged couple (X and Y) living in the newly built upper middle-class neighborhood of Nordhavn:

Interviewer: Why do you live here?

X: We lived in Søborg-Bagsværd [a suburb north of Copenhagen] for many years...
 And when the children moved from home, we wanted to move closer to the city.
 And we previously lived just on the other side of the tracks, on [street name on a small street approx. 1 km away]

Y: One of those little streets over there behind Nordre Frihavnsgade on Østerbro.

X: Yes, we lived there many years ago, before we had children. We lived over there...
 And then it was also because of the transportation aspect that we chose Nordhavn.
 (...) So; we looked at different places. In Frederiksberg and Carlsberg town and Islands Brygge...

Y: South Harbor...

X: Fisketorvet, the one behind Fisketorvet

Y: Yes, the South Harbor there...

X: We didn't look at Sydhavnen that much...

Y: What's it called... Engholmene

X: Yes, Engholmene... It's right behind Fisketorvet.

X: So, we went around looking at different places. But we found this apartment [in Nordhavn, north of the city center] and in terms of transport, when we are going to Bagsværd and Lyngby [suburbs north of Copenhagen], it is somewhat easier [than the other places].

The couple negotiates the meaning of living in Nordhavn in relation to other places in which they have or have not considered living. These negotiations relate to the hypothesis that place matters and show how meanings are created by comparing different places. For example, the woman (X) mentions other exclusive housing areas such as Frederiksberg, Carlsberg Byen and Islands Brygge, while it seems important to her that their house hunting is not connected to the South Harbor area, which is a former working-class neighborhood. She, therefore, mentions that they looked at Engholmene, which is a newly developed site on the harbor front located closer to the city center. For our purpose, it is also interesting that they talk about place and settling in a way that underpins the idea that settling revolves around deliberate individual choices. As the quote exemplifies, the interviewees in Nordhavn often talked at length and in detail about their reflections on place and settling and contrasted Nordhavn and the alternatives they had been considering. In this way, they tapped into the narrative of settling as a free and deliberate choice.

In contrast, emphasizing choice when starting a conversation about place and settling caused some friction in the Folehaven interviews. Posing the question as one of choice felt inappropriate in, for example, the following quote from an interview with a woman who left behind many years of homelessness when she was offered her current apartment in the social housing complex in Folehaven:

Interviewer: Why did you choose to settle here in Folehaven?

I kind of didn't really. It was because... If I must be completely honest, we were actually kicked out of our apartment in Vesterbro because we had some substance abuse problems and then we used the rent and you can't do that... and then we were kicked out and then the municipality could... or there was no one who could help us find somewhere to live for 2 years. So, it was somewhat difficult, but leave it at that... So, we actually lived with my mother-in-law down in Friheden for a few years, until we were offered this because the municipality had some apartments here in

Folehaven specifically for people who needed something, who could not find something or something on their own, but who still did not go to the social services office. So, we didn't feel like it was charity. It was just an option... So, we were happy about that... Because it was the third wish. It was the Valby area. So, we wanted to go to Valby.

In this extract, the interviewee ends up associating with the place, Folehaven, and describes how settling here fulfilled the family's wishes. However, prior to this, she says that settlement has for her not had much to do with free choice, which contrasts with the assumptions behind our question. Instead, hers is a story of drug abuse, failure to pay rent and homelessness. During the interview, we were confronted by the fact that we had a poor understanding of the types of experiences connected to settling other than those that corresponded with the narrative of freedom of choice. If the aim of reflexive research is to break away from established frames of reference and look at what we are *not* capable of saying (Alvesson and Sköldbberg 2020, 327), then this interview account hints at something outside our initial frames of reference. Our taking-for-granted of choice and how this interpretation of place and settlement dominated our understanding is revealed by reflexively considering the empirical material and the initial options for interpretation. This is an exercise that Alvesson and Sköldbberg (2020, 336) assert has surprising potential as it illuminates tensions between the empirical material and the favoring of certain interpretations.

To maintain reflexivity in all phases of the research process, we rethink the interviews by revisiting the interview guide after gathering the empirical material. Revisiting the interview guide with the above experiences in mind, we can see that some of the emphasis on choice occurs spontaneously in the interviews as the interviewers emphasize 'choice' more than the interview guide does. However, it also becomes clear that our inclination to assume that settling and place are related to choice was there all along as is reflected in the underlying hypothesis as shown in Tables 1 and 2. One of Alvesson and Sköldbberg's (2020, 336) levels of reflexivity involves relating critical interpretation to linguistic reflection and identifying potentially problematic forms of authority. Our poor understanding of already marginalized experiences with settling can be taken as an example of problematic forms of authority because we employ a language that is ill-fit for making sense of the Folehaven experiences with settling, which is extremely unfortunate, as these experiences are already marginalized and ill-understood by the surrounding society. Without reflexivity, the consequence is most likely continued exclusion of already marginalized experiences with settling.

Inspired by Bourdieu and Waquant's social constructionism (1992), Alvesson and Sköldbberg (2020, 368) ask what constructs the social constructor. The question invites examination of the social landscape, language, paradigms, and local research community that construct the interviewer (the co-constructor of the data). The contrast between how we resonated with the experiences of settlement in the two areas exposed our social positions. Our notions of what it means to live and settle in cities are bound to cultural ideas and assumptions associated with certain social positions. Belonging to the middle-class, our notions aligned better with the stories told in Nordhavn than those told in Folehaven. In Folehaven, the narrative of choice that we offered the interviewees did not support them in making sense of their experiences of settling.

Our active role in producing and reproducing inequalities emerges from reflexive engagement with the contrasting stories told in Folehaven and Nordhavn. Our linguistics was ill-suited for making sense of the experiences of the Folehaven residents. We knew that we were studying mobilities in an unequal world (Murray, Sawchuk and Jirón 2016), but even so, our preconceived notions about settling were not capable of saying much about the inequality in opportunities and constraints linked to different social groups' experiences of settling.

Example 2: What does it mean to be mobile?

Another example is related to the second theme of the interview guide titled "Transportation, mobility patterns and technologies". Here, we were confronted with a tendency to overstate expectations regarding the subjects' mobility.

The SIMS project is based on a theoretical framework concerning mobilities, everyday life, and complexities. Mobilities researchers Budz and Cook (2019, 92) have used the metaphor of a hammer and nail to describe the biases of researchers in this field that commonly emerge: "It is said that from the perspective of a hammer, everything looks like a nail". With the metaphor, they highlight a tendency amongst mobility scholars to assume or construct 'over-animated mobile subjects' (Bissell 2010, 58). The point is that our professional interest in mobilities and subject knowledge in the field influences our interpretations.

"Am I the kind of person who will be predisposed to believe that the data suggest this conclusion?", Hammond (2021, 145) encourages us to ask as part of the reflexive examination of judgements and practices in the research process. The point made by Bissell, Budz and Cook is then that, as mobilities

researchers, our theoretical positions may make us the kind of persons that over-animate our subjects' mobilities.

In the preparatory phase, we held one-day meetings, which were attended by the whole team of researchers in the SIMS project to structure our work with reflexivity. The meetings provided a venue for joint elaboration of the hypothesis and common discussions of our preconceptions, the theoretical concepts at stake, and the formulation of the specific questions to be raised in the interviews. The aim was to force ourselves to articulate what was expected and what was unexpected and pose open questions that would invite new perspectives to emerge from the material. Theoretical positions, personal experiences and experiences from previous mobilities research projects were scrutinized during these meetings. The differences between table 3, which presents our first draft of the theme of the interview guide "Mobility patterns and technologies", and table 4, which presents the same theme in its final version, provide insights into what occurred during the discussions.

Theme	Hypotheses and aim	Questions
Mobility patterns and technologies	To get their stories of how rationales and meaning are created in relation to means of transportation	Try to describe different situations in your everyday life in which you take different forms of transportation. How has it changed over time?
	Life phase change	Try to describe different situations in your everyday life in which different modes of transportation best meet specific needs? If you could decide for yourself, what means of transportation would you use in your everyday life?

Table 3: First draft of 'Mobility patterns and technologies' theme

For example, our discussions about language and elaborated understandings of the key concepts at stake such as 'transportation', 'mobility', 'life phase

changes' and 'structural stories' resulted in the more elaborate and detailed version that appears in table 4. The changes were the result of reflexivity in the sense that, for example, the words 'mobility' and 'transportation' are linked to very different ontological and epistemological approaches, and because wording tends to capture us, linguistic considerations form the backdrop for which interpretations become possible (Alvesson and Sköldberg 2020, 11). Thus, the phrasing is indicative of our interpretive repertoire.

Theme	Hypotheses and aim	Questions
Transportation, mobility patterns, technologies	<p>To get their stories about how rationales and meaning are created in relation to means of transportation.</p> <p><i>Meaning is constructed - situational, co-created (Alvesson & Sköldberg)</i></p> <p>How transportation is related to life phase change.</p> <p><i>Rupture, breaches, and changes in life phases as locus of change (Bech-Jørgensen, 1994; Godskesen, 2002)</i></p> <p>To gain knowledge about</p>	<p>Try to describe situations in your everyday life in which you take different forms of transportation</p> <p>Which do you like best?</p> <p>(Why) Do you cycle? Why/why not?</p> <p>(Why) Do you use the bus/train/subway? Why/why not?</p> <p>(Why) Do you use a car? Why/why not?</p> <p>Do you use other forms of transportation? Walk Scooter Roller skates ...</p> <p>In which situations do you think about the weather in relation to the mode of transportation you choose?</p> <p>(How much does the weather matter?)</p>

	<p>which technologies and solutions they use without asking directly (Rejseplanen, LetsGo, ByCyklen).</p> <p>What structural stories are at play.</p> <p><i>Structural stories are common truths that we can activate as rationales for mobility choices (Freudendal-Pedersen, 2009)</i></p> <p>Which materialities, skills and meanings come into play</p> <p><i>Mobility practices entail the bringing together of different materialities, skills and meanings (Spurling et al 2015)</i></p>	<p>How have your transportation needs changed over time? (Child/Young/Adult/Old)</p> <p>Have you thought about the options for transportation in relation to your choice of residence?</p> <p>Which means of transportation would you most like to use in everyday life? Why?</p> <p>Do you think many others feel the same way? Why/why not?</p> <p>Do you use any apps in connection with transportation? Which ones? How?</p>
--	---	--

Table 4: Final version of the mobility theme – now titled ‘Transportation, mobility patterns and technologies’

Is the tendency to construct ‘over-animated mobile subjects’, as discussed by Bissell (2010) and Budz and Cook (2019), already at stake in our preparatory work? Possibly. The significant expansion of the theme following our

discussions, the many hypotheses constructed, and the many questions and sub-questions in the guide suggest that certain interpretations are favored. The next phase in working with the interview guide provided a more nuanced picture as we again found our preconceptions, hypotheses, and concrete questions aligned well with the stories from the Nordhavn interviews while a discrepancy between the researchers' and residents' frames of reference was more pronounced in the Folehaven interviews. This is discussed in more detail in the next paragraphs.

While conducting the interviews, we felt that the Nordhavn interviewees were able to give long detailed descriptions of their mobilities and reflections in terms of time, practicality, sustainability, economy, and the alternatives they were considering. The next (heavily shortened) quote is from an interview with a young woman who told us detailed stories about her everyday life and the mobilities involved in suturing a hectic everyday life together:

Yes, but I get up and then I typically cycle. I have an electric bike. So, I cycle from here to the office. I have an office in the inner city. (...) Then I also have some other work, which I do occasionally out by Islands Brygge, and I cycle there as well... So, I transport myself around a lot by bicycle... and otherwise, I use the metro occasionally and I also occasionally use car sharing schemes (...) The electric bike was a gift from my boyfriend... and at first, I thought I don't need an electric bike. I'm 30, I can easily ride a bike, but now I've tried it and it's fantastic. And now I can't even imagine not having an electric bike. (...) you get there much faster. It's very easy to get from A to B. I don't think too much about whether I must travel long distances because it's just easy on an electric bike. (...) So, I can pretty much go everywhere. Even to my aunt, who lives in North Zealand (...). I use the metro if it rains, there is a metro right down here... or if my bike isn't working or if I'm going further away and I don't feel like cycling anyway... So, it's mostly a second alternative... or if I have to transport something that I can't carry on my bike, then I take the subway or find a shared car. (...) I use car sharing... I'm trying to think of the last time I used it... (...) The other day I had to pick up a television. So, I took a shared car so I could put it in the back... or if I don't feel like cycling... or if several of us are going somewhere together, I would also consider using it... (...) Typically it would also be because of the weather... I think the last time I took a shared car from out here was because I had to go (...) and meet someone. Yes, the weather was bad, and I was busy. So, I just had to get there as quickly as possible and so I took such a car...

In this extract, we find a detailed account of a busy everyday life and elaborate stories of the pros and cons of using different transportation modes for stitching it together.

In contrast, we met many inhabitants in Folehaven whose everyday lives were less complex and much less mobile than we had expected judging by the many questions we asked about everyday mobility practices. For example, one interviewee, who is similar to the woman from Nordhavn in terms of age and length of education, introduces himself as follows:

As I said, I am Halfdan... And now I live out here in south Valby in some social housing. Some older social housing, I should say. I don't have a job at the moment, so that was that part of it. So I don't exactly commute daily. I regularly have various appointments in the centre of Copenhagen and I'm also quite involved in voluntary work out here. I'm on the board of the housing association and there is also a municipal area renewal scheme out here, which I am involved in with some things (...) And then I'm somewhat politically active in the Social Democrats. So that is also interesting in relation to different things. I don't know if there is much more... That was the more external things. I also, for example, love reading books at home and using the nature in proximity to my home. So I don't know if there is much more to say...

This quote is full of leisure activities and volunteer work, which involves moving around the city, but it is far from a daily occurrence. Furthermore, it highlights interests which are explored in the immediate surroundings. The quote marks the beginning of an interview in which the interviewee paints a picture of a much less hectic and less logistically complex everyday life.

Rethinking the interviews, we find that the tendency of constructing 'over-animated mobile subjects' (Bissell 2010) was mostly evident in the Folehaven interviews, while our general expectation that the interviewees lived complex, busy, and hyper-mobile lives were mostly supported in the Nordhavn interviews. When we applied the interview guide in Folehaven, the many questions we asked about everyday mobility revealed our poor understanding of immobile everyday lives. The fact that we expected the interviewees' everyday lives to be busier is related to both theoretical and subjective frames of reference. Our poor understanding of Folehaven interviewee's (im)mobility reflects a lack of representation of this kind of experience in the mobilities literature and in our own lives. Reproducing it without questioning it would mean reproducing existing inequalities in representation. Without reflexivity, we risk uncritically reporting the mobility experiences that are well-described and ignoring those that are poorly understood. The hyper-mobile subject is well-described while the more static subject is less so.

In summary, applying the same interview guide in the two different areas resulted in two very different experiences. The interviews in Nordhavn were characterized by the relative absence of tension. The negotiations of meanings were non contentious. The researcher's and the interviewees' frames of reference and experiences were relatively aligned. However, our experiences with interviewing in Folehaven were a stark contrast to those we had in Nordhavn. Co-creating meaning and rationales concerning everyday life, place, settling and mobilities was not frictionless as meanings, sense-making and language were far from aligned. The empirical material that was generated by applying the same interview guide and using it as a means for maintaining reflexivity throughout the research process highlights the importance of engaging much more with issues of class, inequality, and mobility injustice than there was scope for in our initial theoretical framework. This underlines the importance of reflexivity, considering different interpretation levels, and revising frames of reference at all stages of the research process.

Discussion: Epistemic injustice at play

As argued earlier, reflexivity should not stop with (self-)criticism but also question shared knowledge and be critical of power structures and collective understandings. Reflexivity can address concerns of epistemic injustice in mobility research in terms of who is considered a trustworthy provider of knowledge and who can make themselves understood (Butz & Cook, 2019). To embrace different understandings of given phenomena, researchers can benefit from paying attention to experiences which are poorly understood. The above examples demonstrate how pre-existing conceptual frameworks and differences in positionalities cause risks of misunderstandings and misrepresentations.

To conceptualize misrepresentation, Miranda Fricker (2007) coined the term "epistemic injustice". Epistemic injustice occurs when someone is discredited in their capacity as a knower or when gaps in the collective knowledge resources disadvantage someone in their capacity to make sense of their own experiences; something which is in their interest to do (Fricker, 2007: 162-63). Marginalised subjects often experience prejudice because of who they are. Furthermore, these subjects' interpretation of their own experiences is often not collectively shared. Fricker distinguishes the following two forms of epistemic injustice: testimonial and hermeneutical. The former occurs when "prejudice causes a hearer to give a deflated level of credibility to a speaker's word" and the latter occurs "at a prior stage when a

gap in collective interpretive resources puts someone at an unfair disadvantage" (Fricker 2007, 1). However, sometimes, the two overlap in that some subjects experience a lack of understanding on the behalf of the researchers and are also marginalized by the researchers, who undermine their credibility as knowers.

The collective loss of words may impact people's capacity to make meaning of situations of everyday life such as situations of immobility. The first example highlighted how presumed freedom of choice in relation to settlement was revealed in questions such as "why did you choose to live here?". This question is in line with a seemingly western liberal understanding of people's capabilities, e.g., the ability to choose where to live. Collective understandings such as this help to marginalize experiences of absence of choice, which may disempower already marginalized groups, thereby not giving them the opportunity to make meaning of their own situation. This was also present in the second example about the residents' everyday mobilities.

