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Is it still „Cycling“? Pedelec-Commuting From a Social-Practice-Perspective

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Preface

The mobility behaviour of the German population has proven to be extremely stable over the past decades. Therefore, a mix of strategies is necessary to achieve a comprehensive mobility transition. Apart from political push and pull measures, the technology and supply of available mobility modes is crucial. Recently, a number of technologies, such as mobility-as-a-service, mobility stations or on-demand-ridepooling systems have begun to enable new pathways. Among these new opportunities is the electrification of bicycles, which offers a large potential to enable cycling for new user groups, situations and purposes.

The work of Mr. Schneider investigates how the electrification of bicycles affects the characteristics of cycling performances in everyday life. He chooses a practice perspective which on the one hand analyses the commute from home to work by e-bike as entangled in the constraints, requirements and opportunities of mundane journeys. This perspective on the other hand also highlights the importance of “details”, such as sweat, weather, or the transportation of children. These details are often overlooked in theory driven economic, behavioural or spatial planning analyses – yet they play a crucial role in everyday mobility behaviour. This thesis thus investigates how little differences in the cultural, personal or physical set-up interact with characteristics of the practice and determine whether the practice is performed or not. Such aspects can for example consist of external and internal “requirements”, such as a need to arrive wearing nice clothes, the need to transport goods and people or the wish for an easy ride in the morning. The detailed qualitative analysis presented here may help to find drivers and barriers to the practice as well as “missing elements”, which can potentially be supplied in order to support the practice.

The electrification of bicycles has the potential to enable cycling in more situations, at more places and for a wider range of people than non-electric bicycles. It could furthermore reshape the meaning of cycling in society and make cycling more appealing for individuals whose mobility practices are driven by meanings around social status as well as ease and joy in daily life. The master thesis presented here offers a variety of starting points for investigating and exploiting this potential.

Thorsten Koska

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Summary

The sales of pedelecs are currently skyrocketing in Germany and in many other places. As a low-carbon means of mobility, pedelecs have the potential to make a substantial contribution to the mobility transition.

This thesis is the first to use the concept of practice theory as proposed by Shove et al. (2012) to investigate this novel, quickly evolving phenomenon. To obtain a broad, qualitative picture of e-biking, a maximum variance sampling strategy was carried out in two cities that vary substantially with regard to velomobility: Wuppertal and Münster. The analysis is based on nine interviews with e-bike commuters which were investigated using template analysis and exploratory memos.

The thesis at hand yields several contributions: On the one hand, it presents the first encompassing account on the practice elements which commuting by pedelec is composed of. It hence contributes to the debate about the depiction of practices and sets ground for further qualitative as well as quantitative investigations of this practice. Furthermore, the thesis finds that pedelec commuting should be conceptualized as a variant of velomobility and not as a variant of motoring or as an independent practice. Yet, the elements integrated in pedelec-commuting are found to clearly differ from those of cycling, so that pedelec-commuting meets the requirements of everyday life, e.g. the transport of objects or strenuous circumstances, much better than commuting on non-electrified bikes.

The findings of this thesis suggest several pathways to strengthening this novel practice. The capacity of e-biking to serve mundane trips can for example be supported through the normalization of the use of weather- and transport relevant materials and competences. Deeper linkages with interacting practices from other sectors, such as an integration of cycling materials (GPS-trackers) into policing practices, can also contribute to this goal.

With regard to research, the present work offers starting points for quantifications, for example on the relative importance of single elements as well as on the characteristics of their relations among each other or with regard to typical constellations of elements.

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List of Abbreviations

bio-bike	human-only propelled cycle
CO ₂	carbon dioxide
e-bike	electrical bicycle
ITTD	interview to the double
MID	Mobilität in Deutschland
pedelec	pedal electric cycle
PT	public transport
TPB	theory of planned behavior
UK	United Kingdom
ZIV	Zweirad Industrieverband e.V.

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1 Introduction

Velomobility used to be a major means of transport a century ago. Does the electrification of bicycles have the potential to bring back such times? The thesis at hand qualitatively explores how the electrification of velomobility affects its suitability for the commute.

The last 6 years have been the hottest on the record of the World Meteorological Association, with 2020 currently averaging + 1.2 ° Celsius above pre industrial levels (WMO, 2020). Although climate change was subject to much debate in Germany, the mobility sector emitted even larger amounts of carbon dioxide (CO₂) in 2019 than in 2005, just short of the values for 1990 (see appendix A.1). One fifth of the German national CO₂ emissions are currently exhausted by the mobility sector, the lion's share of which stem from private cars (60.6 % in 2017) (BMU, 2019, p. 38). While combustion engines have become substantially more efficient in the last decades, larger cars and a rise of car traffic (+ 14 %) caused an increase in car related CO₂ emissions of 3.7 % between 1995 and 2018 (UBA, 2020).

Faced with such figures, current attempts to reduce the climate impact of mobility are foremost directed at substituting private, combustion propelled vehicles with private, electrically propelled vehicles. Yet electric vehicles come not with less, but just with other problems: they produce waste which is currently non-recyclable¹ and require vast amounts of scarce- or conflict resources². Further, if produced and powered by electricity from renewable sources, they would use up the energy needed for other purposes. A shift to electric cars could thus substantially prolong the life of fossil power plants and may hence contribute to a reduction of carbon emissions only in the long run (Schmidt, 2020).

Today, the car seems indispensable to many individuals and politicians. Being “*one of the principal socio-technical institutions through which modernity is organised*” (Böhm et al., 2006, p. 3), cars re-shaped urban structures as well as norms of speed and convenience in the 20th century. Velomobility³, which in 1927 accounted for two thirds of all road users in Hannover (Henneking, 1927, p. 61; cited in Agervig and Ebert, 2012, p. 39) and had a modal share between 40 % and 85 % in European cities in the 1940s (de la Bruheze, 2000), has long since lost its dominance. It is often regarded incapable of “competing” with automobility – a rain-proof and speedy means of transport which does not require bodily efforts. Yet the degree of car dominance and bicycle disappearance varies substantially between European countries. In England, only 2 % of all trips are conducted by bicycle (Kelly, 2020) while in the Netherlands, the bike is used for 27 % of all trips nationwide and even 48 % of commutes in Amsterdam (Harms and Kansen, 2018, pp. 3, 6). Considering rather similar levels of temperature, rain and topography as well as technology in England and the Netherlands, the

¹ See: Süddeutsche Zeitung (29.11.2018): Die dreckige Wahrheit der Energiewende. URL: <https://sueddeutsche.de/auto/elektroautos-batterien-recycling-1.4218519>, accessed 21.11.2020.

² See: Die Zeit (26.11.2017): Industrie warnt vor Rohstoffknappheit. URL: <https://zeit.de/wirtschaft/2017-11/elektromobilitaet-elektroauto-rohstoffe-knappheit-lithium>, accessed 21.11.2020.

³ The terms *velo* and *velomobility* refer to all kinds of cycles and cycling as distinct from other forms of mobility (Watson, 2013; Cox, 2019, as used by).

disappearance of velomobility cannot be causally attributed to the natural conditions of a place or economic “development”.

Pro cycling policies have been pushed for some years (e. g. EU Ministers for Transport, 2015) and while electric cars remain shopkeepers in Germany (only starting to pick up in 2020 because of massive subsidies⁴), another type of electric vehicles saw an unexpected and un-subsidised, yet exponential growth: in 2010, 172 000 pedal electric cycles (pedelecs)⁵ were sold in Germany, accounting for 3.1 % of all cycles sold (ZIV, 2013). In 2016, the German cycling industry association Zweirad Industrieverband e.V. (ZIV) reported pedelecs to already account for 15 % of the bicycle market, yet expected only a modest growth of around 4 % in the medium term (ZIV, 2017). But only three years later, in 2019, the sales had already more than doubled again (to 1.39 million or 31 % of all cycles sold), with new projections estimating 40 % market share in the medium and 50 % in the long term (ZIV, 2020). Considering the failure of past projections, these prognoses may far underestimate the development to come.

So, are pedelecs just another type of bicycle and should their potential thus, as above, be measured in terms of the sales of human-only propelled cycles (bio-bikes)⁶? Or does this steep rise in sales mark the dispersal of a kind way of moving, a different practice, which facilitates other applications than bio-bikes? Hence, do pedelecs have the potential to bring back velomobility as a major means of transport and thus substantially contribute to a reduction of cars and driving or do they just replace bicycles and add more toxic batteries to the problems caused by e-automobility?

Reviewing first empirical evidence on this new mode of mobility, Le Bris finds that “*nearly all [studies] indicate that the pedelec is replacing not only trips on conventional bikes but also a significant number of car trips*” (2016, p. 178). In their extensive review on scientific and grey literature findings, Cairns et al. (2017, p. 331) report that studies on electrically assisted cycling find roughly 20 to 50 percent of pedelec trips to substitute for car rides. Other empirical evidence supports this finding (see Bracher et al., 2017; de Kruijf et al., 2018; Lienhop et al., 2015; McQueen et al., 2019; Moser et al., 2018). Philips et al. (2020) estimate that the substitution of car trips by electric bicycles could in fact cut the car related CO₂ emissions of the United Kingdom (UK) by half. Although such modelling attempts are speculative and require many assumptions (cf. Bucher et al., 2019), Philips et al. (2020) still show the potential of a modal shift towards e-velomobility.

Much larger benefits would be attainable if pedelecs would not only reduce car trips but also render vehicle ownership, and thus production, redundant. Evidence whether – and under which circumstances – that is the case remains scarce. In a longitudinal study, Kroesen (2017) finds e-bikes to replace bicycles, not cars in the Netherlands. But Lienhop et al. (2015), who investigate a sample of pedelec riders (n = 277), find

⁴ Electric cars are currently subsidized with up to 9 000 €, 6 000 € of which are paid for by the citizens of Germany. Source: ADAC (15.06.2020): Die neuen Elektroautos 2020. URL: <https://adac.de/rund-ums-fahrzeug/elektromobilitaet/kaufen/neue-elektroautos/>, accessed 21.11.2020.

⁵ As 99 % of all electrical bicycles (e-bikes) sold in Germany are pedelecs, this thesis focusses on pedelecs. See section 2.2 for a disambiguation of the terminology on electric cycling [click here].

⁶ The term bio-bike was adapted from a gatekeeper in Wuppertal and is used to circumvent terminologies such as “classical-”, “regular-” or “normal-” bicycle which frame electric bikes as deviating from the norm.

that 38.4 % of the respondents can imagine to, or have already disposed of their second car; 16.6% can imagine, or have disposed of their only car. Lienhop et al. (2015, p. 82) also note that while leisure-use of pedelecs substitutes for cycling and walking, pedelec-commuting mainly substitutes for cars and public transport (PT). A decisive factor in making cars dispensable could thus be whether the pedelec is used for the daily ride to work.

The daily way to work (the commute) has special characteristics that pose several challenges to the conduct of velomobility: first, its start and end are fixed in space, which means that commuters may need to overcome long distances, hills or dangerous main streets. Second, it is often fixed in time, so that commutes often coincide with rain, darkness or the rush hour. Third, it is often combined with shopping, parenting or other activities that require transporting cargo (Cass and Faulconbridge, 2016). The commute thus entails key challenges that must be met by fully-fledged means of daily mobility. The argument why the commute is a key component of a shift away from automobility is thus straight forward: if, on the one hand, commuters do not conduct all daily ways to work by pedelec but *rely* on the car often or from time to time, they cannot dispose of it. For larger households, this often necessitates owning several cars. If, on the other hand, daily rides are routinely conducted by (e-)velo, private cars become dispensable. Those specific trips which cannot be conducted by velo can then be overcome by public transport or shared automobility and do not necessitate private car ownership.

Currently dominant policy-approaches to achieving sustainability transitions, i. e. transforming the patterns of human conduct to reduce the stress on ecosystems and human communities alike, are primarily concerned with technological innovations or trying to make individuals choose a different behaviour (Spurling et al., 2013, p. 5) and do often not lead to the envisaged results (Shove, 2010). The first paragraph of this chapter substantiates this claim for the emissions from mobility in Germany. Conventional research paradigms may now lead economists to push for higher fuel prices to make drivers pay for the damage they cause, psychologists to intervene in attitudes and intentions to make users choose differently, political scientists to advocate for intensified regulation and transport scholars to call for restructuring street space. But there is another perspective out there, which leaves behind the boundaries of separated scientific disciplines as well as their focus on individuals *or* structures. Proponents of practice theory claim that it is in fact not people but the socially mediated routines they engage in, that determine the details of behaviour and cause effects. Consider the example of cleaning the body: less than a century ago, a weekly bathtub on Sunday was considered normal, a proper way to be clean and presentable (Hand et al., 2005, p. 5). Today, most people in Europe shower once or even twice a day and this routine has become so normal that many consider cleaning the body less often to be uncomfortable or socially unacceptable (ibid., p.1). This change, albeit gradually evolving over time, had a substantial impact on the demand for water and energy (Shove and Walker, 2010, pp. 472-473). Understanding social practices is thus at heart of understanding pathways towards sustainability (Shove and Spurling, 2013).

A variant of practice theory that is well suited for empirical applications has been proposed by Shove et al. (2012) They argue that social practices emerge and persist through the integration of elements from three dimensions: competences, materials

and meanings. Cycling requires bodily skills of balance (competence), is conducted by sweating practitioners facing headwinds (materials) and may be perceived as dangerous or joyful (meaning). Shove et al. (2012, pp. 32, 58, 114) indicate that a change in one element can send a ripple of changes through elements in all three dimensions and thereby transform the practice entirely. This gives a hint at what might be at play behind the boom of e-bikes: a transformation of cycling.

E-bikes have been investigated from several perspectives (see Cairns et al., 2017, for a review), mostly discussing intervention programs supplying non-practitioners with e-bikes (e. g. Moser et al., 2018) or aspects of health and safety (e. g. Van Cauwenberg et al., 2018; e. g. Castro et al., 2019). Yet the phenomenon remains largely out of practice theorists' sight.

Spotswood et al. (2015, pp. 23, 24) state to be the first to open up a debate on cycling from social practice perspective and call for research on velomobility from a practice perspective. Hofmeister and Keitsch (2016) provide first empirical evidence on the Shovian⁷ elements of cycling. Meanwhile, Cass and Faulconbridge (2016) substantially advance a practice based understanding of the commute and provide a depiction of the materials, meanings and competences integrated in cycle- bus- and car-commuting. Yet, as of today, the literature remains short of a comprehensive depiction of the Shovian elements of cycling, let alone riding pedelec. The thesis at hand engages with this gap in the literature and takes up the task laid out by Spotswood et al. (2015, p. 24) by investigating the following research questions:

- 1 | a) Which practice elements make up pedelec-commuting?
b) Does the pedelec merely compensate for bodily handicaps, topography or distance and thus spread bio-cycling to hitherto cycling averse groups and places? Or does riding pedelec come with characteristics (practice elements), which are distinct from cycling for vastly dissimilar places, people and practice sequences, and should it therefore be considered a new practice in its own right?
- 2 | a) How do the characteristics (practice elements) of riding a pedelec relate to the particularities (time-spaces, social norms, etc.) of commuting?
b) How is the commute entangled with other mundane activities and how does pedelec-commuting interact with surrounding practices?
- 3 | Which cycling related policies can be inferred from the findings?

To shed light on these questions, ten pedelec-commuters were sampled in Münster and Wuppertal. Empirical data was gathered using video ride-alongs, interviews and a researcher's notebook. Nine interviews were systematically analysed using template analysis (see King, 2012) with the help of a qualitative research software (MAXQDA). The sample includes practitioners featuring a wide range of practice relevant characteristics (such as disabilities or family duties) at two places (Wuppertal and Münster) chosen for their practice relevant differences. Yet eight of nine respondents were white collar employees, most were older than 50. Thus, while the findings of this thesis do comprise a wide range of variation in mundane conduct of the practice, they do neither represent the general population nor the whole system of e-velomobility (cf. Watson,

⁷ Abbreviation for research based in Shove et al. (2012).

2013) which would include retailers, city planners, etc. Further, as practices are always localized and subject to change (Wang and Shove, 2014), this thesis can only hold inference on the status quo of white collar pedelec-commuting in non-rural Germany as of 2020.

The thesis starts off with an introduction of practice theory and an investigation of the approaches to- as well as consequences of mobility transitions. In addition, the second chapter presents the relevant literature. Chapter three then delineates the epistemology behind practice research and sheds light on the applied approach to data generation and analysis. Further, it delineates scientific standards for qualitative research. Chapter four introduces the data with regard to the research questions. Further, it connects these “findings” to the literature, discusses their scope and illustrates how such practice insight may translate into policy. A summary closes this thesis.

2 Field of Research

What are these “practices” and how do they help in fostering societal transitions towards sustainability? This chapter first draws out the theoretical background of this thesis by describing how basic categories of social theory, such as agency, time and space, are conceptualized from a practice perspective. Hereafter, it discusses how such thought changes the approach taken to understanding and altering human conduct. Further, the author’s perspective regarding the desirability of a transition towards e-velomobility is put in focus and scrutinized. A review of the practice theory-oriented literature on the topic at hand closes this chapter.

2.1 The Ontology of Practice Theory

Many social theories focus on individuals or structures as their object of interest. Since thinking in terms of practice⁸ is not widespread, this section provides a thorough introduction. To this end, the development of practice thought is briefly introduced first. Then, the terminology used in this thesis is drawn out. The third part digs into the ontology, i. e. the basic philosophical assumptions about which substance makes up this world of practices and who/what acts in it (on ontology see Bricker, 2014). Finally, approaches to systematizing relations within and among practices are depicted in order to facilitate a situated understanding of the spatial and temporal aspects implied in daily commuting.

2.1.1 The Development of Practice Thought

What are “practices”? Andreas Reckwitz writes: “A ‘practice’ (*Praktik*) is a routinised type of behaviour which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, ‘things’ and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge.” (2002, p. 249). Phrased more mundanely: performances of practices are intersubjectively recognizable instances of certain conduct, such as drinking coffee or managing a warehouse, in which manifold material and immaterial aspects interact.

Practice theories have emerged in several variants, with intellectual roots going back to Wittgenstein and Heidegger, and were popularized in different versions by a first generation of public intellectuals such as Taylor (1971), Bourdieu (1979; 1990) and Giddens (1984). These authors all refer to social practices as analytical entities in their own right – among others, such as habitus or class – and agree that, in the words of Taylor, “practices are not just in the minds of the actors but are out there in the practices themselves, practices which cannot be conceived as a set of individual actions, but which are essentially modes of social relations, of mutual action” (1971, p. 27). A groundbreaking step, taking social practices at the centre of the stage, was taken by Giddens: in his theory of structuration, he claims that neither social structures nor

⁸ Practice thought includes various terminology, such as practice theory, praxeology, practice lense etc. (Nicolini, 2017, p. 19).

capable agents exist separately from each other – but that both constantly (re-)produce one another through social practices (1984, pp. 170-171).

While a diversity of ideas about practices continue(d) to circulate (Corradi et al., 2010), a second generation took the concept further with Reckwitz (2002) providing a widely recognized synthesis of practice theory and Schatzki (1996; 2016) prominently arguing for the idea of a “flat ontology”. Mundanely speaking, this flat ontology contends that the social world does not arise from different levels, such as acting individuals who influence and are influenced by societal structures, but only from practices (which entail both). Schatzki claims that even “*social phenomena such as organizations, power, science, education, and transportation are understood as constellations of, aspects of, or rooted in practices.*” (2016, pp. 28-29). In a similar vein, mundane life is conceived to be constituted by practices of leisure, of business, of care etc. The second generation of practice scholars thus understands practices not as one aspect of phenomena among others, but as the central tenet of interest. Practice theory has flourished in recent years. Its advocates have, on a theoretical level, combined practice thought with other theories, such as the material semiotics⁹ of Latour’s (2005) actor-network theory (ANT)¹⁰ (e. g. Nicolini, 2009b, p. 1394) or, especially in the field of mobility, with Geels’s (2011) multi-level perspective (MLP) (e. g. Nijhuis, 2013; e. g. Watson, 2013). But scholars of practice have also claimed applicability of the approach for governance (e. g. Hampton, 2018; e. g. Graham, 2018), consumption (e. g. Warde, 2014) or social transformation (e. g. Strengers and Maller, 2014). To this end, practice theory is increasingly employed for empirical studies in diverse fields such as food and health (e. g. Morley, 2014), sustainable consumption/behavior (e. g. Hargreaves 2011; e. g. Jensen, 2017; see Corsini et al., 2019 for a review), work and organization (e. g. Nicolini, 2012), housing (e. g. Gram-Hanssen, 2011; e. g. Macrorie, 2016) or mundane norms (e. g. Quitzau and Røpke, 2008).

Criticism to practice thought mainly concerns four aspects: first, focusing on practices, not on human activity, clashes with “common sense” assumptions about humans as the centre of the world and invokes fundamental criticism (Schatzki, 2015, p. 4). Second, some scholars argue that practice theory is built on investigating routines and is thus good at understanding stability, but cannot explain change (Le Bris, 2015, p. 141). Third, the (empirical) focus of practice scholars on mundane acting is criticised to impede shedding light on larger systems (Graham, 2018, p. 24), such as digitization or gender roles, and societal change (Geels, 2010, pp. 502-503). Further, imprecision in theory is criticized, for example the indiscriminate use of concepts such as routine (iteration by one individual) and repetition (the reoccurrence of a practice - e. g. weddings) (Stock, 2011, p. 11) or habit (unconsciously acquired) and routine (consciously acquired) (Stock, 2011, p. 11).

While practice theorists counter that the theory is capable of investigating large phenomena, they note that it indeed has a particular strength in analysing mundane, routine conduct (e. g. Everts, 2016, p. 50). It is thus well suited to study the use of *pedelecs*

⁹ A position contending that agency is not confined only to human beings, but distributed in a network of human and non-human entities (Latour, 2005).

¹⁰ ANT does also feature a flat ontology (see Schatzki, 2016, p. 34).

for commuting. But which variant is to be applied? Proponents of practice thought use various terminologies and differ, for example, in the way they integrate material aspects (see subsection 2.1.3). Figure 1 depicts a number of concepts and terminology which different practice theory proponents put in focus.

Schatzki (2002)	Reckwitz (2002b)	Warde (2005)	Gram-Hanssen (2010)	Shove, Pantzar, Watson (2012)
Practical understanding	Body	Understandings	Know-how and embodied habits	Competences (skill)
	Mind			
	The agent			
	Structure/ process			
Rules	Knowledge Discourse/ language	Procedures	Institutional knowledge	
Teloffective structures		Engagement	Engagements	Meanings/ conventions (image)
	Things	Items of consumption	Technologies	Products/ material artefacts (stuff)

Figure 1: Key Concepts in Different Variants of Practice Theory

Source: adapted with modification from Higginson et al. (2016) who build on Gram-Hanssen (2010)

Shove et al. (2012), who provide the most cited approach (Higginson et al., 2016, p. 4), work with a rather clear-cut “three element theory” and claim that social practices are constituted by elements from three dimensions (meaning, material, competence) as well as by the connections among elements and between practices (Shove et al. 2012, p. 14). Shove et al. (2012) feature an encompassing inclusion of the material world in practices – rather than differentiating between practices and material arrangements as Schatzki (1996) does¹¹ – and their simple, straight forward terminology is suitable when practice theory aims at being accessible for interdisciplinary cooperation or even political advice (2015, p. 953). While Shove et al. (2012, p. 14) note that their approach is at risk of oversimplifying a complex reality, they contend that this reductionism enables the conceptualization of stability and change. Shove et al. state that “*practices emerge, persist, shift and disappear when connections between elements of these three types are made, sustained or broken*” (2012, pp. 14-15). Especially this conceptualization of change is useful to give hand for understanding the central issue of this thesis: the difference it makes when a new element, such as a motor, is introduced to an established practice, such as cycling, and potentially re-shapes the elements of the practice as well as their interconnections. Another argument for employing Shove et al. (hereafter at times called “Shovian” approach/theory) is that these authors, as well as scholars employing their scheme, have proven the empirical applicability of the theory by conducting plenty of empirical work, often concerned with matters of

¹¹ See also Everts et al. (2011, pp. 11-12), who argues that Schatzki’s approach is especially suitable for geographic inquiry and the study of large phenomena.

sustainability in daily routines (see for example Kuijer, 2014; Macrorie, 2016; Shove and Spurling, 2013; Shove and Walker, 2010; Spurling and McMeekin, 2014; Strengers and Maller, 2014; Watson, 2013).

One of the risks towards oversimplification lies in the inclination to replace a “thick description”, which is often messy, inconsistent and typical for qualitative empirical work (see Geertz, 1973), with a clean figure or map that might disguise the ambiguities of reality and obscure the manifold aspects of practice (Schatzki, 2002, p. xii, cited in Shove et al. 2012, p. 15). This thesis does thus strive to balance two aspects which are central to qualitative inquiry: to illuminate the contradictions of reality, but also to sort and filter and thus enable a picture which (re)presents, from a certain theoretical angle, the main aspects of a phenomenon. After this first subsection outlined the development of practice theories, the rest of this chapter draws out the variant of practice theory employed for this thesis.

2.1.2 Social Practices: A Shovian Elements Perspective

Following the conception of Shove et al. (2012, p. 14), practices are constituted by materialities (things, technologies, physical entities), competences (formal rules, bodily knowledge, technique) and meanings (symbolic meanings, ideas and aspirations), as well as the interconnections between these elements (see Figure 2; cf. Figure 1). Practices are recognizable as “practice-as-entities”, which are familiar “prototypes” of conduct and persist as long as they are reproduced in countless individual “practice-as-performances” by individuals. In one “practice-as-performance” of cycling for example, a bike and a body might move each other up a hill (material dimension), being balanced and navigated through thick traffic by a cyclist (bodily and mental competences), who may either feel endangered by the motorists or perceive the situation as safe and connect their ride with workout and fitness (meanings). Although such practices-as-performances are thus always unique (no traffic is the same twice), may integrate mutually exclusive elements (safety or danger) and often comprise several steps to be performed one after another (e. g. unlocking the bicycle, mounting, riding, etc.), they are intersubjectively recognizable as the practice-as-entity they belong to: cycling (Shove et al., 2012, p. 121). Individuals who engage in the respective practice, so called “practitioners”, constantly and collectively re-produce and re-shape what the practice-as-entity comprises (Shove et al., 2012, p. 15). Practice theorists thus take a social constructivist position (see Sandermann, 2018, p. 39-42), which means that they assume that no “natural” or “true” version of practices exists (which would be an essentialist/positivist position), but that the shape of human practices is contingent. They agree that important aspects of practice appear in “doing” and cannot be captured in words (e. g. keeping balance while riding a bicycle) and that, while practices are conceived as socially mediated routines, they are always open to change in any individual performance.

Variation in a practice comes from several sources. Fundamentally, it is impossible to reproduce even the most strict routines exactly every time, for example because weather and traffic are never the same in two instances of cycling (see Hui, 2017, p. 55). Further, the elements available for integration at a certain time and place vary strongly. With regard to cycling, the literature points out several aspects which contribute to variation between practice-as-performances. Among these are the bodies of

practitioners (see McHardy, 2013), different levels of involvement and experience (see Le Bris, 2015), cultural or other differences between groups (see Janvaria, 2019), the places and purpose of riding (see Marwein, 2019) and the times of the year (e. g. weather, customs; see Larsen, 2018, p. 10). For many practices, different typical conducts, called “variants”, can be found and analysed for the integrated elements (e. g. Halkier and Jensen, 2011, p. 114, on food consumption; e. g. Higginson et al., 2015, on washing practices). Practice variants can include different or even contradicting elements: while delivery-cycling, aimed at the distribution of food or mail, can be expected to be organized around speed and reliability, cycling to church on a Sunday would rather be organized around leisure, community and joy. Figure 2 depicts a stylized representation of cycling, as a practice-as-entity (left) and then as the two discussed, rather dissimilar practice-as-performances (middle and right side).

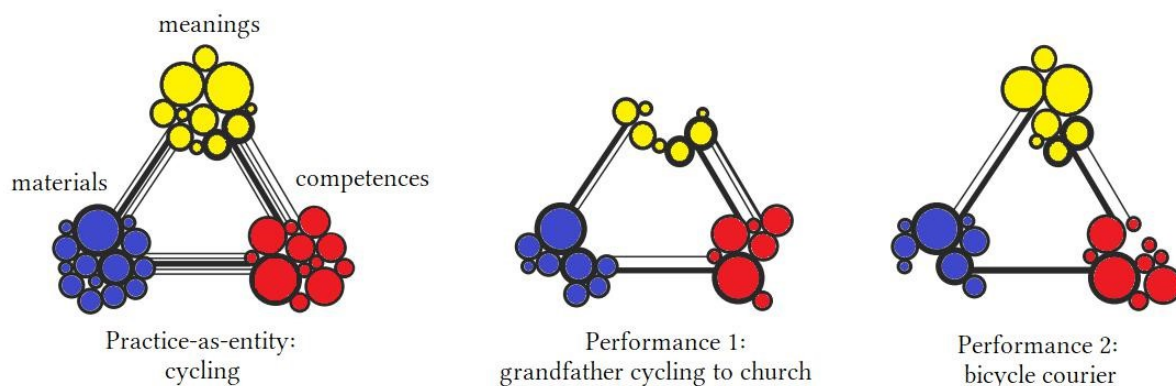


Figure 2 Cycling as Entity and as Differing Performances

Source: adapted with modification from Kuijer (2014, p. 53)

Some variants of cycling are very standardized (e. g. road racing) while the performances of other variants (e. g. urban cycling) vary strongly (Spinney, 2011, p. 165). This thesis is interested in the routine cycling to work as one branch of utility cycling as distinct from leisure cycling (cf. Larsen, 2018, p. 4). Apart from variation which exists in parallel at one place, several accounts have investigated the fundamental transformation “practice-as-entities” undergo in the course of time (e. g. Watson, 2012) or when spreading to other countries (e. g. Pantzar and Shove, 2010). When a new practice emerges or arrives at a place, it grows on the seedbed of elements evoked through totality of previous practices (also called the “plenum of practices”, see Schatzki, 1996). When practices “travel”, they thus often re-shape and integrate different elements at different places (e. g. Wang and Shove, 2014).

But then, does it even make sense to speak of a practice as an entity? Just like with variation, different aspects contribute to similarity: With regard to cycling, the production and design of bicycles are globally rather standardized. “Normal” variants such as single person mountain or city bicycles by far outnumber recumbent, BMX or tandem versions of bicycles. Street rules and signs standardise (il-)legitimate conduct and a plenty of cycling-literature contributes to an internal transfer of information, especially among more involved practitioners (cf. Shove et al., 2012, pp. 37-39). Although one performance of cycling to work might thus be quick and easy and another performance slow and dangerous, chances are that some key elements are found in

most or all variants of the practice. Thus, Kuijer (2014) highlights some elements and connections in Figure 2, by using thicker lines, marking these to be essential (elements) or strong (links). In the case of cycling, the bicycle itself plays an important role and makes cycling intersubjectively recognizable – but what about riding a unicycle, is that still “cycling”? Similarly: is riding a pedelec still “cycling” – or is the pedelec not a bicycle but rather an electric moped and moving with it thus rather driving than riding? Hui (2017, p. 56) recently noted that while the variation between performances of a practice has received considerable attention, the differentiation between different practice-as-entities remains underexplored both theoretically and empirically (ibid., p. 53).

But there is another aspect which is relevant when speaking of a practice-as-entity. As briefly noted before, the practice of cycling entails manifold small tasks related to it: grabbing a helmet, pushing pedals, recharging lights, just to name a few. So, what does cycling encompass and what belongs to another practice? Is “locking the bike” a part of cycling? Shove et al. (2012) use the terms “bundle” and “complex” to investigate how practices are interconnected. Bundles term loose connections among practices based on co-location in space or time (ibid., pp. 84-85), such as cycling and leisuring when riding through a park in nice weather. Complexes on the other hand are co-dependent on several practices (through sequence, synchronization, proximity or necessary co-existence) and unfold emergent properties (ibid., 2012, p. 87).¹² While the practice of locking things up, for example, exists independent of cycling and cycling can be performed without locking up, the complex of cycling to work is infeasible without securing the bike while working, which in most instances requires physical locking.

Shove et al. note that a practice consists of “*whatever actual and potential practitioners recognize as [it]*” (ibid., p. 82, see also p. 121). Taking this theoretical angle, but focusing on actual rather than potential practitioners, the thesis at hand deals with the practice complex of commuting to work by pedelec – consisting of all sub-practices and elements relevant from the practitioners’ perspective.

2.1.3 Agency: Individuals and Organized Interest

The above introduction to practice theory might leave some readers puzzled: What about the individual? Who acts in this world if individuals are “de-centred” (Shove et al., 2012, p. 22), is it the practices themselves? Can social practices be subject to governance? Although the discussion of such issues must remain narrow in a Master’s thesis, key dimensions of ontology such as agency, individuality and governance are discussed in this subsection in order to both make sense of this unfamiliar world of practices and build ground for analysis and discussion.

To start with, how does action come about, “who” or “what” acts? Until today, a number of different conceptualizations have emerged: In choice-based approaches, such as neoclassical economics (e. g. Varian, 2016) or behavioural psychology (e. g. Ajzen, 1991), agency is located in individuals’ consciousness. It would thus be individuals who

¹² C. f. Schatzki (1996, pp. 98-99) who distinguishes between “dispersed” practices (e. g. writing), which are the basic building blocks and more complex, “integrative” practice such as cooking or riding a bicycle. For Schatzki, the term bundle relates to how “doings and sayings” (practices) are connected to arrangements (material objects and settings) (Schatzki, 2015, p. 1). What Shove et al. (2012) term “complexes” is comparable to “constellations” in Schatzki’s work (e. g. Schatzki, 2011, p. 8).

unfold action to follow their objectives, such as to maximize profit/utility, or to act according to norms etc. Practice theory authors rejects such “common sense” conceptions of actors as “*well-bounded, rational or norm-following figures equipped with a definite meaning*” (Pichelstorfer, 2017, p. 83). But they similarly reject structuralist views, which assume that exogenous forces (such as language or class struggle) are at the root of human behaviour and drive socio-economic systems (see Endres and Herrmann, 2018). A bit more similar, yet different is material semiotics which features a post-human, relational ontology – assuming that agency arises from a constitutive entanglement between human and material entities (see Gherardi, 2015, p. 18).