As the second example illustrates, the conceptual framework about mobilities and hyper-mobile lifestyles sometimes clashed with how the residents made sense of their experiences with daily transportation. The risk of miscommunications was present, as our framework was based on an understanding of daily life as being well-structured and busy with many different activities. However, the more unstructured daily life that we were confronted with in which the interviewees' activities were not centred around commuting, education or social relations challenged our preconceived notions of mobile everyday life. Our original choice of interview questions meant that we, to some extent, ended up assuming that the interviewees lived hectic everyday lives (Bissell, 2010). Questions such as "Could you describe situations in your everyday life in which you take different forms of transportation?" clashed with the reality of some interviewees, which was characterized by localness and a routine based on one form of transportation. As previously mentioned, the tendency to treat informants as over-animated mobile subjects is not uncommon in mobility research (Butz and Cook 2019). Because of these expectations, we did not support interviewees in voicing experiences of immobility. Thus, the risk of subjects being communicatively unintelligible due to "a lack of adequate vocabulary or conceptual resources to describe certain categories of experience" (Butz and Cook 2019, 83) revealed itself in relation to both examples.

As discussed, the interview guide was a key tool for maintaining reflexivity, which enabled the identification of mobility inequality and

epistemic injustices in our work. However, epistemic injustices are, first and foremost, a reflection of unequal social power relations which influence our ways of knowing (Fricker 2007). Therefore, conducting research with human subjects will always involve hermeneutical injustices. No matter how well prepared, it is impossible to eradicate prejudice, and we did not expect to avoid all epistemic implications. As Fricker describes “the social atmosphere in which we must judge speakers’ credibility is one in which there are inevitably many stray residual prejudices that threaten to influence our credibility judgements” (Fricker 2007, 5). Our research is an example of how maintaining reflexivity throughout the research process is a way of elucidating injustices on several scales (epistemic, procedural, and distributive). As society evolves, so does our shared understanding of social events, which means that epistemic reflexivity should always be part of the research process in all its phases. Being sensitive to epistemic injustice demands that researchers be critical of their own practice and constantly evaluate collectively shared understandings. Therefore, epistemic justice, as Sheller describes it, includes proactive knowledge production and ongoing adaptation (Sheller 2018, 35).

Reflexivity in terms of epistemic justice exposes mobility injustice and avoids its reproduction (Sheller 2018, Schwanen 2021). Being critical of common interpretations and conceptualisations of social events, not least in research, opens new perspectives and ways of knowing and is, thus, a way of breaking away from “fixed forms of subjectivities” (Alvesson and Sköldbberg 2020, 371). As Alvesson and Sköldbberg (2018, 381) describe “[b]y emphasizing how social science orders the world in a particular way, power/knowledge connections are illuminated, and truth-creating effects are disarmed”.

Researchers should seek to fill knowledge gaps by including different understandings, involving “recognizing and creating new forms of knowledge, new facts, and new ways of reconciling seemingly incommensurable ways of knowing” (Sheller 2018, 33). Reflexivity in research will, thus, include proactive knowledge production and ongoing adaptation. Continually adjusting our understandings is not only a way of avoiding the implications of injustice on an epistemic level; it also represents a way for researchers to gain new perspectives on the field with which they interact.

Conclusion

In this article, we have discussed the importance of maintaining reflexivity to ensure mobility justice and reduce inequalities. We argue that engaging reflexively with the interview guide before, during and after the interviews

can highlight researchers' preconceptions and positionality, and help them handle new perspectives, thereby ensuring epistemic justice. The interview guide was used as a key tool to maintain reflexivity, which raised our awareness of mobility inequality and epistemic injustices in our work with everyday urban mobilities in the SIMS project. A key aim of this article has been to exemplify and inspire other scholars who apply qualitative methods in the mobility field to employ the interview guide as a tool to ensure reflexivity throughout the research process. However, the article also demonstrates that this strategy is not infallible as no unambiguous, stable, and context-independent truths exist in social science (Alvesson and Sköldbberg 2020, 2). In our work, we have shown that, even with the best of intentions, researchers may reproduce inequalities because of the influence of previous experiences, social position, and normative convictions in the research process. This became clear from reflexive qualitative research applying the same interview guide in two very different neighborhoods in Copenhagen, Denmark, in the search for an understanding of the everyday mobilities in the areas.

In the Folehaven interviews, our experiences with posing specific questions that were influenced by the researchers' positioning and normativity and revealed our own mobility expectations, prejudiced language, and social positions. Experiences from our Folehaven interviews – and how they contrasted with our experiences with the Nordhavn interviews – prompted us to question and break away from our frames of reference and launch reflexive processes about what we were *not* capable of capturing (Alvesson and Sköldbberg 2020, 327).

The article demonstrates that maintaining reflexivity in the research process does not guarantee mobile justice or epistemic justice. Instead, it ensures that the researcher is continuously aware of any unintentional reproduction of inequalities in qualitative mobilities research. Throughout the stages of *preparing*, *interviewing*, and *rethinking*, the interview guide helps the researcher identify new aspects of mobility practices – not *despite* the researchers' normativity but *because* of its explicit use. In other words, working transparently is fundamental in abductive, reflexive research processes. During the interaction between interviewee and interviewer, abduction allows social inequalities of mobilities in everyday life practices to be explored.

Being aware of epistemic injustice in research enables researchers to critically examine their own practice. Aiming to achieve epistemic justice means that collectively shared understandings must be constantly re-

evaluated. Epistemic justice includes proactive knowledge production and ongoing adaptation, as Sheller puts it (Sheller 2018).

Alvesson and Sköldberg (202, 345) suggest that one way to do this is by creating the time for research to “circle around outside and to some extent away from its ‘core area’, emphasizing interpretations and reflections other than those which principally characterize the project”. Even though Covid-19 created many challenges for this project, it also facilitated a different process of reflection. Originally, the SIMS project, where the interviews analyzed in this paper stem from, had a research design with several phases, including an intervention phase aiming at experimenting with mobility interventions in the Folehaven and Nordhavn areas. Covid-19 caused us to rethink and radically change our research design. Had the pandemic not hit and had we continued with the original design, this would very likely have meant that we as researchers would have been very occupied with conducting interventions and would have had less time to reflect thoroughly on our knowledge production. As such, this paper was made possible by the pandemic. This also raises a critique of how most contemporary research relies heavily on funding from different agencies with diverse interests. The nature of project work, whereby scientific personnel at universities can only conduct research if they manage to secure external funding, becomes more concerned with delivering results by a deadline to move on to the next project, which seriously threatens reflexive research and enhances the reproduction of inequalities and injustices in mobility research.

Acknowledgements

This research was funded by Innovation Foundation Denmark and AAU Rector’s Talent Management Programme 2018.

References

- Alvesson, M. and Sköldberg, K. 2018. *Reflexive Methodology: New Vistas for Qualitative Research*. London: Sage.
- Bech-Jørgensen, B. 1994. *Når hver dag bliver til hverdag*. [When every day becomes everyday]. Copenhagen: Akademisk Forlag.
- Bissell, D. 2010. "Narrating mobile methodologies: Active and passive empiricisms." In *Mobile methodologies*, edited by B. Fincham, M. McGuinness and L. Murray, 53–68. Basingstoke: Palgrave Macmillan.
- Blaikie, N. and Priest, J. 2019. *Designing Social Research: The Logic of Anticipation*. Cambridge: Polity Press.
<http://ebookcentral.proquest.com/lib/kbdk/detail.action?docID=5638724>.
- Blaikie, N. 1993. *Approaches to social enquiry*. Cambridge: Polity Press.
- Bourdieu, P. and Wacquant, L. 1992. *An invitation to reflexive sociology*. Cambridge: Polity Press.
- Brinkman, S. and Kvale, S. 2014. *InterViews: Learning the Craft of Qualitative Research Interviewing*. London: Sage.
- Butz D. and Cook N. 2019. "Mobile Methods, Epistemic Justice and Mobility Justice." In *Mobilities, Mobility Justice and Social Justice*, edited by Cook N. and Butz D, 81–98. London: Routledge.
- By & Havn. 2022. "Nordhavn er hele Københavns nye, bæredygtige bydel" [Nordhavn is all of Copenhagen's new, sustainable district]. By & Havn. Accessed September 8 2022. <https://byoghavn.dk/nordhavn/>
- Christensen, T., Folkmann, A., Friis, F., Lindberg, M., Kristensen, N., Freudeldal-Pedersen, M. and Hartmann-Petersen, K. 2021. *Forstudie af aktører og lokalområderne i SIMS: Områdebekræftelser og mobilitetsmønstre i Folehaven, Nordhavn og Nærheden*. [Preliminary study of actors and the local areas in SIMS: Area descriptions, Mobility patterns in Folehaven, Nordhavn and Nærheden].
www.sims.aau.dk/digitalAssets/1002/1002457_deliverable-d2.2_final.pdf
- Clegg, S. and Hardy, C. 1996. "Some dare call it power". In *Handbook of Organization Studies*, edited by Clegg, S., Hardy, C. and Nord, W. London: Sage.
- D'Andrea, A., Ciolfi, L., and Gray, B. 2011. "Methodological Challenges and Innovations in Mobilities Research" *Mobilities* 6 (2): 149-160, DOI: 10.1080/17450101.2011.552769
- Danish Ministry of Finance. 2021. "Ulighedssredegørelsen 2021" [The Inequality Account]: https://fm.dk/media/25382/ulighedssredegørelsen-2021_web.pdf

- Finlay, L. 1998. "Reflexivity: An Essential Component for All Research?" *British Journal of Occupational Therapy*, 61 (10): 453-456.
- Fricker, Miranda. 2007. *Epistemic Injustice: Power and the Ethics of Knowing*. Oxford: Oxford University Press
- Freudendal-Pedersen, M. 2007. *Mellem frihed og ufrihed: Strukturelle fortællinger om mobilitet i hverdagslivet*. [Between freedom and unfreedom: Structural stories about mobility in everyday life]. PhD diss., Roskilde University.
- Freudendal-Pedersen, M. 2014. "Tracing the Super Rich and Their Mobilities in a Scandinavian Welfare State." In *Elite Mobilities* edited by Birtchnell, T. and Caletío, J. 209–225. London: Routledge.
- Freudendal-Pedersen, M. 2015. "Cyclists as Part of the City's Organism: Structural Stories on Cycling in Copenhagen". *City & Society* 27 (1), 30-50. <https://doi.org/10.1111/ciso.12051>
- Freudendal-Pedersen, M., Hartmann-Petersen, K., Kjærulff, A, and Nielsen, L. D. 2017. "Interactive environmental planning: creating utopias and storylines within a mobilities planning project". *Journal of Environmental Planning and Management* 60 (6): 941-958. <https://doi.org/10.1080/09640568.2016.1189817>
- Freudendal-Pedersen, M. 2022. *Making Mobilities Matter*. New York: Routledge
- Gergen, K. and Gergen, M. 1991. "Towards Reflexive Methodologies". In *Research and Reflexivity*, edited by Steier, F. London: Sage.
- Godskesen, M. 2002. *Rutiner og brud i hverdagens transport. Et teknologisociologisk studie af børnefamiliers transport*. [Routines and breaks in everyday transport. A technosociological study of transport for families with children]. PhD diss., Technical University Denmark.
- Hammond, M. 2021. *Research Methods: The Key Concepts*. London: Routledge.
- Hartmann-Petersen, K. 2009. *I medgang og modgang: Fleksibilitet og flygtighed i buschaufførers mobile liv* [In ups and downs: Flexibility and volatility in the mobile lives of bus drivers]. PhD diss., Roskilde University.
- Hartmann-Petersen, K. 2020. "Providing and Working in Rhythms". *Handbook of Urban Mobilities*. Jensen, O. B., Lassen, C., Kaufmann, V., Freudendal-Pedersen, M. & Lange, I. S. G. (red.). Routledge, (Routledge International Handbooks).

- Hidayati, I., Tan, W., and Yamu, C. 2021. "Conceptualizing Mobility Inequality: Mobility and Accessibility for the Marginalized". *Journal of Planning Literature*
- Massey, D. 1994. *Space, Place, and Gender*. Minnesota: Minnesota University Press.
- Marcus, G. 1998. *Ethnography Through Thick and Thin*. Princeton: Princeton University Press
- Murray, L., Sawchuk K. and Jirón, P. 2016. "Comparative mobilities in an unequal world: researching intersections of gender and generation." *Mobilities*, 11 (4): 542-552. DOI: 10.1080/17450101.2016.1211822
- Schwanen, T. 2021. "Achieving just transitions to low-carbon urban mobility." *Nature Energy*, 6 (7), 685–687. <https://doi.org/10.1038/s41560-021-00856-z>
- Sheller, Mimi. 2018. *Mobility Justice: The Politics of Movement in an Age of Extremes*. London: Verso.
- Sheller, M. 2003. *Consuming the Caribbean: From Arawaks to Zombies*. London: Routledge.
- Soja, E. 1996. *Thirdspace: Journeys to Los Angeles and other real-and-imagined places*. Oxford: Blackwell.
- Soja, E. 2010. *Seeking spatial justice*. Minnesota: University of Minnesota Press.
- Urry, J. 2007. *Mobilities*. Cambridge: Polity Press.
- Spurling, N. and McMeekin, A. 2015. "Interventions in Practices: Sustainable Mobility Policies in England." In *Social Practices, Interventions and Sustainability: Beyond Behaviour Change*. Edited by Strengers, Y. & Maller, C. New York: Routledge.
- Statistics Denmark. 2022. *Indkomstulighed [Income inequality]*. Statistics Denmark. Accessed September 8 2022. <https://www.dst.dk/da/Statistik/emner/arbejde-og-indkomst/indkomst-og-loen/indkomstulighed;>

8.1. FROM METHODOLOGY TO THEORY

The paper “Despite the best of intentions: Inequality in the search for mobility justice” explored challenges related to inequality in qualitative mobilities research. It suggested that researchers reflexively engage with the interview guide before, during and after interviews to handle normativity, integrate new perspectives and ensure epistemic justice.

The next paper proposes a theoretical framework for capturing the important dimensions of inequality and normativity in a sustainable transition, which has been identified in the dissertation. The aim is to develop a theoretical lens that will allow future studies of sustainable transitions of cities and their mobility systems to address the social and normative implications of transition. It argues that working with sustainable transition essentially involves creating the good, decarbonized future life. It is important to question who is included and who is excluded from visions of the good future life because sustainable transition will potentially redistribute the social landscapes of cities. Therefore, transition scholars need to develop greater awareness of who stands to win and lose from different initiatives. It is important to avoid steering cities onto unjust and possibly inefficient transition paths in the sense that exclusive pathways will leave parts of the city untouched and continuously carbonized.

PAPER SIX: DEVELOPING A THEORETICAL FRAMEWORK FOR CAPTURING INEQUALITY IN TRANSITIONS

Malene Rudolf Lindberg, Aalborg University

Abstract

In essence, a sustainable urban transition involves designing the good future life in cities. Visions of green urban futures and the efforts to realize them hold the promise of a better life for inhabitants. Therefore, it relies on a normative core. However, normative evaluations and questions about who is included or excluded from the visions often remain in the background in research on sustainable transitions, including studies of sustainable urban mobility transitions in which the author took part, and where I empirically encountered a need for a better understanding of the politics of transition. Against this background, the paper develops a theoretical ‘patchwork’ that is sensitive to the social and normative dimensions of sustainable transition. It brings together four prominent frameworks: 1) the Multi-Level Perspective (MLP) for the complex and multi-layered backdrop of sustainable transitions, 2) practice theory for insights into everyday life and how it changes, 3) reflexive modernization for an ontology that addresses social inequality and how it is altered as climate change and efforts to mitigate its consequences unfold and 4) critical realism for rendering the normative aspects of transition visible. While several scholars have suggested combining the MLP and theories of practice (Geels & Penna, 2015; Hargreaves et al., 2013; Köhler et al., 2019; McMeekin & Southerton, 2012), this paper moves further and argues that we also need to include an ontology capable of capturing social differentiation and an understanding of normativity. This is requisite for transition scholars to allow them to conceptualize the key dynamics of transition processes and assess their social implications and normative ideas, and to promote inclusive solutions that are adaptable to the variety of lifestyles, values and spaces; something which is needed to achieve sustainability in urban futures.

Introduction

Cities across the world are facing the daunting challenge of climate change and need sustainable change. Steering towards a sustainable low carbon future call for a radical transition in urban lifestyles – how we live, how we eat and how we move in cities (Shove & Spurling, 2013). The Paris agreement (United Nations, 2015) was a landmark in strengthening global responses to the threat of climate change, committing all nations to the pursuit of efforts to keep the global temperature rise this century below 2 degrees Celsius and limit the temperature increase even further to 1.5 degrees²⁰. The agreement marked a radical shift after decades of stagnant debate on the veracity of climate change, and whether anthropogenic climate change was really happening. However, the radical transitions needed to achieve the goals of the agreement are currently far from being realized. Instead, as the Intergovernmental Panel on Climate Change (IPCC) have documented, total net anthropogenic emissions have continued to rise, as have cumulative net CO₂ emissions since 1850 (IPCC, 2022). An increasing share of emissions can be attributed to cities due to an increase in urban activities such as industry, energy supply, transportation, and construction, with estimates suggesting that 75% of the world's CO₂ emissions derive from cities (IPCC, 2022; UNEP, 2022).

Anthropogenic climate changes are inextricably linked to inequality. The social logic of climate change is fundamentally unequal. In relation to climate change, significant inequality-exacerbating forces are pulling in at least three directions: 1) inequality in terms of contribution to climate change: Who is creating – and has historically created –the problem? 2) inequality in terms of exposure to risks: Who is exposed to climate change-induced risks? And 3) inequality in terms of capacity to respond: Who are sustainable transitions designed by and for? The next paragraphs elaborate on these three forms of climate change inequality.

It is well-documented that affluent groups pollute many times more than less affluent groups. For example, Csutora (2012) found that socio-economic position, rather than consumption patterns, is decisive for the size of Hungarians' climate footprints. Further, it has been documented that inequalities in income and CO₂ emissions are rising in many countries. In

²⁰ <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement/key-aspects-of-the-paris-agreement>

2015, the top 10% of global emitters contributed about 45% of global emissions, while the bottom 50% only contributed 13% of global emissions (Chancel and Piketty 2015). In Denmark, 75% of the citizens belong to these 10%, which means that, on average, we belong to a small global elite (Jacobsen et al., 2018). However, there are big differences among the Danes. Although economic inequality in Denmark is very low in a global context, the richest fifth of the Danish population emits twice as much CO₂ as the poorest fifth, which is caused by more resource-demanding consumption and mobility patterns (ibid). Updated figures from 2022 show that the richest 1% of Danes have a climate footprint which is the same size as that of the poorest billion people on earth and that they, on average, emit 10 times as much CO₂ as the average Dane (Oxfam Ibis, 2022). The figures highlight the existence of extreme carbon inequality both at the global level and within countries and cities. The unequal pollution patterns and the differentiated responsibility for climate change that follows comprise the first type of carbon inequality.