Shove et al. (2012) take a different approach: they depict practices to be actively “*competing for practitioners*”(p. 65) and to depend on their “*capacity to capture resources*” (p. 88) – they thus seem to attribute agency to practices. But this appears to be inconsistent with structuration theory as a major root of Shove et al.’s (2012) ontology in which Giddens defines agency as the capability to make a difference – which can result in acting or not acting alike but depends on the *potential* to act differently (Giddens, 1984, p. 9, 14). Such potential cannot be attributed to practices; they cannot do, they are done. And while material elements definitely impact conduct, neither can they “act differently”¹³. “*While practices thus depend on reflexive human carriers to be accomplished and perpetuated, human agential capability always results from taking part in one or more sociomaterial practices.*” (Nicolini 2009b, p. 1394, drawing on Reckwitz, 2002).

This thesis thus argues for agency to be a concerted achievement: It contends that individuals, their bodies, teleologies¹⁴ etc. arise not from choice or the nature of an individual, but from practices and that – while individuals can make conscious decisions and it is practitioners who act – their agency relies on their capability to engage in social practices which consist of and are shaped by materials (cf. Shove et al., 2012, p. 112).¹⁵ This conception of a reciprocal connection between human carriers and materialities (e. g. via embodiment¹⁶) resembles Giddens’ theory of structuration, in which he argues that neither structures nor human agents exist independently, but that both constitute another through practices (1984, p. 25).

But how can such an ontology still allow for a concept of individuality? Reckwitz (2002, p. 254) describes the individual as the “*unique crossing point*” of a multitude of practices – which include ways of thinking (p. 252) or desiring (p. 254) – and this notion can be extended to saying that individuality results from the whole of all practices an individual is (and was) engaged in or affected by. But why does this individual engage in a practice in the first place? Drawing upon Bourdieu (1990), Nicolini argues that practices are organized around a telic dimension¹⁴ which he qualifies as emergent

¹³ This claim may not hold for the latest digital technology - but that is not the matter of this thesis.

¹⁴ Teleology (or telic dimension) refers to the “*purpose, end or function*” (Robinson, 2020) of something.

¹⁵ Yet this conception primarily aims at routine conduct and does not foreclose consciousness or creativity. Through such, humans can “give birth to” or “transform” practices. But, as with giving birth to a baby, they can neither determine the look nor the logics behind or the future life-path of their “creation”.

¹⁶ Practices are conceived to leave traces in bodies and materials and this way (re-)shape the future practices performed by/with these materials (see Fingerhut et al., 2013). This could also, more commonly, be labelled as path dependence and is in line with current psychological cognition theory (see Koch, 2011).

and constantly changing, but, like other practice theorists, he contends that purpose/meaning/teleology is always carried by practices rather than individuals (2017, p. 22).¹⁷ But what does that mean? How can teleology reside in practices? A composite of psychological and sociological accounts can give a hand for this matter and also hint at how practices recruit and loose practitioners: Warde (2005, p. 143) notes that the internal rewards of a practitioner who engages in a practice are a function of difficulty and prestige: a practice should match the capabilities of an agent, challenge and competence should be in balance (see also MacIntyre, 1985, pp. 187-196). Further, aligning with Bourdieu (1979), Warde (2005, p. 148) argues for external reward to be a function of the prestige of a practice which can translate into economic, cultural and social capital (see Bourdieu, 2008). Another relevant aspect are the emotions the performance of a practice evokes (see Murphy and Patterson, 2011). As such, the teleology lies in the practice itself. The more variation in challenges is found in a practice and the wider it is associated with prestige, the larger the group of individuals which gain internal or external reward (which lie in the practice) and thus might become more faithful practitioners who keep sustaining the practice. These propositions are in line with current psychological theories of motivation (see Rheinberg and Engeser, 2004, p. 204).

Back to daily routines, Cass and Faulconbridge (2016, p. 4) emphasise the fact that mobility practices are often not performed for their own sake but rather to bridge a distance and commuting is a case in point.¹⁸ They advocate for practices to be studied as mode-activity associations (e. g. “cycle-commuting”) to focus on the particularities of such combinations (see also Spurling and McMeekin, 2014, p. 86). This argument is in line with the above notes on the substantial differences between “variants” of cycling and supports the approach of this thesis, to investigate riding pedelec as situated in the particularities of the commute (hereafter called “pedelec-commuting”).

While the above paragraphs discuss the creation and re-production of practices through the daily conduct of practitioners, individuals as well as constellations of interest can try to influence the shape of a practice. Pantzar and Shove (2010) for example discuss how a coalition of government, sports gear producers and committed practitioners together established the new practice of “nordic walking”. So how should the way in which a government, company or influential person infers with mundane practices be conceived? Especially aspects of meaning can be “*quite literally mediated*” by representations of the practice in TV, press or other media (Shove et al., 2012, p. 55) by those who have access to the necessary means. Companies for example often try to re-shape practices in favour of their commercial interest (e. g. to enhance the frequency of sales) but they face contingency and more often than not fail to get their innovations, designs or functions going into the mundane conduct (Warde, 2005, p. 141). Shove et al. point out that “*Nordic Walking was initially associated with health and nature, as the promoters hoped [but] soon after with specific categories of age and gender. These new connections arose as a consequence of the fact that middle-aged women were the first to take up the practice.*” (2012, p. 54). So while practices

¹⁷ C. f. Schatzki (1996, p. 89) who includes “teleoaffective structures” to be central in the ordering and organization of practices.

¹⁸ This character of mobility demand as “derived” from the activities of people is highlighted by the activity-based approach (see Jones et al., 1987) which draws on Hägerstrand’s (1970) time-geography and helped transform transport policy from “predict and provide” to “demand management” (McNally et al., 2007).

can in fact be consciously influenced by governance or business (practices), the effects of interventions are often contingent and practices can be said to be “*simultaneously ungovernable and constantly subject to governance*” (Graham, 2018, p. 36; see also Røpke, 2009, p. 2416).

Governance of practices should thus be conceptualized as “reflexive governance”, as an iterative process with power, the ability to impact the actions of others (Voß and Kemp, 2006, p. 16), constantly re-distributed among many entities (ibid., p. 4). While business and industry have sought to design and change communities of practice, top down initiatives thus often run into trouble because communities of practice are born through the experience of doing, something which can hardly be pushed into existence from afar (Shove et al., 2012, p. 68). Mobility practices should thus be conceived as being influenced by many actors – e. g. through advertisement, available infrastructure or “networked practice relations” among practitioners (see Macrorie, 2016). In line with these arguments about the nature of governance and with the notion, that “new” practices always fall on a seedbed provided by the sum of all previous practice performances (see subsection 2.1.2), Shove and Walker (2010, p. 459) argue that Nordic Walking was in fact not “created” by the governmental and commercial actors who first invented and then promoted it, but rather “assembled” and only took hold because of the fit between different, pre-existing elements.

2.1.4 Time, Space and Societal Change

The above sections argues that agency lies in individuals’ capability to engage in practices and that although practices may be subject to attempts of governance, their fate cannot be controlled. So far, practices have mainly been discussed as entities in isolation. But in fact, there is a whole plenum of practices out there – some of which cooperate, hinder or compete with each other. All these processes do not occur in a vacuum but in a historically situated place, at a certain point in time. As these characteristics are central to understanding commuting practices, this last section on theory is concerned with time, space and the connections among practices and closes with some notes on “systems of practice”, which help conceptualizing power and societal change from a practice perspective.

Time constitutes human practices in two fundamental ways: as “*objective time*” (Shove, 2009, p. 19) it can be understood “*as a finite resource for which practices compete*” (Shove et al., 2012, p. 127). Time spent on one practice cannot be spent on another practice (ibid.). From the perspective of “*experienced time*”, it is something that practices “*make*” (Shove, 2009, p. 17). The experience of time is fundamentally impacted by the character of the practice performed; a boring job passes endlessly slow, while an interesting one rushes the day. In another sense, they constitute time: “*the week-end is weekend*” (ibid., p. 19, emphasis in original) not for any reason but because humans perform different practices than during the week (ibid.).

Similarly underlining the constructivist character of this thesis’ ontology, three terminologies are employed for spatial aspects. In difference from “*location*”, which refers to an always identical spot in relation to the surface of the planet we inhabit (Cresswell, 2006, p. 356), “*place*” refers to the materiality (topography, built-up environment, local climate) but also norms and social constructions built up historically in an area (Tuan, 1979, p. 378; cf. Cresswell, 2006, p. 359). The term “*place*” is thus employed as

pointing to the “plenum of elements” present in a city and its surroundings. “Site”, on the other hand, is taken to denominate all locations where certain practices are frequently conducted (as in Shove et al., 2012, pp. 85, 132-133). The viability of a location to be the site for a practice thus depends on the availability of requisite elements (ibid., p. 132) which is most obvious for material objects (a kitchen requires cooking equipment) but also for the symbolic realm – a comedy show would hardly be feasible in Rome’s St Peter’s Basilica, although seats and stage are available. While the skill/knowledge component is not so obviously contained in locations, material components can be designed to hold the former present. “Zebra-crossings” for example contain information relevant for the practices which the street is a *site* for and moderates between the practices of walking, driving and cycling. But such characteristics are not authoritative: a church *can* still be used for a concert and thus only the practices performed at a location finally determine what it is a site for. The elements available for integration at a location, given the characteristics of its place, also impact which other elements are necessary (e. g. to be supplied by practitioners) for a successful performance: cycling uphill in steep terrain and heavy traffic requires many competences and precludes the performance for cyclists who do not match the required skills or meanings.

Further, time and space are entangled and this becomes very salient when focusing on mobility practices: Hägerstrand’s (1970) time-geography discusses how the limitation of available clock-time implies that mobility practices fundamentally impact the spaces individuals can access in their daily schedules. Figure 3 shows that, while humans are usually stationary in space during the evening, night and morning (top and bottom lines of the walker and driver), the space an individual can access during the mobile time of their day is fundamentally impacted by their mobility practice.

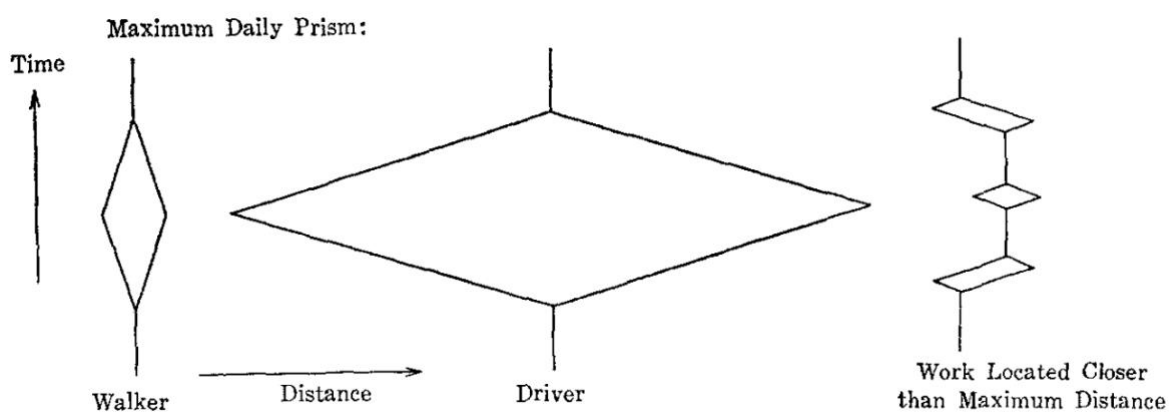


Figure 3: Time-Space Implications of Mobility Practices

Source: Hägerstrand (1970, p. 13)

Assuming that home and work are rather fixed in space, the potential to include other location bound practices (e. g. of leisure, of care) into daily schedules, is tied to mobility practices (see Cass and Faulconbridge, 2016). This is especially relevant for commuting, as practices at distant locations are often “*tightly knit together in time*” (Shove et al., 2015, p. 283) in daily schedules, such as bringing kids to school and starting to work (see also Southerton 2016). The time-spaces of practices are thus fundamentally

entangled through such *sequencing* of practices, so that when the spatio-temporal position of practices changes (e.g. school closing earlier), the accomplishment of a commute might become (in-) feasible by a certain mobility practice (Cass and Faulconbridge, 2016, p. 9). Reconfigurations within other practices, such as changing the food products for breakfast, can have consequences for interlocking routines (Shove, 2009): eating fresh bread instead of cereals may necessitate sequencing a visit to the bakery in the morning routine and thus impede a morning shower at home. The “*patterns of mobility and associated environmental costs [thus] reflect and are occasioned both by the spatial-temporal demands of other social practices and by how these shape each other in space and time*” (Shove and Walker, 2010, p. 473).

But the interrelation between practices stretches much further. On the level of an individual’s daily schedule for example, practices sequenced with mobility can provide for or require elements which interact with the commuting practice. If a person routinely brings home bottled drinks from the supermarket, and conducts this practice in the midst of commuting back home, this practice bundle necessitates the commuting practice to be able to transport heavy and big items. But practices can also be connected by common elements and new elements in one practice can lead to an hitherto impossible bundling: the discman (material element), for example, linked up listening to music and going for a run (Weber, 2005). On the elements-level, practices can thus be connected by mutual elements as well as by “producing” or “using up” elements which other practices also integrate (Shove et al., 2012, p. 88).

Figure 4 and 5 show two recent attempts at representing these two types of connections within and among practices graphically: in Figure 4, Higginson et al. (2016, p. 12) depict connections between elements of car-commuting (blue for competences, red for meaning and green for materials). Higginson et al. note that these connections can vary in “*frequency, strength, direction and length* – [and] *there may be more*” (ibid., p. 16). Macrorie (2016) on the other hand sketches different types of connections between practices and among practice bundles in Figure 5. He depicts bundles and complexes of practices and identifies 12 types of connections (e. g. chaotic or constitutive; see Macrorie, 2016, p. 253) and visualizes these differently in Figure 5.

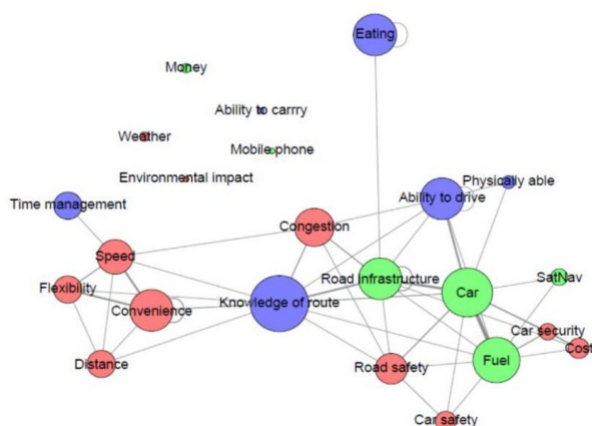


Figure 4: Connections Among Elements of Car-Commuting

Source: Higginson et al. (2016, p. 12)

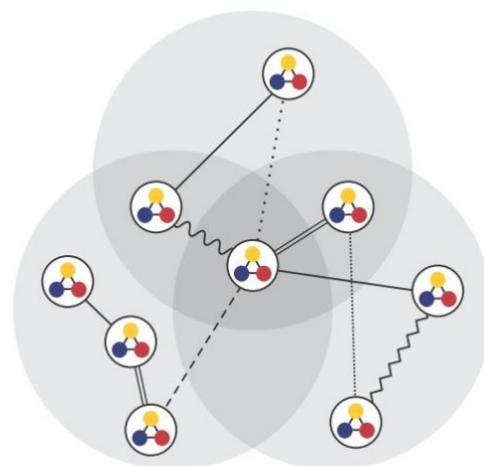


Figure 5: Different Types of Connections Within and Among Complexes of Practices

Source: Macrorie (2016, p. 251)

Like with elements, two practices can also have a substitutive relation: work-related mobility practices, such as commuting, can arguably be replaced by means of virtual communication which renders physical co-presence less- or unnecessary (Strengers and Maller, 2014, p. 89). A special form of such substitution arises when a practice, which beforehand supplied elements for another practice, gets integrated into the practice it once served: technology can, for example, integrate beforehand necessary elements of competence (e. g. orientation by map) into the materialities of a car or bicycle which then “tells” the driver which route to take.

But can the term “complex”, referring to the interdependence of several practices, grasp a societal phenomenon like velomobility and the rivalry which exists among mobility practices? Cycling as a “system of practice”, Watson (2012; 2013) contends, stretches far beyond moments in which practitioners sit on bikes. It includes practices of manufacturers, lobbyists, traffic schooling, etc. It can thus be said that systems of practice, such as cycling and driving cars, compete in board rooms and at the assemblies of political parties as much as in mundane conduct on the streets (Watson, 2012, p. 496). Such “systems of practice” can be depicted in terms of the manifold practices it encompasses, as Graham (2018, p. 142) exemplifies for the case of heating practices in a community housing project (Figure 6).

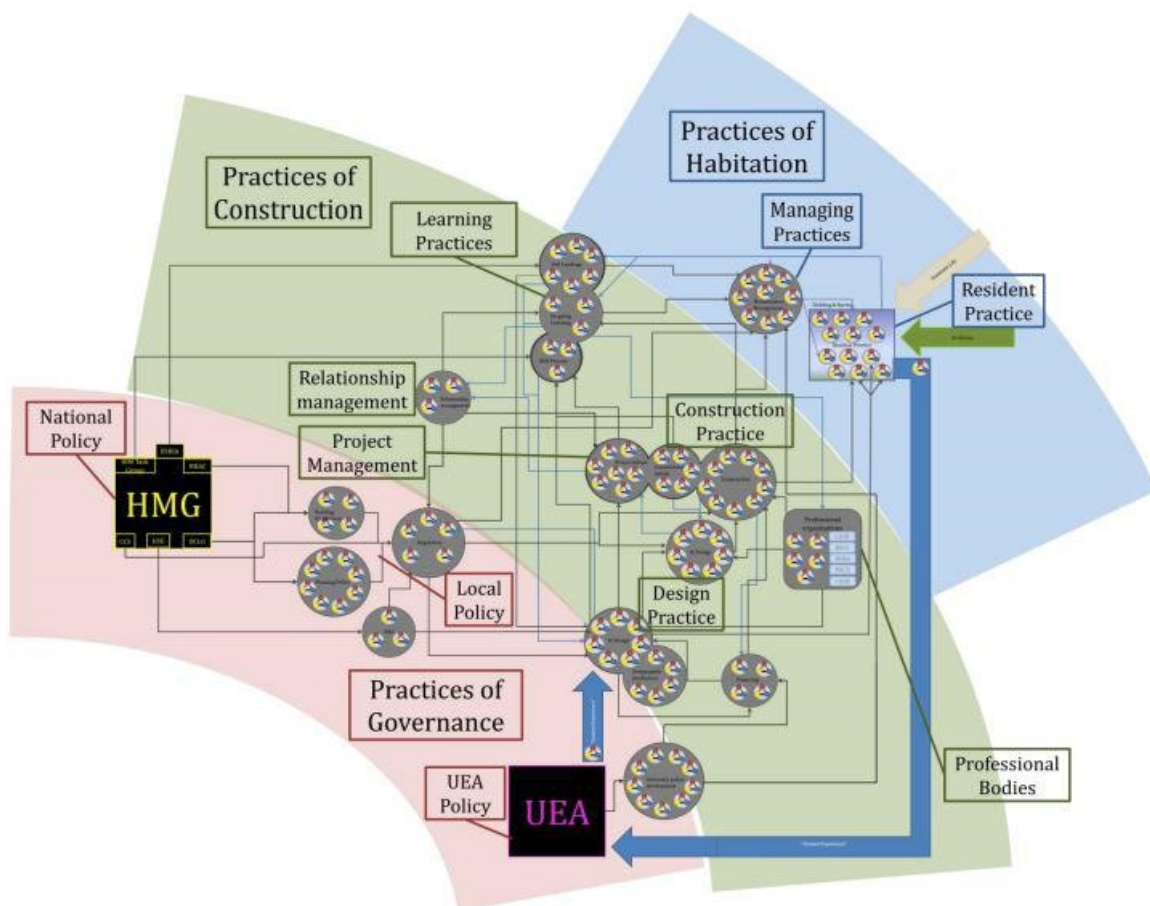


Figure 6: The System of Practices of Heating in a Housing Project

Source: Graham (2018, p. 142)

Thinking about how the manifold practices around driving cars slowly expanded and successively undermined the once dominant mobility practice of cycling through a change in the world of practice elements available (e. g. infrastructures, distances, meanings), Watson (2012; 2013) tries to conceptualize societal transitions in practice terms. Drawing on Urry's "*system of automobility*" (Urry, 2004), Watson argues that automobility has fundamentally changed the spatio-temporal coordination and location of a multitude of practices, for example by facilitating an accelerated functional separation (e. g. suburban housing, industrial parks, mall-shopping).

Furthermore, as Larsen frames it, the system of Automobility pushed other forms of mobility "*into the gutter*" Larsen (2017, p. 881) (making them dangerous and deviant). Watson (2013) further argues that the dominance of auto-mobility evoked "*systemic sticking points*" which impede change (e. g. making cycling more dangerous or sunk investment in cars – which ties people to driving). Yet he also argues that a growing number of velo-practitioners – e. g. through pedelecs – would imply a shift in the meanings (e. g. health or danger), materials (e. g. gas station or bike shop) and competences (e. g. self-efficacy) available at a place. Interested in societal change, Watson (2013; 2012; Watson in Temenos et al. 2017) thus weaves power and dominance into his account of systems of practice and tries to bridge the gap between theories of practice and the multi-level-perspective of Geels (2004). While Watson's special perspective is thus fruitful for conceptualizing larger, societal processes and Geels (2011, pp. 37-38) contends that both perspectives can be integrated, purists of a flat plane of practices reject such a notion because it entails an ontological conflict about the existence and nature of scales and levels (Schatzki, 2016, p. 35; cf. Marston et al. 2005) In sum, section 2.1 pointed out that individuals as well as social systems can be conceptualized through the plenum of practices. Elements from three dimensions are at heart of understanding practices and their interrelations. In order to scrutinize the change implied when adding motor and battery to a bicycle, materials, meanings and competences should thus be focussed. These can help to understand how cycling is transformed and how its interrelations with other practices change.

2.2 Routes to and Consequences of Changes in Mobility

The practice theory approach explored in the above section was chosen because other concepts, such as rational choice or norm driven behaviour, do hitherto not suffice to address the sustainability problems the mobility sector faces. The first part of this section differentiates a practice theory perspective on human conduct from perspectives and models revolving around variously rational, but first and foremost active, individual choice. It then depicts some reasons for the limited success of choice-based approaches and sketches how practice-approaches facilitate new understandings and interventions. Understanding qualitative research as guided by "*reflexive subjectivity*" (Wintzer, 2016, p. 8, see section 3.3.1), the second part of this section explicates and calls into question two major beliefs of the author, namely that commuting by pedelec is in fact more desirable for society and individuals than current commuting routines and that policy may try to re-shape practices.

But before starting off, a terminological ambiguity deserves attention: the introduction to this thesis at times spoke of e-bikes and at times of pedelecs. In Germany, those electrified cycles which require human pedaling for motor support *and* provide

assistance only up to 25 km/h are subject to the same regulations as bicycles (hereafter called pedelec) – while those variants with motor support without pedaling or above 25 km/h are subject to the rules of light motorcycles (hereafter called e-bike): they need an insurance, numberplate, helmet and must drive on the road (Wachotsch et al., 2014, pp. 23-26). Due to these regulations, roughly 99 % of the electric cycles sold in Germany belong to the variant called pedelec (ZIV, 2017) which is thus the vehicle of interest in this thesis. Yet practitioners commonly use the term e-bike for their vehicle (see subsection 4.1.3, a term which is often used for primarily motor propelled variants in the international literature as these are the dominant variant of electrified two-wheelers in other countries (especially in china) and come with substantially different characteristics (see Ma et al., 2019).

2.2.1 Practice and Behavioural Approaches to Human Conduct

The environmental and humanitarian consequences of collective patterns of behaviour and consumption of the industrialized states have been criticized for a long time (e. g. Meadows et al., 1972). As the negative consequences of human conduct have not shrunk but increased in recent years and threaten to cross several planetary boundaries (Rockström et al., 2009; Lade et al., 2020), the currently prominent approaches to understanding and altering human conduct face increasing criticism from scholars of practice (e. g. Shove, 2010). This section briefly introduces the basic ideas behind choice thought, outlines the policies and interventions derived from these approaches and surveys the empirical evidence about their success concerning private mobility. Then, this subsection contrasts the choice perspective with practice approaches and policies.

The discussion on policy options to address sustainability problems mainly revolves around innovations in technology and the behaviour of consumers (Spurling et al., 2013, p. 5). Leaving technology aside for the moment, the approaches to influencing the conduct of humans have been dominated by the choice paradigm of economists and psychologists (Shove, 2010). Among the most prominent approaches are the psychological theory of planned behavior (TPB) (Ajzen, 1991) and behavioural economics (e. g. Cartwright, 2018). Both of these subject-centred/individualistic perspectives resonate “[...] *with widely shared, common-sense ideas about [...] individual agency.*” (Shove, 2010, p. 1274). Being “*theories of variance*” (Geels, 2010, p. 94), such choice-approaches feature a probabilistic account of conduct and revolve around statistic models which nowadays integrate psychological factors (e. g. perceived behavioural control), economic factors (e. g. prices, utility), situational factors (e. g. distances, infrastructure), structural factors (e. g. gender, age) and are amenable to other so called “independent variables”. This cognitivist approach conceives of the human brain as a machine, which considers many factors and calculates how to behave (Searle, 1990, see). They understand human behaviour as a dependent variable which is, metaphorically speaking, being pushed in different directions by independent variables, with the “sum of pushes” determining behaviour.

Current proponents of choice recognize the role habits play and integrate this idea by stating that behaviour determining “calculations” are not continuous but mostly confined to moments of change in biography (e. g. school enrolment of a child) or context (e. g. congestion charge), because these moments spur reflection on behaviour (Le

Bris, 2015, p. 161). Some examples of recent research on commuter cycling from this perspective (using TPB) are Lois et al. (2016), Muñoz et al. (2016) and Redman (2019).

So, which policies follow from such conceptions of mobility behaviour? Respective proponents seek to shift individual choice by providing information (to change norms and attitudes), by altering the prices of gas or parking (to include external effects), by providing behaviour change initiatives (to raise perceived control and inflict “moments of change”) or by providing infrastructure (as a situational factor) (Spotswood et al., 2015, p. 23). Yet large interventions (e. g. in infrastructure) are often seen as a distortion of competition and “free choice” which is assumed to have shaped the status quo (Cass and Faulconbridge, 2016, p. 2).¹⁹ Choice-approaches thus frame collective outcomes as generated by the voluntary behavior of individuals, who are personally responsible for the problems evoked and need to be persuaded to make better decisions and change their lifestyle (Shove, 2010, pp. 1274-1277).

Yet empirical research does not univocally support this conception: in the domain of psychology, the behavior-intention gap refers to the fact that conscious decision does not reliably translate into behavior. Reviewing the literature, Sheeran and Webb (2016, p. 511) report that only half of the intentions translate into action (cf. Hassan et al., 2016). This finding conflicts substantially with the TPB and replicates for the domain of mobility: in a systematic review on the effectiveness of behavioural choice interventions to decrease car use (targetting knowledge, goals and behavioural regulation), Arnott et al. (2014) conclude that there is no evidence that behavioural interventions reduce car use frequency and only inconsistent evidence on distance reduction. Several other reviews also focus behavior change initiatives with Ogilvie et al. (2004) finding some evidence that they can change mobility behavior, especially of motivated subgroups. For commuting and workplace initiatives, Petrunoff et al. (2016) note that, while 10 out of 12 studies find workplace travel interventions to decrease driving or improve active modes of travelling, the resulting evidence remains weak and inconclusive. Less recent but more positive evaluations can be found in Chatterjee (2009) (for personalized travel planning) and Brög et al. (2009) (on voluntary travel behavior change programs). Overall, the evidence is weak and choice-oriented interventions focussing individuals cannot be expected to fundamentally change the overall mobility patterns.

With regard to technological approaches to sustainability (which usually focus technological efficiency) and economic approaches to behaviour (often focused on making sustainable conduct or products cheaper, e. g. through subsidies), the rebound-effect diminishes positive effects. “*Rebound effects refer to behavioural or other systemic responses after the implementation of new technologies or other measures to reduce [...] consumption.*” (Walnum et al., 2014, p. 9510). A more efficient car can, for example, lead to larger distances travelled and free public transport may lead cyclists and pedestrians – rather than drivers – to switch to public transport (Font Vivanco et al., 2015). The monetary savings implied in both cases are most likely invested in additional consumption and further diminish environmental gains (Parrique et al., 2019,

¹⁹ This proposition of demand-driven infrastructure was tested by Burk (2017) who, for a us-context, empirically finds that demand for bike-lanes only translates into infrastructure where political groups lobby for it.

p. 38). Thus, technological/price induced gains can even be overcompensated in reality and eco-friendly alternatives can induce contrary outcomes (Walnum et al., 2014, p. 9532). Opposed to the logic of choice-models, eco-friendly innovations or pricing schemes thus enhance sustainability primarily if they raise prices of eco-unfriendly alternatives, not if they make ecological alternatives cheaper or more convenient²⁰ (Font Vivanco et al., 2015). As a result of these (and probably more) mechanisms, curbing the adverse effects of mobility and transport has not been achieved by the means utilized in the past (see introduction).

How does a practice perspective differ from conceptions of individual choice and what can it contribute to understanding and solving sustainability issues? Based on a theory of process, practice theories conceptualise human conduct as a cultural phenomenon and emphasize personal and societal path dependence (see Geels and Schot, 2010, pp. 94-95). They thus see outcomes as arising from an unfolding, emergent and undetermined process in which meanings, preferences etc. can change (ibid., pp. 95, 117). The major interest of constructivist approaches lies thus, for example, not in a positivist-probabilistic estimation of the impact which a higher wage has on the probability to cycle, but on the process which constructed the relation between wage and cycling in the first place. From this angle, cycling and driving are not “simple”, “dangerous” or “fast” per se, but their characteristics are entangled and only evolve in situated instances: fast and safe car driving, for example, might imply slow and dangerous cycling (but does not have to!). Similarly, the role other aspects (factors in choice terminology) such as speed, convenience etc. play is conceptualized as embedded in manifold aspects such as time-spaces, sequencing or the particularities of a practice-as-performance.

From a practice perspective, environmental and other sustainability related problems arise as a consequence of the sum of all practices performed.²¹ As these practices are in a continuous competition for practitioners (Shove et al., 2012, p. 128), engaging with issues of sustainability means engaging with the character and relative position of practices. Spurling et al. (2013) propose three ways to change the impact of practices:

First, *re-crafting* practices refers to reducing the resource intensity or external effects of existing practices by changing the elements which make up a practice. Shove et al. (2012, pp. 26-37) indicate that the change of one element may initiate the reconfiguration of manifold practice elements. Thus, while this process cannot be directed (see chapter 2.1.2), it often makes sense to address different practice elements of several types (meanings, materials, competences) at once because previous links within the practice might not suffice anymore. Cooking vegan or with local, season-adjusted ingredients, for example, may require new skills and meanings. Second, *substituting practices* attempts to replace harmful practices with more sustainable alternatives that similarly suit the purpose. But this approach does not aim at convincing people – it aims at the competition between practices and taking a look at all component practices

²⁰ This may play a role with regard to autonomous driving, which could be more eco-friendly per km but also increase the distances travelled as sleeping, working, etc. become possible during drives/carriage

²¹ Practices, rather than consumption, stir outcomes from a practice perspective as consumption is not seen as an end in itself, but rather as means to the conduct of practices (Warde, 2005, p. 137, 144).

of a system. This can happen via a restructuring of the practices' site (e. g. its infrastructure), but also by supplying components which enhance a practice's competitiveness and visibility, such as public bike repair stations (as in Denmark), altering traffic rules or improving theft prevention. The third and last approach aims at *changing how practices interlock*, this can be approached via sequencing or synchronization. Shopping and commuting are a good example for different degrees of interlocking, because the routing and transport capacity of different commuting practices enable/disable to sequence shopping into the commute. Synchronization on the other hand relates to the temporal order: starting school later modulates the time-space constraints of commuters so that slower modes of commute-caring associations (bringing kids to school, then going to work) become (in-) feasible. (Spurling et al., 2013; see also Shove and Spurling, 2013; see also Strengers and Maller, 2014)

Shove et al. (2012) provide an interesting example of a policy intervention implemented in Japan in 2005, which coincidentally fits a practice approach. Realizing that the increasing energy demands of heating and cooling office buildings were linked to norms of office wear, the government came up with a nuanced strategy called "cool biz". To engage with the range of acceptable clothing, the then prime minister was shown "*wearing loose-fitting short-sleeved outfits in formal settings*" (Shove et al., 2012, p. 150) and "*ambassadors from various Asian countries made their way down the cat-walk in traditional, climatically appropriate wear*" (ibid.). This was accompanied by cooling government offices only beyond 28 °C and cooperation with business, which supplied clothing brands suitable for the new temperature norms in offices. By providing "the office" as a place with new materials and norms enabled to widen the range the temperature can vary in an office throughout day and year, a noticeable reduction in demand for cooling and heating (via "hot biz") was achieved. (ibid., pp. 149-151)

Summing up the different approaches to sustainable mobility, it can be said that while choice-approaches favour policies that follow the idea of changing the input to an equation which drives all individuals to their decisions (e. g. by providing information), practice theory suggests to understand and alter the mundane processes, so that a change in the relative position of mobility practices drives people to the favoured behaviour (Shove et al., 2012, p. 144). This fundamentally changes the focus of intervention: "*Policies would be directed not at bad behaviours, but at 'bad' elements.*" (ibid., p. 147).