Studies have also documented that marginalized groups are more exposed to the risks associated with climate change such as flooding and drought than other groups (Singer 2019; Beck 2016). A devastating and, therefore, frequently highlighted example of inequality in terms of exposure to climate change induced risk is hurricane Katerina, which hit New Orleans in 2005. The impact of the hurricane on the city was highly uneven and hit black, and working class communities disproportionately hard (Walker and Burningham 2011; Beck 2016). This led Beck to argue that climate change is *metamorphosing* the world and social inequality – causing the landscape of inequality to change dramatically and irreversibly. In the face of anthropogenic climate change, he argues, the notion of class, defined as the unequal distribution of goods, becomes *too soft* a concept to capture the “*explosive realities of radicalizing inequalities*” (Beck 2016, 83). Today, *social class* has become *Anthropocene class*, because where one lives in terms of elevation above sea level is becoming more and more decisive. The unequal distribution of climatic ‘bads’ comprises the second type of carbon inequality.

The third type of inequality is related to the social implications of sustainable transition: Who is included in the visions of sustainable urban futures? Who are sustainable innovations designed for, and who do we plan sustainable interventions for? (Beck, 2015). The creators of climate change responses may give preferential treatment to affluent groups when prioritizing and designing urban mobility services and infrastructure. However, empirical research on sustainable lifestyle transition has yet to sufficiently tackle the reproduction of inequality or the failure to successfully

perform sustainable practices (Walker 2013). A transition can be relatively inclusive or exclusive depending on the way it is pursued (Docherty, Marsden, & Anable, 2018). Hence, a decarbonized future may be more or less unequal than our carbonized present.

The integral nature of climate challenges and inequality emerged in a research project experimenting with sustainable mobility solutions in different urban areas in Copenhagen, Denmark. The research project ‘Sustainable Innovative Mobility Solutions’ (SIMS) trialed Mobility-as-a-Service (MaaS) solutions in socio-demographically diverse urban areas to investigate how sharing cars, bikes and rides contributed to sustainable transitions in cities and their mobility systems. Areas characterized by different types of urban life and physical structure were selected for the study. One of the areas was Nordhavn, a newly developed area on the harbor front which is popular amongst families and couples from the upper-middle-class, while another, Folehaven, was an old working-class neighborhood with social housing located in the middle of three major roads leading into Copenhagen. Within this context, the SIMS project investigated possible sustainable transitions related to the adoption of sharing mobilities. However, when I became seriously involved with the areas, it became clear that the differences between them played a major role in what was possible in terms of a sustainable mobility transition.

As early as the design phase, the MaaS partners voiced unwillingness to engage on equal terms in the two areas, and in the end, the mobility experiment was completely abandoned in Folehaven, which was already a mobility-impooverished and marginalized area. It did not represent a good business case to key partners and decision-makers (Kristensen, Lindberg & Freudendal- Pedersen, forthcoming). At the same time, MaaS providers sought to expand the experiment in Nordhavn, which was already richer in sustainable mobility alternatives than Folehaven (Christensen et al., 2021). In this process, it became clear to us that the MaaS partners thought that their solutions were suitable for the lifestyles and spatial layout of the upper-middle-class neighborhood, Nordhavn, while they withdrew from engaging with Folehaven, referring to previous experiences of vandalism and an absence of the right mindset in socially deprived neighborhoods (for an elaboration, see Kristensen, Lindberg & Freudendal-Pedersen, forthcoming). Regardless of whether MaaS-solutions did or did not entail a feasible transition pathway for Folehaven, we were left with the reality that the people who had the decision-making power to cancel the experiment did so, which was very much in line with Ulrich Beck’s idea of “organized irresponsibility”

(Beck 1992, p. 19; 2015 pp. 132-137) because the decision-makers belonged to social groups or communities that would not experience the consequences of the decisions. The decision-makers did not live in Folehaven, they were not familiar with its mobility patterns or experience the pollution, noise and mobility poverty related to living in the middle of three major roads. As such, it is an example of organized irresponsibility in terms of a climate change response and of transition efforts that end up reproducing mobility inequalities (Kristensen, Lindberg & Fredendal-Pedersen, forthcoming).

With the SIMS sustainable mobility experiments, it became clear that transition efforts do not occur in a social vacuum. Instead, they mirror existing issues of inequality and power in relation to climate change, risk exposure, power and capacity for change. It became clear that we needed a framework that would capture the landscapes of inequality in which we were prompting a transition. It also became clear that addressing the social and normative implications of relying on MaaS-solutions to deliver sustainable mobility transition in these contexts was crucial.

To uncover the social dimensions of transition, several scholars have suggested combining the multi-level perspective with practice theory (Geels & Penna, 2015; Hargreaves et al., 2013; Köhler et al., 2019; McMeekin & Southerton, 2012). In this paper, I argue that we need go further if we want to capture the social implications of sustainable transitions. I argue that we need an ontology that conceptualizes social differentiation and hierarchies, and that we need to expose the normativity which is always involved when discussing questions of inequality and transition. Being aware of our own normativity - we are normative creatures who constantly evaluate what we are engaged with (Sayer, 2011) - is what exposes inequality. Phenomena such as inequality only become detectable when we are normatively engaged with them and render them important.

Against this background, the paper develops a theoretical framework that not only supports transition scholars in understanding the elements and dynamics of sustainable change, but also brings to the fore the social implications of pursuing different transition paths. Therefore, it activates the normativity involved in exposing the implications of social inequality. For this purpose, the paper discusses the following four prominent theoretical traditions: the Multi-Level Perspective (Rip & Kemp, 1998; Schot & Geels, 2008), practice theory (Shove, Pantzer, and Watson 2012), reflexive modernization (Beck, Giddens & Lash, 1994; Beck 1992), and critical realism (Sayer, 2007, 2011, 2014). After having consulted the four traditions, the paper combines the insights into a model for future studies of sustainable transitions

in cities, their mobility systems and beyond. In conclusion, I argue that the resulting lens enables researchers to critically evaluate the social implications of pursuing different transition paths. This is crucial because sustainable transitions have the power to redistribute cities and their social landscapes and, therefore, transition scholars need to develop greater sensitivity in terms of who stands to gain or lose from different initiatives to avoid locking societies and cities into inequality-exacerbating and inefficient transition paths.

Step one: Consulting MLP for the complex backdrop of sustainable transitions

A relevant place to start is to consult the growing field of theories of sustainable transition (Hargreaves, Longhurst, & Seyfang, 2013;) for the complex backdrop of altering urban life as we know it. The Multi-Level Perspective (Rip & Kemp, 1998; Schot & Geels, 2008) is one of the most prominent theories in the field and has gained popularity because it involves an analytical awareness of the multiple dynamics at different levels that must come together to foster change.

As the name suggests, the core principle of the multi-level perspective (MLP) is understanding the complex dynamics of transition processes by being analytically aware of micro-, meso-, and macro-level dynamics and their interactions. Rip and Kemp's (1998) original multilevel model of innovation distinguishes between micro-level niches, meso-level regimes, and macro-level landscapes. Schot & Geels (2008) have made a significant contribution to the MLP perspective, and they describe how transitions occur through interactions between processes that take place at different levels. At the niche level, innovations escape established rules, institutions, and structures and gain momentum, while changes at the landscape level put pressure on the existing regime, which becomes destabilized, thereby opening windows of opportunity for change. Systems such as the urban mobility system operate on a range of distinct scales. Sustainable transition in the system is possible when change-creating dynamics structured at different levels interact, causing the dissolution of the existing regime and the establishment of a new one. The perspective highlights the importance of nurturing sustainable innovations in niche spaces which are protected from, e.g., mainstream market dynamics while seeking to influence landscape-level dynamics to favor sustainable change and disassemble existing carbon-based regimes in the urban sphere (Hargreaves, Longhurst, & Seyfang, 2013; Smith, 2012).

The multi-level perspective has made crucial advances in our understanding of transition processes by providing a framework for systematizing the multi-scalar, heterogeneous dynamics involved in successful sustainable transitions. Being analytically aware of landscape, regime, and niche-level change dynamics and how they interact is important to understand the many processes that must interact in mutually supportive ways to enable sustainable urban innovation. The MLP perspective's systematization of change dynamics working on different scales serve as a backdrop for my theoretical transition lens.

The multiple layers and the hierarchical gaze allow - at least in theory - the researcher to engage with social hierarchies, diverse social conditions, and how they alter with technological change. For example, Geels highlights the different social processes involved in transition when he describes actors and their involvement: *"Actors interact (struggle, form alliances, exercise power, negotiate, and cooperate) within constraints and opportunities of existing structures, at the same time that they act upon and restructure these systems. Another important point is that structure not only constrains but also enables actors"* (Geels, 2004, p. 904). Being aware of power, struggles, and different ways of being which are enabled and constrained by structural framings allows one to ask critical questions about how the distribution of power, opportunities and obstacles transition along with technological innovation.

However, while MLP places actors in contexts, I argue, along with Hargreaves, Longhurst, & Seyfang (2013) and Walker (2013), that this remains under-explored because in many MLP- informed analyses there is no real attempt to understand the social dimensions of change. Instead, the analytical focus is on technological innovation. Although Geels recognizes that actors are enabled and constrained to varying extents, scholars within MLP have yet to engage in-depth with social inequalities and differences in opportunities for breaking away from existing regime rules. Jørgensen (2012), amongst others, has pointed out that there is no clear answer regarding how actors may break out of their structural framing.

The normative qualities of transition are also missing from the perspective. MLP was developed through historical analyses of transition processes, for example, the transition from horse-drawn carts to cars (Hargreaves, Longhurst, & Seyfang, 2013; Geels, 2005). Consequently, authors who adopt the perspective often provide good backward-looking analyses of how transitions occurred, while the perspective is less efficient in forward-looking analyses of transitions in the making. Questions about why change fails to happen and how to make it happen often remain unanswered

(Hargreaves, Longhurst, & Seyfang, 2013). While MLP is well-suited to transition archaeology, i.e., understanding how we got here, it is unsuitable for supporting decisions about where to go from here. As a result, both the social implications and normative conceptions of sustainable transition are difficult to conceptualize within the MLP framework alone. It says little about how people and their practices change and how to prompt future changes.

To better understand social change, several suggestions regarding how MLP and theories of practice could be better integrated have been made (Geels & Penna, 2015; Hargreaves et al., 2013; Köhler et al., 2019; McMeekin & Southerton, 2012). Being theoretically equipped to engage with social complexities and the dynamics of everyday life and how it changes is crucial for sustainability scholars who not only want to understand how past changes came about, but also prompt sustainable transitions and steer cities towards better futures. Therefore, step two of the paper involves consulting practice theory for insights into the social sphere and how it changes.

Step two: Consulting practice theory for social complexities, everyday life, and social change

Social practice theory is becoming increasingly popular amongst scholars of sustainable transition (Christensen et al, 2019; Friis, 2020) – in isolation or applied and in combination with other perspectives such as MLP. Amongst others, Hargreaves, Longhurst, & Seyfang (2013) have suggested combining the two positions in studies of transition. In contrast to others (see, e.g., Geels, 2015), they recognize that practice theory and MLP are not commensurable, but drawing on both lenses broadens the analytical scope, thereby potentially illuminating different aspects of transitions. Social practices replace multiscale dynamics as the central unit of analysis, and renders the everyday life in cities visible for transition scholars (Shove, Pantzer, and Watson 2012). Practice theory entails an ontological shift as it considers everything as social practices. Practices are routinized activities that bring together and connect a range of elements, all of which are equally constitutive of the practice. In Elisabeth Shove's interpretation, the elements that constitute a practice are materials (objects, infrastructures, tools, bodies), competences (know-how, practical consciousness, skills) and meanings (mental activities, emotions, social and symbolic significance) (Shove, Pantzer, and Watson 2012). Therefore, practices consist of specific combinations of these elements, which constitute the background for concrete actors' doings in their everyday lives. A crucial point is that social practices are fundamentally interconnected. Complexes of social practices, infrastructures and institutions develop

together (Shove, Watson, & Spurling, 2015) and produce and reproduce polluting activities across people and places.

Practice theory contributes to the construction of the theoretical lens by capturing the complexity and many elements – social, material, and perceptive – involved in cultivating new sustainable urban lifestyles. It provides a concept of social change and how to foster it (Christensen et al., 2019). According to the practice position, transitions occur when practices are enacted differently a sufficient number of times (Spurling & McMeekin, 2015). The linking of material, competence and meaning elements is crucial in keeping practices together. If linking is conducted differently or ceases, practices will transition or terminate (Shove & Pantzar, 2007). Studying sustainable transitions from a practice perspective means following the elements of practices and nurturing change over time. Spurling et al (2012) have developed three framings for intervention in unsustainable practices, and have highlighted three strategies that vary in terms of the level of ambition, scale and means. When promoting a sustainable transition, we can either seek to recraft practices, which entails changing one or more of the elements that constitute the current practice such as replacing a combustion-engine vehicle with an electric car, or we can seek to substitute practices by *“discouraging current unsustainable practices and replacing them with existing or new alternatives”* (Spurling & McMeekin, 2015: 84). This may involve, e.g., reducing the number of parking spaces for private cars, while increasing the number available for shared cars. As a third option, we can aim for change in the way in which practices interlock. What needs recrafting here is not specific practices, but how and why they interlock in urban everyday life in unsustainable ways. As Watson (2012) observes, greening mobility systems requires changes in the complexities of mobility practices and the way they interlock with other everyday practices such as working, studying, undertaking social activities, shopping, visiting friends and family, etc. (Christensen et al., 2019; Watson 2012). For example, sustainable mobility policies can take advantage of the increase in working from home following pandemic lockdowns, thereby saving travel (Lindberg et al., 2022a). This way of thinking about change has a sub-political dimension, thereby inviting experiments in the urban sphere such as tactical urbanism or the mobility experiments undertaken in SIMS to investigate how practices could be crafted or interconnected in more sustainable ways.

There is – at least conceptually – a clear expectation of variety in practices and social differentiation in practice theory, which, for example, manifests itself when Røpke (2009) notes how: *“(...) performances will always differ between*

individuals and between social groups (...). The research purpose must be decisive for whether to distinguish between different practices-as-entities when performance differ among social groups" (Røpke, 2009, p. 2494). Inequality is connected with this differentiation in practices among social groups, but social differentiation is rarely reflected in efforts to understand how practices transition (Walker, 2013).

Few scholars from the practice perspective have engaged with social inequality, the exception being Walker (2013), who argues that some practitioners might be in a better position to engage with the integrative work of practice performances – the putting together of elements – than others. Simultaneously, some practitioners have better access to the materials, competences and meanings that constitute practice, and some practitioners will be able to integrate elements more successfully than others (Walker, 2013). In this way, Walker suggests that practice theory provides an opportunity to capture the dimensions of social inequality and differentiation in analyses of sustainable transition (Walker, 2013). However, authors of empirical studies who have engaged with sustainable lifestyle transitions from a practice perspective have tended to focus on successful and skilful enactments of transition practices, while few practice theorists have studied the reproduction of inequality or failure to successfully perform sustainable practices (Walker, 2013). This, I argue, is a negative consequence of perceiving everything as social practices (Shove, Pantzer, and Watson 2012) because this ontology involves treating everything equally. A challenge that results from practice theory having such a "flat" ontology is that recognizing hierarchies, differences, and inequalities is fundamentally challenging.

Earlier, the multi-level dynamics involved in sustainable transitions and their interactions were discussed from an MLP perspective. Adding to this, the practice perspective offers substantial insight into the elements of everyday life practices, how they connect and shape social complexities, and how change within this landscape can be prompted by altering elements or interlockings.

However, like MLP, practice theory is fundamentally challenged in terms of recognizing normative aspects of seeking transition and critically evaluating their social consequences. Nevertheless, I have identified potential for engaging more with social inequality from both perspectives, but difficulties with engaging with the normative and social dimensions of transition follow from the descriptive and retrospective qualities of MLP and the flat ontology of practice theory.

Step three: Consulting the theory of reflexive modernization for insights into social inequality and how it transitions

The perspectives we have consulted up until now, MLP and practice theory, have provided tools for understanding the elements and dynamics involved in sustainable change. Combining these perspectives has been done previously (Geels & Penna, 2015; Hargreaves et al., 2013; Köhler et al., 2019; McMeekin & Southerton, 2012). However, even when combined, MLP and practice theory still lacks tools for theorizing the social implications and normative grounds of transition efforts; in other words, for understanding the politics of transitions.

The next step is to consult the theory of reflexive modernization for a different ontological perspective. Drawing on reflexive modernization, a concept launched in a joint effort by the sociologists, Ulrich Beck, Anthony Giddens and Scott Lash (1994), sustainable transition can be perceived as an example of modern societies directing their attention to the process of modernization itself (Beck, Giddens & Lash, 1994). From this perspective, traditional modern institutions such as the nation state are dissolving, while new social orders and landscapes of inequality are arising in the face of the human-made dangers of the risk society (Beck, Giddens & Lash, 1994; Beck 1992). Consulting this theory provides an understanding of the relationship between climate change, modern cities, climate change responses, and social inequality.

In reflexive modernization, change is considered to be uncontrollable – it happens anyway, no matter what we do: “Many transformations are already underway, even though we have not actually asked for them”, as Beck puts it (2014). The idea of change as an unintended consequence of societal activities is central to the concept of the *risk society* (1992 [1986]). Modern societies are facing increasing challenges resulting from self-produced risks. From this perspective, change is not so much the result of deliberate intentions and decisions, but rather it arises from a need to limit the negative side effects or unintended consequences of modern life (Beck, 1992; Freudendal-Pedersen et al, 2020). It follows that no matter the extent of the efforts we put into organizing and designing sustainable transition paths, uncontrollable changes will occur. This is very much in line with the idea, in practice theory, that transitions happen when practices are enacted differently enough times, and practices are modified and transition over time whether through deliberate intervention or unintended accumulation (Shove, Pantzer, & Watson, 2012). From this perspective, sustainable transition is innovation propelled by the need to limit the negative effects of climate change on cities

and their inhabitants. A key point is then that when we understand that that is how change happens, we can influence it.

Climate change transcends national borders, and cities are an interesting alternative to the national framework because they: *"(...) are spaces for action where people actually experience climate change directly. They smell it in cars producing smoke and emissions – in some cities they also see the consequences of flooding. Because they experience it more directly, they feel the pressure to do something in a way that nation-states, which are divorced from the effects of climate change, do not."* (Beck, 2014). However, national borders and nation states are not the only boundaries and concepts of first modernity that are being fundamentally challenged by climate risks. Understanding social hierarchies and inequality in terms of class, Beck argues, no longer suffices to capture the explosiveness of global society (Beck, 1988; 2016: 83;). Climate change is altering the world and causing the landscape of inequality to change dramatically and irreversibly. In the era of climate change, inequality is no longer only about the distribution of goods, but also the distribution of *bads*: exposure to climate change and climate change-induced risks (Beck, 2015; 2016). For example, elevation above sea level is becoming more and more decisive for one's chances in life (Beck, 2016: 85). Beck, therefore, introduces the notion of *risk-class* (2016, 79). To capture social inequality in the age of climate change, we must look at the production and distribution of both goods and bads. While goods are things – machines, buildings, educational degrees, etc., risks are different in nature. They are social constructions – anticipations, imaginations, and possibilities (Beck 2016: 96). Therefore, sustainable transitions are in essence responses to social constructions - risks and anticipations of what will happen if we do not aim for a sustainable transition.

This raises questions about what we consider to be risks, who gets to determine which risks to respond to and how to respond to them, and are those potentially affected included or excluded in the sustainable transitions we are prompting? What are the social implications of prompting different innovative solutions? Or, as Beck puts it: *"It is about who gains and who loses as change occurs and interventions to moderate change unfold"* (Beck, 2016: 85). When the ontology of reflexive modernization is added to the theoretical framework and these kinds of questions are posed, approaching sustainable transitions as neutral, merely technological process becomes impossible. Instead, a sustainable transition becomes something that is potentially very powerful in terms of altering the social orders of cities and societies. No innovation or solution can be implemented in neighborhoods or cities without implications for the people living there. It follows that efforts to limit the unintended

negative consequences of climate change may produce new unintended consequences in terms of altering social landscapes in unanticipated and potentially very problematic ways. Addressing the social implications of steering cities onto different transition paths is, therefore, pivotal because sustainable interventions are changing the social landscape of cities.

It is important to ask critical questions about who benefits and who loses from the pursuit of different transition paths. However, this raises new questions. Because what counts as inequality, and what level of inequality is acceptable in the decarbonized future? These are not questions that can be answered objectively or neutrally. Focusing attention on the social implications of sustainable transition, therefore, reveals something very important about transition - that it is never neutral but relies on a normative core. Consequently, the fourth and final step is to add normativity to the framework. I do this by turning to critical realism for insights into the often hidden normativity in social scientific research including studies of sustainable transitions.

Step four: Consulting critical realism for normativity in sustainable transition

Bringing normativity in sustainable transitions to the fore, I draw on the critical realist, Andrew Sayer, and his evaluative stance (Sayer, 2007, 2011, 2014). Sayer emphasizes that people are sentient, evaluative beings who do not just think and interact with the world, but also constantly evaluate things including the past and the future (Sayer, 2011; 1-2). This is also true for social scientists, urban planners, and sustainability practitioners. In our everyday and professional lives, we cannot avoid engaging with normative questions of good and bad and what to do for the best – the matters of practical reason (Sayer, 2011).

Sayer disputes the assertion of many social scientists who say that our work involves describing, understanding and explaining the world, while evaluating, judging and criticizing the world should be left to others: *“Although social science is directed to understanding and explanation rather than deciding how to act (practical reason), we have to be evaluative if we are to describe, understand and explain social life adequately”* (Sayer, 2011: 216). As social scientists, we want to describe actors’ accounts of the world as fairly as possible, but, as Sayer underlines, this includes evaluating the extent to which they are adequate. To exemplify this, he asks: *“Is the racist’s explanation of the performance of Afro-Caribbean origin children in British schools, correct?”* (Sayer, 2011: 216). One may then ask similar questions in the context of the Mobility

As-A-Service solutions being trialed in the SIMS project, i.e., is the argument of a lack of business potential in deprived urban neighborhoods (Kristensen, Lindberg & Freudendal-Pedersen, forthcoming) given by the operator of a sustainable mobility service, correct? And should this influence which areas of the city get access to sustainable mobility alternatives?

Following Sayer (2011), I argue that when social scientists engage with sustainable transitions and explore how they come about and what futures they can facilitate, we can hardly avoid such normative questions. Thus, working with sustainable transitions involves engaging with futures in which researchers as well as practitioners believe humans will flourish rather than suffer. To make this probable, it is crucial that we normatively evaluate sustainable transition pathways and their social consequences: who is defining the transition, what vision of the good life is it based on, and who will flourish in the sustainable future following this transition?

Adding normativity to the framework emphasizes sustainable transition as an inevitably normative practice. From this perspective, advocates of MLP and practice theory appear surprisingly indifferent to the many normative questions that unavoidably emerge as interventions in unsustainable practices are designed and decided, and transition unfold. Sayer's evaluative stance highlights this often hidden or repressed premise of sustainable transition theories, thereby allowing sustainable transitions to be critically evaluated. As such, it equips scholars to engage with pivotal normative questions such as who is included in and excluded from the process of defining transition tasks and designs, and who will benefit from pursuing specific transitions?

Concluding remarks: Gathering the insights

Combining the insights gained from consulting the four perspectives produces a theoretical lens for understanding the elements and dynamics of transition processes and normatively assessing their social implications. Sustainable transitions have the power to redistribute goods and bads and thereby alter the social landscapes of cities. Therefore, it is important for transition scholars to apply a framework that is sensitive in terms of who stands to gain or lose from different initiatives to avoid locking societies and cities into inequality-exacerbating and inefficient transition pathways. To illustrate what this lens reveals, I use the example of experimenting with prompting car sharing services in a marginalized area, which was one of the aims of the MaaS-based experiments in the SIMS project in Folehaven.

First, the paper consulted the multi-level perspective, one of the most prominent theories of sustainable transition, for the multiple layers and cross-level dynamics involved in sustainable transition processes. From MLP, we learned that transitions come into existence when cross-level dynamics interact in favorable ways. In relation to car sharing schemes, an example of an important niche-level dynamic is innovation in car locking systems, which makes it possible for people to share cars without having to constantly exchange keys. Instead, the key is always in the car, while a personal key tag unlocks all cars. The existence of this niche technology and its implementation in the car sharing scheme was a precondition for the scheme to function in Folehaven. However, it was never implemented in Folehaven because of a lack of interaction with macro-level dynamics such as investors' bottom-line considerations and narratives of neighborhoods (Kristensen, Lindberg, and Freudendal-Pedersen, forthcoming), which pulled in other directions. Dynamics on these levels may also block sustainable transitions, as was the case in this example. Other examples could be technical problems curbing transition processes, or the general acceptance of the negative externalities of car traffic (Geels, 2004), which reduces the pressure for change in urban mobility regimes. What we learn from MLP is that niche innovations at the micro-level and socio-political landscape changes at the macro-level must interact in favor of transition for regime change to happen. This was not the case with car sharing in Folehaven.

From practice theory, the paper picked up an understanding of car sharing as one of multiple possible mobility practices binding together the everyday life of Folehaven inhabitants. Furthermore, practice theory provides insights into the elements of mobility practices, and how changing the elements or the way practices interlink can lead to transitions in urban mobilities. Importantly, practice theory underlines the interconnectedness between mobility practices and other practices. Whereas MLP tends to treat different fields separately, the practice perspective reveals that practices of mobility are interconnected with practices of working, shopping and socializing in everyday life. From practice theory, we obtain detailed insights into the elements in practices of urban everyday life: materialities, competences, and meanings. Car sharing, for example, involves materials such as the car, the key and the key tag, and a smart phone with a booking app. It also involves competences such as the ability to drive a car, plan in advance and book the car in an app, and unlock it with the key tag. It further involves certain meanings such as perceiving car sharing as liberating, resource saving and sustainability enhancing. From practice theory, we also learn that change is

possible if we alter the elements involved in practices or how they interlock. However, as the materials (the cars) was never implemented in Folehaven, key elements in car sharing was inaccessible, and thus the altering of mobility practices in direction of car sharing was hindered. This was one dimension of the severe mobility inequality between Folehaven and other parts of the city that appeared during the SIMS project.

As described, severe mobility inequality between Folehaven and the other intervention areas in SIMS emerged when we became involved in the areas, which called for the development of the theoretical framework to address the social and normative implications of sustainable transition. Instead of being content with combining MLP and theories of practice, the paper therefore identified an empirical need to move further and develop a theoretical lens for capturing dimensions of inequality in relation to sustainable transitions. It argued that we need to include an ontology that can better capture social differentiation and is sensitive to the normativity involved in capturing it. For this, the paper turned to the sociology of reflexive modernization and critical realism. The ontology from reflexive modernization is added to the model to reveal the social consequences of transition. The theory of reflexive modernization facilitates engagement with the social landscapes of the second modernity, and reveals how the social landscape is altered by climate change and our attempts to mitigate its consequences. For example, in the SIMS project, we saw that the MaaS partners withdrew from mobility experiments in Folehaven, an already mobility impoverished area, citing vandalism and the absence of the right mindset in socially deprived neighborhoods as the reasons (for an elaboration, see Kristensen, Lindberg & Freudendal-Pedersen, forthcoming). We saw that different neighborhood narratives framed decision-makers' arguments, causing them to cancel the intervention in Folehaven. We argued that this was very much in line with what Beck describes as "organized irresponsibility" (Beck 1992, 2015), where the capacity to make decisions and the consequences of these decisions allocated to completely different people. The reflexive modernization perspective is included in the lens to understand how the social landscape is transformed by climate change and sustainable transition.

Lastly, critical realism is included to highlight the fact that sustainable transition efforts rely on normative perceptions, which are often hidden, but which are nonetheless crucial for the outcome and implications. Which future city are we striving for? Who is included and excluded from this vision? Our ideas and hopes for the future are key in driving transition processes, and

these can never be neutral. However, the normativity of sustainable transition is not on the radar in MLP, practice theory or reflexive modernization. Therefore, in the fourth and final step, the paper consulted critical realism and Andrew Sayer's evaluative stance to enrich the lens with insights into how social scientists can hardly avoid normative implications, even though they are often hidden or suppressed. When coupled with the ontology of reflexive modernization, the evaluative focus is turned to the social implications of sustainable transition. Other ontologies may steer attention in other directions. The social implications are highlighted in this paper because, in the SIMS project, I empirically identified a need to engage with the landscapes of inequality in the cities and mobility systems. In the SIMS project, the decision-makers' evaluations of the different areas, for example, surfaced in the different narratives of the neighborhoods (Kristensen, Lindberg, and Freudendal-Pedersen, forthcoming). Normativity and evaluations also influence the researcher's decisions and phrasings (Lindberg et al, 2022b). Both practitioner's and researchers' decisions are shaped by who they are, what they know, and how they evaluate it. Therefore, it is crucial that we understand the normativity that frames both transition scholars' and transition practitioners' decision-making and practices as it has consequences for the future city and who it is designed for.

Adding an ontology of social inequality and an awareness of the normativity involved in seeing it enables transition scholars to more carefully analyze the way in which transition efforts interact with the existing social landscapes of the city. It allows the researcher to reflect on existing inequalities, for example, extensive mobility inequalities between different parts of a city, which Kristensen, Lindberg & Freudendal-Pedersen (forthcoming) identified in Copenhagen. An adequate framework is crucial if we want to design and choose transition pathways that reduce rather than exacerbate inequality gaps in cities. For example, it might be problematic to rely on car sharing solutions to deliver sustainable urban mobilities. This is because the future of cities and their mobility systems cannot rely solely on solutions that can only be implemented in urban areas with certain resource levels, which turned out to be the case with the car sharing experiments involved in SIMS. Sustainability in urban futures should not rely on exclusive solutions because it produces unjust cities. When we pay close attention to different transition paths, how they come about and what futures they render possible, we can hardly avoid such normative statements. It activates ideas of whether inequality is good and motivating or bad and unjust, and what level of inequality we find acceptable. Thus, when we engage with questions of

inequality, a sustainable transition and just urban futures, being sensitive to our normativity is crucial because working with sustainable transition concerns our ideas, hopes and dreams for the future. These ideas and their implications for the social landscape will shape the future city.

In this paper, I have argued that a sustainable transition essentially involves creating a good, decarbonized future life in cities. Therefore, it is important to develop analytical sensitivity towards the often suppressed normative underpinnings and social implications of transition paths. Transition efforts are underpinned by ideas of what the good life in the sustainable future city is, and they are decisive for what urban futures are rendered possible, and who is included and excluded from living the good life in decarbonized future cities.

To sum up, the paper consulted four prominent perspectives and gathered key insights to form a new theoretical field for transition studies. The multi-level perspective was consulted to systematize the multi-scalar dynamics involved in sustainable transition, which serves as the backdrop to the lens. Secondly, practice theory offered insights into the social dimensions of change; everyday life, social complexities, and how to foster sustainable change. However, it was argued that important aspects of social inequality and normativity escape both these transition frameworks. This is because of missing ontological and normative perspectives. We need an ontology to conceptualize social differentiation and hierarchies, and a normativity to critically evaluate the social implications of transitions. Reflexive modernity's eye for transitioning social landscapes and critical realism's evaluative stance provided the basis for viewing sustainable transitions as normative and evaluative processes that activate questions of inequality, equity, and justice: Who are we designing a sustainable future for? Is it socially just? The aim of developing the framework was to enable scholars, politicians, planners, and designers to pose these questions and pursue the transition pathways that lead us towards inclusive sustainable futures rather than decarbonized unjust futures. At no previous point have so many resources been dedicated to solving the challenges that climate change represents to cities and societies (Docherty, Marsden, & Anable, 2018). Now is, therefore, a critical time for recognizing that normativity is always at stake in sustainable transition, and that it can reveal the social implications of transition and assist us in critically evaluating them. This is crucial to avoid steering cities onto inequality-exacerbating and inefficient transition pathways.

References

- Beck, U. (1988). *Misunderstanding Reflexivity: The Controversy of Reflexive Modernization*. In Ulrich Beck (ed.): *Democracy without Enemies*. Cambridge: Polity, 84-102.
- Beck, U. (1992). *Risk Society - Towards a New Modernity*. London & New York: SAGE
- Beck, U., Giddens, A., & Lash, S. (1994). *Reflexive Modernization. Politics, Tradition and Aesthetics in the Modern Social Order*. Cambridge: Polity Press.
- Beck, U. (2014). Five minutes with Ulrich Beck: “All kinds of positive developments can result from climate change”. Interview with EUROPP’s managing editor Stuart Brown. Derived from: <https://blogs.lse.ac.uk/euoppblog/2014/02/26/five-minutes-with-ulrich-beck-all-kinds-of-positive-developments-can-result-from-climate-change/>
- Beck, U. (2015). Emancipatory catastrophism: What does it mean to climate change and risk society? *Current Sociology*, 63(1), 75–88. <https://doi.org/10.1177/0011392114559951>
- Beck, U. (2016). *The metamorphosis of the world*. Cambridge: Polity
- Chancel, L. and T. Piketty. 2015. “Carbon and Inequality: From Kyoto to Paris.” Paris School of Economics. Derived from: <http://piketty.pse.ens.fr/files/ChancelPiketty2015.pdf>
- Christensen, T. H., Friis, F., Freudendal-Pedersen, M., Grindsted, T. S., & Hartmann-Petersen, K. (2019). Analytical framework on everyday mobility practices and guidelines for interventions. Copenhagen: SBI.
- Csutora, M. (2012). One More Awareness Gap? The Behaviour–Impact Gap Problem. *Consum Policy* 35, 145–163. <https://doi.org/10.1007/s10603-012-9187-8>
- Docherty, I., Marsden, G., & Anable, J. (2018). The governance of smart mobility. *Transportation Research Part A: Policy and Practice*, 115, 114–125. <https://doi.org/10.1016/j.tra.2017.09.012>
- Freudendal-Pedersen, M., Hartmann-Petersen, K., Friis, F., Rudolf Lindberg, M., & Grindsted, T. S. (2020). Sustainable Mobility in the Mobile Risk Society—Designing Innovative Mobility Solutions in Copenhagen. *Sustainability*, 12(17), 7218. <https://doi.org/10.3390/su12177218>
- Friis, F. (2020). An alternative explanation of the persistent low EV-uptake: The need for interventions in current norms of mobility demand. *Journal of Transport Geography*, 83, 1-9. [10.1016/j.jtrangeo.2020.102635](https://doi.org/10.1016/j.jtrangeo.2020.102635)
- Geels, F. W. (2004). From sectoral systems of innovation to socio-technical systems: Insights about dynamics and change from sociology and

- institutional theory. *Research Policy*, 33(6–7), 897–920.
<https://doi.org/10.1016/j.respol.2004.01.015>
- Geels, F. W., & Penna, C. C. R. (2015). Societal problems and industry reorientation: Elaborating the Dialectic Issue LifeCycle (DILC) model and a case study of car safety in the USA (1900–1995). *Research Policy*, 44(1), 67–82. <https://doi.org/10.1016/J.RESPOL.2014.09.006>
- Hargreaves, T., Longhurst, N., & Seyfang, G. (2013). Up, down, round and round: connecting regimes and practices in innovation for sustainability. *Environment and Planning A*, 45, 402–420. <https://doi.org/10.1068/a45124>
- IPCC (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge & New York: Cambridge University Press.
doi:10.1017/9781009325844.
- Jacobsen, S. G. et. al. (2018). Klimaopråb: Politikerne spiller hasard med vores fremtid. Derived
from:<https://politiken.dk/debat/debatindlaeg/art6508380/politikerne-spiller-hasard-med-vores-fremtid>
- Jørgensen, U. (2012). Mapping and navigating transitions - The multi-level perspective compared with arenas of development. *Research Policy*, 41(6), 996–1010. <https://doi.org/10.1016/j.respol.2012.03.001>
- Kristensen, N. G., Lindberg, M. R., Freudendal-Pedersen, M., (forthcoming). Urban mobility injustice and imagined sociospatial differences in cities - A comparative study of two Copenhagen neighbourhoods. *Cities*
- Köhler, J., Geels, F. W., Kern, F., Markard, J., Onsongo, E., Wieczorek, A., ... Wells, P. (2019). An agenda for sustainability transitions research: State of the art and future directions. *Environmental Innovation and Societal Transitions*, 31, 1–32. <https://doi.org/10.1016/J.EIST.2019.01.004>
- Lindberg, M. R., Freudendal-Pedersen, M., Hartmann-Petersen, K., Kristensen, N. G., Christensen, T. H., Grindsted, T. S. (2022a). Pandemic Detours or New Sustainable Pathways? Post-pandemic Mobility Futures in Danish Cities. *Applied mobilities*.
<https://doi.org/10.1080/23800127.2022.2145081>
- Lindberg, M. R., Kristensen, N. G., Freudendal-Pedersen, M., Hartmann-Petersen, K. (2022b). Despite the best of Intentions: Inequality in the search of Mobility Justice. Working paper.