This account was purposely pointed to carve out the distinction between practice and behavioural approaches. It should be noted that a wide range of approaches to societal transitions exist (see Feola, 2015, for a review) and that the mobility literature features many shades and blends of theories (for reviews on mobility research apart from choice see: Banister et al., 2013; Faulconbridge and Hui, 2016; Van Wee et al., 2014).

2.2.2 A World of Velomobility - A Nicer World for Everyone?

"Certainly, whether situated in mobilities or transport ontology, the vast majority of cycling research is conducted by academics and activists who are often cyclists themselves and wish to see more cycling." (Spinney, 2016, p. 451)

Summarizing the miraculous effects cycling-proponents ascribe to a velomobile society, Oosterhuis concludes that bicycles are portrayed as “*an efficient, inexpensive, clean, and convenient solution for traffic congestion, cramped town centres, suburban sprawl, environmental and noise pollution, depletion of energy reserves, public health problems, feelings of insecurity in public spaces, social exclusion, and the loss of social cohesion.*” (2014, p. 21). But what about downsides? Determining all implications of a more e-velomobile society would necessitate a thesis on its own. Yet this section aims at becoming aware of potential drawbacks, unintended consequences²² and engaging with the perspectives that differ from the author’s young, white, academic and cis-male perspective. This section thus first reports on research concerning the uneven impacts of pro-cycling policies on different groups in society and then adds critical remarks on the principal justification of policy interference in practices and about potential unintended consequences.

Socio-technical transformations inevitably imply winners and losers (Cohen, 2012, p. 380). Transitions in mobility systems often (re-)structure settlement patterns, comparative economic advantages and socio-economic hierarchies (ibid.). Stehlin (2014, p. 2) finds cycling infrastructure to be mainly developed in gentrifying areas (in the USA), Schwanen (in Temenos et al., 2017) finds rail- and cycling infrastructure projects to be associated with “*real estate (re-) development, gentrification, displacement of poorer households*” (ibid., p. 117) and benefits to be “*often unequally distributed between genders, classes, ethnicities*” (ibid.). Material and spatial rearrangements, such as a re-distribution of street-space from cars to bicycles for example, can mean that urban residents can reach their destination easier by bicycle – at the expense of rural residents who then need more time to get into the city centre. But such changes can also redistribute social status: Cupples and Ridley argue that cycling advocacy and policy re-distribute morality by constructing cyclists as responsible, moral actors who take care of themselves and society, while car drivers are “*othered as the vicious and dysfunctional forces which [...] need therefore to be civilised through intervention.*” (ibid., 2008, p. 257; see also Hoffmann, 2016). From this angle, sustainability can be seen a Foucauldian “dispositif”, which exempts state and firms from responsibility and is used as a tool of neo-liberal governance to impose all responsibility for health, environment, etc. on the individual who is immoral if it does not conform for whatever reason (Spinney, 2016).

So, who are those hitherto not included in cycling? Research of Steinbach et al. (2011, p. 1124) shows that ethnicity is relevant in the UK and quantifies white respondents to be almost twice as likely to cycle than Black and three times as likely as Asian respondents. Studying the Indian ethnic minority in the UK, Janvaria (2019) finds Muslim norms of modesty to impede cycling, especially for women, and a lack of social status to be a problem for men. Steinbach et al. (2011) relate low cycling rates in minorities to a lack of role models for the communities in the UK (see also Aldred and Jungnickel, 2014). Steinbach et al. (2011, p. 1126) highlights how the aspirations of materially underprivileged groups forecloses cycling as a viable self-image and how cycling fits neatly with middle-class identities.

²² Unintended consequences play an important role in the theory of structuration (Giddens, 1984, pp. 10-14).

Xie and Spinney (2018) discuss gender aspects of cycling with a focus on norms and safety in the UK. They find several reasons for lower cycling rates of women: non-identification with a masculine image of cycling related to sports, maintenance and technology, social norms of appearance and feeling less safe while cycling in general, yet especially in specific situations (riding in traffic, riding on a surface separated from the street, cycling in the dark). Evaluating the tours which a bicycle route finder suggests for London, they find that the proposed routes might be well suitable from a male perspective but do not integrate the social safety issues women face. They ask cyclists to ride different routes and find that the route perceived to be the safest as well as the preferred route vary substantially between the genders. In light of these differences with regard to class, ethnicity and gender, it can be argued that those who profit from pro-cycling intervention are first and foremost those who are “*able-bodied, youngish, fit, slim, and live centrally*” (2019, p. 8) – those who tend to be privileged also with regard to other aspects of life.

But the patterns depicted above vary substantially: while women are usually underrepresented in low-cycling contexts (<30 % of all trips in UK are conducted by women) they are even over-represented in high cycling contexts (>55 % in the Netherlands and Denmark) (Xie and Spinney, 2018, p. 199). Xie and Spinney see this discrepancy rooted in cycling cultures as well as facilities and suggest high cycling rates of women to be a proxy for the cycling friendliness of a place, which in turn facilitates a high overall modal share of cycling. (see also Aldred et al., 2016; see also Garrard et al., 2008; see also Steinbach et al., 2011). Similarly: While still slightly under represented, migrants from the Global South are almost as likely to cycle as white natives in the Netherlands (Harms and Kansen, 2018, p. 7). In high-cycling countries, such as Denmark or Germany, “*virtually all segments of society*” (Pucher and Buehler, 2008, p. 502) are enlisted in cycling. Comparing different places, the association between demographic, socio-economic, socio-cultural characteristics and cycling levels is inconsistent (Oosterhuis, 2014, pp. 25-27). Thus, most of these effects are strong when cycling is a niche activity but the association with masculinity, danger or identity diminishes where cycling is normal and the infrastructure is well developed. Further aspects, which cannot be discussed here, include parenthood, age, location of residence and not least the shape of individual bodies.

What about the pedelec in all this? Does it reinforce or diminish inequalities? This matter cannot be answered as of today because the pedelec-community is still rapidly expanding and new groups get enlisted. Yet three aspects can be noted: the motor assistance favours especially cyclists with long commutes (residing outside of urban cores), mitigates the role of bodily fitness and while the price barrier on the one hand excludes poorer people, a top-end pedelec in terms of performance and status is comparatively much more accessible than a top-end car.

In addition, there are two fundamental concerns about interventions in practices. First, interventions in the spatio-temporal structure of mundane conduct can have incalculable effects: shifting morning routines to later times in order to make velo-commuting more viable (e. g. proposed by Cass and Faulconbridge, 2016) could potentially lead to longer bathing sequences or more energy intensive breakfast preparation – potentially overcompensating any gains. Second, is it actually legitimate for policy to try to influence how citizens behave, rather than just setting general regulations? Such

attempts to change behavior by intervening more subtly, similar as with nudging, is under dispute for *“the conviction amongst our leaders that they have both the right and the capacity to invade our brains and reshape how we perceive and interact with the world around us”* (O’Neill, 2010). In academics, the criticized concept is sometimes referred to as “libertarian paternalism” arguing that the state should only set clear rules for business etc. but not try to influence personal conduct, preferences, etc. (Jones et al., 2011).

There would be much more to add: about positive and negative health effects of pedelecs (see Bourne et al., 2018), about changes in traffic and risk when more people ride pedelecs (e. g. Kováčsov’ et al., 2016) and – especially relevant in Germany – on the socio-economic implications of a decreasing car production, just to name a few. While these questions must be the matter of other thesis’s, it remains to state that velomobility faces uneven geographies and cannot a priori be conceived as (morally, socio-economically) “good”.

2.3 Literature Review

After section 2.1 laid out the theoretical backdrop of this thesis and section 2.2 critically surveyed some potential blind spots concerning pro-cycling policies, this review of the literature aims to present the state of knowledge on pedelec-commuting from a practice perspective based on Shove et al. (2012) (Shovian perspective). As this theoretical framework is rather new, there is no research examining pedelec-commuting from this distinct angle. Due to the fundamental differences between practice theory and other schools of social science (see subsection 2.2.1), this review focusses solely on practice-oriented takes on the subject and leaves aside behaviourist and other approaches²³. Thus, it closes in on the state of knowledge by first depicting accounts of pedelec-riding from a broader practice-theory perspective, then sketches research on velomobility conducted from a Shovian elements-perspective and finally surveys work in the Shovian tradition focussing the particularities of the commute.

2.3.1 Pedelecs From a Practice Perspective

McHardy (2013; 2012) appears to be the first author to deal with e-velomobility from a practice angle. His auto-ethnography of 2013 contributes by giving a detailed account of the motor-body interaction during pedelec rides. He foregrounds the composition of this *“radically relational achievement”* (McHardy, 2012, p.106) in which the bodies and minds of riders, vehicles, riding surfaces and much more interact. The most extensive research on pedelec-riding as a social practice has been presented in the dissertation of Le Bris (2015). Using a grounded theory approach, Le Bris develops two models: one is concerned with the processes behind “practice-careers” (getting to know and growing into the practice) and the second model focusses on the interplay between different components which constantly re-shape the habitual scripts of practitioners (termed “knowledge & teleology”, “materiality” and “doing & social context”). Interestingly, the theoretical model developed in this thesis using grounded theory almost resembles the Shovian three elements perspective. Yet its focus on the process of

²³ For a review of other strains of research on pedelecs see Cairns et al. (2017).

growing into the practice enables insights into individual pedelec practice-careers and thus sheds lights on aspects which a focus on single performances and the practice as entity does not readily comprise. As for the meanings of riding pedelec, a 2015 study on pedelecs as a means of commute for young adults (apprentices and trainees) by Le Bris and Rothfuß finds that in a rural, hilly area in southern Germany roughly 40% of respondents said that pedelecs are just for elder people, roughly 40 % said they are just for less athletic people. In her 2016 article, Le Bris once more foregrounds sceptical attitudes and prejudices (meanings) towards the pedelec in Germany. She argues that pedelecs are strongly associated with age and weakness and that a change in meanings of riding pedelec appears to be essential for a widespread diffusion of the practice.

Further studies on e-bikes from a practice perspective have been conducted by Zuev (2018; 2020) and Zuev et al. (2019). Yet Zuev's work, focussing e-biking in China, does not fit in this review as the Chinese context is characterized by different materials (actual e-bikes, not pedelecs), competences (e. g. street norms and official rules) and meanings (e. g. norm systems).

2.3.2 Cycling From a Shovian Perspective

As riding pedelec has thus not been thoroughly investigated from a Shovian elements-perspective yet, this thesis enters new ground. It thus appears fruitful to take note of literature which investigates the closely related practice of bicycling from the Shovian angle. The widely cited article "Analysing Cycling as a Social Practice" by Spotswood et al. (2015), opened this new strain of research by mapping the practice of cycling in three elements for the first time. Focussed on the UK context (low cycling rates), it finds a very specific image of commuter-cyclists as sporty and competitive, a completely different person than the leisure-cyclist. The article's contribution lies in listing meanings, materials and competences of cycling and investigating potential links between meanings and the materials available at a place. They conclude that a change in materials, such as the provision of secure bicycle parking at offices, may associate work with cycling and thereby render bicycle-commuting to be conceived appropriate for professionals. As Spotswood et al. (2015) re-use data which the authors retrieved earlier to explore the images of cycling, the study mainly focusses on meanings and cannot take full scope of materials and competences.

Another account of cycling as a Shovian practice in a low-cycling context is provided by Scheurenbrand et al. (2018) who investigate cycling in Las Palmas, Canares. They emphasize that the elements present at a place – hence also the viability of cycling – is affected by many other practices which are spatio-temporally separated from bicycle rides and thus often not thought about in discussions on cycling. Policing for example has a substantial impact on many aspects of cycling, such as the security of bicycle parking and the integrity of cyclist riding space. They highlight that apart from such direct effects, these matters have further, indirect consequences: if a lack of policing makes owning valuable bikes dangerous, this affects the quality of bikes ridden – and thus on the ease and efforts of riding. Practices of traffic education are another example Scheurenbrand et al. (2018) put forward for practices which reshape the elements (esp. meanings and competences) of cycling that circulate in a population. While discussing their research using the Shovian terminology of materials, meanings and

competences, Scheurenbrand et al. (2018) fuse this three-element-take on practices with Schatzki's (1996) terminology, for example by integrating teleoaffective structures (in meanings) and material arrangements (in materials).

Several authors also give comparative accounts of cycling elements at different places. Studying cycling in Trondheim (Norway) and Freiburg (im Breisgau, Germany), Hofmeister and Keitsch (2016) find the elements of cycling to differ between both places. Their contribution lies in providing an extensive list of practice elements found in both cities and tracing the differences between the cities back to the characteristics of both places as well as the variants of cycling practiced, which they find to be more utilitarian in Trondheim (more commuting) and more mundane in Freiburg (more leisuring). These empirical findings are very interesting as they provide first clues about the interrelation between the elements of and the purposes for which cycling is utilized. With regard to theory, they add "structure" (referring to physical and built environment and supposedly taken from Giddens, 1984) as a fourth element to the three proposed by Shove et al. (2012). Furthermore they integrate "timespace", referring to the spatio-temporal peculiarities of a practice, as an element of meaning. While both these moves address shortcomings of the Shovian perspective (see subsection 4.2.2), the integration of concepts remains piecemeal: the historical situatedness of practices affects not only meanings but also materials and competences and the differentiation between elements of material and structure is not explicated (cold weather in Norway, for example, is considered structure, not material). Following up on the comparison between Trondheim and Freiburg, Hofmeister and Stibe (2017) discuss cycling as a Shovian practice from a design perspective. They conceive practitioners as "latent designers" of social systems and point out that making practitioners aware of the elements which make up the practices they engage in may enable them to consciously alter the elements they integrate. The study further discusses the role social technologies and -movements can play in this context. Another discussion of the relation between place and practice elements can be found in Marwein (2019), who uses ethnography and focus groups to compare the Shovian elements of cycling between Stuttgart and Copenhagen. Yet his account provides only a few elements from each of the three categories and is mostly focussed on the cycling infrastructure.

A recent, encompassing account of velomobility from a sociological perspective is provided by Cox (2019), who highlights that the study of cycling necessitates a cross-disciplinary approach and draws on the three element theory for this endeavour (pp. 3, 5).

Finally, two studies contribute to understanding cycling policies from a Shovian perspective. Larsen (2017) combines the analysis of policy programmes on velomobility in Copenhagen with an ethnography conducted on the places the policies address. He thus provides both a municipal planning and a practitioners' perspective on the elements of cycling and contributes to understanding both how these two realms intersect in daily rides and how they make up the local cycling culture in Copenhagen. Bruno and Nikolaeva (2020) on the other hand theorize on practice-based pathways to increasing the share of cyclists. They argue that policy interventions with the aim of convincing drivers to cycle have a hard time as changes in the elements of cycling are not salient to motorists but only to cycling-practitioners. Noting that a huge share of young people cycle in the Netherlands, they enrich the discussion with the notion that

practice-oriented cycling policy should focus on the maintenance of cycling practices in moments of major life changing events (such as job-change or birth of children) rather than on enhancing the picking up of the practice.

2.3.3 Shovian Investigations of the Commute

This last section on the relevant literature points to key publications which contribute to understanding the particularities of the commute from a Shovian perspective.

In a large study, Cass and Faulconbridge (2016) put forward a comprising database: they acquired a sample of 61 individuals who were interviewed about their commuting practices at least twice within a two-year-period (using semi-structured questionnaires) and also asked to provide a wide range of other data such as photographs, travel diaries, GPS-traces etc. Using this data, they provide the only account which comparatively depicts the Shovian practice elements of car-, bus-, and cycle-commuting. They highlight elements which are present in commutes but not in other uses and point to the importance of sequencing and find shopping, exercise, recreation, leisure, parenting and education to be the most important practices sequenced with commutes. They further integrate a time-space perspective based in Hägerstrand (1970) and argue that tight time-schedules, anchored in fixed appointments, are fundamental to commuting practices – often rendering car-driving to be the only feasible practice. Grounded in this thorough analysis, they also present policies aiming to change the time-space in the fields of work, education, health, recreation and shopping to change the structure of competition between commuting practices.

A second substantial contribution comes from Higginson et al. (2016) who are engaged in the development of practice-mapping (see Figure 4). They attempt to capture the entanglement of commuting practices with other mundane practices through both shared elements and the effects of whole practices. Focussing on commutes by car and motorbike in practice-as-performances as well as on the elements of practices performed just before and after commuting, they are able to depict several commuting practices as well as practices sequenced just before and after in a single graph. While not making it to the point of providing a universally applicable, thoroughly convincing depiction, they provide several ways of depiction and thus substantially advance thinking about mapping practices. Further work on the computerized analysis of connections within practices can be found in Lawo et al. (2020).

A few more studies supplement these major contributions: investigating commuter practices in the United Arab Emirates and interviewing mainly car users, Lyanna et al. (2019) find meanings to dominate commuting practices and to shape the materials and competences integrated. Mattioli et al. (2016) point to the relevance of cargo-carrying capacity for practices which are often sequenced with commutes (material aspect) and find many of these practices to thus be car-dependent. Larsen (2018) finally gives an example of investigating the meanings, materials and competences of one very particular kind of bicycle commuting: studying long-distance bike commuting (an hour and more), he finds this practice-variant to be deeply entangled with exercising and sport, featuring substantially different elements than more mundane variants of cycling.

The above review of literature points out that pedelec-commuting has not been studied from a Shovian perspective and thesis thus enters new ground. With regard to cycling, only Hofmeister and Keitsch (2016) present an account that investigates and lists the involved elements in depth. The literature highlights the interrelation between commuting and sequenced practices and points towards different elements between cycling variants for different purposes and at different places.

3 Methodology

The subsequent chapter discusses how this thesis' practice ontology, based in Giddens (1984) and Shove et al. (2012), is translated first into an appropriate epistemology, second into techniques of data generation and analysis and finally into the text which is outcome of the analysis. The first subsection thus reports on ways to get hold of practices and finds a triangulation of different accounts to be ideal. The second subsection explains why interviews with ten practitioners in Wuppertal and Münster are the empirical basis of this thesis and how these were scrutinized using template analysis. The last subsection discusses quality criteria, provides additional information which is relevant for making this research intersubjectively traceable and points to strengths as well as weaknesses of the approach taken.

3.1 Epistemology and “Tools” for Research on Practices

What follows from an ontology that sees the social to consist of and transpire through practices? How can such a perspective, de-centring human agency and shifting bodily movements, things and routine into focus (Reckwitz, 2002, p. 259), be translated into epistemological²⁴ approaches to capture aspects of practices? This chapter first introduces several “lenses”, which can be employed to take scope of a practice from different perspectives. The second subsection then investigates the range of aspects which can be studied by different “tools”, while the last part reports on the approaches which have hitherto been applied with regard to velomobility.

3.1.1 How to get Hold of Practices?

Giddens notes that nothing in structuration theory prohibits the use of some specific research technique (1984, p. xxx) and in principle, both qualitative and quantitative data can reveal aspects of practices (Browne, 2016). Yet the matter of this thesis is not hypothesis testing or determining the relative importance of established aspects, but investigating a rather unexplored practice. As it thus aims at eliciting “what?” and not “how much?”, the principal nature of the bulk of necessary data is clear: an exploratory study of cycling by pedelec as a practice demands qualitative material (Stebbins, 2001).

Section 2.1 argues that elements make up practices, that these practices bundle or at times fusion with other practices and thereby become complexes which can evolve into large systems, consisting of many complexes, which shape society. This account fits well with Nicolini (2009b), who argues that practices should be studied by “zooming in and out” – through re-positioning in the field and switching theoretical lenses. He suggests that practices should first be studied in the details of their accomplishment (zooming in) and then in how they persist in time-space and interfere with other practices (zooming out) (ibid., p. 1392). This approach is based in the idea that it is impossible to picture the whole of a practice at once and Nicolini thus argues for a “*selective re-positioning so that certain aspects of a practice are fore-grounded and others are temporarily sent to the back-ground*” (ibid., p. 1412). Morley (2016) also argues that

²⁴ Epistemology refers to the ways to and conditions of gathering knowledge about the objects an ontology proposes (see Steup, 2005).

the first step should be to zoom in with rich, qualitative data, and then zoom out using quantitative data and observing the networks any practice is involved in.

This thesis does thus not investigate historical change or the whole system of velomobility which would include city planners, bike dealers, etc. It rather zooms in on the details of the mundane performance of riding pedelec, in the distinct setting of German cities in 2020. But in order to grasp the particularities of commuting, it cannot zoom in as much as McHardy (2013) – who investigates primarily the interrelation of pedelec and rider – but needs to also get hold of the interrelations with all other practices relevant for the commute. Apart from such “snapshot perspectives”, cycling practices have been studied temporally, either with regard to the practices-careers of the practitioners involved (e. g. Le Bris, 2015) or the historical evolution of systems of practices (e. g. Watson, 2012).

3.1.2 Appropriateness of “Tools” for Studying Mundane Conduct

After determining perspective and zoom level, an appropriate “camera” has to be determined: how can thorough accounts of pedelec-commuting be produced? Is it practitioners themselves who need to be tapped or does their cognitive and social involvement blur such accounts? Can researchers produce more accurate accounts of practices because they are, as observers, capable of producing data from an impartial point of view and receptive of aspects which have long been thoroughly sedimented into the routine and practical consciousness (see below) of practitioners? Or are observers incapable of grasping the internal dynamics of practice and their accounts equally entangled in the construction of events through language and positioning as those of practitioners? Framed differently: should researcher observation or accounts of practitioners build the foundation of this thesis?

To answer these questions, the subsection at hand first sketches some basic remarks on the knowledgeability of actors in the theory of structuration and links these to the Shovian practice-elements approach. Then, fundamental concerns raised by postmodern scholars about the nature and differences between interviews and observation are discussed.

First, it is useful to refer back to knowledgeability of practitioners in Giddens’ theory of structuration: according to Giddens (1984, p. xxii-xxiii) practitioners are intelligible and thus have the capacity to understand what they do. Yet, while this reflexivity works in the practical consciousness as well as in the discursive consciousness, only the discursive consciousness is directly accessible for practitioners. Although there is no rigid “barrier” between practical and discursive consciousness (as between the former two and the un-conscious), especially the routinised elements of practices are sedimented in the practical consciousness and are thus not (offhandedly) elicited through practitioners’ reflections (ibid., pp. 5-7). This is connected to constructivist notions about language and semiotics stating that “*what agents know about what they do is restricted to what they can say about it*” (ibid., p. xxx). Thus Giddens infers that “*The study of practical consciousness must be incorporated into research work.*” (ibid.). This means that, although in principle posing one straight forward resource for learning about practices, the reflections of practitioners are fundamentally restricted by the structure of language and by the sedimentation of knowledge through routine in the practical consciousness as well as the unconscious.

Practices can thus be investigated via linguistic accounts of practitioners. These can provide access to elements which cannot be (reliably) observed, such as smelling, feeling, thinking (Hitchings, 2012; Kuijer, 2014, p. 65). Interviews furthermore enable to explore structures and linkages between practice elements as well as to resolve ambiguous findings because they enable a discursive interaction between researchers and participants which can be used to clarify vague positions (Spotswood et al., 2015, p. 26). Scepticism for oral accounts and preferences for observation stems from the idea that observation would give researchers direct access to the phenomenon in question and interview data would only give access to accounts of the former (Atkinson and Coffey, 2003, p. 209).

While in principle capable of verbalizing big parts of their routine, practitioners are not used to such kinds of reflections (Kuijer, 2014, p. 65). This lack of familiarity with reflection adds to the problem that practitioners often use imprecise concepts to describe practices (Martens, 2012, pp. 110-111). Furthermore, due to psychological effects and social desirability, respondents might disguise or not disclose their thoughts and report on events that took place in a substantially different form or not at all (Atkinson and Coffey, 2003, p. 112). Yet most of these objections can also be levied against (disclosed) observation.

Interviews as the main pathway to insight? For a long time, dominant scholars of “modern”, “positivist” traditions of thought (see Alvesson and Sköldbberg, 2009, pp. 16-20) considered the interview to be mainly a technique that, if applied appropriately, gathers objective knowledge and produce neutrally transmitted “facts of experience” (Gubrium and Holstein, 2003, p. 3). As such, they used quantitative means to analyse the obtained data (Graneheim et al., 2017, p. 29). Interviews, especially open ended ones, are still often thought to enable a step into of respondents “worlds” and allow understanding their “true” experiences and perspectives (Silverman, 2017, p. 146). But around the turn of the century, Atkinson and Silverman (1997) formulated the widely cited critique that the interview is so omnipresent, e. g. through journalism and psychotherapy, that interviews are unthinkingly applied as the main method of qualitative data generation and often used in an unscientific fashion, no matter whether the method suits the epistemological demands or not (claims renewed by Silverman, 2017, p. 145). Atkinson and Silverman argue that the idea that interviews inform about the “true” inner perspective of informants’ is flawed, not only because interviewees often fail to accurately report on events or because internal valuations are always fluid, but also because the conduct of interviews itself is a social practices just like observation and thus the roles researchers and interviewees take are similarly important ingredients to the generated data as the events around which the interviews revolve (Whitaker and Atkinson, 2019, see also “constructivist position” in section 2.1.2). Such a post-modern perspective conceives interviews to be strongly influenced by the social: on the one hand by categories of language and thought, norms of what is memorable, valuable and appropriate, but also, on the other hand, by the material settings which co-constitute the data (Atkinson and Coffey, 2003, p. 118). Atkinson (2015, p. 95) emphasizes that interview data cannot be considered either “true” or “distorted” because interviews are themselves guided by social rules, “*reflect common genres*” (2015, p. 60) of constructing the self and memories and have the material dimensions of performances (material settings, postures) (2015, p. 86). Hammersley (2017, p. 173) sees these

arguments to subvert the two main purposes of interviews, namely accessing the knowledge of informants and shedding light on their beliefs, attitudes, etc.

Observation as the better tool? The selectivity and distortion implied with using the researcher as a “recorder” to inform about the situation must be taken with similar caution. The most basic argument, known as the “crisis of representation” shook the social sciences around the turn of the 20th century. It claims that any information that researcher records and turns into text is created against the backdrop of the person of the researcher (Wintzer, 2016, p. 6). A thing can, for example, only be “large” in comparison. In the case of observation, the representation of a phenomenon thus depends on the researcher’s experience, expectations, etc. (see Atkinson and Coffey, 2003). Thus, the objections of selectivity and of following discursive formations levied against interviews must also be held against any form of observational data because observers need to direct their attention, select what is observed and then record and transcribe their observations (Hammersley, 2017, p. 182). Observers furthermore also influence the social situation they try to witness (Thierbach and Petschick, 2019, p. 1178). But can interviews and observations be separated as fundamentally different in the first place? Atkinson and Coffey (2003, p. 110) note that the basic differentiation between these two types of ethnographic data is actually misleading: speaking is always the performance of a practice and practices are only intersubjectively understandable because they can be talked about.

So, how can data be collected? All these critiques are inspired by a more general postmodern perspective which is sceptical of objective findings, general truths or overarching theories, more interested in the unique than in the general, locates meaning rather than discovering it, gives emotion a strong hold in the social and offers interpretations rather than findings (Gubrium and Holstein, 2003, p. 4). Hammersley (2017) engages with these critiques and argues for a middle ground between a naive naturalism, taking interviews (or data in general) to give account of some “objective reality”, and a strong version of (postmodern) constructionism, which is so concerned with language, particularity and the positioning of actors that it precludes the possibility of gaining information on a phenomenon of interest. But what follows from these nonetheless valid points of critique? When working with interviews, the construction of questions as well as the interpretation of the data must take account that the questions themselves, especially the words used, reflect the person of the researcher and co-create the answers. The analysis must engage with the perspective of interviewees and question why accounts were given in a particular way (ibid., pp. 181-182). When scrutinizing practitioner accounts, the researcher always needs to be aware that interviewees construct a version of themselves and others as moral agents through their narrations (Atkinson and Coffey, 2003, p. 116). For the analysis of observations, the position of the observer and their impact on the data must equally be taken into account, especially with regard to the focus of attention and the effects implied by the person conducting the research. All these aspects already need to be taken into account when preparing interview questionnaires and engaging with the field, such as when approaching potential respondents.

And how can inference be drawn from such data? Understanding requires plenty of pre-knowledge and assumptions: knowledge of language, terms, culture (e. g. irony) etc. (Kuckartz, 2018, p. 16-17). In the German context, the interpretation of

cultural produce is referred to as hermeneutics (ibid., p.17). Based on Klafki (2001), Kuckartz (2018, p. 18-20) specifies four core aspects relevant for hermeneutic analysis: *First*, the conditions of data creation must be understood: who communicated with whom under which conditions? Has there been contact before, what are the expectations of the involved persons, which role does social desirability play, how was the mood, etc.? *Second*, hermeneutics is based on a circular proceeding: pre-knowledge is required for engaging with the material, but this engagement results in new knowledge which in turn facilitates a better understanding of the material. *Third*, hermeneutic difference describes the difference in understanding the world between the producer and the recipient of data. The larger the hermeneutic difference, the higher the degree of interpretation and sense making necessary to understand a text, picture etc. If the hermeneutic difference is too large, such as when reading poems of a foreign culture with unknown lettering, understanding becomes impossible without further ado. Hermeneutics is thus applicable for the field between familiarity and strangeness. *Fourth*, adequacy instead of correctness: understanding requires pre-knowledge and is always dependent on the researcher. As such, different researchers must come to different conclusions and any hermeneutic analysis can neither be wrong nor right, it can only be more or less appropriate. (Kuckartz, 2018, pp. 18-20)

Researching on a practice which the author is familiar with, in his mother tongue and country of long term residence, the hermeneutic difference between researcher and data is expected to be relatively small. Yet aspects such as his associations with types of mobility, his age and physical fitness are first vantage points of difference that could lead to inadequate interpretations and should not go unnoticed. To enhance transparency and tackle such aspects, this thesis explicates pre-knowledge and person of the author (see appendix A.6).

Summing up, it can be said that the two previous paragraphs showed that talk as well as observation, practitioner as well as researcher accounts pose both resources and obstructions for studying practices. Thus, neither relying on observation nor on practitioners accounts alone can draw a complete picture of riding pedelecs; they do not stand in opposition. Thus, in line with practice theory scholars (e. g. Macrorie, 2016, p. 99), these epistemological remarks lead to the conclusion that several data sources should to be combined.

3.1.3 Data Generation in Practice Oriented Research on Cycling

So which techniques have hitherto been applied by practice theory scholars to study velomobility? A glance over the literature shows that most studies on velomobile practices mainly rely on interviews but add additional material: Andenes (2014), in his master thesis on bicycle commuting in Oslo, uses semi structured interviews (adding secondary sources such as statistics and newspaper articles); Aldred (2010) reconstructs the perception of self by cycling practitioners in “heavily-motored countries” through narrative interviews; Pearce (2016) uses in-depth interviews (along with observation and participant observation) to understand how cargo carrying is incorporated in urban cycling practices; Steinbach et al. (2011) use combined accounts of interviews, public blogs, news groups and field diaries (observation) to reflect on the effect of gendered, ethnic and class identities in cycling practices. The major practice-oriented study on pedelecs of Le Bris (2015) relies completely on interviews.

Yet accounts without interviews also exist: McHardy (2013) uses an auto-ethnography to “microscope” the relation between body and machine. Larsen (2019) draws mainly on the literature and to limited extent on his own ethnographic experience from earlier studies (e. g. Larsen and Funk, 2018) to explore the history of urban cycling practices. Vivanco (2018) uses structured surveys with quantitative as well as open questions to understand the spatial dimensions of cycling practices and Cochoy et al. (2019) investigate bike-sharing using videography.

Thus, while some authors add other techniques, structured interviews are the major method employed to study tangible, localized manifestations of cycling practices.

3.2 Methodology Applied

After the first section of this chapter argued on the epistemological difficulties implied in studying practices and in the use of qualitative data, the section at hand explains how these remarks translate into research strategies. To this end, the subsequent paragraphs determine the the process of conduct, the type of data used and the “techniques” of sourcing and interpreting data.

3.2.1 Research Process

There are two fundamentally different approaches to qualitative research processes (see King, 2012, p. 427). On the one hand, some qualitative researchers argue for a pre-structured proceeding, which aims at intersubjective consistency and thus replicability. While proponents of this position usually acknowledge the character of data as constructed through participants, researchers and method, they attempt to counter biases through self-reflection of the researcher and by conducting research via an explicit, predefined methodology, such as a step-by-step guide through all analytical stages. (ibid.) Mayring (2015) for example demands (a) precise research question(s) and definitions of what can be subsumed under any analytical code. The aim is to achieve the “rigidity” and “scientificity” of quantitative methodologies. This approach thus strives for validity, reliability and objectivity as criteria of good conduct, as known from quantitative methods (e. g. Mayring, 2015, p. 53). A research proceeding is then deemed of high quality if different researchers working on the same data end up with the same results (ibid.).

Many proponents of constructivist thought on the other hand abandon the possibility of objectivity altogether (see subsections 2.1.2, 2.2.1 and 3.1.2). Their attempt to arriving at relevant descriptions or theories consists in letting loose of pre-imposed procedures, starting with the researcher having no precise research question, proceeding with letting her/him reflect on what they encounter and then float towards what the researcher deems important (Breuer et al., 2019, pp. 4-10, 151). This proceeding is based on the idea that the researcher should not be overloaded with pre-conceived ideas and biases from literature and hence be able to develop more situated and accurate accounts of the phenomena they encounter (ibid., pp. 144-145). The impact of the personality of the researcher is acknowledged and not understood as a shortcoming, but rather as a means to gaining insight, because it is the researcher’s sense-making which first translates raw data into meaning (ibid., p. 2). Such approaches, most prominently the “grounded theory”-paradigm (see Corbin and Strauss, 2008) also come with a completely different research process: the sample is not determined

beforehand, new participants are sampled one after another, based on what seems relevant to the researcher at any given moment (ibid., p. 144). Similarly, the questions of interviews/places of study (can) change with every respondent (ibid.).

As the chosen approach fundamentally impacts all decisions on data generation and analysis, the process applied in this thesis is explicated before diving into details. In general, the epistemological foundation of research on practices laid out in section 3.1 strongly lean towards a constructivist grounded theory approach rather than towards a structured-objectivist proceeding. Yet the author of this thesis is strongly sceptical of some aspects of a grounded theory methodology: first, especially when taking constructivism serious, the path dependence implied with one researcher and one participant co-constructing this first set of data and then developing all subsequent steps based on what the researcher draws from these first impressions is immense. Second, grounded theory (as depicted by Corbin and Strauss, 2008), depends very much on the immersion into persons to which a large hermeneutic difference (see subsection 3.2.4) may exist (e. g. ibid., pp. 171-172, 239). Furthermore, such an approach relies on intuition and “guts feeling” (e. g. ibid., pp. 260, 266) to interpret the retrieved accounts as well as to develop the direction of analysis. It is thus so much impacted by the pre-knowledge, emotions and thinking of the researcher, that its results must necessarily be understood as one of many similarly valid and probable tellings of a story that only emerges through the path of the project. This circumstance is reflected in the notion of Corbin and Strauss, that analysis has to find a *“balance between the art and science”* (2008, p. 48).

At the same time, the reasoning of Corbin and Strauss (2008) fits the constructivist epistemological positions outlined before. Even supposedly “neutral” descriptions, such as terming something a “police report”, implies conceptions about a political system, gives/takes credibility to/from the document etc. Words can never be objective, always transport meaning and thus “create a story” (ibid., p. 54). Understanding qualitative (or any) data (especially language) always requires some degree of interpretation and any substantial analysis of qualitative data requires intuition of what is important and what not. The author considers many of the analytical tools proposed by Corbin and Strauss (2008, pp. 58-86) to be relevant for breaking up the surface of the text and diving deeper into the data. Similarly, their proposal to use memos in order to take hold of ideas and thereby gradually stature concepts is deemed plausible. As a result, the basic, constructivist posture of Corbin and Strauss and their tools are combined with a detailed theoretical perspective and a less path dependent proceeding: The sampling is static and the focus of interest does not change with every subsequent piece of data gathered, but remains more or less the same throughout data generation. Also, while acknowledging the central role the author plays in making sense of the data and the importance of asking questions to the data in order to immerse into the topic and gain a broader understanding, the answers to those questions are not expected to come from the author (cf. Corbin and Strauss, 2008, pp. 169-170). Rather, the questions are posed to sensitize the author for aspects which *may or may not* be appearing in the data.

“How far the analysis varies dimensionally from art to science depends upon the philosophic background of the researcher, his or her discipline, and the qualitative method he or she is using” (Corbin and Strauss, 2008, p. 48). Notwithstanding the

impossibility of “objective”, “true” accounts levied throughout the previous chapters, this thesis strives for the science and tries to minimize the art. After the above discussion of rather abstract epistemological positions on data generation, the two subsequent subsections put flesh to the bones: subsection 3.2.2 explicates the places of study and the acquired sample, subsection 3.2.3 elaborates on the techniques used to generate the data.

3.2.2 Sampling of Practitioners and Places of Study

Subsection 2.1.4 defined “places” to vary with regard to both cultural and material aspects. Both of these are entangled with velomobility: cycling is a bodily practice and not completely constructed in our minds. It does therefore make a difference whether velomobility is practiced in flat or mountainous terrain and whether cyclists ride on separated surfaces or navigate through thick traffic (see subsection 2.1.3). But the introduction also pointed out that cycling rates can be substantially different in similar material settings and subsection 2.2.2 highlighted that the in-/exclusion of different groups within society in cycling is very entangled with cycling rates. Thus, in order to obtain a broad account of the practice, several places should be studied.

As the resource restrictions of a master thesis preclude studying more than two places, a maximum variation sampling (see below) is pursued. But sampling two places as maximally different for riding pedelec is easier said than done. This problem arises because a number of characteristics of a place could potentially impact pedelec practices: weather, mobility culture, infrastructure, topography, city structure (dwelling as well as socio-economic, etc.) and many other aspects all play a role. From these diverse aspects, a maximum difference in terrain was chosen, because the material difference between a bio-bike and a pedelec consists in motor and battery, which make a particular difference when facing hills. Furthermore, the two places should feature a maximal difference in cycling rates as the literature shows that these substantially impact meanings and groups participating in cycling. This sampling of two places does not intend to enable a comparative account of the difference between pedelec-commuting at places with polar characteristics, but rather serves as a means to integrate as much variation in the sample as possible. After the analysis of the Germany-wide mobility data survey database *Mobilität in Deutschland (MID)*, Wuppertal and Münster were determined as appropriate places for the study. In 2017, cycling had a modal share of 30.9% of all trips (29.8% by bicycle, 1% by pedelec; self reported) in Münster, a city located in a flat plane. Wuppertal, on the other hand, is characterized by a very hilly topography, features only 2 % of cycling and 0.2 % of all trips were conducted by pedelec (all modal shares here and below were calculated based on the MID data using BMVI (2017)).

Wuppertal is located in a valley, stretching along the river Wupper and the steep hills on both sides of the river valley. The city, which was a centre of early industrialization in Germany, is currently home to about 360 000 inhabitants²⁵. As 59.4 % of all trips were conducted by car in 2017, automobility dominates the local mobility. The historic continuity of this feature was reflected on-site where several people noted that during

²⁵ See: <https://wuppertal.de/wirtschaft-stadtentwicklung/daten-fakten>, accessed 30.10.2020.

their childhood no one learned how to cycle, as this practice was commonly considered to be dangerous and hence infeasible. Nowadays, Wuppertal features an active civil society revolving around the so called “Utopiastadt”-project²⁶ and the “Wuppertal Bewegung e.V.”²⁷, both actively engaged in the promotion of urban cycling. Having achieved the transformation of an abandoned rail-track into a non-motorist highway (the “Nordbahntrasse”), an urge for a transformation of urban mobility is present in Wuppertal.

Münster on the other hand is well known as a “cycling capital of Germany”²⁸, an image which is used by the municipal marketing as well as in the media and echoes very strongly in the conducted interviews. This means that cycling is part of the local identity, a very common means of transport (30.9 % of all trips), that the infrastructure is quite well developed and that the municipality actively supports velomobility. The city, characterized by its large university and its administrative function, houses around 310 000 inhabitants.²⁹ Still, the car is the most frequently used means of mobility in Münster (38.5 % of all trips).

Sampling Practitioners: Who should be asked for participation, how should they be approached? With regard to qualitative sampling in general, Flick (2017, pp. 155–157) notes that the relevance of case groups should outweigh their representativeness. Hui (2016) specifies that practice-focused sampling should use practice-specific attributes, such as the experience of a practitioner, rather than socio-demographic characteristics, unless these are important for the focused practice. As combining the commute with transport, care and leisure alter demands (Cass and Faulconbridge, 2016), practitioners who transport/accompany small children should be included. Because gender can impact several aspects of cycling, such as stereotypes and clothing (Steinbach et al., 2011) or the perception of infrastructure (Xie and Spinney, 2018), both male and female respondents should be represented. Also, rather than focusing on socio-demographic attributes, e. g. on age, respondents should feature different grades of physiological capabilities, ranging from people with limited capabilities through average to sporty. Long journeys should be featured as well as short ones. Finally, a range of different workplaces (from white to blue collar work) should be included to embrace the differences in physical efforts at work and norms, e. g. regarding cleanliness (Larsen, 2018).

For acquiring the sample, the researcher needed to approach his interviewees at distinct locations (Münster and Wuppertal), where he did not possess a networks that could be tapped. Local gatekeepers did not reply before fieldwork³⁰ and thus, most practitioners were approached on the streets (for similar approaches to sampling cycling-commuters see Braun et al., 2016 and Cole-Hunter et al., 2015). In Wuppertal,

²⁶ See: <https://clownfisch.eu/utopiastadt/>, accessed 29.10.2020.

²⁷ See: <https://wuppertalbewegung.de/nordbahntrasse/streckenverlauf/>, accessed 29.10.2020.

²⁸ See for example: <https://adfc-nrw.de/kreisverbaende/kv-muenster/radverkehr/fahrradhauptstadt-muenster.html>, accessed 30.10.2020.

²⁹ See: <https://stadt-muenster.de/stadtentwicklung/zahlen-daten-fakten.html>, accessed 30.10.2020.

³⁰ As the covid 19-pandemic in spring 2020 foreclosed in-person interviews for some months, the author con-tacted five bike-stores in Münster via email and asked them to distribute invitations for skype-interviews among their customers – none of the stores replied.

however, a part of the sample was obtained through the owner of a cycle-shop who also provided a two-hour off-the-record conversation about the local cycling culture, politics and recent developments.

Identifying participants which fit the optimal sampling, would have necessitated facing potential interviewees with a range of personal questions about their bodily capabilities and practice sequencing before having established a personal relationship. This seemed infeasible. Apart from the arbitrary and most likely misleading use of visual impression, the characteristics of most practitioners could thus not be distinguished ahead of inviting candidates for interviews. In order to boost variation while sampling in the streets, potential interviewees were approached in different locations: on important cycling tracks close to commerce and industry, in inner city areas close to shopping and childcare as well as on bike-paths along commuter streets heading out to suburbs. In order to reduce unconscious selection, due to the researcher's personal sympathy to different groups, every individual who passed by with a pedelec was approached first. Later, after figuring out that academics between 50 and 60 appeared in abundance and that much more women than men were willing to participate, a specific focus was put on sampling younger, male respondents. Noticing early on that academics were over-represented, the gatekeeper in Wuppertal was asked for contacts to blue-collar workers and one of the conveyed persons agreed to take part in the study. As this practitioner rides a cargo-pedelec, he would usually have been excluded, but as his attribute of not working in an office but in industrial production was deemed theoretically interesting, he was included. He remained the only blue-collar worker in the sample (two out of nine were non-academic in the end).³¹ Sampling for younger participants was also not very successful, only one respondent was younger than 30 years, two in the beginning of their forties, the rest was older than fifty (see Table 1). One interview was excluded (Nr. 3) as the respondents' characteristics are covered in abundance by the rest of the sample (female, in her fifties, academic, environmentalist) and the largest part of the interview discussed not her pedelec practice but her ideas about and involvement in societal change. Overall, roughly half of the practitioners approached agreed to participate, more details on the initiation of contacts can be found in appendix A.2. Table 1 presents key characteristics of the acquired sample.

³¹ It would have been preferable to include more non-academics. But how does one sample non-academics by visual inspection? This approach will most likely fail and is inevitably based on classist prejudices. It was thus not pursued.

Table 1: Key Characteristics of Sampled Practitioners

Nr.	Pseudonym	Length of interv.	Methods applied	Age, gender	Age of children	Employment	Most important vehicle	Distance one way (days per week)	Owms pedelec since:	Sequenced practices	Bodily capabilities
1	Clara	1:27 h	Video, interv., ITTD	59, f	2 adult children	full-time in a retirement home	pedelec	2.7 km (5)	1 year	errands, visiting	below average
2	Ulrike	0:54 h	interv., ride	51, f	14, 19	full-time, artist	pedelec	5 – 10 km (6)	?	?	average
3	Anabell	0:51 h	interv., ITTD	54, f	22, 25, 27	full-time, unspecified	pedelec	5 km (5,5)	5 years	errands	average
4	Thorsten	0:45 h	interv., ride	41, m	6	full-time, industrial production	pedelec	11 km (7)	0.5 years	leisure rides, transport,	very sporty
5	Elisa	1:03 h	interv., ITTD	26, f	-	student, part time employed	PT	5-20 (2)	0.5 years	meeting people, shopping	average
6	Alina	1:08 h	interv., ride, ITTD	52, f	-	part time, in school	pedelec	7 km (1-3)	many years	leisure rides, exploring	chronic disease: at times suddenly powerless
7	Markus	0:50 h	interv., ITTD	55, m	18, 20	full-time, academic at university	pedelec, racing bike	12 km (5)	0.5 years	question was not asked	sporty
8	Astrid	1:15 h	interv.	40, f	3, 6	part time (27h/week), office	pedelec	10-12 km (5)	2 years	carrying children, shopping	average
9	David	0:40 h	Video, interv.	51, m	20, 23	full-time, marketing	car	12-15 km (4)	0.75 years	social activities after work	average
10	Paul	0:50h	interv., ITTD	55, m	13, 19, 21	full-time, architect	car	10-11 km (3)	0.2 years	errands, window shopping	sporty

Abbreviations: interv. - interview, f/m - female/male, PT - public transport, ITTD - interview to the double (see below)

3.2.3 Techniques Utilized for Data Generation

“Using practice theory is thus not directly tied to certain methods, but the choice of methods is – as always – dependent upon your specific research question. [...] the real issue is what is it that the researchers want to discover, what is it they are interested in, and what follows from that concern?” (Shove, 2017; see also Nicolini (2012) for a similar position).

Task of this thesis is to provide a first account of the elements of pedeleccommuting, in order to shed light on the differences between cycling and riding pedelec and foster a practice based understanding of the particular setting which characterizes the commute. The challenge consists in eliciting all elements, also those hidden in the practical consciousness and to do so in a fashion that makes transparent and reflects, during data generation and interpretation, the construction of the data through language, method, social norms, power relations, the author etc. (see subsection 3.1.2).

Method 1: Interview To account for teleology, practice-careers, meanings, etc., verbal accounts of practitioners should constitute the basis of the data (see subsection 3.1.2). Empirical approaches to such accounts include interviews, group techniques or records, such as practitioners’ letters, diaries, etc. As utility cycling must be expected to seldom be the object of practitioner’s records (notes, videos etc.), the accounts must be produced. Group techniques come with substantial efforts for scheduling and are not considered as they are especially valuable for uncovering taboos or sensible dynamics (Browne, 2016), which are not deemed to central for the questions at hand. Hence, as found in the other practice oriented studies on velomobility (see subsection 3.1.3), interviews are the main method utilized.

The basic types of interviews (narrative, guided and group interviews) vary with regard to openness, style of communication, reflexivity, and distance (Flick, 2017, p. 270; Helfferich, 2011, pp. 35, 45). To enable openness for the perspectives of practitioners and to strengthen the exploratory component of this thesis, the interviews should contain questions that spur narration. But as the primary interest of this thesis is rather precise, the interviews should foremost focus on the practice elements to make sure the data contains in depth information (see Helfferich, 2019, p. 673). Another argument for applying a more structured variant is that many aspects of practice are sedimented in routine and in-depth questioning can lead interviewees towards less salient issues and point to the level of detail which is of interest for this research. In order to obtain the necessary data, focussed interviews (Helfferich, 2019, pp. 678-680) were conducted. Yet a specific stimulus was used: after an open, narration generating question started the interview, the respondents were asked about the three element categories and, with the first question per category, provided with a print-out “element card”, depicting a range of mundane terms concerning the respective category (see Figure 7 and appendix A.3).

Some authors note that respondents should not be asked about the theoretical concepts of interest but only about aspects accessible to their mundane worlds (e. g. Rosenthal, 2015, p.15). But breaking down the abstract topic of “capabilities” into mundane categories appears to suit this requirement. While the terms used on the printout inevitably influence the fields practitioners reflect about, the same applies for the words used in an interview guide. This approach serves to focus respondents on

materials, meanings and competences. Further, it is considered a promising attempt to break routinised ways of thinking and representing.

Two further aspects were considered to enhance the participants' focus on the mundane and the routinised: basic knowledge is an important aspect of social practices, but these mundane understandings do not appear in everyday conversations. In an attempt to also elicit such aspects, participants were instructed before the interviews that everything, no matter how normal, is of interest (as in Kuijer, 2014, p. 66). Lastly, a short interview to the double (see next section), proved helpful during pretesting to turn attention towards the interest of the interview: investigate what exactly is done, with which things and skills. After the introductory question and the element cards, a number of questions were asked to focus on the particularities of the commute as well as other aspects of interest (see appendix A.4 for the interview guide). Advice on the construction of interview guides from Kruse (2015, pp. 209-230) and Helfferich (2019, pp. 676-678) was integrated.

When constructing the interview questions and conducting the interviews, it was attempted to pose questions as open and "neutral" as possible. Also, all respondents were explicitly asked for negative aspects of pedelec-commuting. Although the author tried to not expose his convictions, it must be expected that interviewees grasped his excitement about the pedelec and may have been affected by a social desirability bias.

Method 2: the ITTD The interview to the double (ITTD) originates from organizational psychology and asks interviewees to verbalize the details of a routine practice (such as factory work) so precisely, that a body-double could substitute for them without being uncovered to be somebody else than the interviewee (Nicolini, 2009a). According to Sheridan et al. (2018, 3:20-4:20), this technique helps to uncover the tacit knowledge and fine details of practice enactment from the practitioners' perspective. Price (in Sheridan et al., 2018) advises to guide interviewees to the desired account through an introductory explanation of the method and by asking questions during the ITTD to re-focus on details. The interview to the double prompts interviewees to step out of their normal "interview

mode" and re-visualize their commuting routine. The ITTD is thus employed as an attempt to transfer information from the practical consciousness into the discursive consciousness (see subsection 3.1.2) and thereby elicit aspects which would not be verbalized in "normal" interviews.

All interviews were conducted at a location of the respondents choice, a brief description of the first contact with each interviewee and the situation in which the interview took place can be found before each transcript (see appendix A.7). ITTDs were only



Figure 7: „Element-Card“ for Competences

Source: The author

conducted when sufficient time was available (in six of the nine analysed interviews - see Table 1).

Method 3: Videography In addition to interviews, observational data should be included (see subsection 3.1.2). But how can cycling be observed? Inspired by the “new mobilities paradigm” Spinney (2011) develops the “walk-along” interview into a “ride-along” videography. Instead of talking while riding, he uses a helmet camera and later talks through the footage with the practitioners (ibid., p. 166).

For this thesis, ride along videography was strived for as a supplementary technique. The intention was to merge the ITTD and videography by picking up interviewees at their work site before the interview and taking a video of their commute back home. Then, during the interview, interviewees would be asked to describe the details of their practice while watching the footage. But asking practitioners who had just agreed to take part in an interview that lasts 40 minutes or more whether I could also pick them up before and ride along proved to be difficult. While P1³², who was met in a casual setting via the gatekeeper in Wuppertal, agreed to be accompanied on her commute and discussed the footage during the interview, this remained the only successful attempt to obtain such data.³³ Only P9 was also recorded on camera, but as he was riding not for the commute but for the camera – chatting and pointing out hallmarks of Münster during the ride – this data does not resemble a commute. P4 and P6 were accompanied without video. Notes were taken on all accompanied trips, these can be found with the respective interview in the appendix. As too little material was thus produced for a systematic analysis and a screening of the records did not reveal striking aspects, the data was not scrutinized and only used as supplementary material.

Supplementary Material A digital researcher’s notebook was started prior to- and maintained during the fieldwork, to pin down thoughts and reflections – e. g. on un-/successful steps in research, contact with practitioners or when realizing beforehand unacknowledged normativity. Yet this was not started with the beginning of research but just days before the start of data generation. Some notes about discussions with peers as well as thoughts about the pedelec were also collected in a paper notebook. Both these resources were written informally and contain many privacy relevant aspects, they thus remain with the author only. The notes were not used for the analysis and served only as an aid for data generation and backdrop to the discussion.

Put together, the conduct of focussed interviews, amended by some interviews to the double and supplementary audio/video footage of ride-alongs were gathered and are deemed capable of holding a rich and diverse account of pedelec-commuting. For resource restrictions and practical reasons, only the interviews and ITTDs are systematically analysed. All data was recorded in the German language and is not available in English.

³² Abbreviation: P1 refers to the first respondent, P1 L1 to the first line of the respective interview

³³ With P2, the camera did not work, P3 did not want to be accompanied, P4 was riding too fast to hold the camera in the hand and P5 was interviewed via webcam. Similar reasons apply for P6-P10.

3.2.4 Methods of Data Analysis

The epistemological position assumed in this thesis comprises aspects of both interpretative and structuring approaches (see subsection 3.2.1). The transcripts are thus approached twofold: on the one hand, template analysis, as developed by King (2012; 1998; 2004) is used to obtain a fine-grained coding scheme and display all elements of pedelec-commuting that can be elicited. At the same time, memos are used to develop a situated understanding of the interrelations between coded aspects and develop themes through which key characteristics of pedelec-commuting can be summarized.

The first step after obtaining verbal data consists in a transcription of the interviews. In order to retain insecurities and emotions (e. g. when someone repeats words or laughs), a literal transcription was conducted but, as no semantic analysis was aimed for, the transcripts do not include phonology. The transcription rules are displayed before each transcript (see appendix A.7). For most interviews, only the content containing parts of the audiotapes were transcribed so that the discussion of data privacy etc. do not appear in the transcripts (see transcript with P3 for an exception).

Template analysis The method applied should match the character of this thesis as both explorative but also firmly based in practice theory. Template analysis (King, 2012, 2004) enables such a proceeding as it advises to include both: themes deduced from theory (a priori themes) and themes induced from the data. The method structures the data by filing both kinds of themes in one template, ordered by different levels of abstraction.

The method proceeds as follows: As a first step, a subset of the data is coded inductively. In addition, key themes are deduced from theory. As a second step, the themes from both origins are put together and clustered on different levels of abstraction. Hereafter, the whole dataset is coded using the template. During this process, the template and themes can be altered as necessary. After coding, a final template can be presented in the form of a table or mindmap to enable an overview on the data. The template's depth is not fixed but should rather reflect the depth of data with regard to the respective theme. A priori themes can be placed both below or above induced themes. (King, 2012)

The coding for this thesis started with three interviews (P1, P4, P10), which were coded irrespective of each other in order to allow for different structures in the data to be transferred into coding schemes and thereby decrease path dependency. It was attempted to select interviews with a maximum difference between the interviewees (non-/academic background, commuting distance) as well as "interview style" (flow, deviation from the interview guide) to allow for different structures in the data to be recognized. In order to decrease the mental path-dependency implied with coding a second interview after having developed codes on a first interview, the first and third coding system were developed in English, the second in German.

Due to their central roles in the theoretical approach of this thesis, materials, meanings, competences, time and space were selected to be included in the template as a priori themes deduced from theory.

The proceeding for the creation of the first template slightly deviates from the suggestions of King (2012): while King starts with writing notes in the margins of transcripts and only after re-writing these notes on “post-its” arranges them on a table to arrive at categories, this analysis started clustering at the same time as coding. This was done for a process- and a content related reason: first, this analysis was conducted using a software, so that a simultaneous process of coding and (re-)sorting is much more feasible than when writing in the margins of transcripts. Second, rather than first coding general themes and then later diving deeper into the details, the theory orientation on the Shovian elements affords a direct grouping of details. This is because elements, e. g. the materials “navigation system” and “brakes”, might appear in very different contexts, such as routing and dangerous situations, but both need to be coded as material elements of the pedelec. Otherwise it would not be feasible to finally depict all material elements of pedelec-commuting irrespective of the context in which they play a role. This way of template creation also necessitates constant re-ordering as motor and gear might first be assigned to the materials of a bicycle but later, as sub-themes develop, be filed into “general parts of bicycles” and “parts specific to pedelecs”.

As the first template, integrating the induced codes from all three coded interviews (see appendix A.8.1), seemed to contain some inconsistencies³⁴, the ambivalent part of the template was printed out again, notes concerning re-assignments within the template were written on the printouts (see appendix A.8.2) and transferred to MAXQDA. Then, all nine interviews were coded again, using the restructured coding system (see appendix A.8.3). Further changes and amendments were necessary during the coding of the dataset (see appendix A.8.4).

This coding strategy is in line with template analysis as King (2012) foregrounds an openness towards additional coding after the template construction and the potential utility of changes in the template after its initial creation. Yet the level of detail coded in this thesis means that the template evolved and changed substantially even after the fusion of the three initial templates. As such, it would have been optimal to re-code all interviews after having established a template on the whole material. As the coding itself took a substantial amount of time, this was not feasible. Only the first three interviews, which were coded before the first unified coding template was established were re-coded again.

Hermeneutic codes and thematic memos Such a microscopic coding might inhibit thorough, hermeneutic understanding. The analysis thus employed several strategies developed in the context of grounded theory to “break up” the text and go beyond the surface, such as “waving the red flag”, “asking questions about the data” and “making comparisons” (Corbin and Strauss, 2008, pp. 69-85). The application of these strategies was conducted twofold: on the one hand, memos were written throughout coding to take hold of thoughts concerning the data, to question findings and dig

³⁴ These inconsistencies mostly regarded the separation between space and material elements. This can be traced back to the theoretical foundations of this thesis which takes practices from Shove et al. (2012) and context (in the form of time-space) from Hägerstrand (1970). Yet these are not clearly separable as (especially material) aspects of place and practice blend in almost any practice-as-performance. This is reflected more consistently in Schatzki's (2013) conception of practice-material arrangement bundles and is considered a theoretical shortcoming of Shove et al. (2013)

deeper into evolving concepts.³⁵ On the other hand, several meta-codes were developed to highlight aspects of interviewing in the transcripts (e. g. when asking closed questions).

This twofold proceeding – a detailed and descriptive coding system along with a memo-based reflection of the underlying tones and themes makes for a rich and situated understanding of the data as well as a detailed record of the data which can be used to answer the research questions in theory relevant details. With hindsight it must be added that the creation of memos in MAXQDA was conducted at times but forgotten at others. The MAXQDA project data (which can be obtained from the author) does thus cover a vast part but not the whole thinking between the first notes about the interviews to the findings presented in chapter 4.1. This must be regarded a shortcoming of this thesis and was caused by the author's unfamiliarity with the proceedings of qualitative inquiry.

3.3 Scientific Criteria and Reflection

After light was shed on the process of data interrogation, this section thus reflects on quality criteria applicable for this thesis and provides contextual information on the situation in which research took place and on the researcher in order to afford both researcher and reader a better understanding of the processes and results behind this thesis.

3.3.1 Applicable Criteria for Good Research

The quality of all scientific inquiry is measured against certain criteria (Wintzer, 2016, p. 7). While objectivity, reliability and validity are established criteria for natural sciences and for quantitative-positivist methodologies of social sciences, interpretative social sciences come with different benchmarks (Helfferich, 2011, pp. 154-156). The positivist criteria, following the quantitative logic of measuring, describe numeric thresholds and can often be unambiguously assessed in a standardized way (Kuckartz, 2014, p. 25). They are applied to ensure a correct operationalisation, prevent errors of measurement or randomness, ensure representation and thereby build the ground for generalizations in positivist traditions (Helfferich, 2011, p. 154).

As the socio-cultural background of the researchers always affects which matters are of interest, how data is interpreted, etc., the principal possibility of "objectivity" can be challenged for all kinds of research (Flick, 2012, pp. 23-26). But as qualitative research takes the researcher to be the main "instrument" of data generation, the person of the author becomes a crucial ingredient to the created data (Helfferich, 2011, p. 155). This is most obvious for personal and sensible topics where rapport matters for the information which can be obtained. But this notion is also true for non-sensible topics: a car mechanic for example, interviewed to describe why a particular car broke down, would respond very differently to an interviewer who is a fellow mechanic than to someone they perceive to be technology-averse. Different researchers obtaining the same data would thus even point to routinised, stylized and less adequate accounts (ibid.). With regard to the principle of circulation in hermeneutics (see subsection

³⁵ The memos arising from the initial coding of P1, P4 and P10 were maintained for the final analysis.

3.1.2) it can even be said that the researcher changes during research, so that no second generation of data would yield the same material (ibid.). Reliability is therefore equally inapplicable as objectivity.

Qualitative, constructivist social science strives for situated in depth knowledge and should, rather than aspiring representativeness for the general population or the whole of a phenomenon, explicate which settings, groups, places etc. its findings hold inference for (Wintzer, 2016, p. 9). While some researchers argue for maintaining the general applicability of universal criteria (e. g. Mayring, 2015, pp. 53-54), others drop criteria altogether or re-specify criteria for qualitative research (Kuckartz, 2018, p. 202). Following Wintzer (2016, p. 8) I agree with the latter position and, instead of dropping general criteria altogether, strive for intersubjective plausibility (of data generation and analysis) instead of objectivity and for reflexive subjectivity, a proper sampling strategy, good conduct and full transparency instead of reliability and validity.

Intersubjective plausibility asks researchers to explicate all necessary assumptions and steps so that other scholars can reconstruct and understand how results came about (Wintzer, 2016, p. 8). Reflexive subjectivity instructs researchers to reflect upon their own assumptions and their role in the process of research as it is conducted, from theory via data generation up to the analysis and the final writing (ibid.; e. g. as in Macrorie, 2016, pp. 116-119). Researchers must reflect on their pre-knowledge, implicit expectations, norms or fears (Helfferich, 2011, p. 157). Such explication aims for the researcher to become aware of their predispositions and thus to counter the predispositions' power in stirring the direction of interviews and analysis towards the expectations of the researcher (ibid.). Such is especially true for the study of cycling in which Oosterhuis (2014) finds much unacknowledged normativity (see also subsection 2.2.2).

In order to reflect on myself as an "ingredient" to the research and in order to make this standpoint transparent to the readers, a self reflection on me as a person was conducted, it can be found in appendix A.6.

3.3.2 Additional Information on the Data

The interviews were conducted in a particular time-space and setting. First: summer was just about to arrive in the middle of a pleasant May: in Wuppertal the weather was sunny but cold (around 10 °C - 15 °C) and windy in the week of sampling and interviewing. In Münster it was warm (around 20 °C - 25 °C) and sunny. While phenomena such as rain, ice and snow were discussed at length in the interviews, it is not unlikely that the meanings, materials and competences relevant for cycling at other times of the year are underrepresented in the data and that an emotional subtone of happiness about the arriving summer and being able to be outside comfortably again echoes in the records. Second: the corona-pandemic related restrictions on travelling and social interaction of the spring 2020 had just been lifted, potentially also affecting bodily and mental states of respondents. A hint in this direction is the fact that the sales of bicycles

and equipment rose dramatically in the spring of 2020 as newspapers reported³⁶ and several bicycle stores confirmed to the author. Further information on the interaction between researcher and participant as well as the set-up of the respective interview can be found with the transcripts in appendix A.7.

3.4 Research Ethics

Typical concerns of ethics in qualitative research relate to voluntarism of participation, the prevention of any drawbacks for participants and safeguarding anonymity (Hopf, 2017). As no covered observation was conducted and the focus of attention is not related to sensible topics (e. g. sexuality), the most grave concerns of research ethics are not expected to be touched (see Flick, 2012, pp. 67-68). Still, with respects to ethics and the German law, respondents need to agree to any data collection and the terms of processing. These issues were observed by asking respondents to read and sign a letter of informed consent as advised by Hopf (2017, p. 591). It can be found in appendix A.5. Further, anonymity must be ensured. Doing so is harder to ensure in small, well connected groups because the main danger is identification from within the group (Wintzer, 2016, p. 16). As the group of interest is large and disconnected, only a snowball sampling could potentially cause recognizably. In the case of this study, the gatekeeper is the only “knot” in the net. Yet this would be friends identifying friends exploring a common practice, which is not expected to be of severe concern. Still, pseudonyms are used in the transcripts for names and places in order to impede any inference and all personal data is deleted after the analysis, thus only pseudonymised transcripts and the form of agreement to participation remain with the author.

³⁶ E. g. Zeit Online: “Der Boom für Fahrradbranche hält an”. URL: https://zeit.de/mobilitaet/2020-07/radverkehr-fahrrad-verkauf-boom-autos-einbruch-corona-krise?utm_referrer=https%3A%2F%2Fwww.ecosia.org%2F, accessed 29.10.2020.

4 Analysis

This chapter contains two parts. In the first part, the results of the coding are outlined and then scrutinized with regard to the research questions. The second part discusses these results in the light of the literature, reflects on the interplay of the findings with current societal changes and identifies starting points for pedelec-policies from a practice perspective.

4.1 “Findings”

This section presents the data with regard to the research questions. To this end, it first depicts the coding template and thereby enables both an overview across the range of aspects scrutinized as well as a depiction of the elements of pedelec-commuting. Subsection two and three then present the major themes which characterize pedelec-commuting and differentiate it from cycling as well as from other mobility practices. Subsection four investigates how these characteristics interact with the particularities of the commute. Finally, the last subsection examines an additional theme, which is not addressed in the research questions but evolved throughout the investigation and appears to be of substantial importance for understanding which commutes are (not) conducted by the pedelec.

4.1.1 Coding Template

This subsection presents the final coding template in three large figures. The depictions are reduced to four levels as these already require a lot of space and further codes would complicate the picture rather than providing additional information. The depiction of practice-elements contains a part which displays the full depth that has been coded.³⁷ These figures are displayed in high resolution, so PDF-readers can zoom in and explore the different levels of abstraction, paper-readers can find a larger version in appendix A.8.5.

While the analysis does not revolve around numbers, a quantification of coding categories is provided first in order to afford the reader an overview of the produced material. Overall, 2804 segments (codings³⁸) were marked in the transcripts. Roughly two-thirds of these codings deal directly with the subject of interest. Among these are about 950 codings on the elements of riding pedelec, 300 on other aspects of the practice, 450 on aspects of time and space, 150 on characteristics of interviewees and 100 related to other mobility practices. The remaining codings deal with meta-aspects – some 450 codings track content produced by the interviewer, 250 raise “red flags”, 100 contain general comments and 50 mark potential quotes.

Figure 8 presents the first part of the coding template, focussing on “meta-codes”. Among these is the “red flags”-section, which was coded when respondents used words or phrases which point to noteworthy aspects, such as generalizations (e.g. the word “always”) or indications that aspects are downplayed (e.g. “[...] when your [lock] slips down too low, the dogs pee on it. That’s another thing I don’t like so much. (I1, L212-

³⁷ The complete MAXQDA-dataset can be obtained from the author.

³⁸ For this thesis, “code” refers to the label given to one or several parts of the text. The coded segments are called “codings”.