- McMeekin, A., & Southerton, D. (2012). Sustainability transitions and final consumption: practices and socio-technical systems. <https://doi.org/10.1080/09537325.2012.663960>, 24(4), 345–361. <https://doi.org/10.1080/09537325.2012.663960>
- Oxfam (2015). Extreme Carbon Inequality: Why the Paris climate deal must put the poorest, lowest emitting and most vulnerable people first. Oxfam Media Briefing, (December), 1–14. Retrieved from https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/mb-extreme-carbon-inequality-021215-en.pdf
- Rip, A., & Kemp, R. (1998). Technological change. In S. Rayner & E. L. Malone (eds): Human Choice and Climate Change. Vol. II, 327–399. Columbus, Ohio: Battelle Press. <https://doi.org/10.1007/BF02887432>
- Røpke, I. (2009). Theories of practice - New inspiration for ecological economic studies on consumption. *Ecological Economics*, 68(10), 2490–2497. <https://doi.org/10.1016/j.ecolecon.2009.05.015>
- Sayer, A. (2007). Moral Economy as Critique. *New Political Economy*, 12(2), 261–270. <https://doi.org/10.1080/13563460701303008>
- Sayer, A. (2011). *Why Things Matter to People: Social Science, Values and Ethical Life*. New York: Cambridge. <https://doi.org/10.1017/CBO9780511734779>
- Sayer, A. (2014). *Why We Can't Afford the Rich*. Bristol: Policy Press. <https://doi.org/10.2307/j.ctt1t89fd6>
- Schot, J., & Geels, F. W. (2008). Strategic niche management and sustainable innovation journeys: Theory, findings, research agenda, and policy. *Technology Analysis and Strategic Management*, 20 (5), 537–554. <https://doi.org/10.1080/09537320802292651>
- Shove, E., & Pantzar, M. (2007). Recruitment and Reproduction: The Careers and Carriers of Digital Photography and Floorball. *Human Affairs* 17 (2). pp. 154–167. <https://doi.org/10.2478/v10023-007-0014-9>
- Shove, E., Pantzar, M., & Watson, M. (2012). *The dynamics of social practice. Everyday life and how it changes*. London & New York: Sage
- Shove, E., & Spurling, N. (2013). *Sustainable practices: Social theory and climate change*. Abingdon: Routledge.
- Singer, M. (2019). *Climate Change and Social Inequality*. Abingdon: Routledge.
- Smith A. (2012). Civil society in sustainable energy transitions. In Verbong, G. & Loorbach, D. (eds.): *Governing the Energy Transition: Reality, Illusion or Necessity?* 180–202. London: Routledge.

- Spurling, N., & McMeekin, A. (2015). Interventions in Practices: Sustainable Mobility Policies in England. In Y. Strengers & C. Maller (eds.), *Social Practices, Interventions and Sustainability: Beyond Behaviour Change*. London: Routledge.
- UNEP (2022): Cities and climate change. Derived from:
<https://www.unep.org/explore-topics/resource-efficiency/what-we-do/cities/cities-and-climate-change>
- United Nations (2015). The Paris Agreement. Paris: UN. Derived from:
https://unfccc.int/sites/default/files/english_paris_agreement.pdf
- Walker, G. & Burningham, K. (2011). Flood Risk, Vulnerability and Environmental Justice: Evidence and Evaluation of Inequality in a UK Context. *Critical Social Policy* 31(2), 216-240.
- Walker, G. (2013). Inequality, sustainability and capability: Locating justice in social practice. In Shove, E. & Spurling, N. (eds.) *Sustainable Practices. Social theory and climate change*. Abingdon: Routledge.
- Watson, M. (2012). How theories of practice can inform transition to a decarbonised transport system. *Journal of Transport Geography*, 24, 488–496. <https://doi.org/10.1016/j.jtrangeo.2012.04.002>

8.2. SUB-CONCLUSION PART IV

This part of the dissertation has identified feasible pathways for future studies on sustainable mobility transitions in cities. Analytical attention is devoted to the social dimensions of transition and especially social inequality, which the dissertation has called for.

Part four contained two papers with two different contributions - methodological and theoretical. First, the paper “Despite the best of intentions: Inequality in the search for mobility justice” discussed methodological tools for handling inequality and normativity in qualitative mobilities research. In it, we argued that it is important to maintain reflexivity throughout the research process for mobility justice and to reduce inequality rather than exacerbate it. Drawing on examples from SIMS interviews in Folehaven and Nordhavn, we advocate using the interview guide as a tool for engaging with reflexivity before, during and after interviews to highlight researchers’ preconceptions and positionality and reveal new perspectives. This is key to creating representational and epistemically just research.

However, the article also demonstrates that this is not an failsafe strategy because no unambiguous truths exist in social research (Alvesson and Sköldberg 2020, 2). Even with the best of intentions, researchers may reproduce inequalities because of the impossibility of disregarding who we are in terms of social position and normative convictions, and what experiences and language we take with us into the research process. This became clear when applying the same interview guide in two very different areas of Copenhagen, Denmark, because the two contrasting experiences illuminated something about our mobility expectations, prejudiced language and social positions. The contrasting experiences prompted reflexive engagement with what could and what could not be captured by the initial frame of reference (Alvesson and Sköldberg 2020, 327). Maintaining reflexivity does not guarantee

mobility justice or epistemic justice. What it does is that it ensures that the researcher is aware of any unintentional reproduction of inequalities in qualitative mobilities research. It enables continuous re-evaluation of established understandings and shared meanings, and it, therefore, supports epistemic justice (Sheller, 2018) in the research.

In the second paper, “Developing a theoretical framework for capturing inequality in transitions” also engaged with the normative component of research, we argue that sustainable transitions essentially involve creating the good, decarbonized future life. Therefore, working with these questions always involves normativity. This is the case for both researchers and practitioners. Normativity is also what makes us able to see issues of inequality and social justice in relation to sustainable transitions. Therefore, in the paper, we proposed a framework for future studies of sustainable transitions that combines the normative component of critical realism (Sayer, 2007, 2011, 2014), the ontological component of reflexive modernization (Beck, Giddens & Lash, 1994; Beck 1992), the transition frameworks from the Multi-Level Perspective (Rip & Kemp, 1998; Schot & Geels, 2008), and practice theory (Shove, Pantzer, and Watson 2012). The resulting framework, I suggest, facilitates critical engagement with the social implications of sustainable transitions.

Several scholars have already suggested combining MLP and theories of practice (Geels & Penna, 2015; Hargreaves et al., 2013; Köhler et al., 2019; McMeekin & Southerton, 2012) to add conceptions of social complexities, everyday life, and social change to the multi-level framework for understanding sustainable transitions. We went one step further in the paper and argued that we also need to include an ontology that can capture social differentiation and normativity to allow transition scholars to critically assess the social implications of sustainable transitions. Such an assessment is a prerequisite for steering cities onto inclusive transition pathways.

PART V: CLOSING

CHAPTER 9.

This thesis started from a concern with the role of inequality in sustainable transition, and how to break with the tendency in sustainability studies to neglect the social dimensions of transition such as inequality (Walker, 2013; Bullard, Agyeman and Evans, 2002; Agyeman & Evans, 2004) in favor of technological or behavioral dimensions (Freudendal-Pedersen et al., 2020; Shove, 2010; Samson et al, forthcoming). The neglect of the social dimensions is striking, especially given that thirty-five years ago, a consensus was established on the definition of sustainability, which was considered as having three dimensions: economic, social, and environmental. This happened with the publication of the Brundtland report in 1987 (Brundtland, 1987; Bartiaux et al., 2019). To achieve sustainability in the social and economic dimensions, any sustainable transition must consider the landscape of inequality in which new sustainable solutions are to act, and which might transition as sustainability interventions unfold. Preoccupied with placing inequality in studies of sustainable transitions, this dissertation raised the question:

How can we understand the role of inequality in
sustainable urban transitions - theoretically,
empirically, and methodologically?

The question has been explored through six sociological inquiries into obstacles, mechanisms, possible tipping points, and directions for future studies of sustainable transitions of unequal cities.

Bearing in mind Michel Foucault's advice to never let a concrete example out of sight (Foucault in Flyvbjerg 2009: 160), I have investigated the question by analyzing the SIMS project's experiments with Mobility-As-A-Service (MaaS) based mobility interventions in different urban areas in Copenhagen as an

example of sustainable interventions in an unequal urban landscape. The dissertation thus addresses the question of inequality and sustainable change in relation to urban mobility. The focus on mobility is inspired by the mobilities turn in social sciences (Urry, 2000; Sheller & Urry, 2006; Cresswell, 2011), which emphasizes the importance of “the systematic movements of people for work and family life, for leisure and pleasure, and for politics and protest” for contemporary society and urban communities (Sheller & Urry, 2006: 208). I look at these questions through the lens of an everyday life perspective. The everyday life comes into being in the interaction between the conditions of everyday life and the way they are handled (Bech-Jørgensen, 1994). In everyday life in cities, a multitude of mobility practices play out, and this is where inequalities are experienced. Against this background, the following research questions were formulated:

1. Why has inequality often been marginalized in studies of sustainable transition?
2. Does inequality influence efforts to intervene in unsustainable mobility practices and if so, how?
3. What creates tipping points in relation to sustainable urban mobility?
4. How do we incorporate sensitivity towards inequality (theoretically and methodologically) in sustainable transition research?

Part two of the dissertation “Obstacles” addressed the first question via two articles that explored alternatives to technology- and behavior-oriented approaches, which obscure the social dimensions of change. Both alternatives are based on an everyday life perspective. Part three of the dissertation “Empirical Inquiries” answered research questions two and three in two articles that analyzed empirical material collected from household interviews conducted in two different areas and a stakeholder workshop on public transport in the wake of the Covid-19 pandemic. Part four “Directions for future research” suggested methodological and theoretical directions for future research in two papers – one explored how to methodologically handle inequality, and the other

presented a theoretical framework for revealing the unequal implications of transitions. Together, they respond to research question four.

In total, six papers form the dissertation. This closing chapter is structured around six points in line with the papers. While the papers contain many more nuances, the chapter focuses on the key contribution to the problem statement of each paper. It further considers their consequences in terms of recommendations for future studies and transition efforts.

Point 1: To develop sensitivity towards inequality, sustainability scholars and professionals need to adopt a more thorough understanding of the social sphere and how it changes than that offered by the historically dominant behavioral approach. The everyday life perspective and practice theory provide an alternative framework.

A first step towards placing inequality at the forefront of sustainability research is for transition scholars and practitioners to adopt a more complex understanding of social life and how it changes. Historically, transition studies have made use of a very limited portion of sociological knowledge, applying an approach that focuses on individual behavior. Why have individuals not yet changed their behavior sufficiently in response to severe climate change? This question becomes incomprehensible if we disregard the fact that individuals' practices interlock with larger social patterns of urban life. Therefore, Spaargaren has criticized behavioral models for being "sociologically naïve" (2011: 814). As such, they present an obstacle to understanding the social dimensions of sustainable transitions.

The everyday life perspective represents a fruitful alternative to simplistic approaches in order to better support sustainable transitions in cities. One way of focusing on everyday life in

research, policies, and planning for sustainability is via theories of practice. By de-centralizing individual behavior, theories of practice take routinized everyday practices as the starting point for understanding (un)sustainable ways of living and moving in the urban (Reckwitz, 2002; Warde 2014). Practices are thus the unit of analysis against which larger social phenomena such as inequality can be understood (Schtzki, 2001; Reckwitz, 2002). With this alternative set of lenses, new pathways for planning sustainable transitions in cities become visible. The book chapter “From planning practice to urban practice: Integrating everyday life in planning ” took the limits of behavior-oriented transition models as the outset for arguing that an alternative approach that starts with the sociology of everyday life could better inform transition efforts, especially in relation to planning for sustainable urban futures. From this perspective, prompting sustainability becomes a task of understanding social life as routinized everyday practices and identifying how planning can support sustainable changes in urban everyday life.

A recommendation is to move away from understanding the climate change challenge as something that can be handled via interventions in individual behaviors and instead apply an everyday life perspective using theories of practice. This provides a more comprehensive approach for pursuing urban sustainability and enables one to engage with the social dimensions of change, including a starting point for engaging with questions of inequality.

Point 2: An obstacle to socially fair sustainable transitions is the extensive focus on technological innovations to make cities and urban mobility systems more sustainable. Shifting the analytical focus away from technology advancements to changes in the social and cultural landscapes is key for the social dimensions of transition to stand out distinctly against technological dimensions.

Another important step is to shift the analytical focus away from technology to social change. Creators of sustainability in urban mobility systems have been concerned with emerging green technologies and their ability to transcend from the niche level to the norm for mobility (Freudendal-Pedersen et al, 2020; Morozov, 2014; Hargreaves et al., 2013). However, focusing on technological innovations has occurred at the expense of understanding the social dimensions of change (Morozov, 2014). Although the dissemination of decarbonized technologies is important, a thorough understanding of such change processes requires a consideration of the cultures and social landscapes in which the technologies are to act.

This point is developed in the paper “Sustainable Mobility in the Mobile Risk Society—Designing Innovative Mobility Solutions in Copenhagen”, which asserted that the everyday life perspective in the light of the mobile risk society (Kesselring, 2008) presents an alternative to technology-fetishizing approaches to sustainable mobility transition. In the paper, we present the current transformation of automotive mobilities as an example of a technology-reliant response to the decarbonization of cities with its emphasis on electrification, new battery technologies, automation, smart mobility etc., and we argue that such a focus will only lead to the iteration of the current system of automobility. Focusing instead on the mobility cultures in which urban everyday mobilities are embedded can support sustainable innovation in cities and their mobility systems. These cultures are deeply rooted in the risk society (Beck, 1992), which becomes the mobile risk society within the mobilities paradigm (Kesselring, 2008). A narrow-minded focus on technological innovation among sustainability scholars and practitioners obscures opportunities for engaging with social change and social inequalities. The decarbonization of cities and their mobilities is possible when directing attention towards the mobility cultures in which urban everyday mobilities are embedded.

The recommendation is to acknowledge that mobility transitions are interlinked with the cultural values of modern societies, deeply rooted in the mobile risk society. Cities need robust, socially coherent, and inclusive mobility systems to become sustainable, which involves more than just replacing carbonized technologies. Such mobility transitions may be pursued if we create cross-disciplinary spaces for actors to meet across dominant silos and discuss mobility innovation as a matter of interlinking sustainable mobilities practices in the mobile risk society.

Point 3: When not explicitly addressed, existing inequalities tend to influence and reproduce in sustainable transition efforts, for example, when prejudiced understandings and territorial narratives frame investment decisions. Therefore, relying on private or semi-private actors may challenge coherent, inclusive mobility transitions.

Does inequality influence efforts to intervene in unsustainable mobility practices and if so, how? This research question was explored through a comparative study of mobility capacity and sustainable intervention in two neighborhoods in Copenhagen, both of which were part of the SIMS project. When conducting pre-intervention investigations into the areas, it became clear that inequality in terms of social and spatial resources, experiences of mobility, and territorial narratives of the different neighborhoods played a decisive role in determining which sustainable interventions became possible. The article “Urban mobility injustice and imagined sociospatial differences in cities” focused on the two neighborhoods, Folehaven and Nordhavn, and an analytical comparison revealed great differences in terms of their spatial resources, the residents’ experiences of (im)mobility, and territorial narratives about the areas. This had severe consequences for mobility capacity and sustainable mobility development in the

areas. Paying attention to neighborhood narratives increases understanding of how mobility inequalities shape planning decisions and reproduce in planning decisions.

The analysis found that the territorial narratives were a dominant factor in creating experiences of immobility. Importantly, this was intensified by private investors and mobility stakeholders outside the area, whose investment decisions were influenced by the reputation of the areas. They thus played a role in determining which sustainable mobility solutions became possible in the areas. Although the mobility operators in the SIMS project are not representative of decision-makers, their decision-making reveal some of the mechanisms involved in the production and reproduction of existing spatial and mobility inequalities in the city and demonstrates the power of narratives in planning (Fischer and Gottweis, 2012). To the extent that different narratives result in uneven mobility investments, it may contribute to increasingly polarized urban futures.

In terms of recommendations, the findings highlight the importance of public investments in sustainability initiatives in areas that are not perceived as “a good business case” by private mobility operators and investors to nurture inclusive and sustainable mobilities across the city scape. Transitioning unequal cities and their mobility systems towards sustainability cannot solely rely on private providers and experiments. Public investment in basic infrastructure is needed to make urban areas attractive for investments. However, territorial narratives are also likely to shape the decision-making at these planning levels, which may add an extra layer to the (re)production of inequalities. This underscores the importance of recognizing the power of territorial narratives in planning for sustainable urban futures and being critical of them.

Point 4: The Covid-19 pandemic had severe consequences for urban mobilities, but it also heralded

“mobile tipping points” (Urry, 2004). For example, it created new discussions and imaginaries in the public transportation sector, of which post-pandemic restoration is key for ensuring sustainable physical mobility for less advantaged people and places.

During the writing of this dissertation, the global Covid-19 pandemic hit with severe consequences for society, cities and mobilities. Pandemic disruptions to mobility normality revealed great agility in urban mobility practices, but it also became clear that to avoid unwanted consequences in the form of a pandemic fear-induced increase in automobility, ‘business as usual’ approaches to public transport would no longer suffice. Therefore, public transport providers are more engaged than ever with integrating Mobility-as-a-Service and flexible ticketing solutions, which are arguably heralding mobile tipping points (Urry, 2004). These are the findings of the paper “Pandemic Detours or New Austainable Pathways? Post-Pandemic Mobility Futures in Danish Cities”, which explored the consequences of pandemic shocks for public transportation by analyzing discussions that took place during an online workshop for public transportation stakeholders. Restoring public transportation is key for mobility equality as it represents the backbone of physical mobility in marginalized areas of the city such as Folehaven (Christensen et al, 2021; Kristensen, Lindberg & Freudendal-Pedersen, forthcoming).

Looking at the consequences of the pandemic for public transportation through the lens of practice theory (Shove et al., 2012) and the mobile risk society (Kesselring, 2008), in the article, we argued that the pandemic may be a portal to the third modernity and a new phase of the mobile risk society. The radical disruptions that Covid-19 enforced on cities, planners, public transport providers and passengers gave a taste of urban mobility as it could be. Covid-19 highlighted how mobilities impact modern economies, cultures, and cities. This provides a new backdrop for experimenting with sustainable alternatives to the current system

of automobility, for example through better integrating public transport and MaaS solutions.

However, because routinized mobility practices are deeply entrenched in existing institutions and infrastructure, which do not necessarily change with Covid-19, changes may not occur “by themselves”. Rather, the realization of benefits depends on continued investment and active policymaking. In terms of recommendations, I point to post-pandemic investments in public transportation. As a source of sustainable and accessible mobility for all, the post-pandemic restoration of and investment in public transportation is key in terms of mobility equality. Further, public transport can comprise the backbone of new integrated MaaS-solutions.

Point 5: The production and reproduction of inequality are not only related to planners’ choices, but also to researchers’ choices. Inequalities may be reproduced in scholarly work, even when of explicit concern. In empirical research, methodological reflexivity is a way of handling this. Visiting and revisiting the interview guide throughout the research process is a tool for maintaining reflexivity and approaching mobility justice (Sheller, 2018a; 2018b) and epistemic justice (Fricker, 2007) in qualitative mobilities studies.

Inequalities may be produced and reproduced in all sorts of societal activity – research included. Researchers’ normativity and positionality have implications for the representation of people and places. Who we are and how we go about research shapes the data and influences interpretations of experiences and results. Methodological decisions are thus interlinked with the production and reproduction of inequality in representation – what Miranda Fricker (2007) has coined epistemic (in)justice. With a starting point in reflexive methodology, the paper “Despite the best of intentions: Inequality in the search for mobility justice” critically examined

epistemic injustices and the production of inequality in the qualitative interviews with families in SIMS.

With examples we show that mobility inequalities and injustices may be unintentionally produced and reproduced in the research process when the researcher – a human being with certain expectations, prejudices, and social position - interacts with specific empirical contexts. Though the strategy is not infallible, we argue that a way of handling this is by using the interview guide as a tool to maintain reflexivity. The interview guide helps the researcher identify new aspects of mobility practices – not *despite* the researchers' normativity but *because* it is explicitly used to reflexively engage during the processes of preparing, interviewing, and rethinking the research.

A recommendation is to devote time for research to take detours and circle outside its 'core area' (Alvesson & Sköldberg, 2020: 345) to enable other interpretations and reflections than those completely in line with the initial research framework. This also raises a critique of the way that most contemporary research relies heavily on funding from private sources, which potentially threatens reflexive research and exacerbates the reproduction of inequalities in research because researchers are constantly chasing the next source of funding at the cost of immersing in reflections on consequences of the research e.g. in terms of representation and equality. Even though Covid-19 created many challenges for my project, it also facilitated a different process of reflection and created time to reflect more thoroughly on inequality in knowledge production.

Point 6: New theoretical frameworks are needed so that transition studies can address the social implications of steering cities onto different transition pathways. I suggest a framework that combines insights from the multi-level perspective, theories of social practice, the risk society and critical realism.

While combining MLP and practice theory has already been suggested (Geels & Penna, 2015; Hargreaves et al., 2013; Köhler et al., 2019; McMeekin & Southerton, 2012), I go a step further by arguing that we also need to include normativity and an ontology to capture social differentiation, inequalities, hierarchies and power.

Sustainable transition is essentially about creating a good, decarbonized future life in cities and, therefore, it is important to develop analytical sensitivity towards the often-suppressed normative underpinnings and social implications of transition pathways. Paying close attention to the social and normative implications of transitions is important because they determine who is included and excluded from living the good life in future decarbonized cities.

A theoretical lens for transition scholars to engage with normativity and the social implications of sustainable transition was developed which combines insights from the Multi-Level Perspective (Rip & Kemp, 1998; Schot & Geels, 2008), practice theory (Shove, Pantzer, and Watson 2012), reflexive modernization (Beck, Giddens & Lash, 1994; Beck 1992), and critical realism (Sayer, 2007, 2011, 2014). Rather than trying to perfect existing theories of transition, I suggest combining these traditions in a theoretical framework, which is driven by an empirically identified need for elucidating aspects of normativity and inequality in transition efforts.

The multi-level perspective systematizes the complex and multi-scalar dynamics involved in sustainable transitions, which serves as the backdrop for the lens. Practice theory provides insights into the social dimensions of change; everyday life and social complexities. However, important aspects of social inequality and normativity escape both transition frameworks because of a lack of normativity and an ontology for recognizing hierarchies and social differentiation. Ulrich Beck's risk society (1992) delivers the ontology and Andrew Sayer's evaluative stance (2011) provide the

basis for viewing sustainable transitions as normative and evaluative processes that activate questions of inequality, equity, and justice.

I recommend experimenting with this ‘patchwork lens’, arguing that approaching transitions from this perspective reveals the social dimensions of sustainable transition and the role of inequality in change processes. It equips future transition studies with a theoretical lens for discovering the transition pathways that steer cities towards inclusive sustainable futures.

CHAPTER 10. CONCLUSION

Through six articles, this dissertation has discussed unfeasible and feasible theoretical frameworks, empirical findings, and methodological challenges and tools for addressing inequality and understanding the role it plays in a sustainable transition of cities and their mobility systems. The dissertation was guided by the following problem statement: How can we understand the role of inequality in sustainable urban transitions - theoretically, empirically, and methodologically? In conclusion, I pick up on this question and highlight the main theoretical, empirical, and methodological contributions of the dissertation.

Theoretically, the dissertation has argued that because transition scholars, planners and politicians have historically been prone to focusing on individual behavior and technological innovations, important social dimensions of change have been overlooked including inequality in terms of distribution, access, and power. Acknowledging the importance of paying closer attention to the social dimensions of change is the first step for transition scholars who want to engage with questions of inequality. A feasible way forward, I have suggested, starts by taking everyday life in cities as the unit of analysis.

This can be achieved via social practice theory, replacing individual behavior with social practices to understand the multiple interconnected social practices that make up everyday life. Thereby it provides planners and transition scholars with a tool for understanding urban complexity and how to foster change against this background. I further suggest to engage with the everyday life perspective in the light of the mobile risk society (Kesselring, 2008). In this light, many attempts to transition urban mobilities appear excessively fixated on innovation and technology-reliant responses. New understandings of mobility transition as interlinked with everyday practices that interlock to form cultures

of mobilities deeply rooted in the mobile risk society present a rich starting point for understanding the social dimensions of transition and creating sustainable and socially coherent mobility systems in cities.

Sustainable transitions are in essence about creating the good future life, i.e., it is a normative activity. We also need to acknowledge and actively make use of this normativity in studies of sustainable transitions, because normativity is also what reveals inequality. The dissertation contribute with new directions for handling inequality in future sustainable transition studies by developing a ‘patchwork’ theoretical lens for capturing inequality and change. It is original in that it combines insights from the prominent transition framework, the multi-level perspective, with practice theory, the risk society, and critical realism, providing insights into change dynamics, an understanding of everyday social practices, an ontology for recognizing hierarchies and a basis for viewing sustainable transitions as normative and evaluative processes that activate questions of inequality, equity, and justice. Experimenting with this ‘patchwork lens’ can allow future scholars of sustainable transition to consider the social implications of a sustainable transition.

Empirically, the dissertation has identified one of potentially several mechanisms through which inequality and transition efforts are mutually shaping each other. Through a comparative analysis of two different urban areas in Copenhagen, Denmark, I identified existing inequalities in the socio-economic and spatial composition of the areas and showed how they were contributing to unequal mobilities and unequal mobility futures. The reproduction and reinforcement of mobility inequality happened because territorial narratives framed mobility operators’ decisions about whether to invest in the areas. The finding illuminates one way in which inequality influences sustainable transition efforts: through the power of neighborhood narratives. Public investments

that ensure equal mobility development are, therefore, essential for socially coherent mobility futures in cities.

A second empirical contribution lies in the identification of possible mobile tipping points induced by the global Covid-19 pandemic. Covid-19 lockdowns had severe consequences for public transportation systems in cities. I identify new pandemic-induced imaginaries and conversations which are gaining ground among stakeholders and providers of public transportation in Danish cities. In realization that the “business as usual” approach to public transportation no longer suffices, new conversations on flexibility, user needs, and mobility-as-a-service solutions are spreading, possibly heralding mobile tipping points. On this basis, I argue that the pandemic may present a portal to a third modernity and a new phase in the mobile risk society. The Covid-19 pandemic has highlighted the way in which mobilities impact modern cities. This provides a new backdrop for experimenting with sustainable alternatives to current carbonized urban mobilities.

To conclude on the methodological discussion, I suggest that because research is not neutral or resistant to issues of inequality, researchers need strategies for handling the potential production and reproduction of inequalities in their work. Working actively with the interview guide throughout all phases of the qualitative research processes represents such a strategy. It is a way to handle the issues of normativity and positionality that are ever-present in qualitative mobility research. Utilizing the interview guide as a tool for continuously reflecting on research experiences and interpretations can assist researchers in approaching epistemic justice (Fricker, 2007) and equality in representation. Inequality may be produced and reproduced unwillingly in, for example, decisions about where to look, who to ask and how to question. Maintaining reflexivity at all stages of the research process helps us discover blind spots and avoid unintentionally reproducing inequalities.

At no previous point in time have so many resources been dedicated to solving the challenges that climate change represents to cities and societies (Docherty, Marsden, & Anable, 2018). Now is, therefore, a critical time for including the social dimensions in analyses of transition and assessing the possible unequal implications of pursuing different pathways towards sustainability in cities and their mobility systems. This dissertation has aimed for providing insights, tools and lenses for sustainability scholars and practitioners to undertake the important task of addressing the social implications of transitioning cities and their mobilities in a world that is becoming more unequal by the day.

LITERATURE LIST

- Agyeman, J. & Evans, B. (2004). 'Just sustainability': the emerging discourse of environmental justice in Britain?. *The Geographical Journal* 170(20), 155-164.
- Alvesson, M. & Sköldberg, K. (2020). *Reflexive Methodology: New Vistas for Qualitative Research*. London: Sage.
- Bartiaux, F., Maretti, M., Cartone, A., Biermann, P., & Krasteva, V. (2019). Sustainable energy transitions and social inequalities in energy access: A relational comparison of capabilities in three European countries. *Global Transitions*, 1, 226-240. <https://doi.org/10.1016/j.glt.2019.11.002>
- Bech-Jørgensen, B. (1994): *Når hver dag bliver til hverdag*. Copenhagen: Akademisk Forlag.
- Beck, U. (1988). Misunderstanding Reflexivity: The Controversy of Reflexive Modernization. In Ulrich Beck (ed.): *Democracy without Enemies*. Cambridge: Polity, 84-102.
- Beck, U. (1992). *Risk Society - Towards a New Modernity*. London: Sage
- Beck, U., Giddens, A., & Lash, S. (1994). *Reflexive Modernization. Politics, Tradition and Aesthetics in the Modern Social Order*. Cambridge: Polity Press.
- Beck, U. (2006). *Cosmopolitan Vision*. Cambridge: Polity Press.
- Beck, U. (2014). Five minutes with Ulrich Beck: "All kinds of positive developments can result from climate change". Interview with EUROPP's managing editor Stuart Brown. Derived from: <https://blogs.lse.ac.uk/euoppblog/2014/02/26/five-minutes-with-ulrich-beck-all-kinds-of-positive-developments-can-result-from-climate-change/>
- Beck, U. (2015). Emancipatory catastrophism: What does it mean to climate change and risk society? *Current Sociology*, 63(1), 75–88. <https://doi.org/10.1177/0011392114559951>

- Beck, U. (2016). *The metamorphosis of the world*. Cambridge: Polity
- Berger, P. T. & Luckmann, T. (1992). *Den samfundsskabte virkelighed*. Copenhagen: Lindhart & Ringhof
- Bhaskar, R. (1998). General Introduction, in M. Archer et al (eds) *Critical Realism*. London: Routledge
- Bloch, C. (1988). Om forskel mellem det kendte og det “endnu-ikke-kendte, in C. Bloch et al. (eds) *Hverdagsliv, kultur og subjektivitet*. Copenhagen: Akademisk Forlag, 124–145.
- Bordieu, P. & Waquant, L. (1992) *An Invitation to Reflexive Sociology*. Cambridge: Polity Press.
- Brinkman, S. & Kvale, S. (2014). *InterViews: Learning the Craft of Qualitative Research Interviewing*. London: Sage.
- Brinkmann, S. & Tanggaard, L. (2020). *Kvalitative Metoder*. Copenhagen: Hans Reitzel.
- Brundtland, G. (1987). *Report of the World Commission on Environment and Development: Our Common Future*. United Nations General Assembly document A/42/427
- Budd, L., & Ison, S. (2020). Responsible Transport: A post-COVID agenda for transport policy and practice. *Transportation Research Interdisciplinary Perspectives*, 6, 100-151.
doi.org/10.1016/j.trip.2020.100151
- Bullard, R., Agyeman, J. and Evans, B. (2002). *Just Sustainabilities. Development in an unequal world*. London: Earthscan
- Butz D. and Cook N. (2019). Mobile Methods, Epistemic Justice and Mobility Justice. In Cook N. and Butz D, (eds.) *Mobilities, Mobility Justice and Social Justice*, 81–98. London: Routledge.
- Børsen, T., & Botin, L. (2013). *What is Techno-Anthropology? What is Techno-Anthropology?* Aalborg: Aalborg Universitetsforlag, 7-34.