213) – emphasis and translation from German by the author, for original see endnote: A). This coding served to make the author aware of nuances in the material and to focus on the latent content of the data (see Corbin and Strauss, 2008, p. 69–85). Furthermore, aspect of interview style, such as providing suggestions in the interview questions (e.g. “*What do while you ride your pedelec? Stuff like, I don’t know, singing, thinking [...]*”^B (I4, L576-577)) were coded in this section. These codes served to become aware of the co-creation of the data by interviewer and interviewee. Lastly, Figure 8 also contains some more general codes, such as marking parts of transcripts which should not be part of the analysis or sequences which might become quotes for this thesis. The colours of codes do not have a substantial meaning in Figure 8 and serve to differentiate between the groups of codes more easily.

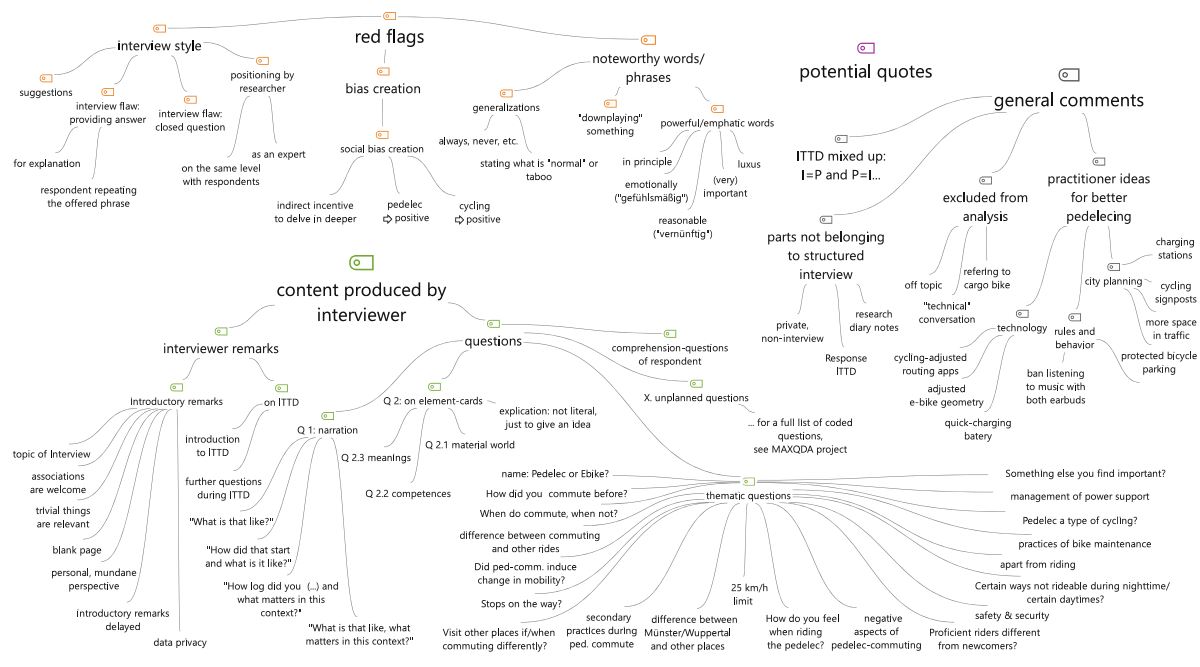


Figure 8: Meta-Codes

Source: The author

Figure 9 turns the focus towards pedelec-commuting. Its largest branch presents the Shovian elements of pedelec-commuting. The second branch, “general aspects”, contains further information on the practice. This entails sub-practices, practice-careers of practitioners (inductively coded as “process of adaption”) and codes which capture the differentiation between cycling and riding pedelec. In all figures of this section, sub-codes at times refer to different levels of abstraction, such as “expensive” and “fear”, both sub-codes to “negative aspects” in the meanings of riding pedelec. This was accepted in order to grasp as many different aspects as possible without blowing the coding scheme completely out of proportion. After the coding was finished, each code was assigned to the research question it is *most* related to. The colours used in the two subsequently presented figures represent this assignment: orange codes are foremost related to the difference between riding pedelec and bicycle, dark blue codes denominate aspects

which are characteristic for velomobility in general, green codes are related to commuting/the workplace and light blue is associated with other aspects, such as particularities of individuals, time-space etc. Purple codes finally contain sub-codes related to several of these aspects.

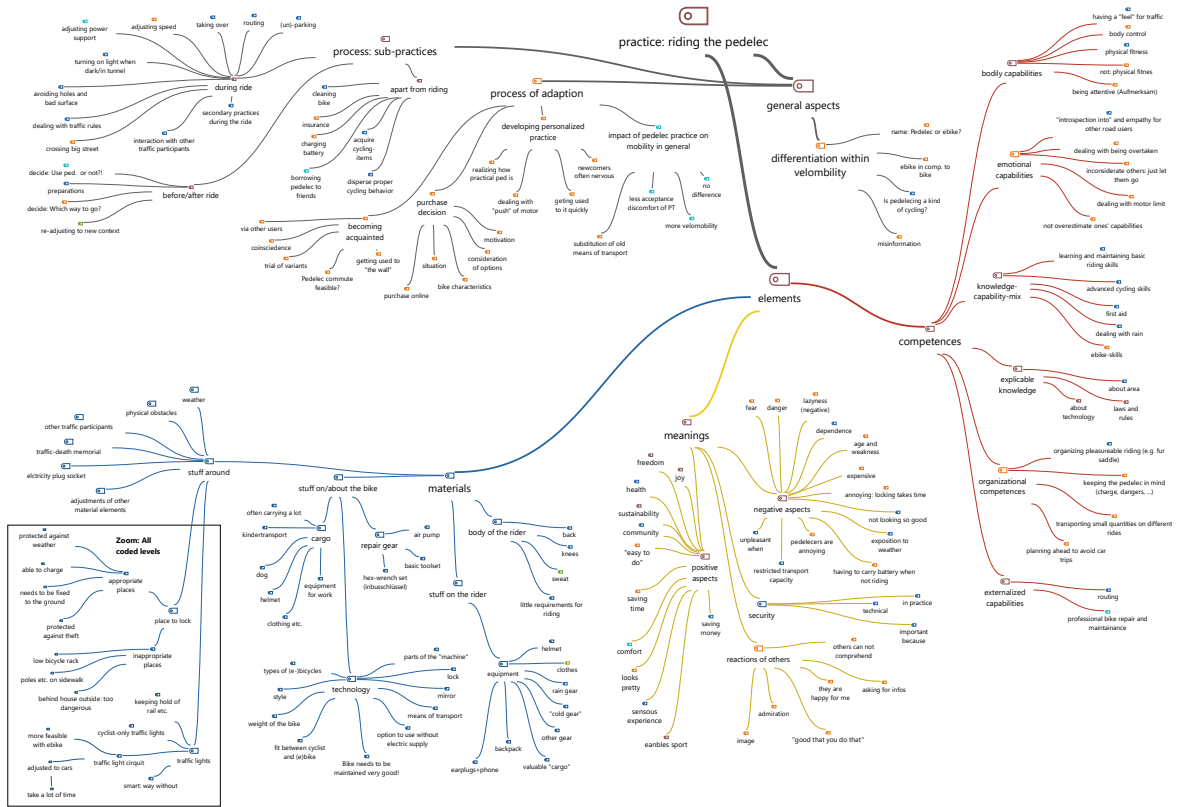


Figure 9: Elements of Pedelec-Commuting

Source: The author

But of course, this assignment of codes to research questions is not straight forward. The “danger of riding”, for example, is typical for velomobility in general, yet different for riding pedelecs (because of higher speeds) and even has specific character in the commute. In such cases, the code is dyed in the colour of the research question it is most related to, but discussed wherever relevant.

Apart from meta-codes and codes regarding the pedelec-practice, three more themes were elicited from the data. Figure 10 on the one hand depicts aspects of time and space, themes deduced from theory. In addition, it contains inductively coded remarks about other mobility practices and about the interviewees.

The process of coding was perceived as very demanding by the author, especially as segments of transcripts often yield content on either different levels (such as a meta-code on specific words and a content-related code on e.g. rush hour) or touch on several categories of interest (such as the rush hour and the workplace norm of being in time). Many segments could be coded in one category or another, or even both. “Becoming experienced“, for example, is subsumed under the

“rhythm of the life”-theme in the time-space category, because the notion of the first codings was more related to life experience. Yet other codings with a more practice-related notion could also be subsumed under the “process of adoption”-theme in the general aspects of the pedelec-practice. Such fine differences made the coding ambiguous.

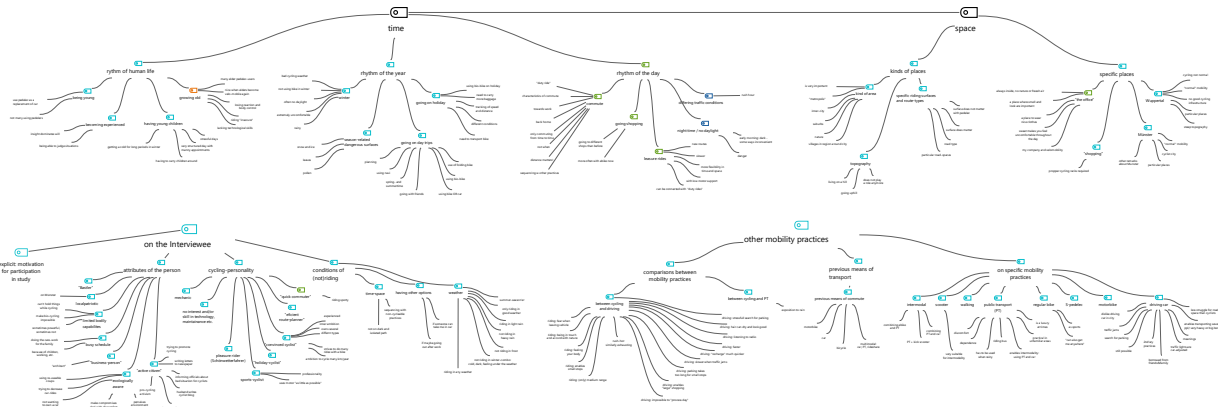


Figure 10: Codes on Time-Space, Interviewees and Other Mobility Practices

Source: The author

This section provided a rough overview on the codes created from the data. The next three subsections present the data with regard to the research questions. To this end, the subsections 4.1.2 and 4.1.3 shed light on the characteristics of riding pedelec and subsection 4.1.4 goes into the details of commuting.

4.1.2 A Substantially Different Practice

Throughout the interviews, respondents directly and indirectly pointed out aspects which differentiate riding a pedelec from riding a bicycle. This section sheds light on the ripple of changes which the addition of motor and battery causes in the materials, meanings as well as competences of cycling. To this end, key themes that differentiate riding a pedelec from riding a bicycle are presented first. A graphical representation of these changes closes this subsection.

Speeding (up) comfortable: One of the primary characteristics of riding pedelec consists in accelerating quickly, without much effort, and then maintaining a high speed without becoming exhausted. This trait surfaces in several different contexts: stops, such as at traffic lights, remain inconvenient but, especially when carrying children or heavy loads, speeding up effortlessly is perceived as very relieving (e. g. I8, L243-253). Also, after speeding up, travelling at a speed of 25 km/h, without effort, is associated with a significantly different riding experience as Paul (55 years old, architect)³⁹ notes:

³⁹ Pseudonyms and some details on respondents accompany quotes to afford readers an easy track of quoted respondents (as suggested by Barbour, 2014, p. 502).

“[...] I really enjoy being swift on my bike without a lot of effort [...] I have a very different feeling compared to riding my mountainbike, on which I am in fact also fast but with much more effort. The feeling is, well, it is exhilarating to be riding the pedelec swiftly.”^c (I10, L222-231).

This speed and ease of riding evokes a joy which was reported by many respondents and is especially vivid when mounting a pedelec for the first time:

“[...] because it is a lot of fun to jet around like that, a friend of mine [...] tried it and she was really like a little kid, full of enthusiasm, screaming ‘ah, this is so wicked!’ (both laugh). Well, that is the feeling when trying it for the first time, [...], this enormous speed with minimal power input.”^d (I5, L79-86).

All but one practitioner interviewed explicitly used the word “fun” (Spaß) to describe their riding experience,⁴⁰ an emotion which for some is related to feeling the air stream past (e. g. I1, L682-684) or to feeling the interaction of motor and body (e. g. I7, L100-101, 366-376) and was reported to not decrease over the years. But the ease of riding also affects the time after rides: practitioners do not sweat much or have to recover, which is especially important when cycling not for sports but in everyday life (e. g. I1, L446-450; I3, L657-663; I7 L176; I8, L83; I9, L128). The pedelec thus shifts the associations with cycling from struggle towards comfort and joy, especially for long trips and when facing headwind or hills.

Because of the support, riding becomes less challenging not only physically, but also technically. Several competences, such as the use of gears (setting an appropriate gear while driving as well as downshifting when stopping) become less crucial, as a lack of skills can be compensated for by the engine. Besides, pedelecs typically feature advanced components, such as disk breaks or gear hubs with 8 gears rather than a circuit with 27 gears, which require less competences.

Yet practitioners who are used to sporty cycling face an “invisible wall” when the motor suddenly switches off at 25 km/h: they feel like they could and would go faster on a regular bike, but going from almost no effort to heavy exercise only to be a little faster does not feel right (e. g. I8, L998-1010). In some elder models, the motor does not disattach and cause additional friction. It can thus be considered an emotional capability of riding pedelec for sporty riders to not slowly increase the effort until reaching the desired speed, but having to overcome this “barrier” at 25 km/h. Another emotional aspect is related to being overtaken. While some cyclists find it irritating to be effortlessly overtaken by pedelec-users (especially when these are seniors; e. g. I9, L69-79), some pedelec riders feel bad when fast cyclists overtake them (e. g. I8, L1393-1405). Hence, a relevant competence in this context is to re-focus on one’s own conduct rather than constantly comparing among peers (ibid.).

Reaching far and going almost anywhere: in Wuppertal, which features many hills and slopes, respondents either note that they do not have to worry about being

⁴⁰ See I1, L1565; I4, L119; I5, L76; I6, L91; I7, L76; I8, L1418; I10, L454. Missing is I2 which was not coded and I3 in which the practitioner says that she really enjoys riding (“Ich finds super” - I3, L147).

able to reach a destination by cycle anymore (e. g. I5, L339-345) or that the support enables mundane (non-sport) velomobility in the first place (e. g. I1, L965-967):⁴¹

“The environment here in Wuppertal is just that way, making it really practical when you don’t have to waste a thought on your destination because you know you will actually make it with the help of your motor, that you can estimate the time of arrival and do not have to push the bike in-between. So [now] I can handle any mountain here in Wuppertal, there is no restriction.”^E (I3, L235-241)

Yet this change is not restricted to hilly places: by extending the range which can be overcome and decreasing the time efforts implied with cycling long distances, the pedelec also makes a substantial difference in flat areas like Münster and renders new routes (as well as timeslots) viable for velomobility. In addition, the importance of a smooth riding surface decreases substantially and more surfaces, like forest paths or gravel, can be ridden fast and comfortably, which adds further flexibility to routing (e. g. I8, L378-397).

This extension of cycle-ability is especially pronounced for practitioners who face bodily restraints: Alina (52, early adopter) suffers from a degenerative disease which can substantially impact her bodily strength at any moment throughout the day. Cycling used to be impossible for her (I6, L912-918), but with a pedelec she does not have to worry anymore because she can adjust the machine to her needs (I6 L7-25). To Alina, like to all others whose range of cycle-able trips has been substantially increased (e. g. through overcoming topography), the pedelec means freedom:

“Freedom, uhm, really being capable to just start riding without having to consider the disease or headwind or anything, that is a great feeling of freedom [...]”^F (I6, L446-449).

An important competence, especially when going far, is not running out of battery. Such episodes are described as very uncomfortable as Astrid (40, frequently carrying two children) notes:

“In such instances I get really fear- fearful, when I, uhm (laughs) am somehow still at the harbour and I realize that I have only one line left [a small share of the battery, the author] and I know that I have to go another- another three kilometers.”^G (I8, L937-940).

To prevent such situations, it is critical to keep track of the battery status between rides and charge in advance. It appears to be a challenge for some to keep charging in mind which is thus a competence of pedelec-commuting. If the battery has not been charged appropriately, which happens repeatedly to many practitioners, it does often not suffice to blindly rely on the range indicated by the display of the pedelec. It is thus necessary to develop a good judgement of how long the battery will actually last, taking aspects such as cargo, temperature or headwind into account. When relying on the battery and noticing a shortage ahead, management of the remaining power becomes a crucial competence: the motor should be turned low or off when feasible and used only for straining parts, such as rough surfaces or when going uphill.

⁴¹ An exception is P5, who used the 200 m height on his commute to exercise for competitive cycling.

Increased financial and health risks: The increased speed and a higher value of the vehicle also come along with a number of risks which are not novel to velomobility, but substantially amplified for pedelecs. Higher speeds imply less time for reaction to unexpected situations and practitioners accordingly state that they have to be more cautious (e. g. I7, L370-374). Many practitioners thus highlight the need for high quality bike components, especially breaks (preferably disk breaks), which will not defect in the decisive moment (e. g. I4, L699-700). Thus, some who do not use a helmet when using a bio-bike do wear a helmet when riding pedelec to mitigate the increased risk (e. g. I7, L135-143). Concerning infrastructure, increased speeds mean that wider riding surfaces are required for safe riding (e. g. I7, L236-243).

Apart from dangers to the health of practitioners, the severity of financial risks was remarked by most respondents. One major aspect is theft. Apart from the expensive bike, which can be stolen as a whole, the battery (which itself often costs between 500 € and 1 000 €) can be kicked off. This phenomenon seems to be particularly present in Münster, where pedelecs are more common and theft appears to be much more of a problem in general.⁴² No matter where, a high-quality lock, well anchored bike racks as well as an insurance are much more important for most pedelecs than for most bicycles. But also apart from theft, special caution is necessary: the pedelec must for example not fall over, because the expensive electronic parts could be damaged (e. g. I8, L1018-1030). In addition, routine maintenance must be conducted by qualified personnel so that further time effort and costs arise.

Beyond riding – image and knowledge: The practice also encompasses many aspects that come into play off the road. For example, the battery should not be stored too cold, as it will otherwise lose capacity. While a general notion of this knowledge (competence) seems to be spread widely among practitioners, their accounts of appropriate conduct vary substantially: some say the battery should be stored at room temperature (I4, L747), some speak about “not below 6°C” (I9, L231) or “not in frost” (I3, L850; I8, L1561). Another aspect related to knowledge are laws and rules. Practitioners seem not to be firm about what they are (not) allowed to do, e. g. whether listening on earplugs while riding is legal (I9, L320-323), and which laws apply to e-bikes as distinct from pedelecs (e. g. I5, L406-422).

With regard to the (self-) image of pedelec riders, a range of different perspectives was encountered. For most, such as for David (51, münsteranian local patriot), the pedelec is a fancy, modern gadget:

“Well, in the past one thought that’s so grandpa-style- but today, it is hip. Today there are young people with these mega-mountainbikes, [...] I think it is a hip device. And it seems to me that there are more and more young people [using pedelecs].”^H (I9, L287).

Several practitioners describe liking the look of their pedelec (e. g. I10, L121-139) and practitioners say that the association between pedelecs and fragility or weakness which existed just a few years ago has faded (e. g. I8 1670-1673). The reactions coming from co-workers and peers (which were explicitly asked for) are described to be either

⁴² See I6, L1101-1162; I8, L1136-1144; I9, L31; I10, L736-737.

positive or driven by curiosity about this new phenomenon. Anabell (54, reluctant user) is the only respondent who is ashamed to ride a pedelec (I3, L229, 641) and associates the pedelec with age and weakness (I3, L142). To her, who first came in contact with the pedelec through senior friends, it is important to note that she uses her bio-bike for leisure rides: “for holiday rides, [...], I do use my regular bicycle, but as I like to put it, the pedelec is my car for the city.”¹ (I3, L157-160). To regain a congruent self-image, Anabell thus shifts the point of reference from cycling to driving – a change which transforms the meaning of mundane pedelec use from being weak to being active.

Two elements triggering a ripple of changes: This subsection pointed to a number of themes, which together make up the difference between riding bio-bike and pedelec. The changes are manifold but all have a common root: it is the addition of motor and battery to the bicycle. Figure 11 depicts the ripple of changes brought about by motor and battery, which has immediate effects on some aspects of the practice that in turn inflict further change.

A substantial difference from the other figures in this section is that Figure 11 does not present clear-cut elements, but rather themes which denominate changes in the practice along with a symbol that represents the types of elements concerned. In Figure 11, like in the theory section of this thesis (see Figure 2), blue represents materials, yellow meanings and red stands for competences. Yet the depicted changes are often related to several categories: “riding fast without exhaustion” denominates a change in physical speed as well as in the human power required, but also refers to a change in the

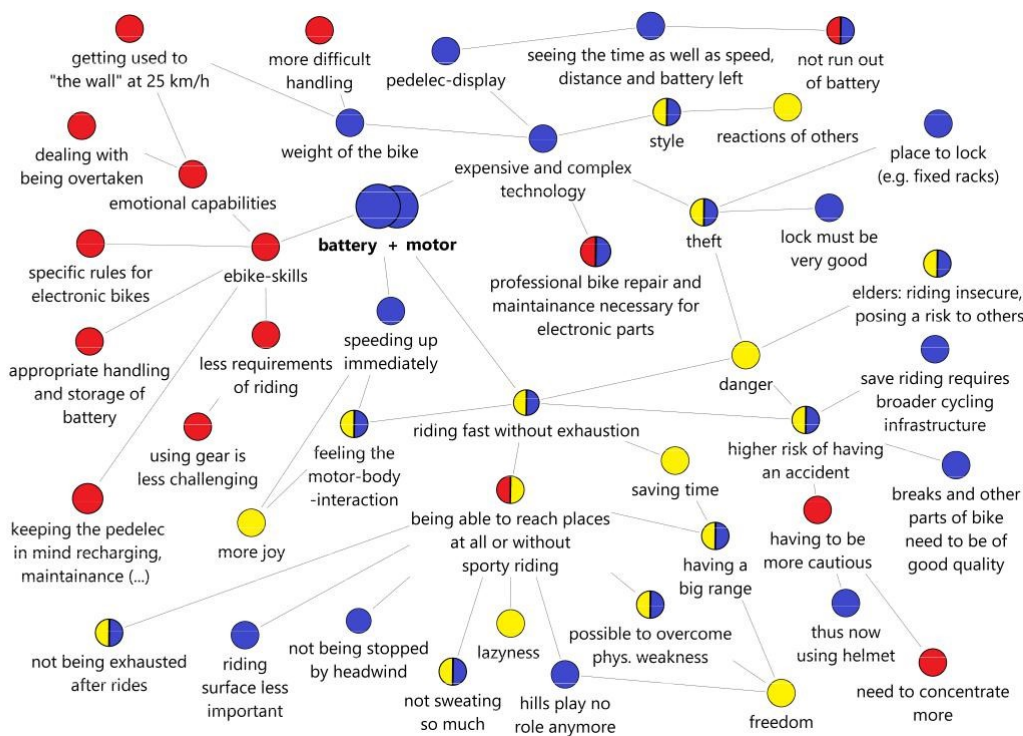


Figure 11: Themes Which are Central to the Difference Between Riding Pedelec and Bicycle

Source: The author

meaning practitioners associate with riding pedelec. In such cases, the symbol contains several colours.⁴³ Figure 11 must be considered provisional for two reasons: first, it is focussed on change in practice elements and leaves aside the character of connections, merely representing these as lines between the themes. Second, its construction is not based on a rigorous methodology, but rather aims to give a summary on the themes developed through analysis. Many more themes as well as links exist, yet depicting all in one graph would lead to confusion rather than understanding (e. g. Higginson et al., 2015, p. 964). Despite these limitations, Figure 11 provides a novel approach at depicting what Shove et al. (2012) are most concerned about: how change in everyday social practices can be conceptualized. This representation thus makes a contribution to the hitherto unsatisfactory attempts at depicting practices in their elements (see subsection 2.1.3).

4.1.3 Yet Still Velomobility

Motor and battery hence alter many elements and characteristics of cycling. The section at hand thus first deals with the question whether riding pedelec is actually still a kind of cycling or whether it in fact is something different. Finding it to be a variant of cycling, the main part of this subsection then presents three themes which are central to practices of velomobility and differentiate these from other kinds of mobility practices.

As discussed in subsection 2.2.1, the relevant “authority” for delineating one practice from another are the practitioners themselves. Thus, the participants were asked “*Would you say that riding a pedelec is a type of cycling, or is it something different?*”

^J. The results are straight forward: eight out of nine interviewees said that riding pedelec is a kind of cycling, with three adding that it is cycling with a motor (I4, I6, I8) ^K. Only one interviewee said that it is rather a mixture of cycling and riding a motor scooter (see I5, L976-978). Concluding that riding pedelec is thus a kind of cycling, the question turns towards an appropriate terminology for this variant. In official terms, the machines ridden by all participants are pedelecs (see subsection 2.2). Yet responding to a direct question on the matter ^L, only one person in the sample drawn calls her vehicle a pedelec. Anabell (54, reluctant user) employs this term because to her, riding “e-bike” has a connotation of laziness, of being transported, and she only uses the motor not in flat terrain but only when going up the steep hills of Wuppertal (I3, L112-117). All other respondents said that they call their vehicle e-bike and that this is the common term among practitioners and their peers (e. g. I1, L87). Astrid (40, frequently carrying two children) explicates that the term e-bike is very intelligible (I8, L185-190), known by everyone and that the term pedelec sounds awkward to her (I8, L208-210).

Those who are capable of cycling can start riding immediately: So, why do practitioners almost unanimously agree that riding pedelec is a variant of cycling albeit all the differences between riding bicycle and pedelec which were highlighted in the

⁴³ At times, the distinction whether one or several categories of elements are implied is hard to make. The pedelec-skill “not run out of battery”, for example, is foremost a competence specific to riding pedelec, but the importance of that skill is substantially moderated by the materiality of the battery, whose capacity is displayed increasingly less accurate as the battery ages. In figure Figure 9 on the elements of pedelec-commuting these elements would thus appear twice.

previous subsection? One important component is that both these variants of velomobility require a shared set of very specific bodily skills (e. g. keeping balance or using gear and breaks appropriately), the peculiarities of which differ from those of riding other two-wheeled vehicles like scooters or motorbikes. Yet some respondents, especially those having trouble with keeping balance and those who had not been riding a bicycle regularly before switching to the pedelec, remark that the weight of the pedelec makes handling the vehicle more difficult and that it takes some practice to get used to the interaction between body and machine. Thus, depending on a person's skills in velomobility and their general bodily condition, the difficulty assigned to riding pedelec may vary from "[anyone] *who is able to ride a bicycle can also ride a pedelec I think.*"^M (I10, L192), as Paul (55, architect) reports, to Elisa's (26, student) notion that "[...] *well, I feel like you have to re-learn the intuition for cycling once again*"^N (I5, L377-379). As the pedelec enables higher speeds, advanced cycling skills, such as "anticipatory riding" and "judgement on situations" as well as "judgement of one's own capabilities", become more important. These are required for swift but save journeys with both bicycles and pedelecs and depend mainly on experience as Markus (55, passionate cyclist) explicates:

"[...] it is important to ride with foresight, to adjust one's speed to the traffic of cause, [and] not to overestimate yourself. So I think that also is an important- an important aspect to learn, to adjust the behavior to the traffic situation, something [...] which I learned in those years, that it make sense to do."^O (I7, L255-264).

Riding pedelec is thus closely tied to the basic as well as advanced capabilities of cycling and therefore clearly perceived to be a variety of velomobility as distinct from riding other two-wheeled vehicles. Yet much larger differences exist between velomobility and the main other practices utilized for the commute: driving cars and using public transport. These differences are therefore the subject of the remainder of this subsection.

Still no cover around: Just like bicyclists, pedelec users face their surroundings without a metal-glass barrier and thus experience their trips in a substantially different way than motorists. This comes with both dis- and advantages. On the one hand, velomobilists cannot rely on a buffer between themselves and traffic which has consequences for the awareness necessary during rides, especially in urban traffic. Thorsten (41, cycling enthusiast) says:

"[...] you always need to take the stupidity of others into account (laughs). [...] because like, a door suddenly opens because some guy wants to get out [of the car] or, ah, I need to turn here and he just pulls over, stufflike that. Quick and agile, ears and eyes everywhere, thats what you have to be."^P (P4, L291-297).

While danger is imminent at all times and thus associated with cycling in general, it is especially imminent when sharing the riding surface with motorists or in time-spaces that entail darkness, rain or frost. Apart from bodily danger, being in the midst of- or next to motorised vehicles also feels unpleasant as Clara (59, caregiver) explicates:

"[...] if you for example have to go along the B7 [in the valley of Wuppertal], [...], between all these machines, even when cycling lanes exist, it stinks so much, well, I find that very unpleasant."^Q (I1, L893-900).

But this character of cycling as a practice in which practitioners are outside, and thus really feel their surroundings, is on the other hand also associated with powerful positive meanings. As averse Clara (59, caregiver) is to riding between cars, as enthusiastic she is about riding through pleasant surroundings and

“[...] this connection with the world around which cycling entails, also with the air, and then you go along the [cycling highway] and the sun shines and you see some plants becoming successively greener, especially in summer. [...] that’s always very very lovely.”^R (I1, L460-467).

This immediate contact with the world around translates into routing preferences which differ from those of driving or using PT. velomobilists focus less on finding the quickest route but strive for paths which suit the practitioners’ tradeoffs between safety, perception of riding environment and trip length. The perception of rides and choice of routes is furthermore heavily influenced by the weather conditions – one of the major aspects which sets cycling apart from other common commuting practices. As this topic comes with a number of particularities for commuting, the topics of rain and frost are discussed at length not in the next paragraph but in the subsequent subchapter which focusses on the characteristics of the commute.

Feasible for some, but not all mobility demands: Another major difference to other mobility practices, especially in comparison to private cars, are certain restrictions of velomobility. While the car suits a wide range of applications, the range and transport capacity of cycles are more limited. Although motor and battery increase the range of routes that can be overcome by velomobility with regard to distance and topography, the time-space which can be navigated using a pedelec on a daily basis remains limited. A conscious switch from car to pedelec can thus also affect the location at which other routine practices, like shopping or getting a haircut, are conducted (e. g. I1, L872-884). Apart from locations, this can also alter the conduct of these practices: some practitioners split their shopping into several trips in order to enable transport by pedelec. Others alternate practices and use the pedelec for some part/instance of their commute(s) and the car for others (often when shopping for drinks). Cargo-bikes or bike-trailers are an option to overcome the transport restrictions. While these facilitate loading heavy objects, motor and battery enable all kinds of riders to move the load. Such configurations then suffice even for quite exceptional demands as Markus (55, passionate cyclist), the one person in the sample who uses a cargo-pedelec, states:

“[I] can also take scrap metal back home, recently I transported 130 kilogram, steel and aluminium- and at times also groceries for a whole week. All that. Now, girlfriend being in advanced pregnancy, she at times also takes a seat, when we go to the birth center and stufflike that (laughs).”^S (I4, L49-57).

Thus, when motor and cargo capacity are combined, either in a cargo-pedelec or by adding a trailer, the pedelec’s functionality comes much closer to the “one-size fits all”-state of cars. Yet, transporting several adults is still unfeasible and restrictions in range and exposition to weather still delineate riding pedelec as a variant of velomobility as distinct from automobility and (in a different way) from public transport.

Albeit these limitations, many respondents (I3, I4, I5, I6) associate velomobility (especially when using a pedelec) with freedom. Interestingly, these practitioners vary so

much with regard to their individual characteristics that they span the whole sample's spread of ages, duration of pedelec ownership, car ownership status, previous means of transport, perception of rain, bodily power, commuting distance and commuting days per week.

Figure 12 summarizes core elements and connections mentioned in this chapter which differentiate velomobility from other commuting practices. It does not intend to represent all elements typical for velomobility or implicate that these elements are present for all practitioners and performances. It is rather another attempt to depict practices in their elements (see subsection 2.1.3), this time pointing at key aspects which the surveyed sample named to be typical for cycling-as-entity and set it apart from other mobility practices.

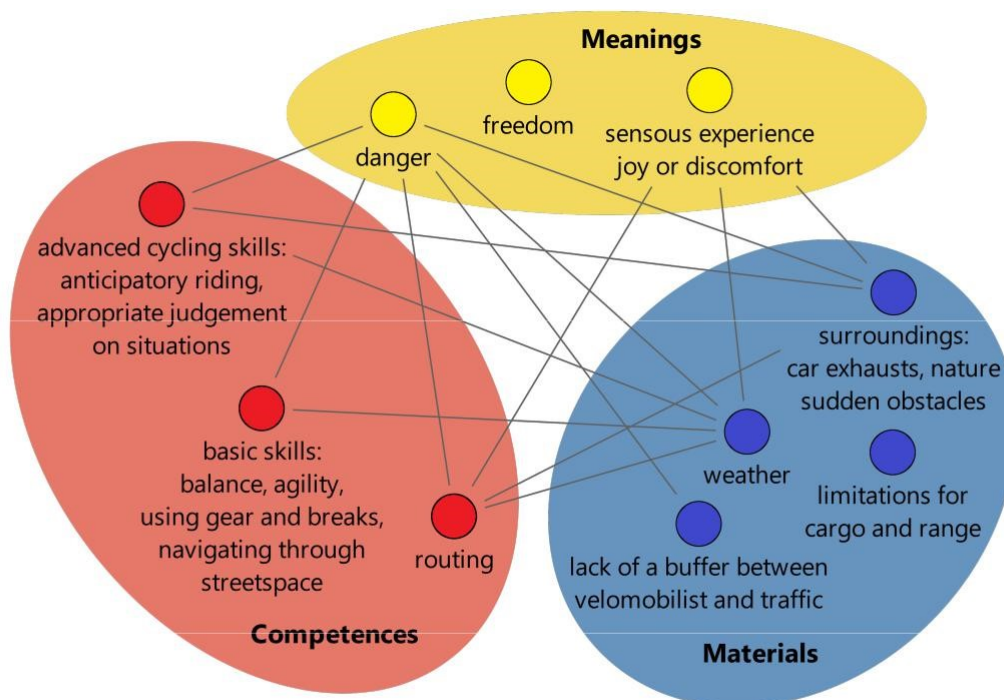


Figure 12: Themes Which are Central to Velomobility

Source: The author

4.1.4 The Commute: Riding and the Workplace

The two previous subsections find riding pedelec to be a variant of velomobility but to also feature characteristic particularities. The subsection at hand aims to explore the properties of commuting and to investigate how these blend with the elements of riding pedelec to establish the amalgam that makes up pedelec-commuting. To this end, the subsection first sheds light on the time-space of commuting, then pictures the workplace as a place with a particular character and finally sketches the more variable part of the commute: returning. The worksites of the sampled practitioners include facilities of education and care as well as bureaus. Commutes to worksites such as metal workshops or trucker cabins may come with substantially different characteristics than those described below.