- C40Cities (2016). C40 Awards the 11 Best Cities of 2016 for Addressing Climate Change. Derived from <https://www.c40.org/news/c40-awards-the-11-best-cities-of-2016-for-addressing-climate-change/>
- Candea, M. (2019). Comparison in anthropology: The impossible method. Cambridge: Cambridge University Press
- Chancel, L., Piketty, T., Saez, E., & Zucman, G. et al. (2022): World Inequality Report. World Inequality Lab. Derived from: <https://wir2022.wid.world/>
- Chancel, L. & T. Piketty. (2015). Carbon and Inequality: From Kyoto to Paris. Paris School of Economics. Derived from: <http://piketty.pse.ens.fr/files/ChancelPiketty2015.pdf>
- Christensen, T., Folkmann, A., Friis, F., Lindberg, M., Kristensen, N., Freudeldal-Pedersen, M. and Hartmann-Petersen, K. (2021). Forstudie af aktører og lokalområderne i SIMS: Områdebeskrivelser og mobilitetsmønstre i Folehaven, Nordhavn og Nærheden. Derived from: www.sims.aau.dk/digitalAssets/1002/1002457_deliverable-d2.2_final.pdf
- Christiansen, H. & Baescu, O. (2021) Transportvaneundersøgelsens årsrapport for Danmark 2021. Lyngby: DTU
- Collin, F. (2003): Konstruktivisme. Roskilde: Roskilde Universitetsforlag.
- Cresswell, T. (2011). Mobilities I: Catching up. Progress in Human Geography, 35(4), 550–558. <https://doi.org/10.1177/0309132510383348>
- Csutora, M. (2012). One More Awareness Gap? The Behaviour–Impact Gap Problem. Consum Policy 35, 145–163. <https://doi.org/10.1007/s10603-012-9187-8>
- Cusack, M. (2021). Individual, social, and environmental factors associated with active transportation commuting during the COVID-19 pandemic. Journal of Transport & Health 22. <https://doi.org/10.1016/j.jth.2021.101089>

- Deetz, S. (1992). *Democracy in an Age of Corporate Colonialization: Developments in communication and the Politics of Everyday Life*. Albany: State University of New York Press.
- Docherty, I., Marsden, G., & Anable, J. (2018). The governance of smart mobility. *Transportation Research Part A: Policy and Practice*, 115, 114–125. <https://doi.org/10.1016/j.tra.2017.09.012>
- Dennis, K., & Urry, J. (2008). *After the Car*. Cambridge: Polity.
- European Commission (2014). *Copenhagen Winner 2014 European Green Capital*, available at: https://ec.europa.eu/environment/pdf/europeangreencapital/Copenhagen-Short-Leaflet_Web.pdf
- European Environment Agency (2020). *Final Energy Consumption by Mode of Transport*. Copenhagen. Denmark
- Eysenck, Hans (1976). *Case Studies in Behaviour Therapy*. London: Routledge
- Fairclough, N., Jessop, B. & Sayer, A. (2002). Critical Realism and Semiosis. *Alethia* 5(1), 2-10. <https://doi.org/10.1558/aleth.v5i1.2>
- Fischer, F., & Gottweis, H. (2012). *The argumentative turn revisited: Public policy as communicative practice*. Duke University Press.
- Flyvbjerg, B. (2009). *Samfundsvidenskab som virker*. Copenhagen: Akademisk Forlag
- Freudental-Pedersen, M., Hartmann-Petersen, K., Friis, F., Lindberg, M. R., & Grindsted, T. S. (2020). Sustainable Mobility in the Mobile Risk Society—Designing Innovative Mobility Solutions in Copenhagen. *Sustainability*, 12(17), 7218. <https://doi.org/10.3390/su12177218>
- Fricke, Miranda. 2007. *Epistemic Injustice: Power and the Ethics of Knowing*. Oxford: Oxford University Press

- Gardiner, D. & Associates, LLC (2012). Physical Risks from Climate change. Derived from: <https://s3.amazonaws.com/oxfam-us/www/static/media/files/physical-risks-from-climate-change.pdf>
- Geels, F. W. (2004). From sectoral systems of innovation to socio-technical systems: Insights about dynamics and change from sociology and institutional theory. *Research Policy*, 33(6–7), 897–920. <https://doi.org/10.1016/j.respol.2004.01.015>
- Geels, F. W. (2010). Ontologies, socio-technical transitions (to sustainability), and the multi-level perspective. *Research Policy*. <https://doi.org/10.1016/j.respol.2010.01.022>
- Geels, F. W., & Penna, C. C. R. (2015). Societal problems and industry reorientation: Elaborating the Dialectic Issue LifeCycle (DILC) model and a case study of car safety in the USA (1900–1995). *Research Policy*, 44(1), 67–82. <https://doi.org/10.1016/J.RESPOL.2014.09.006>
- Gore, T. (2021). Carbon inequality in 2030. Oxford: Oxfam GB. Derived from: <https://www.oxfam.org/en/research/carbon-inequality-2030>
- Graham, S., & Thrift, N. (2007). Out of Order. *Theory, Culture & Society*, 24(3): 1–25. doi.org/10.1177/0263276407075954
- Hacking, Ian (1999). *The Social Construction of what?* Cambridge and London: Harvard University Press
- Halkier, B. (2020). Fokusgrupper. In Brinkmann, S. & Tanggaard, L.: *Kvalitative Metoder*. Copenhagen: Hans Reitzel
- Hargreaves, T., Longhurst, N., & Seyfang, G. (2013). Up, down, round and round: connecting regimes and practices in innovation for sustainability. *Environment and Planning A*, 45, 402–420. <https://doi.org/10.1068/a45124>
- IPCC (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K.

Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)). Combridge & New York: Cambridge University Press. doi:10.1017/9781009325844.

Jagger et al., (2011) Preparing for the Field: Managing and Enjoying Fieldwork (chapter 9 in book – from qualitative methods course)

Kahn Ribeiro, S.; Kobayashi, S.; Beuthe, M.; Gasca, J.; Greene, D.; Lee, D.S.; Muromachi, Y.; Newton, P.J.; Plotkin, S.; Sperling, D.; et al. Transport and Its Infrastructure. In Metz, B., Davidson, O.R., Bosch, P.R., Dave, R., Meyer, L.A., (eds) Climate Change 2007. Cambridge: Cambridge University Press.

Kesselring, S. (2008). “The mobile risk society.” In W. Canzler, V. Kaufmann, & S. Kesselring (eds) Tracing mobilities, 77–102. Farmham: Ashgate.

Kesselring, S. & Fredendal-Pedersen, M. (2021). Searching for urban mobilities futures. Methodological innovation in the light of COVID-19. Sustainable Cities and Society 75, 103138

Kvale, S. (2007). Doing interviews. London: Sage.

Köhler, J., Geels, F. W., Kern, F., Markard, J., Onsongo, E., Wieczorek, A., ... Wells, P. (2019). An agenda for sustainability transitions research: State of the art and future directions. Environmental Innovation and Societal Transitions, 31, 1–32. <https://doi.org/10.1016/J.EIST.2019.01.004>

Kristensen, N. G., Lindberg, M. R., Freudendal-Pedersen, M., (forthcoming). Urban mobility injustice and imagined sociospatial differences in cities - A comparative study of two Copenhagen neighbourhoods. Cities

Larsen. T. S. (2018) Advanced Marginality as a comparative research strategy in praxis: the Danish “Grey Belt” in conversation with the French “Red Belt”, Urban Geography, 39(8), 1131-1151, DOI: [10.1080/02723638.2018.1440124](https://doi.org/10.1080/02723638.2018.1440124)

- Lindberg, M. R., Freudendal-Pedersen, M., Hartmann-Petersen, K., Kristensen, N. G., Christensen, T. H., & Grindsted, T. S. (2022) Post-Pandemic Mobility Futures in Danish Cities. *Applied Mobilities*, 1-17. <https://doi.org/10.1080/23800127.2022.2145081>
- Morello-Frosch, R. A. (1997). Environmental justice and California's "Riskscape": The Distribution of Air Toxics and Associated Cancer and Non-cancer Health Risks Among Diverse Communities. PhD Dissertation. University of California, Berkeley ProQuest Dissertation Publishing.
- Morena, E., D. Krause, and D. Stevis. (2020). *Just Transitions. Social Justice in a Low-Carbon World*. London: Pluto Press.
- Morgan, D. L. (1997). *Focus groups as qualitative research*. London: Sage Publications.
- Morozov, E. (2014). To save Everything, click here. The folly of Technological solutionism. *PublicAffairs*.
<https://doi.org/10.1007/s13398-014-0173-7.2>
- Oxfam (2015). *Extreme Carbon Inequality: Why the Paris climate deal must put the poorest, lowest emitting and most vulnerable people first*. Oxfam Media Briefing, (December), 1–14. Retrieved from https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/mb-extreme-carbon-inequality-021215-en.pdf
- Potter, J. & Wetherell, M. (1987) *Discourse and social psychology*. London: Sage
- Rip, A., & Kemp, R. (1998). Technological change. In S. Rayner & E. L. Malone (eds): *Human Choice and Climate Change*. Vol. II, 327-399. Columbus, Ohio: Battelle Press.
- Reckwitz, A. (2002). Toward a Theory of Social Practices: A Development in Culturalist Theorizing. *European Journal of Social Theory*, 5(2), 243–263. <https://doi.org/10.1177/13684310222225432>.
- Samson, C., Lindberg, M. R., Freudendal-Pedersen, M., & Galland, D. (forthcoming) *From planning practice to urban practice: Integrating*

everyday life in planning for urban sustainability. *Planning for Urban Sustainability*

- Sayer, A. (1992). *Method in social science - A realist approach*. London: Routledge.
- Sayer, A. (2000). *Realism and social science*. London: Sage.
- Sayer, A. (2007). Moral Economy as Critique. *New Political Economy*, 12(2), 261-270. <https://doi.org/10.1080/13563460701303008>
- Sayer, A. (2011). *Why Things Matter to People: Social Science, Values and Ethical Life*. New York: Cambridge.
<https://doi.org/10.1017/CBO9780511734779>
- Sayer, A. (2014). *Why We Can't Afford the Rich*. Bristol: Policy Press.
<https://doi.org/10.2307/j.ctt1t89fd6>
- Scavenius, T. (2014). *Moral Responsibility for Climate Change*. PhD Dissertation. Department of Political Science, University of Copenhagen.
- Scavenius, T. & Lindberg, M. R. (2016). Klimaresiliens: Fra handlingsunderskud til institutionsopbygning. *Slagmark* 73, 141-156
- Scavenius, T., & Lindberg, M. (2018). The Double Gap between climate values and climate action. In T. Scavenius & S. Rayner (Eds.), *Institutional Capacity for Climate Response: A New Approach to Climate Politics*. Routledge Earthscan.
- Schatzki, T.R. (2001). Introduction: Practice theory. In Knorr Cetina, K. et al., *The Practice Turn in Contemporary Theory*. London & New York: Routledge, 10–23.
- Schot, J., & Geels, F. W. (2008). Strategic niche management and sustainable innovation journeys: Theory, findings, research agenda, and policy. *Technology Analysis and Strategic Management*, 20 (5), 537-554. <https://doi.org/10.1080/09537320802292651>

- Sedysheva, A. (2020). Doing Qualitative Research during the Covid-19 Pandemic of 2020. *Research and Methods* 29 (1), 75-88.
- Sheller, M. (2018a). *Mobility justice: the politics of movement in an age of extremes*. Verso.
- Sheller, M. (2018b). Theorizing mobility justice. *Tempo Social: Revista De Sociologia Da USP* 30(2), 17-34. <https://doi.org/10.11606/0103-2070.ts.2018.142763>
- Sheller, M., & Urry, J. (2006). The New Mobilities Paradigm. *Environment and Planning A*, 38(2), 207-226.
[HTTPS://DOI.ORG/10.1068/A37268](https://doi.org/10.1068/A37268)
- Shove, E. (2010). Beyond the ABC: Climate Change Policy and Theories of Social Change. *Environment and Planning A: Economy and Space*, 42(6), 1273–1285. <https://doi.org/10.1068/a42282>.
- Shove, E., Pantzar, M. and Watson, M. (2012). *The Dynamics of Social Practice: Everyday Life and How it Changes*. London: Sage
<https://doi.org/10.4135/9781446250655>.
- SIMS (2018). Project description. Derived from:
<https://www.sims.aau.dk/om/>
- Singer, M. (2019). *Climate Change and Social Inequality*. Abingdon: Routledge
- Southerton, D., Chappells, H. and Vliet, B.V. (2004). *Sustainable consumption: The implications of changing infrastructures of provision*. Cheltenham: Edward Elgar Publishing.
- Spaargaren, G. (2011). Theories of practices: Agency, technology, and culture. *Global Environmental Change*, 21(3), 813–822.
<https://doi.org/10.1016/j.gloenvcha.2011.03.010>.
- Spurling, N. et al. (2013) 'Interventions in practice: re-framing policy approaches to consumer behaviour', University of Manchester, Sustainable Practices Research Group.

Stevis, D., and R. Felli. (2015). "Global Labor Unions and Just Transition to a Green Economy." *International Environmental Agreements: Politics, Law and Economics* 15 (1), 29–43. doi:10.1007/s10784-014-9266-1.

Torras, M. & Boyce, J. (1998). Income, Inequality, and Pollution: A Reassessment of the Environmental Kuznets Curve. *Ecological Economics* 25, 147-160. [https://doi.org/10.1016/S0921-8009\(97\)00177-8](https://doi.org/10.1016/S0921-8009(97)00177-8)

UNEP (2022). Cities and climate change. Derived from: <https://www.unep.org/explore-topics/resource-efficiency/what-we-do/cities/cities-and-climate-change>

United Nations (2015). The Paris Agreement. Derived from: https://unfccc.int/sites/default/files/english_paris_agreement.pdf.

Urry, J. (2004). The 'System' of Automobility. *Language Teaching Research*, 21 (4–5). <https://doi.org/10.1177/13621688221132475>

Urry, J. (2007). *Mobilities*. Cambridge: Polity Press.

Wacquant, L. (2007) *Urban Outcasts*. United Kingdom: Polity Press.

Walker, G. & Burningham, K. (2011). Flood Risk, Vulnerability and Environmental Justice: Evidence and Evaluation of Inequality in a UK Context. *Critical Social Policy* 31(2), 216-240.

Walker, G. (2013). Inequality, sustainability, and capability: Locating justice in social practice. In Shove, E. & Spurling, N. (eds.) *Sustainable Practices. Social theory and climate change*. Abingdon: Routledge.

Warde, A. (2014). After taste: Culture, consumption and theories of practice. *Journal of Consumer Culture*, 14(3), 279–303. <https://doi.org/10.1177/1469540514547828>.

Warde, A. (2005). Consumption and Theories of Practice. *Journal of Consumer Culture*, 5(2), 131–153. <https://doi.org/10.1177/1469540505053090>

Weedon, C. (1987). *Feminist Practice and poststructuralist theory*. Oxford: Basil Blackweel.

World Bank (2022 [2019]) Gini index (World Bank estimate) - Denmark, Slovenia, Czech Republic, United Kingdom, Italy, United States, Norway, New Zealand, South Africa, Bulgaria, The World Bank Group. Derived from:
https://data.worldbank.org/indicator/SI.POV.GINI?end=2018&locations=DK-SI-CZ-GB-IT-US-NO-NZ-ZA-BG&most_recent_value_desc=false&start=1969

Yin, R. K. (2018). Case study research and application. London: Sage

Ørngreen, R., & Levinsen, K. T. (2017). Workshops as a Research Methodology. Electronic Journal of ELearning, 15(1), 70-81.

APPENDICES

Appendix A. Interview guide, households

Appendix B. Interview guide, mobility operators

Appendix C. Focus group guide

Appendix A. Interview guide, households

Semi-structured interview guide used for household interviews in Folehaven and Nordhavn. In Danish.

Hypoteser:

- Vi har en forestilling om stederne har en betydning for mobilitetsmønstre
- Vi har en forestilling om at det er i livsfaseskiftene muligheden for ændringer i praksis er størst (Brud, skred og forskydninger – kan områdefornyelse ses som et skred fx)
- Vi har en forestilling om at mobilitetsmønstre kan ændres i forbindelse med fysiske/materielle forandringer.

Forskningsmål:

- Det overordnede mål er at indsamle viden, der kan kvalificere udformningen og designet af bæredygtige mobilitetsløsninger for fremtiden.
- At udvikle SIMS-løsninger, der udvider vores forståelse for (tid, rum og forandring) hvordan man kan og bør intervenere i menneskers hverdagsliv.

Emne:	Hypotese/formål:	Spørgsmål:
Hverdagsliv og sted	<p>At få beskrivelser de føler sig trygge i og se hvilke temaer de slår an der skal følges.</p> <p><i>Det er afgørende at forstå hverdagslivet fordi hverdagslivet er bundet sammen af mobilitet (Bech-Jørgensen, 1994, Freudendal-Pedersen, 2015)</i></p> <p>At få viden om stedet, brugen af stedet, valg af bosted, præferencer, ønsker og udfordringer.</p>	<p>Prøv at beskrive en typisk hverdag for dig?</p> <ul style="list-style-type: none"> - Forskelle på hverdag og weekend? - Hvor arbejder du? - Hvordan ser dine familieforhold ud? - Hvad laver du i din fritid? - <p>Hvorfor bor du her?</p> <ul style="list-style-type: none"> - Hvor længe har du boet her? - Hvad kan du allerbedst lide ved at bo her? - Hvad er mest besværligt ved at bo her? - Hvis du kunne få lige præcis det hverdagsliv du ønskede dig hvordan skulle det så se ud? - Hvad skal der til for at det kan lade sig gøre?