Before going into the content, it seems valuable to first situate the data obtained by reviewing which means of transport the practitioners used before switching to the

pedelec. This enables an idea of the perspectives on commuting represented by the sample. Seven of nine participants listed the car as one of their previous means of commute, four named the bicycle. Subway and motorcycle were both named by one respondent. One person was particularly intermodal, she used public transport (buses and trains), shared rides, car-sharing as well as a bicycle. Five respondents reported to currently commute by pedelec on a daily basis, four to use the pedelec for 2-4 commutes a week. The sample studied hence entails both participants familiar with cycling to work and others who transitioned to cycling only when taking up the pedelec. It is thus well suited to capture different perspectives and experiences on the journey to work.

An unavoidable doing, fixed in time and space: A very fundamental characteristic of commuting is its regularity. In most cases, also for most in the sample, commuting means going to a fixed place at a fixed time. No matter how one feels, no matter whether rain is pouring or the sun is shining, it must be done. No person in the sample reported to shift their commute with regard to the circumstances. Further, it is a very particular time-space. Often on busy tracks during a crowded rush-hour; often early, dark and cold.

This has several implications for the fit of velomobility for commuting. Pedelec-commuters cannot enter the cozyness of well protected and tempered vehicle interiors which level up any inconveniences. They thus feel the weather and often need several items for protection. The basic protection consists in a rain jacket, an item which all practitioners take along when clouds are on the sky. Those who are willing to face more than a few drops gear up with some or all material elements available to protect cyclists from getting wet: a rain cover for the helmet, one for the backpack, one for the shoes and finally rain trousers. In the cold season, gloves, hats, jumpers and coats complete the cover. Some perceive this gear as a burden and the length of many commutes (9 km on average in the sample) means that strong rain or cold air may penetrate the cover after a while. Astrid (40, frequently carrying two children) remarks:

“[...] I find it really annoying that you have to wear all this rain gear, because that is actually also a time factor, and you do in fact also, in a way, get a bit wett, even if you- if I use quite good rain gear [...]”^T (I8, L454-459).

A further problem for velomobility on wet days is that conventional “shoe breaks” become slippery in rain. The inevitability of facing bad weather during some commutes thus also reinforces the importance of disk-breaks, which subsection 4.1.2 noted to be often built into pedelecs because of the higher riding speed and component quality. Hence, this technological (material) aspect of many pedelecs suits their use for time-fixed commuting.

In high-cycling contexts, such as Münster or the local cycling highway of Wuppertal, good weather can also imply problems: the number of cyclists slows down the speed of riding, especially on narrow cycling lanes along entry roads towards the city centre, where cyclists then have little space to overtake each other and dangerous situations arise (e. g. I8, L606-623). Further, the chances of finding a safe space for locking the pedelec diminish (e. g. I10, L382-385). Concerning both these aspects, the pedelec is disadvantageous: it demands higher safety requirements for parking and increases the spread of speeds on cycling tracks. But while pedelec users may thus not be able to

speed up on a busy commute to meet their schedule when being late in rush hour, they still evade getting stuck in the motorists' commuter traffic jams, being part of which was described as severely unnerving by several respondents (e. g. I10, L406-410).

Several practitioners say that they happily outsource the competences of bicycle repair and maintenance. But as bicycle-workshops often take several days to do even small but urgent fixes, like replacing flat tires, competences with regard to repairing the bike become more central when bikes are used not only for leisure or as one of- but as the main mobility practice for daily duty rides.

Because of the commute's repetitive character, commuters know their daily route well – they know the dangerous spots and often also whether they can catch the next traffic lights ahead before they turn red. As traffic lights are usually adapted to the speeds of cars, they tend to switch just before cyclists arrive. But several respondents in the sample noted that the speed of the pedelec makes a decisive difference here, which shortens rides and helps maintaining flow. Markus (55, passionate cyclist) states:

“What I've experienced now, thanks to the e-bike, is that I can pass many traffic lights one after the other because I am much faster. That means I can flow with the cars, well, not completely, but I catch several traffic lights in a row that I did not catch on my touring bicycle and therefore I am simply faster.”^U (I7, L220-227).

In this case, the repetitive character of commuting and the speed of the pedelec interact and pedelec-commuters can overcome a barrier which the car-adjusted street space usually poses to cyclists.

A refreshing, sensuous experience: In contrast to motoring, which is associated with both stress and laziness in the interviews, pedelec-commuters perceive their rides to feel refreshing (e. g. I6, L831-834), to be an opportunity to process the day, to think things through and switch between different atmospheres, aspects which were not present during the interviewees car-commutes (e. g. P7, L649-655).⁴⁴ These positive associations with pedelec-commuting are related to the sensuous experience of getting in touch with the surroundings, at best getting in touch with nature, which is particular for cycling (apart from walking) and especially vivid for those not just moving along roads but going through parks or outside of urban areas. David (51, münsteranian local patriot) draws out this aspect:

“Well, I think- that is the decisive advantage- whether pedelec or bicycle, there is no difference, when you go to work by cycle- I used to set off at ten to six, [...], the birds sing and I ride across the field, along the rails, you are in the midst of nature, you see some deer, or a pheasant, and then you go into the city, behind the rail station up to the [local cycling highway], there I have this green-effect, then I go through [a beautiful park], and then I arrive at work. So, first, you are awake, [...], and you perceive everything completely different as when sluggishly sitting in a car and driving to work. You are- well, how to say, you are on working temperature.”^V (I9, L303-319).

But early morning is a time at which not everyone is keen to take on physical exertion. And so the comparative ease of riding pedelec (instead of bicycle) can make a decisive

⁴⁴ Such a finding might well be induced by sampling pedelec-practitioners, as the perception of (un)easing car commutes may well be highly related to the choice of other commuting practices (see subsection 4.4.2).

difference no matter the age or bodily capabilities as Elisa (26, student), the youngest practitioner in the sample, notes:

“So if I get up particularly early, when I feel a bit under the weather, not being motivated and fit, then I would still go by pedelec, because I know I can turn the motor up to full power and then it is more like a fresh breeze in the morning rather than some sporty action”^w (I5, L171-177).

The workplace – cleanliness and gender differences: Workplaces are characterized by special norms of wear and appearance, which diverge strongly between interviewees of different genders: four of the five women in the sample said that they sweat less using a pedelec than when using a bio-bike and that this trait of riding pedelec enables them to wear their workplace-clothes during the rides, which makes velocommuting much more feasible and pleasant. Clara (59, caregiver) highlights:

“[that] is something I find really comfortable for mundane cycling because I- [...] can simply ride in office clothes because I do not arrive bathed in sweat and first have to shower and get changed but I just get off my velo and go into the office.”^x (I1, L449-454).

The fifth woman also reports to sweat less. Yet she says that she still has to wear rather functional clothes and cannot, as she would like to do and she perceives to be suitable for an office, wear more fancy clothes (see I8, L463-470). Other women also note not being able to wear certain kinds of clothing while cycling, such as tight- or long skirts as well as wide trousers, and thus at times having to compromise their look and wear when being velomobile (e. g. I5, L899-903). The men in the sample in contrast perceive sweat and clothing differently: they enjoy riding fast, speed over 25 km/h and while Markus (55, passionate cyclist) and David (51, münsteranian local patriot) report sweating less and liking it, Paul (55, architect) does not appear to have any problem with sweat. While the contradiction between the workplace norm of cleanliness and him arriving at work all sweaty is present, it does not seem to bother Paul much: *“If I feel like it, in good weather, I volunteer to give the pedals an extra push, also in the morning actually, before work (smirks), well, then I have to relax a little and evaporate (laughs) before sitting at my desk in the office.”^y (I10, L238-242).* Paul commutes wearing a suit and none of the men in the sample reported to adjust their clothes because of going to their workplace.

Respondents furthermore note that they are much more at ease with cycling in rain or hitting dirty roads (e. g. I8, L1453-1476). It can thus be inferred, that aspects such as dirt and sweat, implied with velomobility being a physical practice performed outside, are much more of a problem for commutes than for leisure use.

Going back home – leisure, sequencing and cargo: The return from work is not as fixed in time hence also space and ends at home, which enables sequencing many practices into the commute. Many thus visit friends on the way back home or turn this inevitable ride into a free-time activity as David (51, münsteranian local patriot) describes:

“In the evening I do- I call that my reward trip. [...]. And as you know, in summer it’s just like on a vacation here, I mean the people relax along the canal and swim and

you go past them on your velo, listening to some music [...]^Z (P9, L 321-334). Apart from leisure-practices,

such as joy-riding, visiting friends or window-shopping, mundane duties are also bundled with the commute. Most practitioners in the sample interrupt their way back to go shopping for groceries, construction material or do other errands, one respondent also brings and takes her kids from/to the kindergarten. If such practices are to be bundled with commuting, the possibility to load cargo becomes essential: children, rain gear and sports equipment, laptops, groceries or plants all need to be transported. Many pedelec-commuters use one or several backpacks, panniers, baskets or a trailer to suit their needs.⁴⁵ In a similar way as with topography, weakness or distance, the pedelec diminishes the distress caused by these additional strains and makes carrying cargo feasible in a daily routine:

“[You do not really save time using a pedelec,] it is more like, that you arrive more relaxed and uhm, you don’t have to exhaust yourself so much, especially because I often bring the kids to the nursery in the morning, then I additionally have the trailer attached, [...] and then the weight becomes an issue, also carrying the baggage that adds on top [...]^{AA} (I8, L82-91)

A majority of the practitioners in the sample shop for groceries on their pedelec-commute. Some of these also use their car for a large “weekly shopping”, to transport heavy items like batches of drinks. Pedelec-practitioners throughout the sample note that errands, like short stops in the pedestrian zone, at the post office etc. are best conducted by velo. One reason is the velo’s potential to “sneak through” one-way streets, cross parks and pedestrian zones in the urban centres where many errands are located. The second is the velo’s fit with being parked nearby, which obliterates having to search for car parking, which many describe as utterly frustrating. Both these characteristics boost urban practicability and gives velos an edge over cars for some urban mobility needs. But larger errands, like shopping for furniture, or visits of family and friends who live further away are infeasible by pedelec.⁴⁶

4.1.5 Ride(r)s of Joy, Conviction and Pragmatism

Some practitioners ride their pedelec for almost all commutes, some use it only for a little share. This aspect is particularly relevant, as commuting by pedelec once in a while does not substantially reduce the use of cars and conducting most commutes by velo may be considered a precondition for obliterating a car (see introduction). Taking a closer look at this matter, the interviewees in some instances commute by pedelec primarily because they enjoy the ride, in others because velomobility is very practical and in some because cycling is the only mobility practice they find acceptable.

⁴⁵ Interestingly, the luggage rack, the material element usually pre-installed in velos for transport, is not used by any practitioner in the sample (except for mounting panniers).

⁴⁶ With regard to heavy loads, the cargo-pedelec comes into play. One of the largest retailers of furniture for example offers these for its customers in Berlin: <https://bikeblogger.de/2019/07/ikea-sattelt-um/>, accessed 17.10.2020.

The analysis suggests that the share of commutes conducted by pedelec is related to different "logics" of pedelec-commuting, which translate into and affect the elements practitioners supply for and require in their pedelec-commutes. As this thesis took accounts of practitioners, not single practice-as-performances, the argument arises from comparing between practitioners. Yet while the evidence in this subsection is thus inferred from and framed through the comparison between individuals, one and the same pedelec-commuter can be driven by one or several of the logics depicted in this section. While this matter was not explicitly focussed in the research question, it is presented as a last section of the findings as it emerged throughout the analysis and seems central for the societal problem at hand. The subsequent paragraphs present drafts of pedelec-commuting logics, which are presented as strongly idealized accounts. As a sample of nine is too small to justify detailed claims on three different groups, the subsequent paragraphs should be read as exploratory notes.

Convinced cyclists: A first group of respondents rides on a daily basis, in (almost) any circumstances. They are convinced that velomobility is the right mobility practice for them and/or for everyone and they do their best to make cycling work no matter what. The sample features two main origins for this phenomenon: a deep personal "connection" with cycling (cycling-geeks) and/or a societal perspective focussed on sustainability that wishes to contribute to a societal change in mobility (eco-cyclists). These traits do not necessarily go hand in hand. Thorsten (41, cycling enthusiast) illustrates this:

"I always smoked. And, uhm, to me, cycling is like getting up in the morning, cigarette, coffee, that's what cycling is to me. It just belongs to my life. When you enter my apartment, you will find stuff related to cycling everywhere [...]" ^{BB} (I4, L391-396).

Yet at the same time, Thorsten says: *"[...] what I in fact lack understanding for is, uhm, Critical Mass for example, a hundred people going three rounds in a roundabout blocking everything completely, I could throw a grenade in there. Like that. Although I am a cyclist myself."* ^{CC} (I4 601-606). Having worked as a cycle-mechanic almost his entire career, having participated in competitive cycling and using the cycle as one of his main means of leisure, Thorsten can almost be considered a prototype of a cycling-geek. This type of pedelec user is proficient in maintenance and familiar with very advanced cycling competences like jumping off the bicycle when immediate danger arises or judging on the quality as well as the wear and tear of cycle-components. They are trained and do not actually need the motor for the commute (almost) no matter the topography, distance, etc. In the sample, apart from Thorsten, Markus (55, passionate cyclist) integrates many of these characteristics.

At this point, some readers not so familiar with constructivist practice theory may shout out – *"ah, see, it is the individual after all, he likes cycling, he is a mechanic, (...), and thus he always cycles"*. From a practice perspective, Thorsten has been so thoroughly recruited, he has become such a faithful practitioner, that the practice has come to dominate his teleology and made him acquire all the skills necessary to practice cycling day in – day out.

The other fraction of "convinced cyclists", those which Thorsten could "throw a grenade" at, could be labelled eco-cyclists. Their motivation to ride is mainly related to

“sustain-ability” and “individual contribution to societal change”, meanings which they associate velomobility and themselves with. In utter difference to cycling-geeks, many eco-cyclists are happy to externalize cycling skills to professionals and some would not be able to fix a flat tire. They are often very happy with the motor easing their way and the pedelec makes a decisive difference for them, as it enables to navigate through the day without driving a car. Apart from Astrid (40, frequently carrying two children), Clara (59, caregiver) is a good example of this branch as she has not grown up with a bicycle and recently bought a pedelec in order to decrease her impact on the environment:

[...] I dispense the car [now]. Because the car is held so dear [in our society, add. the author] and saying no, it does not have to be this way and also the feeling that this makes sense, the feeling that- or even the joy I'd say – at times I am really happy about having ridden so many kilometers, aah have a look how many, and I ride to all places now, [...]^{DD} (I1, L434-436).

For making the daily commute possible in all weather and circumstances, convinced cyclists of both types are well equipped with material elements: pedelecs adjusted to the body, protective gear, means of transport, lights, etc.

Pragmatists: The second group identified is labelled “pragmatist” pedelec-commute(r)s. In this constellation, riders embrace velomobility because it has several advantages to other means of commute, such as the possibility to move through urban spaces without the re-strictions of cars, sneaking through and often stopping at several locations on the commute. Using a pedelec, riders can opt-out of traffic jams, the struggle to find car parking or crowded and unreliable public transport during rush-hour. Anabell (54, long time user) explains:

“I am not a fan of going into the city by car, I am already annoyed having to pay for parking and stufflike that, and having to go back to the place where I parked, and uhm, with the pedelec I can just go anywhere and lock it, get things done, go to other parts of the city centre and do other things, just like pearls on a string and then- and that somehow makes much more sense to me. I can also hop offand push the bike, if it's quicker to go through the pedestrian zone, but I can also ride around if I dont feel like walking, so I am just much, much more flexible.”^{EE} (I3, L414-426)

Similar as with integrating errands etc. into their commute, pragmatists ride(r)s often turn the duty-ride of getting to work into a time of leisure or sports, releasing additional synergies in a busy daily schedule. This type of rider is rather flexible, adjusts to the circumstances and can thus also cope with “disadvantages” of cycling such as the restricted transport capacity. Anabell notes that

“The disadvantage actually is that I can now transport much less, so uhm, if I-, I have to plan more carefully. If I have an emergency shift for example, I take half of the stuffon the previous day, because with the car I could just put everything in one bag and with the pedelec I cannot transport so much.”^{FF} (I3, L753-760).

But while practitioners of this type are thus willing to acquire cycling knowledge, obtain cycling equipment and make efforts to make cycling work, they are also not reluctant to switch to another means of commute if cycling does not suit their demands. The pedelec makes a decisive difference to them, as it combines the advantages of

cycling with the ease usually only afforded by motoring. Apart from Anabell, Elisa (26, student) and Alina (52, early adopter) are characterized by many of these traits.

Joy-ride(r)s: The last group of riders identified within the sample are practitioners who are primarily attracted by the joy they feel when riding pedelec. They are least concerned with how to make velomobility possible in averse situations and hence often only go “when all things match”. They own little equipment for transport or against bad weather as they have other options and will readily switch to another mobility practice if they find it more suitable – in this sample usually to driving their private car. Asked whether he uses weather adapted clothing, Paul (55, architect) responds:

“Nah, I only have uhm, my jacket, when I go in the morning it [...] is too cold [without], uhm, in the afternoon that jacket disappears in the a pannier, uhm. Whenever it looks like rain or eventually, 90 % probability of rain, I immediately take a seat in my car”^{GG} (I10, L157-162).

Joy-riders thus mainly go in the daylight and warmth of summertime, in order to turn their commute into an enjoyable experience. In addition to Paul, David (51, münster-anian local patriot) seems to primarily use the pedelec in this logic.

The data does not indicate that joy-riders receive the pleasure from other aspects than convinced- or pragmatic riders (see section 4.1.2) or that they enjoy these rides more than others. While they do not try to “make things work” by altering material elements or acquiring additional competences, the data suggests that they are especially keen to choose a more pleasant route, e. g. through nature, and provide the required time for such detours.

As noted in the introduction to this subsection, all riders have rides of joy, most have rides which are done for practical reasons and some have rides of pure conviction. The types are thus not mutually exclusive and serve to better understand typical associations among elements. More detailed insights from this perspective may be particularly fruitful for a policy perspective, as the gathered knowledge can later be used to develop policies tailored to different challenges in the spread of the practice.

4.2 Discussion

After the first part of the analysis presented manifold aspects of pedelec-commuting which were created from the data in the light of practice theory, this section takes a step back: it compares the findings with the literature, discusses strengths and weaknesses of the approach taken and points to practice-oriented pedelec-commuting policies.

4.2.1 Progress and due Tasks in the Investigation of Pedelec-Commuting

As of today, pedelec-commuting has not been investigated from a Shovian practice perspective (see section 2.3). The discussion of this thesis’ proceeding and findings can thus only be compared to the most similar literature available and must largely revolve around the data at hand.

A matter of detail? Representing the elements of cycling

The first part of the research questions 1. a) asks for the elements that make up pedelec-commuting. These were presented in detail in section 4.1. As no other depictions

of pedelec-commuting exist, this account can not be compared with another list of elements but must be evaluated against the characteristics of Shovian element-accounts on cycling, which have been provided by Marwein (2019), Hofmeister and Keitsch (2016) and Cass and Faulconbridge (2016). Marwein (2019) does not provide a list of elements but describes his findings in a text, in which he focusses mainly on traffic and streetspace. His auto-ethnographic account provides pictures of situations on the streets and focuses on understanding the circumstances of riding in urban centres. While Marwein investigates cycling, his observations are largely also applicable to riding pedelec as practitioners use the same spaces on the roads and face similar situations during rides.

The approach of Hofmeister and Keitsch (2016) summarizes all gathered aspects under the three element labels (+structure) and provides two graphs which allow to compare the elements of cycling-as-entity between Trondheim and Freiburg. This take on cycling is more similar to the thesis at hand as it aims to portray the practice in its elements. Yet their account primarily serves to point out the differences and similarities between the elements of cycling at the two places they studied. This thesis' take on depicting practice elements is slightly different as it does not primarily aim to differentiate between different variants of pedelec-commuting or the variation between places, but at gathering an encompassing account of the practice-as-entity. To this end, the depiction presented in this thesis provides several levels of abstraction and hence the hitherto most detailed depiction of the elements of a variant of cycling. This may be considered an advantage as it provides additional details which could give a hand to subsequent, quantifying research. Such research could use the graphs presented above to elicit a first list of items which may be relevant for quantification. These items may also be used to study the differences between the practice-as-entity at two places. Yet this thesis aims at investigating very different practice-as-performances in detail which also implies listing contradictory elements, such as danger and safety, as sub-codes to the same heading. Further, many aspects must be abbreviated for the depiction so that some of the depicted elements can hardly be interpreted without the MAXQDA dataset. As the elements were retrieved from only nine interviews, they can furthermore only be considered a preliminary account which depicts a snapshot and presents the range of elements involved. The clarity and finality suggested by a clear-cut graph may therefore also be considered problematic and less appropriate than a qualitative description (see subsection 4.2.2).

Still “cycling”?

Question 1. b) asks whether motor and battery transform cycling so much that riding pedelec should be considered a new practice as distinct from cycling, or whether this material change just spreads “regular” cycling to new places and groups. This question has hitherto not been brought up by the literature and Hui (2017, p. 53) notes that the delineation between different practices has not been subject to much research in general. Section 4.1 found that the pedelec does in fact make velomobility suitable for more people and more applications. But the elements of velo-commuting do also change substantially for those who commuted on bicycles before. Former bicyclists are similarly thrilled by the new sensation of riding. This increased emotion of joy throughout the range of users has also been highlighted as a major characteristic of the pedelec by Le Bris (2015, p. 412). Despite all these changes, which make riding

pedelec something substantially different than riding bicycle, practitioners do not hesitate to still call the practice cycling. As subsection 2.2.1 points out that practitioners are authoritative for delineating between practices. From a practice perspective, riding pedelec should thus be conceived as a branch of cycling albeit the substantial differences outlined above.

But this perspective, which is in line with pedelecs and bicycles being treated equally by the German law, conflicts with the terminology used by practitioners: almost all respondents in the sample use the name “e-bike” for their velo. Yet in the German law, this terminology is confined to electrically propelled cycles which speed up beyond 25 km/h and are thus subject to substantially different, motorized traffic adjusted, regulations. Many practitioners are not aware of these differences, which leads some practitioners to think that the regulations for e-bikes may apply to them. It might thus make sense to change the vehicle’s official name from pedelec to e-bike and use a term like speed e-bike (s-bike) or similar for those assisted bikes which are propelled above 25 km/h (hitherto called s-pedelec). Two further aspects substantiate this idea: the term pedelec (for pedal electric cycle) is not immediately comprehensible while the spread of the English language and the abbreviation e-auto (for electric car) make the term e-bike intuitive in the German context (see I 8, L 168-220). Further, pedelec sounds old fashioned and “awkward” (ibid.).⁴⁷ The author also thinks that the term pedelec is much more associated with the first generation of chunky bikes and elderly riders. From this perspective, it would also be interesting for future research to investigate whether non-practitioners associate different meanings with the terms e-bike and pedelec.

Dynamics of a novel practice

This issue brings up the finding of this thesis which is most different to hitherto research. Several studies, such as Le Bris (2016) and Cairns et al. (2017) have reported riding pedelec to be associated with meanings of old age and laziness. Le Bris (2015, p. 299) thus even labels riding pedelec a social risk. Such has not been present in the data of this study. Being explicitly asked about the matter, all respondents interviewed for this thesis reported positive and no one reported negative reactions of peers and strangers. Only one participant in the study noted to associate her usage of the pedelec with weakness. She justifies her use of the pedelec with the fact that she would otherwise use a car (as she often did before).

So, how does this change in meaning come about? Many of the interviewed practitioners talk to friends and strangers about their new vehicle. They often encounter curiosity and interest, let others know about their satisfaction or grant them a testride. In line with other intervention studies, Le Bris and Rothfuß (2015) show that test rides substantially transform the meanings associated with riding pedelec, among these the range of ends individuals can see themselves meet using pedelecs. This process of pioneers bringing new ranks of potential practitioners in touch with the practice seems to already have transformed the general ideas about pedelecs. Another current change is the progressing integration of motor and battery in frame and wheel depicted in

⁴⁷ This is also the reason for which the term “pedelecing” was omitted throughout the thesis.

Figure 13, which make pedelecs successively less distinguishable from bicycles and fit with more business-urban or sporty images.



Figure 13: Different Types of Pedelec Models

Sources: "classic" pedelec: Fahrrad-Ass.de, URL: <http://alturl.com/kr776>, accessed 12.02.2020

"sporty" e-mountainbike: vitalmtb.com, URL: <https://alturl.com/4gyb3>, accessed 12.02.2020

"urban" pedelec: kettingbeschermer.nl, URL: <https://alturl.com/3op6u>, accessed 12.02.2020

As several practitioners noted that the look of their vehicle is important to them, this development of new product lines is most likely another primary driver of the changing associations with pedelecs. The latest stage of design, pedelecs which are not readily recognized as such (model on the right side) has not fully made its way into cycle-shops around Germany. Furthermore, many people have not yet ridden a pedelec at all.

The ongoing transformation of the image of pedelecs – from being seen as an aid for the elderly to a modern means of transport – must thus be considered far from finished and will contribute to enlisting many more practitioners.

Research questions number 1. b) must thus be answered with "both": the pedelec does spread cycling to hitherto averse groups as well as places and practitioners perceive it to be cycling as distinct from riding. At the same time, the elements of riding pedelec are substantially different from those of bicycling and many of these differences apply to all places, people and practice sequences.

Riding pedelec – a cycling variant better suited to commuting

Research question 2. a) asks how the elements of riding pedelec fit the particularities of the commute. The findings highlight the speed and range afforded by the pedelec. In the terms of Hägerstrand's (1970) time-geography (see subsection 2.1.4), pedelecs thus enable velomobility to cover a wider time-space prism, which is existential in rendering the practice suitable for the demands of commuting in which a number of time-space fixed anchor points must be met (e. g. start of kid's ballet class, chess group). As commutes thus follow time-space paths that are not voluntarily chosen and which commuters often want to just get done with, the time saving afforded by the pedelec is much more important than when cycling for leisure (in which riding itself is often the end strived for or at least an enjoyable part). Further, several aspects of this involuntary spatio-temporality increase sweating when bicycle-commuting: being in time may require speeding, maintaining an appropriate appearance requires rain clothes which block evaporation, going in cold morning hours necessitate thick jackets. Yet the social norms of workplaces create a conflict between being sweaty and being at work, which is a serious problem for velomobility as a means of commute especially for longer rides under the aforementioned conditions. The pedelec enables practitioners to turn up the

engine as necessary and cycle sweat-free also under a range of aversive conditions which frequently make bio-bike commuters switch to another practice. While several disadvantages of cycling to work are thus mitigated by the pedelec, the major positive characteristics of velo-commuting remain in place. Commuters avoid the strain of using car and PT during rush-hour, they arrive refreshed and “on working temperature”. Physical exercise can still be integrated in the commute by those who wish to do so.

On the downside, the high value of the pedelec requires non-public parking spaces at home and at work. This means that the infrastructure present at the workplace still play an important role, but change in comparison to human only propelled cycling: showers for example lose their importance. But Velomobilists are not only at risk of theft and sweat, but also of injury. This danger is related to the particular time-space of commuting: darkness, rain, frost – which increase the danger of riding – coincide with many commutes which take place in the early morning, especially in winter.

Finally, the aspect of commuting which impedes daily velomobility the most is not really altered by adding motor and battery: “bad” weather. While all interviewees usually cycle when temperatures are mild and no rain is projected, some go in summer rain and none of the interviewees cycles when sleet turns roads and pavements into dangerous ice rinks. These findings mirror the literature: investigating a sample of 324 pedelec-commuters, Bracher et al. (2017, p. 32) quantify the likelihood to commute in different weather conditions (self-reported). They find that while most practitioners report to ride despite a breeze or humid weather, most are unlikely to use the pedelec in strong rain, storm and ice. Fog, strong wind, cold temperatures and light rain range in between, still substantially reducing the self-reported likelihood of riding pedelec.

Question 2 b) asks for the entanglement of the commute with other mundane activities and its interaction with other practices. Mattioli et al. (2016) find many practices which are often integrated in the commute to be car-dependent, mostly due to the distances to be overcome and the loads to be transported. This thesis finds those practitioners who strive to enable velo-commuting to make active changes in the material configuration of their pedelec. They append baskets, panniers or trailers in order to make their velo-commute fit with the demands of sequenced practices. In this context, the motor support makes a decisive difference for many commuters, as loads can be transported more easily – especially in hilly places. But this process of practice-adaptation goes both ways: sequenced practices can also be altered to suit the practice of pedelec-commuting. Several respondents note that they split their weekly shopping, get drinks and other heavy items once in a while when they use their car anyway and do a large share of grocery shopping by bike – now going to the supermarket more frequently.

While pedelecs enhance the range most riders are willing to overcome on their velo, they do alter the time-demands of velomobility only for some riders. Time appears to be the more relevant restriction for the daily commute and the conduct of frequently sequenced practices. In car-adjusted places outside of urban centres, velomobility thus still faces substantial challenges to keep up with automobility. Yet in urban places, the pedelec in fact appears to often have an edge over the car. Here, pedelecs can play their strengths of velomobility and sneak through, be (dis-) mounted when necessary and facilitate door to door rides as opposed to PT and cars, which often necessitate time consuming and unpleasant searches for parking and walks in-between stops.

Making the pedelec suit the daily ride

The major hypothesis arising from the analysis of the data is that different practitioners engage in different “logics” of commuting by pedelec, which make them supply and demand particular elements to/from the practice and engage in pedelec-commuting more or less frequently (see subsection 4.1.5). Other studies have come up with similar ideas, such as ideal types or variants of practices which have been studied with regard to food preparation (Halkier and Jensen, 2011), concerning laundry practices (Higginson et al., 2015) or water use in gardening (Browne et al., 2014). Another approach to the matter is thinking about different levels of commitment to the practice (Warde, 2005, p. 138). With regard to cycling, this approach is picked up by Hofmeister and Keitsch (2016), who give first hints in this direction by finding that utilitarian and leisure cycling come with substantially different elements but do not investigate the matter in depth. In a non-practice, large scale quantitative study on commuter cycling (n = 13.700), Rérat (2019) finds four types of cyclists: active, civic, independent and enthusiast.⁴⁸ This typology is quite similar to the practice/practitioner logics sketched in this thesis. But following a choice tradition (see subsection 2.2.1), Rérat investigates motivators and barriers and tries to understand the variation through the characteristics of the respective individuals.

The argument of this thesis goes a different way and asks for scrutinizing the different variants of practices rather than the characteristics of the practitioners who engage in the practice variants. Yet the data generation of this thesis was focussed on thoroughly eliciting the range of elements related to pedelec-commuting, rather than the associations among elements or which of them appear together. One provisional finding is that those practitioners who cycle in rain and cold appear to integrate different material elements than those who go only in nice weather. As one of the respondents put it: *“There is- is no bad weather, only wrong clothes.”*^{HH} (I4, L159- 160). In similar vein it could be added *“No load is too heavy or too big, there is just a lack of transport capacity and skills.”* Do joy-riders thus just lack the experience of how well rain trousers and shoe covers can protect them against rain and the competences to integrate these or other elements smoothly into their routine? How can the association of using rain-protective equipment with being just for “fanatic” cyclists, as Paul (55, architect) put it (I10, L143-146), be diminished?

The data at hand is not suitable to take this next step as this would necessitate a larger sample and systematically taking account of practice elements so that the suspected logics could be tested for their empirical existence. If such typical constellations of elements with the respective implications for the frequency of pedelec-commutes would be found, policies could aim at delivering the elements which respective variants lack so that more practitioners could engage in logics that facilitate pedelec-commuting under a wider range of conditions.

⁴⁸ For another choice-based typology of individuals’ attitudes towards cycling, which also includes non-cyclists, see Cabral and Kim (2020).

4.2.2 Strengths, Weaknesses and Transferability

This subsection seeks to put the presented thesis into perspective. To this end, assets as well as shortcomings of this thesis are pointed out. Furthermore, the scope of the insights is discussed. Then, the Shovian practice theory is reflected, both in general and with regard to the subject matter. As qualitative (if not all) research demands the researcher to be the main “tool” utilized (see May and Perry, 2014) some parts of this chapter are written in first person to account for the author being an active part of the process.

What’s missing? While the sample covers a wide range of differences between places (e. g. traffic regime, flat/hilly) and situations (e. g. small children, disabilities, urban/suburban), it must be noted that the representation of groups vastly differs. Blue-collar and young-age perspectives for example are substantially underrepresented (see subsection 3.2.2). Asking for participation in an interview (albeit called “talk”) about an abstract topic (“Pendeln”/“Verkehrswende”) as well as the officially looking handout (see appendix A.2) might have posed a barrier and restrained people without academic background from participation (see Przyborski and WohlrabSahr, 2014, p. 59). The sampling section also pointed out that women were more willing to participate and that efforts had to be taken to strive for a rather balanced inclusion of genders. In addition, women talked more extensively in the interviews – as a result, all interviews with men were shorter than any interview with a women and the combined interview time with women (6:38h) in effect more than doubled that of men (3:05h). Yet, apart from issues which are noted in the analysis, the perspectives of men and women do not seem to diverge systematically.

Another issue is that only people who did commute by pedelec were approached and interviewed, the perspectives of those who did once commute by pedelec but stopped or who never tried the pedelec do thus not appear. This implies that, apart from sampling effects such as gender or class, which can be traced, there are other shortcomings of the sampling which can only be speculated about. For example, seven out of nine practitioners interviewed have a garage in which they can lock their pedelec back home. One person has to carry her bike upstairs and one did not mention how he parks his (cargo-) pedelec, but he is expected to have a garage or similar. Thus, the high value of the pedelec, theft and the weight of the bike appear to interact and form a barrier, which excludes almost everyone without a ground level parking facility from using a pedelec on a daily basis. If this were true, the importance of locking facilities – as well as the “barrier” itself – would not be reliably captured when engaging only with active practitioners, as these are the ones who have a locking facility.⁴⁹ Similarly, maybe some practitioners stop after a short time for a systematic reason arising from meanings, materials or competences – these would also not reliably be captured.

With regard to the conducted interviews, it can be noted that the open question starting off the interview did not generate long and narrative accounts yielding insight on the pedelec practice from the practitioners perspectives. The interviewer also posed follow-up questions rather quickly and often did not wait more than a few seconds for

⁴⁹ Anecdotal evidence: my stepbrother told me this Christmas that he would like to get rid of his car and commute by pedelec – if only he had a suitable place to store a pedelec at home.

practitioners to add more when they stopped talking. Two reasons for this consisted in the mundane topic on the one hand, apparently leaving many interviewees puzzled with regard to what might be of interest and the researcher being fearful that an empty silence might stop respondents from talking altogether. On the other hand, the questionnaire was rather extensive and as the researcher intended to compare the answers of respondents on matters of interest, he tried to pose all questions – at times rushing through. Thus, most of the data was produced very practice-theory oriented with little scope for the practitioners' perspectives.

Beyond such observations on a theoretical level, being a cycling practitioner myself, I reflected on the elements and procedures I integrate in my cycling practice and became aware of certain elements that were not covered in the data. One example is the importance of switching gears (as a competence). During research, I noted how hard my partner had to push her pedals when going uphill. I realized that she did not switch down in a way I would consider "appropriate", as I had been taught as a child, and was thus struggling.

While several interviewees talked about switching down gears when stopping at traffic lights, no one discussed setting the gear appropriately while riding. Similarly, hand signs, which cyclists use for communication with other traffic participants, were not mentioned by any practitioner. After realizing this cycling competence during one of my own rides, I looked for it in the data and found it only in the videos, which I had not analysed in depth because of a lack of good material. Also, the "riding style", including risk-taking behavior, dealing with traffic rules etc., was only recorded via the respondents' self-reporting in the ITTD but not actually investigated. These two examples substantiate the claims of practice theorists that practices are not completely captured by interviews (see subsection 3.1.2). This implies that for scrutinizing the details of doing, a triangulation of (auto-) ethnography, interviews and videography would most likely have revealed more aspects. The omission of such subtle details, the bodily routines of practice, can on the one hand be considered a shortcoming of this thesis. But velomobility is well researched and the particularities of riding have been thoroughly scrutinized (e. g. riding performances and their safety implications (Kováčsov' et al., 2016) or the flow of riding (Spinney, 2011)). Omitting the details of riding and focussing on the hitherto not scrutinized Shovian elements of pedelec-commuting can thus on the other hand also be considered a strength of this thesis.

As this thesis taps only practitioners but not experts, it depicts the status quo of the practice elements utilized in mundane conduct, rather than the whole range of elements in existence. Concerning safe riding for example, especially in autumn and winter, slipping and falling can be prevented by knowledge about the interplay of tire pressure and grip or material alterations, such as a height adjustment of handlebar and saddle or side-only tire-spikes.⁵⁰ Some elements which could complement mundane use but are not widespread are thus not recorded. These may be especially interesting for practice-oriented cycling policy.

⁵⁰ Cycling-expert on the radio. Deutschlandfunk, Umwelt und Verbraucher (12.11.2020). URL: https://ondemand-mp3.dradio.de/file/dradio/2020/11/12/adac_testet_fahrradwege_und_freut_sich_ueber_abbau_von_dlf_20201112_1150_346ecb49.mp3, starting at 20:00 min., accessed 19.11.2020.

Further, Shove et al. (2012, p.31) state that practices arise from elements and their interconnections. As discussed in subsection 4.2.1, this thesis has focussed on the elements and only added some piecemeal to the interconnections. This can either be seen as a shortcoming or to be a necessary step that facilitates future research by providing the elements which can then be scrutinized for their interconnections.

The figure: an adequate way to depict a practice?

This thesis contains several figures to depict aspects of pedelec-commuting. Such “clean” and “precise” representations are at risk of oversimplifying a complex phenomenon, diminishing many contradictions and nuances that make up reality and could be transmitted in a text (see section 2.2.1, see also Everts, 2020). To create the graphs presented in section 4.1, elements as well as important connections had to be selected from the data. As no quantification was available, the selection was conducted on the basis of the researchers’ “guts feelings”⁵¹ about the most central elements and connections. Further, interconnections and elements are multifaceted: for some riders warm weather increases joy and they feel comfortable, for others it may imply sweat and burden. The effect of a rise in temperature may also vary between the performances of individual practitioners and depend on the other elements integrated in a performance, e. g. clothing, or sequenced practices.

Thus, do these graphs shed light on- or disguise the practice? In favour of the presented figures, it can be argued that these graphic representations, like maps, help with not getting lost in details but grasping the interplay of many elements at the same time. Subsection 2.1.4 presents current approaches to depicting the Shovian practice elements and their connections, but finds that no satisfying state has been reached yet. The depictions in this thesis are surely not thoroughly satisfying either, but contribute to this debate.

Notes on practice theory

During the conduct of this thesis, several ideas about strengths, limitations and room for improvement evolved with regard to the perspective proposed by Shove et al. (2012) and the conceptualization of Schatzki (1996; 2016).

This thesis zoomed in on the change resulting from the addition of just a little material to bicycles. The Shovian take on practices proved valuable to do exactly that: investigate how things, meanings, body, emotions, movements – how all these diverse aspects are affected by and react to the addition of an element.

The analysis led to the hypothesis that different typical associations among elements, called “logics”, exist, which determine the viability of velomobility given the elements available at a certain moment. Further, the analysis suggests that the (non) conduct of the commute by pedelec is very related to the individual(s) engaging in the practice and the materials, meanings and competences these individuals bring with them – especially their teleologies about mobility. This clashes with a the flat ontology proposed by Schatzki (2016) and is an argument for conceptualizing individuals as entities in their own right. Le Bris’ (2015) study gives a good example of how practices and

⁵¹ See subsection 3.2.1 for a discussion of the use of “guts feelings” in qualitative research.

individuals can be conceptualized and investigated through the practice-careers of practitioners.

In a similar vein, the Shovian twist to completely melt the natural as well as built up surroundings, what Schatzki (1996) separates from practices and labels “material arrangements”, into the elements of the studied practice, did not appear to be fruitful. While this approach makes it easier to grasp the theoretical construct of practice theory (at least to me), it appears to disregard the structural features (which are brought about by the plenum of practices) which shape the context in which a practice-performance takes place. Whether it rains a lot at a place or not impacts the elements to be integrated in regular pedelec-commuting, yet this is not internal to the practice but depends on climate. Similarly, whether driving on a road, given a certain traffic, is considered dangerous or normal most likely varies substantially between the citizens of Cairo and Copenhagen, due to different norms concerning traffic.

I hence do not feel comfortable with the flat ontology proposed by Schatzki (1996) as well as the account of Shove and Spurling (2013) which focusses solely on practice (elements). I am rather inclined to a perspective which contends that individuals, structures (ideas, institutions) and materialities exist in their own right, but interact and constantly (re-) produce each other through practices.

Social sciences are complex and, as noted before, it is a strength of practice theory to combine the subjects of different academic disciplines. But in the current version of Shovian practice theory, it seems like aspects (and their disciplines) get mixed up: the perception of danger (psychology), the time efforts implied with a practice (transport), the reactions of others (sociology) and functionality (technology/biology, design) are all implied in the Shovian meanings of pedelec-commuting. Shove et al. (2012) do not elaborate on the precise content of these element categories or on sub-groups which make up the three elements. While this may have been necessary to formulate a consistent and encompassing theory, it is a problem for the empirical application. In this thesis, the sub-categories to meanings, materials and competences remain rather messy with different levels of abstraction residing next to each other. I would argue that it may take this theory a vast step further to systematically think through, define and label relevant sub-groups as well as types of links between elements. This endeavour would have to gather and order insight from very different academic traditions and would thus require a multidisciplinary team (see also Cox, 2019, p. 3).

Coming up with such a more fine grained elements theory would serve the empirical application of Shovian practice theory and be especially important for quantifying approaches, which require a much higher degree of standardization than qualitative investigations. Empowered by such refinements of theory, and potentially taking more account of structure and individual, a quantitative application of Shovian theory seems well equipped to scrutinize different practice-as-performances for systematic associations between practice elements and the characteristics of connections amongst elements, which could both contribute to understanding and supporting commuter mobility.

4.2.3 Policy Approaches to Enhance Pedelec-Commuting

While this thesis first and foremost focusses on the exploration of pedelec-commuting, it is also based in the notion that research should be applicable. This last section thus briefly depicts potential policies to re-craft and substitute practices or change how they interlock (see section 2.2).

Re-crafting elements: The analysis of this thesis suggest that some elements which are required for daily commuting are not widespread among practitioners. This take on re-crafting does thus not, as proposed by Spurling and McMeekin (2014, p. 10), aim at replacing but rather at spreading elements. As rain appears to be the element which most often impedes pedelec-commutes, this appears to be particularly relevant for cycling-adapted rain-equipment. In Germany, one pathway of targeting commuters to switch to cycling has been the promotion of the so called “Jobrad” programme. When leasing a velo via their employers, employees can save taxes equivalent to roughly 30 % of the price, similar to company car arrangements. In order to make commuters not only obtain a new bike, but also become aware of what is necessary for the daily commute and get them to obtain the required materials, it might make sense to add a short, mandatory counselling, e. g. via phone. In this context, optional “gear packs” could be offered to future velo-commuters at reduced prices when they lease a “Jobrad”. These gear packs could be of different size and their content should be determined in further research, but they could for example include high quality rain trousers, shoe-protection and waterproof gloves (pack 1) or a high security, motor cycle type lock and panniers/rack trunk (pack 2).

This thesis does not focus on infrastructure and urban features, as the increase of cycling pace has received substantial attention in the literature on cycling and is a major domain of current efforts to promote cycling (Buehler and Dill, 2016). Yet with regard to commuting and intermodality, it seems relevant that respondents said they would never leave their pedelec at train stations. This is a substantial problem, as leaving the bike at central train stations would be key to shortening intercity travel times of cyclists and leaving the bike at regional or urban rail stations could make a car-free commute possible in rural areas which are in pedelec-distance to a quick rail into urban areas. To enhance such intermodal commute, secure parking facilities are needed. Rather simple ID- and/or video-secured shelters could facilitate such protected parking cheaply in rural areas while more sophisticated, underground variants of bicycle parking are out there to be implemented in urban areas.⁵² Another approach, this time actually focussed on re-crafting, could deal with a problem which the pedelec induces for velomobility, especially in high cycling contexts: several respondents in Münster noted that the cycling infrastructure is continuous but so narrow that they are often thwarted by bio-bicyclists and even feel uncomfortable riding full speed when the lane is empty. They can thus often not maintain the speed they would like and which the pedelec enables. Further, they are often just an inch short of catching car-adjusted traffic lights. Here, a change of the street rules and their material implementation may help: traffic light circuits could be adjusted to 25 km/h and street signs could point out this new speed norm, if not setting a 25 km/h speed limit altogether. Cyclists should then

⁵² E. g. in Japan. URL: <https://i-genius.org/eco-cycle-automated-underground-bicycle-parking-in-japan/>, accessed 28.12.2020.

be exempted from the duty to ride on cycling paths and these paths could feature signs saying that those who ride faster than 20 km/h should use the road. This would enable faster as well as slower riders to ride more comfortable and secure. At the same time, one of velomobility's big advantages, its flexibility would be reinforced: pedelec riders and sporty cyclists could go fast on roads when the cycling lane is blocked by fellow cyclists, but evade car traffic jams by using the cyclist paths during rush hour.

As the second approach to more sustainable practices mentioned by Spurling and McMeekin (2014), substituting practices, is just what all these means strive for, the discussion turns right to the last approach:

Changing how practices interlock: Getting back to the interrelation of policing practices with cycling put forward by Scheurenbrand et al. (2018) and adding new GPS technologies, substantial opportunities for increased safety against theft arises. Some manufacturers already prove the technological possibility to automatically notify users via text message or smartphone app when their bike moves.⁵³ If the police would cooperate closely with pedelec manufacturers or cycling-security providers, practitioners could be given the option to forward the live-tracking of their pedelec to the police who could then arrest thieves. The integration of new elements into practices of both velomobility and policing could thus make velo-theft a business too risky to undertake.

Apart from these approaches, a current societal phenomenon has the potential to alter the spatio-temporal organization of work very fundamentally and may enable to substantially enhance the viability of velo-commuting. The pandemic situation of the year 2020 forces many companies to imply home office regulations and a survey among 3500 employers shows that they see many advantages in at least a partial loosening of working time-spaces.⁵⁴ From a survey among workers, Alipour et al. (2020) conclude that the pandemia-related boom of remote work will most likely have lasting effects on the organization of work. Legislators in Germany have even been debating a right to home office for all jobs where this is feasible, at least for a number of days per month. These developments spread the material and competences necessary to facilitate remote working to an unprecedented number of individuals and changes the associated meanings. Practices such as videoconferences and shared work on cloud-stored documents are all of a sudden known throughout all branches of white collar-workspaces, including government and education. This brings about unexpected potential to render some commutes unnecessary and many others much more flexible in time. Rainy days could principally be spend back home and if there is only one important meeting in the afternoon which necessitates co-presence on site, the commute could in future easily be shifted in time so that the heavy rain is avoided. As this thesis finds most commuters not to be deterred from riding pedelec by a light shower, but only by heavy rain, enabling employees to omit such unpleasant weather on the way to work appears of utter-most importance. Modern weather forecast technology –

⁵³ E. g. the Dutch company VanMoof. URL: <https://support.vanmoof.com/de/support/solutions/articles/44001778607-wie-funktioniert-die-diebstahl-ortung->, accessed 20.11.2020. But many different types of retrofittable trackers are also available, for example from powunity for less than 200 e. URL: <https://powunity.com/>, accessed 20.11.2020.

⁵⁴ See: Norddeutsche Unternehmensverband AGA: "Arbeitgeber im Norden sehen Vorteile im Mobilen Arbeiten – Unternehmer lehnen gesetzlichen Zwang für mobiles Arbeiten ab". URL: <https://aga.de/nachrichten/detail/arbeitgeber-im-norden-sehen-vorteile-im-mobilen-arbeiten-unternehmer-lehnen-gesetzlichen-zwang-fuer-1/?no-cache=1&cHash=a00a2a16bd4fe7ecb50031f530d30e6f>, accessed 09.11.2020

projecting showers quite accurate for the immediate timespan ahead – could furthermore enable commuters to pick the right moment to get to work dry on their velo. Similarly, home office (or late commutes) could also become standard for days with frost. Supporting such an re-organization of work could become a central pillar for making pedelec-commuting to not only remain an on/off practice enabled by the option to switch to the private car at any time, but to become the basic means of commute – amended by public transport and shared vehicle mobility in instances for which velomobility is not suitable. Yet it should be noted that the home office is much more viable for white collar than for blue collar or service jobs (Alipour et al., 2020). A push towards e-velomobility based on new modes of work could thus be especially beneficial for groups already privileged in our society.

5 Conclusion

The mobility patterns in Germany have been stable in their un-sustainability, irrespective of technology and choice-oriented approaches to tackling this problem since the 1990s. The approach pursued in this thesis thus takes a different, decisively constructivist track. It contends that mobility patterns arise from social practices and that a change in one element can transform a practice, hence its potential role in society. Taking this vantage point, this thesis scrutinizes the changes which motor and battery induce to the elements (meanings, materials and competences) of velomobility. The use of pedelecs for the commute was chosen to be the focus of this study for two reasons: the way to work on the one hand plays a major role in mundane mobility patterns and on the other hand poses specific challenges, which arise from the frequent integration of other practices into the trips and from its spatiotemporal inflexibility. If the pedelec can make a decisive change in the fit of velomobility for the commute, it can be expected to also be suitable for a wide range of mundane applications in other domains such as leisure or care. As pedelec-commuting has hitherto not been investigated from a practice perspective based in Shove et al. (2012), this thesis sheds first light on the matter. The sampling of studied places and practitioners thus aims to include a broad range of practice-as-performances in order to take a wide scope of the practice-as-entity. The empirical application focusses on the practice elements of pedelec-commuting and their interrelation with the spatiotemporal particularities of commuting as well as its bundling with other practices. To this end, ten interviews and several ride-alongs were conducted in Münster and Wuppertal. Nine interviews were analysed using the software MAXQDA by the means of both template analysis, as proposed by King (1998), and hermeneutic memos, as suggested by Corbin and Strauss (2008).

A full account of the elements of pedelec-commuting as well as these manifold interrelations cannot be reproduced here (see section 4), but the following major aspects can be summarized: riding pedelec comes with less effort and higher speeds than bicycling which makes velomobility more joyful, enables heavy transport and longer/hillier trips. While this diminishes the demand for bodily competences, it requires additional, specific cycling skills, mostly with regard to handling (e. g. of the battery) and foresight in traffic. At the same time, risks are amplified, with regard to both physical danger of the rider as well as financial and emotional (fear of theft). The latter also diminishes the range of applications as protected parking becomes much more important and public parking in central locations is only possible for short periods. Yet, similar to bicycling, the rider is uncovered, right in the midst of weather and street traffic, with air streaming around their body. The same basic competences of balancing and maneuvering are required and albeit range and drag are enhanced, the applications for daily conduct remain restricted with regard to transport and length of trips.

The analysis underlines that the change of elements does not happen in isolation. Higher speed (material) requires more attention and anticipatory riding (competences), brings about more joy (meaning) and enhances the importance of other materialities (e. g. disk breaks). All these changes interact with the particularities of the commute, which poses particular challenges to velomobility. The temporal inflexibility of commutes, for example, means that velo-commuters at times face cycling in rain. In

combination with the additional sweat caused by rain jackets and the aversion against sweat when arriving at the workplace, this constitutes an amalgam which is very adverse for bio-cycling as a daily means of commute. The reduction in bodily effort enabled by the pedelec takes a substantial edge off this complex as it enables (almost) sweat free riding. The aforementioned disk brakes furthermore enable safe breaking in rain. Through such alterations, the elements of pedelec-commuting come to fit the commute much better than those of bio-cycling and thus renders velomobility much more viable to be not just the main – but a daily means of commute.

With regard to these findings, it can be concluded that pedelec-commuting comes with substantially different characteristics than bio-bike-commuting irrespective of the studied place or individual. Yet, as practitioners unanimously state that riding pedelec is a kind of cycling, it can firmly be conceptualised as a variant of riding (cycling) rather than driving (motoring).

While motor and battery substantially increase the fit between the characteristics of cycling and the commute, several obstacles remain when substituting for cars on a daily basis. These obstacles are mainly related to with other mundane activities which are usually sequenced with the commute (e. g. transport capacity, can not drink alcohol) and weather (rain, cold). Yet these issues arise for some but not for all practitioners and are closely related to other practices the individual is engaged in (weekly shopping requires a large trunk, leisuring at a remote location may necessitate motoring) as well as the materials integrated in the practice (rain trousers, gloves etc. can protect against weather and panniers or trailers can facilitate transport).

The analysis thus highlights that a promising pathway towards understanding and facilitating daily pedelec-commuting consists in scrutinizing the interrelations between constellations of integrated elements and the frequency of riding. Future research could use the coding template developed in this thesis to derive at a preliminary list of elements of pedelec-commuting. From this starting point, a larger sample could be scrutinized for typically co-occurring elements and their relevance for the frequency of velomobility. Based on such insight, policies aiming to spread those elements which facilitate daily velomobility could be developed. As for the time being, adjusting traffic lights and flow to the travelling speed of pedelecs (25 km/h), protecting bicycle parking, better policing and public campaigns normalizing the use of weather protective rain gear (via advertisements as well as display by public figures and politicians) would make for a good start into a velomobile future and not only benefit pedelec- but also bio-bike-commuters.

The findings of this thesis rest on a sample which leans towards elder users residing in urban or suburban places in Germany who work in academic jobs. But the major shortcoming of the applied proceeding is methodological: a practice perspective should combine interviews with forms of observation, which was strived for but not attained. Several aspects were only noticed by coincidence (e. g. hand signs) and future research should thus use more diverse accounts and sources, at best also including experts such as cycle dealers.

So, what's the future of the pedelec? Considering the exponential growth of pedelec sales in recent years, the current societal focus on a mobility transition and rapid technological development, the time of the pedelec is yet to come. Why? Because people of

all ages utterly *enjoy* riding it. But whether pedelecs will mainly be a free time gadget or make velomobility a major means of mundane mobility depends not primarily on the roll out of new, protected cycling lanes, but on the meanings, materials and competences of riding pedelec which circulate in the population and make pedelec-commuting more or less viable. Understanding these elements and their interrelations should be at heart of future velomobility research and policy, a pathway for which this thesis provides first insight.

Quotes in German

- A *“[...]wenn einem das [Schloss] so weit runter rutscht, dann pinkeln immer die Hunde dran. Das finde ich auch nicht so schön.” (I1, L212-213)*
- B *“Ähm, machst du noch irgendwas während du Pedelec fährst? Sowas wie, keine Ahnung, Singen, Nachdenken, Musik hören?” (I4, L576-577)*
- C *“[...] ich finde es einfach klasse auf dem Fahrrad ohne große Anstrengung flott unterwegs zu sein [mhm], das ist ein ganz schönes Gefühl [...] “hab ich ein ganz anderes Gefühl als wenn ich jetzt auf dem Mountainbike sitze und auch durchaus schnell bin aber ähm, doch wesentlich anstrengender. Also das Gefühl ist schon, ja, ist schon erhebend, wenn man da mit dem Pedelec flott unterwegs ist.” (I10, L222-231)*
- D *“[...] weil das halt einfach mega bock macht damit so rumzudüsen [mhm], ne Freundin von mir hat das, [...], ausprobiert und die war richtig so wie ein kleines Kind, so voll begeistert, und hat rumgeschrieen ‘ah, ist das geil’ (beide lachen). Ja, das ist halt so das Gefühl, wenn man das erste Mal damit fährt, man ist halt so, ähm ja, so ne enorme Geschwindigkeit mit minimalem Kraftinput gibt.” (I5, L79-86)*
- E *“Die Umgebung hier in Wuppertal ist einfach so, dass es schon sehr praktisch ist, wenn man sich keine Gedanken über sein Ziel machen muss, weil man weiß, dass man mit Hilfe des Motors auch ankommen kann und man auch die Zeit abschätzen kann, man muss nicht zwischendurch schieben, also ich schaffe in Wuppertal jeden Berg. [mhm] Da gibt es keine Einschränkung [mhm].” (I1, L965-967)*
- F *“Freiheit, ähm, einfach wirklich damit losfahren zu können ohne auf irgendwie-auf ne Krankheit oder auf Wind oder irgendwie sowas Rücksicht zu nehmen, das ist wirklich ein großes Freiheitsgefühl [...]” (I6, L446-449).*
- G *“Da krieg ich es schon echt mal mit der An- mit der Angst zu tun wenn ich ähm (lacht) dann irgendwie noch am Hafen bin und ich merke ich hab nur noch einen Strich und ich weiß ich muss noch- noch drei Kilometer weit.” (I8, L937-940).*
- H *“Aber so, ne, früher haste gedacht das ist so Opa mit- aber das ist ja heute hip. [ja] Du hast ja auch heute junge Leute die diese mega-Mountainbikes, mit mega Antrieb und Akku, klar, wenn man die Berge da hoch krakselt mit so nem- also das ist, ich finde das ist ein hipperes Gerät. Und es gibt ja auch immer mehr junge Leute finde ich.” (I9, L287)*
- I *“für Urlaubstouren, [...], da nutze ich dann schon mein normales Fahrrad, aber ich sag immer, das Pedelec ist mein Auto in der Stadt.” (I3, L157-160)*
- J E. g. *“Würdest du sagen, Pedelecfahrern ist eine Art von Fahrradfahren oder etwas anderes?” (I7, L913-914)*
- K E. g. *“[...] also im Groben würd ich das unter Fahrrad fahren fassen mit... äh... Motorisierung halt. So... ja. Also ich würd es- es ist für mich auf jeden Fall Fahrrad fahren.” (I6, L1432-1434)*
- L E. g. *“Do you say E-bike or pedelec?” – “Sagst du Pedelec oder Ebike?” (I1, L77)*
- M *“[...] wer Fahrrad fahren kann, kann auch Pedelec fahren bin ich der Meinung.” (I10, L192)*

N *“[...] also ich finde da muss man nochmal uhm, das Gefühl für das Radfahren nochmal neu erlernen” (I5, L377-379)*

O *“[...] es ist halt wichtig das man vorausschauend fährt, das man im Prinzip seine Geschwindigkeit natürlich auch an den Verkehr anpasst, ne, ist auch wichtig, und ähm, dass man sich letztendlich auch nicht überschätzt. Also ich glaub das ist auch ein wichtiger- ein wichtiger Aspekt den man auch lernen muss, dass man halt entsprechend sich der Verkehrssituation sag ich mal angemessen verhält, was nicht immer funktioniert aber was man, was ich also gelernt hab über die Jahre, dass es eben schon Sinn macht wenn man das tut.” (I7, L255-264)*

P *“[...] man muss immer mit der Dummheit der Anderen rechnen. (lacht) Gerade als Radfahrer, wie halt, die Tür geht einfach auf, weil der Kollege gerade aussteigen möchte, oder, ach, da, muss ich abbiegen und dann zieht er rüber, [mhm] solche sachen. Schon flink, wendig, und Augen und Ohren überall. [mhm] Dat muss man schon sein.” (P4, L291-297)*

Q *“[...] wenn du jetzt irgendwie unten über die B7 hier fahren musst, also im Moment ist der Verkehr ja relativ mäßig aber oft ist der ja auch stärker, wenn da zwischen den ganzen Karosserien, also selbst wenn es da einen Radweg gibt, es stinkt ohne Ende, also das finde ich sehr unangenehm.” (I1, L893-900)*

R *“[...] einfach diese Verbindung die durch das Radfahren tatsächlich mit der Umwelt, auch einfach mit der Luft, auch da an der Trasse dann scheint die Sonne oder du siehst irgendwelche Pflanzen, wie sie jetzt zunehmend grün wurden, gerade im Sommer. [...] also immer sehr sehr schön.” (I1, L460-467)*

S *“[...] kann ich da halt auch vermeintliche Schrotteile mit nach hause nehmen, letztens waren es dann knapp hundert dreißig Kilo die ich damit transportiert hab, Stahl und Alu- und äh, und halt auch mal nen kompletten Wocheneinkauf, ne. Ist alles dabei. Jetzt, Freundin hochschwanger, die sitzt dann auch manchmal da drinne, wenn man dann ins Geburtshaus fährt und sowas (lacht).” (I4, L49-57)*

T *“[...] das finde ich halt schon auch echt lästig das man sich dann halt diese ganzen Regenklamotten anziehen muss, weil das halt einfach auch ein Zeitfaktor ist, [mhm] und man kommt hinterher ja schon irgendwie so ein bisschen nass an auch wenn man irgendwie- ich ganz gute Regenklamotten hab [...]” (I8, L454-459)*

U *“Und ähm, was ich jetzt halt erleben durfte, durch das Ebike, ist, dass ich jetzt im Prinzip viel mehr Ampelschaltungen nacheinander schaffe, weil ich schneller bin. [mhm] Und das heißt ich kann jetzt fast mit den Autos mitschwimmen ähm, nicht ganz, aber ich kriech jetzt mehrere Ampelphasen hin-tereinander die ich mit dem Tourenrad nicht bekommen hab und bin deswegen auch einfach schneller.” (I7, L220-227)*

V *“Also ich finde halt- das ist der entscheidende Vorteil- ob Pedlec oder Fahrrad, da gibt es keinen Unterschied, wenn du mit dem Fahrrad zur Arbeit fährst- früher bin ich immer um 10 vor sechs losgefahren, [...], da zwitschern die Vögel und ich fahre übers Feld, die Bahnschienen entlang, du bist so mitten in der Natur, siehst mal ein Reh, oder einen Fasan, kommst dann hier dann- fahr ich hier dann halt in die Stadt rein quasi hinterm Bahnhof quasi her und fahr auf die Promenade, da hab ich dann halt diesen Grün-Effekt, dann fahre ich [durch einen schönen Park] und bin dann bei*

der Arbeit, ne. Also erst mal bist du wach, [...], und nimmst das ganz anders wahr als wenn du mit dem Auto dich trödelig da hin gesetzt hast und zur Arbeit gefahren bist, du bist halt schon-ja, wie soll man sagen, du bist schon auf Betriebstemperatur.” (I9, L303-319)

W *“Also wenn ich jetzt halt mal morgens früh aufstehe und mich ein bisschen so unterm Wetter fühle, und nicht so ganz motiviert und fit drauf bin, dann würde ich halt trotzdem mit dem Ebike fahren, weil ich weiß ich kann den Motor jetzt auf volle Power stellen und dann ist das halt wie ein Mal durchlüften morgens und nicht so super die sportliche Aktion.”* (I5, L171-177)

X *“[...] das finde ich zum Beispiel auch beim Alltagsfahren sehr angenehm weil ich- [...] kann aber locker in Bürokleidung fahren weil ich nicht schweißgebadet irgendwo ankomme und erstmal umziehen und duschen muss sondern ich einfach vom Rad steige und in mein Büro gehe.”* (I1, L449-454)

Y *“Wenn ich Lust habe, bei schönem Wetter, dann tret ich schon mal freiwillig rein, auch morgens tatsächlich, vor der Arbeit (schmunzelt), ne, da muss ich dann erstmal ein bisschen ausruhen, ne, und ausdunsten (lacht) bevor ich mich am meinen Büroplatz setze”* (I10, L238-242)

Z *“[...] abends mach ich- ich nenn das immer ähm, Belohnungsrunde. [...]. Und wie du weißt, im Sommer ist das hier wie Urlaub, ich mein die Leute liegen hier am Kanal und schwimmen und du fährst dann hier mit dem Fahrrad längs, hast dann noch so ein bisschen gedudel im Ohr [...]”* (P9, L 321-334)

AA *“[Man spart mit dem Ebike nicht wirklich Zeit ein], es ist eher so, [mhm] dass man eben entspannter ankommt und öhm, [mhm] sich nicht so verausgaben muss weil ich vor allem ja oft auch die Kinder morgens noch zur Kita bringe und dann hab ich hinten noch den Fahrradanhänger dranne, [...] und da ist es dann schon auch mit dem Gewicht, also mit dem Gepäck auch was man da noch drin hat [...]”* (I8, L82-91)

BB *“Ich hab immer geraucht. Und ähm, Radfahren ist für mich so wie morgens früh aufstehen, Kippe, Kaffee, [mhm] so ist für mich Radfahren. Das gehört halt einfach mit zu meinem Leben. [mhm]. Wenn du bei mir in die Wohnung rein kommst du wirst überall irgendwo was sehen was mit Fahrrad zu tun hat, [...]”* (I4, L391-396)

CC *“[...] wo ich tatsächlich kein Verständnis für hab ist, ähm, Critical Mass zum Beispiel, wenn da hundert Leute drei Runden im Kreisverkehr fahren und komplett alles blockieren, könnte ich ne Granate rein werfen. So. Obwohl ich selbst Radfahrer bin.”* (I4 601-606).