	<p><i>Stedet har betydning (Soja, 2010, 1996; Massey, 1994)</i></p> <p>Indsigt i beboeres hverdagsliv, herunder typiske gøremål og rytmer i hverdagen.</p> <p><i>Mobilitet er vigtig for det levede liv (Urry, 2007; Freudendal-Pedersen, 2015)</i></p> <p><i>Mobilitet er med til at organisere hverdagen (Freudendal-Pedersen, 2015)</i></p>	<p>Kender du til visionerne for området?</p> <ul style="list-style-type: none"> - Har de haft indflydelse på dit valg af bolig og hvordan du lever dit hverdagsliv?
Transportspørgsmål, mobilitetsmønstre og teknologier	<p>At få deres fortællinger om hvordan rationaler og mening skabes i forhold til transportmidler.</p> <p><i>Mening er social skabt, den er situeret og konstrueret (Alvesson & Sköldberg, 2020)</i></p> <p>Hvordan transport hænger sammen med livsfaseskift.</p> <p><i>Brud, skred, forskydninger og livsfaseskift er der hvor forandring sker (Bech-Jørgensen, 1994; Godskesen, 2002)</i></p>	<p>Prøv at beskrive situationer i dit hverdagsliv hvor du transporterer dig forskelligt?</p> <p>Hvad kan du bedst lide?</p> <p>(Hvorfor) Cykler du?</p> <ul style="list-style-type: none"> - Hvorfor/hvorfor ikke? <p>(Hvorfor) Bruger du bus/tog/metro?</p> <ul style="list-style-type: none"> - Hvorfor/hvorfor ikke? <p>(Hvorfor) Bruger du bil?</p> <ul style="list-style-type: none"> - Hvorfor/hvorfor ikke? <p>Bruger du andre former for transportmidler?</p>

	<p>At få viden om hvilke løsninger de bruger uden at spørge direkte (Rejseplanen, LetsGo, ByCyklen).</p>	<ul style="list-style-type: none"> - Gang - Løbehjul - rulleskøjter
	<p>Hvilke strukturelle fortællinger er i spil.</p> <p><i>Strukturelle fortællinger er generaliserede sandheder som vi kan aktivere til at rationalisere vores valg (Freudendal-Pedersen, 2009)</i></p>	<p>I hvilke situationer tænker du over vejret i forhold til hvilken transportform du vælger (Hvor meget betyder vejret)</p> <p>Hvordan har dine transportbehov ændret sig gennem tiden?</p> <p>(Barn/ung/voksen/gammel)</p>
	<p>Hvilke materialiteter, kompetencer og meninger kommer på banen.</p> <p><i>Mobilitetspraksisser består af materialiteter, kompetencer og meninger (Spurling et al 2015)</i></p>	<p>Har du tænkt over mulighederne for transport ift. dit valg af bopæl?</p> <p>Hvilke transportmidler vil du allerhelst benytte dig af i hverdagen?</p> <ul style="list-style-type: none"> - Hvorfor? - Tror du mange andre har det på samme måde? - Hvorfor/hvorfor ikke? <p>Bruger du nogen apps i forbindelse med transport?</p> <p>Hvilke? Hvordan?</p>

Fællesskab	<p>Se hvordan de reagerer på et abstrakt spørgsmål og se hvordan de bærer det videre i resten af samtalen undersøge fællesskabers betydning i forhold til mobilitet.</p> <p><i>Fællesskabers forandringspotentiale? Ambassadørtanken (som vi fik viden om i interviews med etablerede delebilsordninger)</i></p>	<p>Hvad er fællesskab for dig?</p> <p>Hvilke typer fællesskaber indgår du i?</p> <p>(Hvornår, hvorfor og hvordan).</p> <p>Hvilke typer af fællesskaber er der her hvor du bor?</p> <p>Ser du dig selv som en del af de fællesskaber?</p> <p>Hvordan kan du bedst lide at deltage i noget fælles?</p>
Klima/sundhed	<p>Hvordan relaterer de klima og sundhed til deres mobilitet</p>	<p>Hvilke klima- og/eller miljøproblemer mener du er de største?</p> <p>Hvilke miljøproblemer er du mest påvirket af i dit hverdagsliv, og hvordan?</p> <p>Tænker du på klimaet i forbindelse med den type af transport du bruger?</p> <p>Tænker du på sundhed i forbindelse med den type af transport du bruger?</p>

<p>Fremtid - Idéer til SIMS-løsninger</p>	<p>At få deres vurdering af hvad de mener der er brug for.</p> <p><i>Forestillinger om løsninger- hypotese om at mange tænker på teknologi og adfærd (Shove, 2010; Freudendal-Pedersen et al 2020).</i></p> <p>At spore dem ind på Maas løsninger og se om der er spirer i forhold til at tænke i de baner.</p> <p><i>Mobility-As-A-Service som fremtidens mobilitetsløsning (Cohen & Shaheen, 2018)</i></p> <p>Hvilke fællesskaber/institutioner relaterer de til mobilitet og forandring</p> <p><i>Kollektivt/institutionelt ansvar for mobilitetsforandring</i></p> <p><i>Stedet har betydning (Soja, 2010, 1996; Massey, 1994)</i></p>	<p>Hvad mener du er transportområdets største udfordringer (i dag og for fremtiden)?</p> <p>Hvad mener du er et godt transportsystem? (i fremtiden)</p> <ul style="list-style-type: none"> - Hvad kunne få sådan et system til at virke for dig? - Hvordan ville det påvirke din hverdag? - Tror du det ville virke ligesådan for andre? <p>Hvad er i dine øjne de bedste alternativer til benzinbilen?</p> <p>Kender du til nogle typer af deleordninger på transportområdet?</p> <ul style="list-style-type: none"> - Hvad er dine erfaringer og/eller forventninger med disse? (samkørsel, delebil, blaffarnationen) - Hvor holder du dig orienteret om hvad der sker i nærområdet? - Kender du til nogle der bruger deleløsninger, samkører i dit netværk? <p>Kan der gøres noget i dit lokalområde for at optimere din transportsituation?</p> <ul style="list-style-type: none"> - Hvad?, Hvor og Hvem har ansvaret? - Hvordan vil sådanne tiltag have indflydelse på dit hverdagsliv? - Hvordan tror du dine ønsker vil virke for andre? <p>Er der noget af det du har fortalt, du tror du ville have svaret anderledes på inden COVID-19?</p>
---	--	--

	Interviews i forlængelse af pandemi: Hvad betyder det? (til COVID artikel?)	<ul style="list-style-type: none"> - Tænker du anderledes i forhold til kollektiv transport? - Tænker du anderledes i forhold til at bruge bil? -
Baggrundsinfo	For at få en fornemmelse af bredden/diversiteten for/i området. Spørg kun hvis interviewet ikke allerede har disse infos!	<p>Familietype?</p> <p>Boligtype og størrelse?</p> <p>Job?</p> <p>Ressourceniveau? (lavt, under middel, middel, over middel, højt?)</p>

Appendix B. Interview guide, mobility operators

Semi-structured interview guide used for mobility provider interviews. In Danish.

Emne:	Hypotese/formål:	Spørgsmål:
Informanten og den mobilitetsaktør, hun/han repræsenterer	<p>At få viden om informanten og hendes/hans baggrund, hvad de er formet af.</p> <p>Indsigt i virksomhedens "elevatortale" – fortælling om sig selv</p>	<p>Vil du til en start fortælle mig lidt om dig selv og din baggrund?</p> <ul style="list-style-type: none"> - Hvordan kom du til at arbejde med det her område? - Hvor længe har du været en del af XXX? - Hvad synes du er mest interessant/motiverende ved at arbejde med det her område? <p>Til en start kunne jeg godt tænke mig at starte med at få malet det helt grundlæggende billede op:</p> <ul style="list-style-type: none"> - Hvad er historien bag xxxx? <p>Hvordan plejer du at introducere jeres virksomhed til udenforstående?</p>
Vision og fortællingen om virksomheden og delemobilitet	<p>At få deres mere detaljerede fortællinger om virksomheden og hvad den er sat i verden for</p> <p>Hvad er delemobilitet og hvorfor er det vigtigt?</p> <p>Hvor meget fylder bæredygtighed i</p>	<p>Hvis man skal tale vision eller strategi - hvad er I så sat i verden for?</p> <ul style="list-style-type: none"> - Er der nogle specifikke mobilitetsudfordringer, som I tænker jer selv som et svar på? - Udfordringer for jeres kunder? - Udfordringer på et større samfundsmæssigt niveau? <p>Vi står jo aktuelt over for mange store udfordringer, og nogle af dem er delemobilitet relateret til – nogen ser dem måske endda som et svar på dem. Hvordan forholder i jer til:</p> <ul style="list-style-type: none"> - Trængsel? - Fleksibilitet? - økonomi?

	<p>deres selvfremstilling?</p> <p>Hvordan mening skabes i forhold til dem selv og deres forretningsmodel</p>	<ul style="list-style-type: none"> - bæredygtighed? - Sundhed? - Et socialt aspekt?
<p>Fortællinger og forståelser af forskellige brugere og steder</p>	<p>Hvilken viden og hvilke fortællinger har de om deres kunder og potentielle nye kundegrupper</p> <p>Hvilke forståelser af forskellige grupper og steder er i spil, og hvad bygger deres forestillinger på?</p> <p>Hypotese: Der florerer en række fortællinger/ forestillinger, som strukturerer deres forretningsudviklin g.</p> <p>Hvilke erfaringer har de?</p> <p>Hvilken viden har de?</p>	<p>Hvem er jeres kunder?</p> <ul style="list-style-type: none"> - Hvor bor de henne? - Hvad er det for nogle behov, I dækker hos dem? - Forskellige typer af kunder? - Fx i forhold til køn, alder, økonomi? - Ser I at folk har forskellige behov i forskellige områder? <p>Hvor opererer I henne?</p> <ul style="list-style-type: none"> - Hvor bliver jeres services brugt? - Bliver de brugt til noget forskelligt på forskellige steder/områder/bydele? <p>Når I leder efter nye kunder, hvem er det så I leder efter?</p> <ul style="list-style-type: none"> - Hvor leder I? - Hvad gør I for at få fat i dem? - Har I bestemte netværk/samarbejdspartnere/ambassadører, I benytter jer af? - Er der nogle grupper, hvor I tænker, at dem får vi aldrig fat i? - Hvad bygger I det på? <p>Er der nogen områder, hvor I har prøvet jeres service af, men har fjernet dem igen?</p> <ul style="list-style-type: none"> - Hvorfor tror du ikke, det fangede an? - Hvordan adskilte virkeligheden sig fra jeres forventninger? <p>Hvad gør I for at finde ud af, om der er kundegrundlag for jeres service i et område?</p> <ul style="list-style-type: none"> - Laver I nogen former for markedsanalyse eller anden vidensindsamling?

		<ul style="list-style-type: none"> - Arbejder I med segmentering af kunder eller områder?
SIMS – forskelle på de tre områder	<p>Hvilke forestillinger har de om de tre konkrete områder i SIMS</p> <p>Hvorfor er de mere engagerede i nogle områder end andre?</p> <p>Hypotese: Bestemte typer af argumenter - Økonomiske argumenter, Fortællinger om hærværk, tyveri, Kriminalitet</p>	<p>Så vil jeg gerne tale lidt mere konkret om SIMS projektet og de områder, vi arbejder med der. Men først vil jeg høre dig;</p> <p>Hvad var jeres motivation for at gå ind i SIMS?</p> <p>I SIMS-projektet arbejder vi jo med tre konkrete områder, som er meget forskellige, og jeres engagement i områderne er jo også forskelligt. Og så sidder jeg og tænker, at det må bygge på noget viden eller nogen erfaringer I har med, hvordan jeres biler/cykler tages imod og bruges i forskellige områder.</p> <p>Kan du fortælle mig noget om det erfaringsgrundlag?</p> <ul style="list-style-type: none"> - Erfaringer fra lignende områder? - Økonomiske argumenter? - Hærværk/tyveri? - Brugt til kriminalitet?
SIMS – de tre områder og vores fund: Nordhavn	<p>Hypotese: Det store engagement i Nordhavn bygger på nogle bestemte forforståelser, forestillinger og strukturelle fortællinger om området, snarere end en markedsanalyse / indsigt i, hvilke mobilitetspraksisser, der præger området</p>	<p>Hvis vi så kigger konkret på de tre områder, så kan jeg forstå I er meget interesserede i, er jo Nordhavn. Hvad er det for et potentiale, I ser der?</p> <ul style="list-style-type: none"> - Hvad bygger jeres interesse på? - Hvor har I den viden fra? <p>Noget af det, vi fandt i Nordhavn, var, at alle de beboere, vi havde fat i – både unge, børnefamilier, og par uden hjemmeboende børn – orienterede sig mod deleløsninger. Ca. halvdelen var aktive brugere, mens andre overvejede at prøve det af.</p> <p>Havde I regnet med det?</p> <ul style="list-style-type: none"> - Hvorfor/hvorfor ikke?

	<p>Forholde dem konkrete fund fra Nordhavn, som kan udfordre de fortællinger, og høre deres reaktion</p>	<p>Det, vi også fandt var, at det var nogle andre delebils løsninger end dem i projektet, de brugte.</p> <p>Hvorfor tror du, det er sådan?</p> <p>Vi mødte særligt disse forestillinger:</p> <ul style="list-style-type: none"> - At det er ufleksibelt – har du hørt den før? - At det er for dyrt – har du hørt den før? - At udbuddet er for lille? - At parkering er for langt væk? - Hvad tænker du om det? - Hvad kan man gøre ved de her forestillinger? - Hvordan har I gjort det i andre områder? - <p>Hvis du skal opsummere;</p> <p>Hvad er businesscasen for jer i Nordhavn?</p> <p>Hvad skal der til for at den bliver til noget? Og hvad er omvendt "worst case"?</p> <ul style="list-style-type: none"> - Hvad mener du er afgørende for om det ender i best eller worst case?
<p>SIMS – de tre områder og vores fund: Folehaven</p>	<p>Kontrasten mellem forskellige områder gav noget godt i Folehaven fokusgruppen – hvad gør den her?</p> <p>Hvorfor er de sprunget fra Folehaven?</p> <p>Hypotese: For- forståelser og strukturelle fortællinger om</p>	<p>Et andet område i SIMS, som jeg interesserer mig for qua mit fokus på forskelle mellem byområder, er Folehaven. Det er jo på mange måder forskelligt fra Nordhavn. Kan du fortælle mig om, hvordan de forskelle ser ud fra din stol?</p> <p>Jeg kan forstå, at I har svært ved at se potentialet i Folehaven ift. jeres biler/cykler og at I pt. ikke er engagerede i det site. Hvorfor?</p> <ul style="list-style-type: none"> - Hvad bygger I det på? <p>Hvad skulle være anderledes ved området for at det blev attraktivt for jer?</p> <p>I vores interview fandt vi, at nogle overvejede at begynde at bruge jeres løsning.</p> <ul style="list-style-type: none"> - Hvad tænker du om det?

	<p>området (snarere end viden om området og analyse af mobilitetspraksisser og potentialer) ligger til grund for manglende engagement</p> <p>Forholde dem konkrete fund fra Folehaven, som kan udfordre de fortællinger</p>	<ul style="list-style-type: none"> - Passer det med den viden, I har om jeres kunder? - Passer det med, hvem I arbejder med som potentielle kunder? <p>De behov, som blev nævnt i forbindelse med jer, og som gjorde jeres service relevant, var "jyllands-bilen" eller "ikea-bilen"</p> <ul style="list-style-type: none"> - Var det tilfældigt, at vi lige rendte ind i nogen, der sagde det, eller kan du også se det behov gøre sig gældende?
SIMS – de tre områder og vores fund: Nærheden	<p>Hvilke forestillinger har de om Nærheden</p> <p>Give plads til at tale om Nærheden, selvom det er uden for min projektafgrænsning</p>	<p>Det sidste område i projektet er Nærheden. Hvordan ser det område ud med dine briller?</p> <ul style="list-style-type: none"> - Hvordan adskiller det sig fra de to andre? - Hvilke potentialer er der for jeres service? - Hvilke udfordringer? - Evt Løsninger? <p>Best/worst case scenarios for Nærheden?</p>
Outro	COVID-19	<p>Nu taler vi jo sammen på bagkanten af 2. bølge af corona-nedlukningen eller måske forkanten af 3. bølge. Har corona ændret dit/virksomhedens syn på noget af det, vi har talt om i dag?</p> <ul style="list-style-type: none"> - Hvordan er jeres virksomhed påvirket af covid-19? - Har I ændret jeres strategier på nogle områder som følge af COVID-19? - Hvordan forventer I, 2021 kommer til at se ud?

	Visioner for fremtiden	<p>Til sidst kunne jeg godt tænke mig at blive lidt klogere på, hvad det er for en mobilitetsfremtid, som I ser ind i -</p> <p>Hvilke visioner har I for fremtiden – har I fx 2030-mål for virksomheden og transportlandsskabet her?</p>
--	------------------------	--

Appendix C. Focus group guide

Semi-structured focus group guide used for focus groups in Folehaven and Nordhavn. In Danish.

Formål:

At få viden om hvordan meninger (og strukturelle fortællinger) skabes, hvordan kompetencer og materialiteter konstrueres samt forståelsen af sted.

At identificerer sprækkerne, hvor der er potentiale for at ændre (ubæredygtige) mobilitetsvaner og forståelser.

At indsamle ideer til designet af de fysiske og sociale interventioner.

Forløb:

Inddeles i en præsentationsrunde + tre "diskussionsrunder".

Under hele forløbet vil der være et kort over områderne på bordet og adgang til skriveredskaber (farvepen, tuscher, postit-sedler mv.)

INTRO v/ moderatorer

1. Præsentationsrunde (ca. 10 min.)

Fokusgruppen indledes med en runde, hvor hver deltager kort præsenterer sig selv. Oplægget er, at de skal fortælle "Hvem de er?" og i den forbindelse meget gerne også sige et par ord om, hvordan de selv kommer rundt i det daglige (fx til arbejde, indkøb, hente børn osv. osv.)

2. Diskussion af forskellige mobilitetsformer (ca. 25 min.)

Billeder af forskellige transportmidler lægges på bordet, og deltagerne bedes rangere dem efter en række kriterier. Det mest miljøvenlige skal øverst osv. Gruppen skal blive enige om rækkefølgen. De har ca. 5-10 min til at rangere transportmidlerne efter følgende kriterier:

- a) Hvad er mest miljøvenligt?
- b) Hvad er mest sundt?

- c) Hvad er mest besværligt?
- d) Hvad giver de bedste fællesskaber?
- e) Hvad er samfundsøkonomisk dyrest?

Hvis gruppen ikke kan blive enige, er det ok – pointen er at høre argumenterne og forhandlingen.

Billeder af følgende transportmidler lægges på bordet:

Personbil – kollektiv transport (bus, tog, metro) - cykel - gang - knallert/motorcykel

3. Hverdagens mobilitet og alternative mobilitetsformer i de tre områder (ca. 25 min.

Kort og streetviewbilleder af de tre områder (Folehaven, Nordhavn, Nærheden) lægges på bordet foran gruppen. Og vi spørger:

"Når I ser på de her tre forskellige områder, hvad er det så for nogle typer af transportløsninger, I kunne forestille jer, vil fungere de her steder?"

Formålet med denne runde er at udfordre deltagerne mht. overvejelser om andre former for mobilitet, og de forskelle i behov og muligheder, der knytter sig til forskellige områder i byen, inklusiv deres eget.

4. Idéer til SIMS og deleløsninger i de tre områder (ca. 25 min.)

Samme materialer som øvelsen ovenfor – denne gang spørger vi specifikt ind til deleløsninger:

"Hvis man nu med udgangspunkt i de her tre forskellige områder, tænker i fremtidens mobilitet og på deleløsninger; hvad kunne I så forestille jer, kunne fungere hvor?"

Formålet med denne runde er at udfordre deltagerne mht. overvejelser om andre former for mobilitet, og de forskelle i behov og muligheder, der knytter sig til forskellige områder i byen, inklusiv deres eget. Åben diskussion.

OUTRO v/ moderatorer

Cities must adapt to the inescapable fate that climate change represents. This involves finding ways to de-carbonize the variety of urban lifestyles and radically changing pollutive everyday mobility practices. But how to do this? And who stands to win and lose from sustainability interventions in the urban landscape? Who are we planning for when we plan for urban sustainability? These questions are crucial for the future of cities. They are decisive for who will inhabit them and how inhabitable they will be.