DD *“[...] ich verzichte auf das Auto. Weil das Auto hat ja so einen enormen Stellenwert und da zu sagen ne, das muss gar nicht sein und eben auch das Gefühl das das sinnvoll ist, das Gefühl, dass-oder auch die Freude sag ich mal – also ich freue mich manchmal auch so richtig darüber, dass ich so und so viel Kilometer gefahren bin, und guck mal wie viel schon, und ich fahre jetzt auch überall hin [...]”* (I1, L434-436)

EE *“Ich bin zum Beispiel kein Freund davon mit dem Auto in die Stadt zu fahren, mich nervt das schon, dass ich für den Parkplatz bezahlen muss und so, und dass ich auch immer zu der Stelle zurück muss, wo ich geparkt hab, und äh mit Pedelec kann ich halt irgendwo hinfahren und es abschließen, was erledigen und dann in einen anderen Teil der Innenstadt fahren und weitere Dinge erledigen, so wie auf einer*

Perlenschnur [mhm] und dann- und das ist für mich auch irgendwie viel logischer. Kann auch mal absteigen und schieben, wenns durch die Fußgängerzone kürzer ist, kann aber auch außen rum fahren, wenn ich keine Lust hab zu Fuß zu gehen, also bin irgendwie viel, viel flexibler.” (I3, L414-426)

^{FF} *“Nö, ich hab lediglich ähm, mein- ne Jacke drüber, wenn ich jetzt morgens fahre ist das so zu frisch, ähm, nachmittags verschwindet die dann so in ner Fahrradtasche, und, ne. Sobald es nach Regen aussieht oder eventuell, 90 % Regenwahrscheinlichkeit, dann setzt ich mich gleich ins Auto.” (I10, L157-162)*

^{GG} *“Nö, ich hab lediglich ähm, mein- ne Jacke drüber, wenn ich jetzt morgens fahre ist das so zu frisch, ähm, nachmittags verschwindet die dann so in ner Fahrradtasche, und, ne. Sobald es nach Regen aussieht oder eventuell, 90 % Regenwahrscheinlichkeit, dann setzt ich mich gleich ins Auto.” (I10, L157-162)*

^{HH} *“Es gibt- gibt kein schlechtes Wetter, nur die falsche Kleidung.” (I4, L159- 160)*

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7 Appendix

A.1 CO2 Emissions of Different Sectors in Germany Since 1990

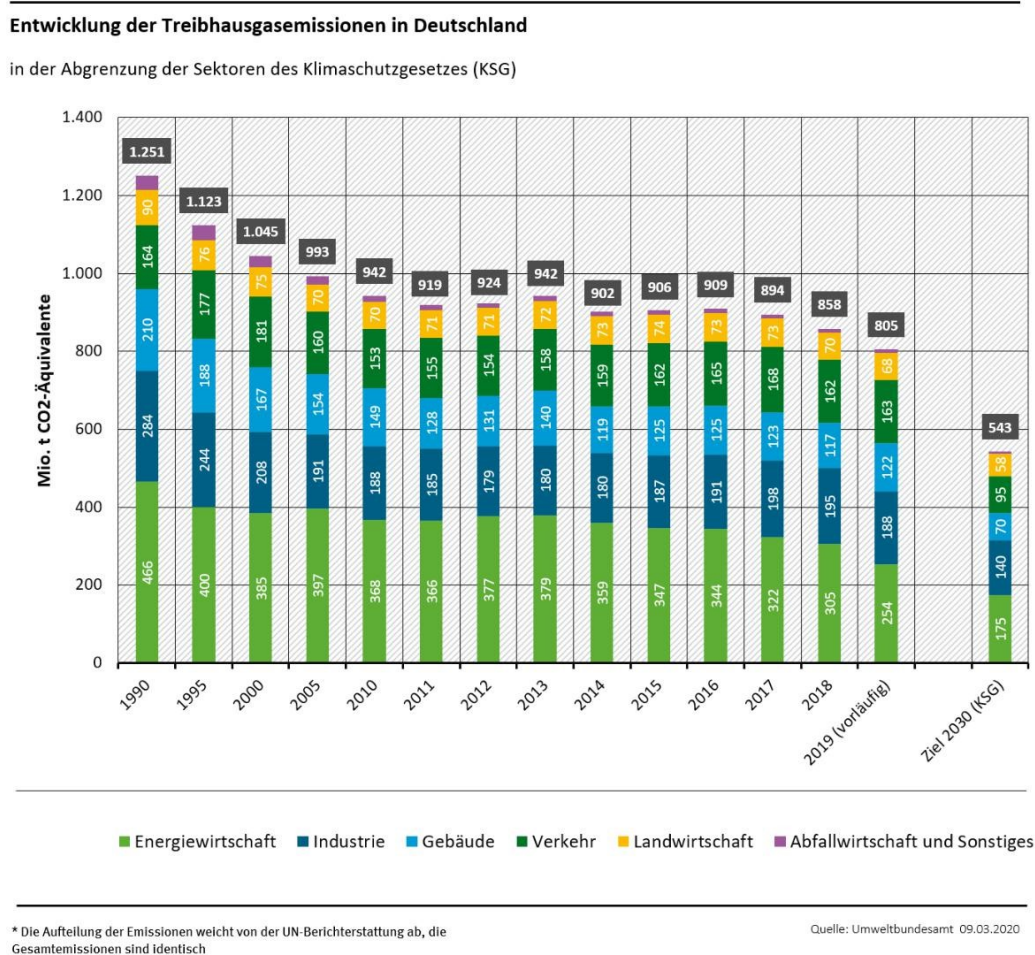


Figure 14: CO2 Emissions of Different Sectors in Germany Since 1990

Source: Stoll (2020)

A.2 Approaching Potential Interviewees

The first contact with participants fundamentally structures the interviewer- and interviewees perceptions of each other and their idea about their expectations (Helfferrich, 2011, pp. 119-121). As the phrases used are thus important concerning who will take part in the study and who not, these are explicated here. First, potential interviewees were addressed with regard to their e-bike (“*Is this your pedelec?*”, “*That is a nice e-bike!*” or “*May I speak to you with regard to your pedelec?*”) then, they were asked whether they ride to work with their pedelec, and if this was affirmed, I introduced myself. In the beginning this was done by saying “*I study in Halle (Saale) and I*

do research on the mobility transition”, but as such a framing might imply that I am first and foremost keen on arguing against cars and might thus deter some people (e. g. politically conservative or “convinced drivers”), this was changed to “(...) *I do research about commuting to work by pedelec*” after roughly half the sample. In their first reaction, most respondents spontaneously expressed their satisfaction with their pedelec (“*Yeah and it is great!*”). I asked them whether they would be keen to sit down and talk about it and handed out a leaflet (see below). While the response rate was not recorded (which should have been done), I estimate that roughly half of those who stopped and listened actually agreed to participate. Another quarter would have liked to, but was too busy with work and children (many were still in home-office with kids back home too, due to the corona pandemic) and another quarter was not willing to participate. The participation rate was thus very high (see Engel and Schmidt, 2019) and apart from a larger share of women agreeing to participate, no systemic bias was noticed. Apart from the motive of being seen as part of a sustainable mobility transition, several respondents (among them Participant 9 (P9), P8 and P3 mentioned either knowing people who write their thesis or explicated that they took part to support young people in obtaining their degree. An academic background along with the corresponding sympathy and familiarity with the proceeding have thus most likely contributed to more academics being willing to participate.



MARTIN-LUTHER-UNIVERSITÄT
HALLE-WITTENBERG



Liebe Pedelec-fahrende in Münster und Wuppertal,

falls Sie mit Ihrem Pedelec zur Arbeit pendeln möchten wir Sie hiermit herzlich einladen an einem aktuellen Forschungsprojekt teilzunehmen. Durch Ihren Beitrag können Sie die Verkehrswende voranbringen!

Wobei können Sie uns helfen?

Es handelt sich um sozialwissenschaftliche Grundlagenforschung zum besseren Verständnis von Alltagsmobilität. Im Mittelpunkt steht derzeit der tägliche Weg zur Arbeit. Auf Basis der gewonnenen Erkenntnisse möchten wir neue Impulse für die Verkehrswende ermöglichen.

Was erwartet Sie?

Um Mobilitätsroutinen besser zu verstehen möchten wir mit Ihnen ein Gespräch führen in dem Sie uns als ExpertIn aus Ihrem Alltag berichten. Keine Angst, jedeR kann das, es geht um Ihre individuelle Lebenswelt. Aufgrund der derzeitigen Corona-Lage kann das Gespräch vorzugsweise per Skype/ Telefon geführt werden, falls Sie ein persönliches Gespräch bevorzugen kann dies evtl. auch umgesetzt werden. Das Gespräch dauert, je nach Verlauf, etwa zwischen 30 und 45 Minuten und findet in den kommenden Tagen/Wochen statt.

Können Ihre Aussagen zurückverfolgt werden?

Nein. Die Gespräche werden aufgezeichnet und verschriftlicht, danach werden alle identifizierbaren Namen, Orte, etc. durch Pseudonyme ersetzt und die Originalaufnahmen gelöscht. Vor Beginn des Gespräches werden Sie exakt über die Nutzung der erhobenen Daten informiert.

Für Ihren Aufwand bieten wir eine kleine Entschädigung von 10€/h. Wir freuen uns auf Ihre Mail oder Ihren Anruf!

Ein Forschungsprojekt am

Institut für Geowissenschaften
und Geographie, Fachgruppe
Anthropogeographie, der
Martin-Luther-Universität
Halle-Wittenberg

Leitung des Forschungsprojektes:
Prof. Dr. Jonathan Everts

Umsetzung der Befragungen:
B. Sc. Paul Schneider

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Paul Schneider
Mobil: 01639 604684
Mail: Paul.schneider
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Figure 15: "Hand-out" for Potential Interviewees

Source: The author

A.3 “Element-cards”

Print-outs of the subsequent two “element-cards” along with a third card on competences were used in the interviews. The use of the element-cards is explained in subsection 3.2.3.

Figure 16: “Element-Card” for Materials Figure 17: “Element-Card” for Meanings

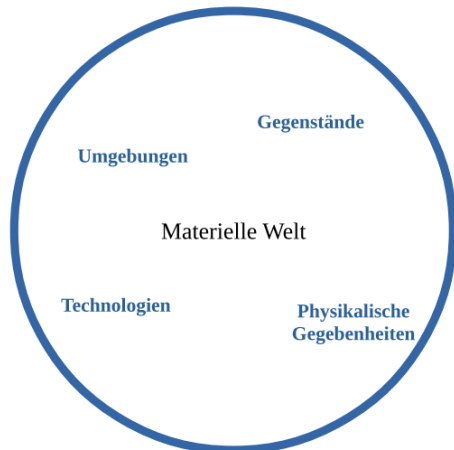


Figure 16: „Element-Card“ for Materials

Source: The author

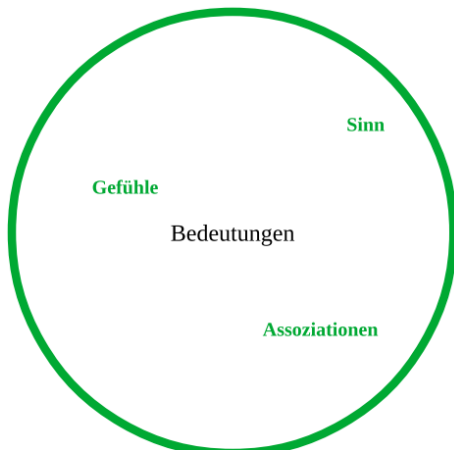


Figure 17: „Element-Card“ for Meanings

Source: The author

A.4 Interview Guide and Socio-Demography Questionnaire

Guide Page 1: Introduction

Checkliste: Letter of Consent, Zustimmungformular, „Elementekarten“, Datenfragebogen, Aufnahmegerät (Speicher+Batterie Prüfen), Stift und Papier

Begrüßung:

- Vielen Dank, dass Sie sich die Zeit für dieses Interview genommen haben.
- Möchten Sie lieber gesiezt- oder geduzt werden?

Forschungshintergrund

- In meiner Arbeit geht es darum herauszufinden was beim Pendeln per Pedelec alles eine Rolle spielt und wie sich pedelecfahren von anderen Arten zur Arbeit zu kommen unterscheidet.
- Im Zentrum steht das Pedelecfahren und alles was irgendwie damit verbunden ist.
- Es geht darum Ihre Perspektive als Pedelec-PendlerIn in den Mittelpunkt zu stellen.
- Datenschutz und Forschungsethik verlangen „bewusste Einwilligung“ in Forschungsteilnahme: **Letter of Informed Consent**

Zur Art des Interviews:

- Das Interview soll etwa 30 bis 60 Minuten dauern.
- Das Interview soll keine Abfrage von Wissen wie ein Test sein!
- Es geht nicht um komplexe Ausführungen, sondern darum Ihre individuelle Sichtweise zu erfassen!
- Mein Vorwissen wird ausgeblendet, stellen Sie sich das ganze also wie eine leere Seite vor: nur das was gesagt wird steht nachher drauf!
- Auch Dinge die Ihnen ganz normal und selbstverständlich vorkommen sind für mich von Interesse.
- Falls Ihnen schon bei der Fragestellung verschiedene Aspekte in den Sinn kommen können Sie diese gerne notieren. (Stift und Papier da?)
- Falls Ihnen bei oder nach der Beantwortung einer Frage eine neue Perspektive oder ein neuer Aspekt einfällt, zögern Sie bitte nicht diesen auch noch anzusprechen.
- Pausen zum Überlegen vollkommen okay!

Guide Page 2: Interview to the double (ITTD) and introductory question

Interview to double: Unsere **Alltagsroutinen** haben die Eigenschaft, dass sie automatisch ablaufen und wir sie **unbewusst** ausführen. Da es in dieser Studie um die Untersuchung von Alltagsroutinen geht, möchte ich Sie durch ein kleines Experiment dazu bringen sich Ihre tägliche Routine zu vergegenwärtigen: **Stellen Sie sich vor**, wir beide hätten exakt ihren Körper. Ich bin ihr **Body-Double** und soll kommende Woche an Ihrer Stelle zur Arbeit fahren, ohne dass das jemand bemerken kann. **Damit das klappt** muss ich genau wissen wie Sie sich normalerweise verhalten, da ich **mich** beispielsweise **verraten** könnte wenn ich an einer Ampel halte wo Sie das nicht tun würden, oder wenn ich mir nicht die Hose über den Schuhen zusammenbinde.

Ich möchte Sie also bitten mir in kleinen Schritten genau zu erzählen was ich bei Ihrer Routine auf dem Weg zur Arbeit nacheinander machen muss und wie dies je nach verschiedenen Umständen variiert.

Ich möchte Sie also darum bitten sich ihren Pendelweg ganz lebendig, wie in einem Film vorzustellen und diesen ohne Unterbrechung detailliert zu beschreiben, so dass ich ihn genau gleich zurücklegen kann wie Sie. Wo muss ich aufpassen, was kann alles passieren, wie reagiere ich dann?

2. Person! (Interventions: 'how would you do it', 'what do you mean', 'when', 'in which case' and never '~~why~~' and '~~how come~~')

Du kommst ungefähr um 9 Uhr an der Uni an. Ein bisschen später kannst du ankommen, aber nie früher. Du nimmst die Treppen und gehst direkt zur Kaffeeküche, wenn dir auf dem Weg Kollegen entgegenkommen grüßt du sie, lässt dich aber nicht auf ein Gespräch ein weil du zuerst einen Kaffee brauchst – außer die Kollegen kommen mit. Du läufst recht schnell und bist ein bisschen gestresst bis du den Kaffee hast, er muss schwarz sein, mit ein bisschen Zucker, danach läufst du gemütlicher und lässt dich auch mal ansprechen. Weil du linkshänder bist öffnest du die Tür mit links, falls gutes Wetter ist machst du das Fenster auf und genießt kurz einen Blick nach draußen, sonst schaltest du direkt den PC ein. (...)

- Sie haben mir jetzt beschrieben wie andere Sie sehen, wenn Sie zur Arbeit gehen, quasi eine Außenperspektive. Aber wie ist das Pendeln per Pedelec denn für Sie persönlich, erzählen Sie doch mal!

Guide Page 3: Questions on materials, meanings, competences

<p>Stichworte der Interviewten:</p> <p>Interessante Aspekte: Materials Meanings Competences</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p>	<p>Materielle Welt: Gegenstände, Umgebungen, Technologien, physische Aspekte</p> <p>- Welche Gegenstände spielen beim Pendeln per Pedelec eine Rolle?</p> <p>- Welche physischen Aspekte beeinflussen denn Ihr Pendeln?</p> <p>- Welche Dinge oder physischen Aspekte <i>Ihres konkreten Arbeitsweges</i> spielen denn noch eine Rolle?</p> <p>(Spezifika: Fahrrad (Schalten Bremsweg), Kleidung, Ausrüstung (Licht, Bleche, Handschuhe) , Fahroberfläche, grüne Welle, Verkehrsdichte, Wetter, Dusche)</p> <p>Mentale Welt: Bedeutungen, Gefühle, Sinn, Assoziationen</p> <p>- Was verbinden Sie mit dem Pendeln per Pedelec? (innenperspektive)</p> <p>- Wofür steht Pedelecfahren denn so? (außenperspektive)</p> <p>(Flow, Schweinehund, Spaß, Freiheit, Armut, Umweltbewusstsein, Kindheit)</p> <p>Dritter Bereich: Fähigkeiten, Kompetenzen, Wissen</p> <p>- Was muss man denn können um Pedelec zu pendeln?</p> <p>- Welche Fähigkeiten oder so erleichtern das Pedelecfahren?</p> <p>- Was muss man wissen um mit dem Pedelec pendeln zu können?</p> <p>(Gleichgewicht, Fahrradschule, StVO, Überblick, Stressresistenz?, „Sauberkeits“-Konventionen, Selbstbild, Technisches Wissen über Fahrrad (Batterie, Reparatur))</p>
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Guide Page 4: General questions

<p>2. Teil: Themengebiete:</p> <p>Zuvor genutzte VKM</p> <p>Pendeln</p> <p>Sequencing/Mehrfachweg</p> <p>Kultur</p> <p>Sicherheit, Wetter</p> <p>Technik, Reparatur</p> <p>Same same?</p>	<p>- Wie sind Sie denn gependelt bevor Sie das Pedelec genutzt haben? Falls zuvor mit Rad: Wie hat sich das Pendeln mit dem Rad vom Pendeln per Pedelec unterschieden? Erzählen Sie gerne ausführlich! Falls zuvor mit anderem VKM: Wie hat sich das Pendeln mit X vom Pendeln per Pedelec unterschieden? Warum sind Sie nicht mit dem Rad gependelt? Wie unterscheiden sich denn Radfahren und Pedelec fahren? Erzählen Sie gerne ausführlich!</p> <p>- Wie unterscheidet sich denn <i>das Pendeln</i> von anderen Wegen?</p> <p>- Fahren Sie immer per Pedelec zur Arbeit? Falls nein, wann nicht?</p> <p>- Wie würden Sie Ihren Arbeitsweg zurücklegen wenn Sie kein Pedelec nutzen würden?</p> <p>- Seit Sie angefangen haben mit dem Pedelec zu Pendeln, hat sich diese Veränderung auf Ihre sonstige Wahl von Verkehrsmitteln ausgewirkt?</p> <p>- Verknüpfen Sie ihren Weg zur Arbeit noch mit anderen Zwischenstops oder Aktivitäten? - Würden Sie den Arbeitsweg mit andern Erledig. oder Orten verknüpfen wenn Sie nicht mit dem Ped. unterwegs wären?</p> <p>- Machen Sie noch etwas anderes <i>während</i> Sie mit dem Pedelec fahren?</p> <p>- Was ist denn „normale“ Mobilität in Ihrer Stadt?</p> <p>- Wie reagieren die Leute auf Ihr E-Bike und das Sie damit Pendeln?</p> <p>- Womit assoziieren andere das Pendeln per Pedelec?</p> <p>- Haben Sie das Gefühl, Fahrradfahren ist eine gewöhnliche Art sich fortzubewegen?</p> <p>- Wie fühlen Sie sich beim Pedelecfahren?</p> <p>- Unterscheiden sich geübte Pedelecfahrende von Neulingen?</p> <p>- Was spielt denn im Bereich Sicherheit beim Pedelec-Pendeln alles eine Rolle?</p> <p>- Spielen Wetter, Jahreszeit und Lichtverhältnisse beim Pedelec-Pendeln eine andere Rolle als beim Fahrradfahren?</p> <p>- Abseits des Fahrens, was ist denn da noch wichtig wenn man ein Pedelec hat?</p> <p>- Welche Handgriffe sollte man denn beherrschen um Ihr Rad in Schuss zu halten?</p> <p>- Ist Pedelecfahren eine Art von Fahrradfahren oder ist es etwas anderes?</p>
<p>Zum Ende des Interviews:</p>	
<p>- Zum Schluss: Gibt es sonst noch etwas das Sie wichtig finden?</p> <p>- Vielen Dank für das Gespräch!</p> <p>- Kurzfragebogen</p>	

Socio-Demography Questionnaire

Personenbezogene Daten:

Geschlecht: Besuch Universität (falls ja: Jahre und Fachgebiet)?

Alter:

Kinder (alter):

Wie wichtig sind die Umweltthemen?

1 2 3 4 5
(min) (max)

Beschäftigung (Vollzeit, Teilzeit, Keine):

Mobilitätsbezogene Daten:

Wichtigstes Verkehrsmittel:

Wie lange besitzt du das Pedelec?

Auto in Besitz/Verfügbar?

Anzahl Tage pro Woche die per Pedelec
(ggf. Fahrrad) gependelt wird:

Pendeldistanz:

Source of Interview guide and Questionnaire: The author

A.5 Letter of Informed Consent

Informationen über den Umgang mit dem Interviewmaterial

Sehr geehrte/r Pedelecradfahrer/in,

Dieses Informationsblatt soll Ihnen eine Grundlage für die Zustimmung oder Ablehnung der Nutzung Ihrer Daten im Rahmen dieser Forschung geben. Der Datenschutz verlangt Ihre ausdrückliche und informierte Einwilligung, was wir mit Ihrem Interview machen dürfen.

Bei dem vorliegenden Forschungsvorhaben geht es um das Pendeln per Pedelec. Es handelt sich um sozialwissenschaftliche Grundlagenforschung die ein tiefer gehendes Verständnis von Mobilitätspraktiken zum Ziel hat. Dieses Wissen kann helfen um eine zukünftige Verkehrswende/Transformation der Alltagsmobilität zu fördern. Die verantwortliche Leitung des Forschungsvorhabens liegt bei Professor Jonathan Everts, Leiter der Forschungsgruppe Anthropogeographie an der Universität Halle-Wittenberg, zudem arbeitet Herr B.Sc. Paul Schneider an diesem Projekt. Das Forschungsvorhaben dient wissenschaftlichen Zwecken sowie einer Qualifizierungsarbeit. Beide an diesem Forschungsprojekt beteiligten unterliegen der Schweigepflicht und sind auf das Datengeheimnis verpflichtet.

Im Rahmen dieses Forschungsprojektes würden wir gerne eine oder mehrere der folgenden Datensätze erheben:

- Personenbezogene Daten (z.B. Alter, Beruf)
- Tonaufnahme eines Interviews
- Begleitung einer Pendelfahrt mit Videokamera

Maßnahmen zur Sicherstellung von Anonymität und korrekter Wiedergabe Ihrer Äußerungen:

- Wir gehen sorgfältig mit dem Erzählten um: Wir nehmen das Gespräch, bei Einwilligung, auf Band auf. Das Band wird abgetippt und anschließend gelöscht. Eine Abschrift (Transkript) können Sie erhalten.
- Wir anonymisieren das Transkript, d.h. wir verändern alle Personen-, sowie identifizierbare Orts-, Straßennamen und sonstige identifizierbare Aspekte.
- Ihre Personenbezogenen Daten (Name, Alter, etc.) sowie die Ton- und Videoaufnahmen werden am Ende des Projektes in unseren Unterlagen gelöscht, so dass lediglich noch das anonymisierte Transkript existiert, dies muss als Nachweis guter wissenschaftlicher Praxis aufbewahrt und ggf. dem Prüfungsamt der Universität Halle übergeben werden. Die von Ihnen unterschriebene Erklärung zur Einwilligung in die Auswertung wird durch den Interviewenden aufbewahrt. Sie dient lediglich dazu, bei einer Überprüfung durch den Datenschutzbeauftragten nachweisen zu können, dass Sie mit der Auswertung einverstanden waren und kann mit Ihrem Interview nicht mehr in Verbindung gebracht werden.
- Gerne würden wir die Transkriptionszeit durch die Nutzung eines google-Services drastisch reduzieren. Falls Sie diesem vorgehen zustimmen (Anfrage auf kommender Seite) freuen wir uns, sonst wird alles händisch transkribiert.

Nutzung der erhobenen Daten

- Wenn Ihre Zustimmung erfolgt, wird das Transkript für eine wissenschaftliche Analyse genutzt.
- Die Ergebnisse der Analyse können in verschiedenen wissenschaftlichen Publikationen genutzt werden.
- Gegeben Ihre Zustimmung können zudem Teile des Interviews als wörtliche Zitate verwendet werden. Hierbei wird jeweils noch einmal explizit auf die Wahrung von Anonymität geachtet.

Die Datenschutzbestimmungen verlangen auch, dass wir Sie noch einmal ausdrücklich darauf hinweisen, dass aus einer Nichtteilnahme keine Nachteile entstehen. Sie können Antworten auch bei einzelnen Fragen verweigern. Auch die Einwilligung ist freiwillig und kann jederzeit von Ihnen widerrufen und die Löschung des Interviews von Ihnen verlangt werden. Falls Sie nachträglich Bedenken haben und einen solchen Schritt erwägen, wenden Sie sich bitte an die Projektleitung, Herr Jonathan Everts (jonathan.everts@geo.uni-halle.de) oder an Paul Schneider (paul.schneider@student.uni-halle.de).

Dieser Text wurde durch den Autor mit Hilfe der Unterlagen auf <https://sozmethode.hypotheses.org/292> und https://www.forschungsdaten-bildung.de/get_files.php?action=get_file&file=fdbinfo_4.pdf erstellt.

Schriftliche Einwilligung gemäß Datenschutz

Forschungsvorhaben: „Is it Still Cycling? An Investigation Into Pedelec-Commuting Practices in Wuppertal and Münster“

Leitung: Professor Dr. Jonathan Everts, Interviewdurchführender: Paul Schneider

Interview-/ Beobachtungsdatum: _____

Ich bin über das Vorgehen bei der Verschriftlichung, Datenspeicherung und Auswertung des von mir gegebenen Interviews persönlich und mittels eines schriftlichen Handzettels informiert worden, der mir auch ausgehändigt wurde. Mir ist bewusst, dass die Teilnahme an diesem Interview freiwillig ist und ich zu jeder Zeit die Möglichkeit habe, das Interview abubrechen und mein Einverständnis in eine Aufzeichnung und Transkription des Interviews zurückziehen, ohne dass mir dadurch irgendwelche Nachteile entstehen.

Ich bin mit damit einverstanden,

dass das Interview/ die Beobachtung digital aufgezeichnet, transkribiert und anonymisiert wird	<input type="checkbox"/> ja <input type="checkbox"/> nein
dass Sequenzen des Interviews/ der Beobachtung in transkribierter und anonymisierter Form im Rahmen der Abschlussarbeit und ggf. daraus entstehender (Fach-)Publikationen genutzt werden	<input type="checkbox"/> ja <input type="checkbox"/> nein
dass die Audioaufnahme mit Hilfe eines Google-Service oder ähnlichem transkribiert wird (bei Nein: Transkription von Hand)	<input type="checkbox"/> ja <input type="checkbox"/> nein

Unter den oben angegebenen Bedingungen erkläre ich mich bereit, das Interview zu geben.

Vor- und Nachname (in Druckschrift)

Ort und Datum

Unterschrift

A.6 Explications on the Author

As this section relates to me as an individual, it is written from a first person perspective. I am positioned with regard to several dimensions. Bodily, socio-economically and ideologically. Starting with the last aspect, I started my studies, did internships and spend time in student-organizations all being concerned with the broad matter of “sustainability”. The omission of damage to others and the environment is of relevance to me from from a personal perspective and transcends into which professional projects I take up. To me, as a private person, privately owned cars are a societal problem for many different reasons. Like many scholars of cycling (see Cox, 2019, p. 41), I cycle myself and hold rather precise ideas about the normative desirability of velomobile futures. I am used to riding in urban, academic contexts in which cycling and using public transport are much more normal and common mundane mobility practices than driving cars. Not really having thought about, let alone having mounted a pedelec before starting this thesis, I became increasingly fascinated by the pedelec throughout the research.

To start engaging with this ideological bias prior to data generation and become aware of aspects not apparent in my experience, the chapters 2.2.2 was designed to critically engage with this predisposition and become aware of objections against velomobility from cycling-critical communities and scholars. Throughout the project I used conversations with peers to reflect on my predispositions and become aware of many emotions and normative ideas.

As for the analysis, apart from potentially being more open to coding sequences averse to motoring and affine to cycling, being a rather “ideological” person could mean that I overemphasise matters of meaning over material and competence.

Apart from having a specific view of the world, I also have a specific body and gender. I am young, tall and physically fit, albeit not sporty. Bodily problems did never stop me from cycling until recently, when a problem with my hands precluded me from cycling for some time, making me more aware of the manifold bodily requirements of velomobility. To me, riding bike is a quick and comfortable means of transport for most purposes as I ride rather fast and have never gotten used to the speed and ease of cars through regular use - although I have a drivers licence and drive at times. I have a good sense of orientation and can often navigate without maps, including situations in which my partner, who has been on the same cycling-trips with me, has no clue as of where to go. Reflecting on such matters happened throughout the research.

I identify myself as a male person. That does not mean that I my concept of self is organized around “typically male” attributes like bodily capabilities and being tough. But I wear the typical mens-wear of trousers not skirts and do not often have to compromise my look because of cycling – except when riding with wet hair after which I am regularly very dissatisfied with my look. In such instances I thus alter my schedule, start earlier and ride slower.

My normative background and academic language does substantially impact my sympathy for persons and I tried to counter this bias especially during the sampling. Whenever I became aware of not approaching a pedelec-user because of sensing that they may react negatively or feel intimidated, I made myself aware that this biases the sample and forced myself to approach anyone irrespective of social proximity.

A.7 Sample interview transcript

The data volume of the transcribed Interviews surpasses any reasonable file size for this document. Thus, one of the interviews was automatically converted back from PDF to Word, it contains a number of transformation artefacts and but no line numbers. It is included in order to give the readers an impression of the Interview style and depth. Interested readers can request the full set of interviews from the author.

Transkript Interview 6

Transkriptionsregeln:

- Wörtliche Transkription, auch Unsicherheit vermittelnde oder den Gesprächsfluss aufrechterhaltende Laute werden mit ähm, ja, etc. transkribiert.
- Plötzliches Abbrechen wird mit – am Ende des abgebr- Wortes markiert.
- Sprachliche Überlappungen werden durch eckige Klammern markiert [das hier sagt die andere Person].
- Emotionen, Handlungen oder Ergänzungen werden, zum besseren Verständnis, in runden Klammern notiert (lacht weil...), zudem auch Pseudonymisierungen (Ort an Trasse).
- *Unklare Aussprache* die Rekonstruiert werden musste ist kursiv markiert.- Unterstrichene Worte/Wortteile wurden besonders betont.
- Imitation eines Zitates wird „durch Anführungszeichen“ signalisiert.
- Kommata zeigen fließendes Gespräch an, Punkte die Beendung von Sätzen durch die Sprechenden. Zeilenumbrüche stehen für getrennt gesprochene Sätze.
- Pausen, ab 4 Sekunden, werden in eckiger Klammer mit Sekundenangabe notiert [5 Sek].
- Rechtschreibung wurde nicht bereinigt da dies unverhältnismäßigen Aufwand und keinen Mehrwert bringen würde.
- Grau unterlegte Bereiche: Alles was nicht zum Leitfadengestützten Interview gehört (ITTD, Kommentar zu Videographie oder Begleitfahrten, Forschungstagebuch, Notizen zu Gesprächen)

Kurzbeschreibung Person und Situation:

P6 ist weiblich, Anfang fünfzig, hat keine Kinder und lebt mit ihrem Mann. Sie arbeitet als Minijob in einer Schule und pendelt im Sommer an 1-3 von 4 Arbeitstagen mit dem Pedelec zur Arbeit (ca. 7km). Ihr wichtigstes Verkehrsmittel ist das Pedelec, da sie vor ihrem aktuellen Modell schon zwei fuhr kann sie als langjährige Nutzerin angesehen werden. Sie hat Multiple Sklerose weswegen sich ihr gesundheitlicher Zustand im Tagesverlauf stark ändern kann.

P6 wurde in der Fußgängerzone vor einem Drogeriemarkt angesprochen, sie stimmte sofort zu. Das Interview wurde bei P6 zuhause durchgeführt, zunächst auf dem Balkon dann im Haus. Mehrstöckiges Reihenhaus im Stadtgebiet. Direkt beidseitig großes Vertrauen und Wohlwollen.

Genutztes Pedelec:

Bild: Der Autor.

Transkript:

I: (...) dann vergessen wir jetzt auch wieder, das das Aufnahmegerät. Äh, du hattest davor schon eins [ein Pedelec]?

P6: Joa, ich hatte schon zwei davor. Also ich hab immer die alten von meiner Mutter aufgefahren sozusagen, und dieses ist jetzt meins. Also das hab ich mir jetzt selbst ausgesucht und ähm, ja für mich ist das halt ein ganz- seit dem ich das mit den e-rädern mache, meine Mobilität is sowas von gestiegen [mhm] und mein Radius vor allem, weil ich sonst immer Fahrradfahren damit verbunden habe aah, bin ich fit genug für den Tag, schaff ich das heute, blablabla, wegen meiner Krankheit (schnau), und dieses ist jetzt so, dass das super ist- also mit e-rad, kannste ja einstellen und dann muss ich mir null Gedanken darüber machen und ich fahre damit sogar auch zum Arbeiten.

I: Ist das- verändert sich das auch über den Tag, dass du morgens noch gar nicht weißt wie es nachmi?ags ist?

P6: Ja, das ist unterschiedlich. Tagesform ist immer sehr unterschiedlich und es hängt auch mit dem We?er zusammen, mit ganz vielen anderen Faktoren, ist so ein Gerät, so ein e-rad natürlich total genial, weil ich stellt sich auf mich ein, also ich kann es- oder, ich kann es auf mich einstellen, sagen wir mal so. [beide schmunzeln]

I: Okay, cool. So ganz am Anfang müssen wie ein bisschen Datenschutzkram machen (...)

[weiter nach Datenschutzerklärung und Unterschrift]

I: Ja dann erst mal vielen vielen Dank, dass du dir die Zeit nimmst, das ist super.

P6: Ja ich hab gerade ja wirklich wie gesagt nicht viel zu tun und ich find das Tema ja spannend und ich dachte mir auch ok-

I: Ja man merkt auch, es kommt direkt aus dir heraus [Jaja] das ist super (lacht) ähm... also zum Hintergrund... ähm... in meiner Arbeit geht es im Grunde darum herauszufinden, wie

Mobilitätsroutinen funktionieren, wie Pedelec fahren in seinen Einzelbestandteilen funktioniert und ähm als Alltags... äähm, als Alltagsgerät, genau- also es geht überhaupt nicht um irgendein Expertenwissen, es geht um persönliche Eindrücke [mhm] und ich versuche bei der Arbeit so viel wie möglich mein eigenes Vorwissen auszublenden, das heißt ähm, es geht auch um ganz banale Alltagssachen, auch wenn du das Gefühl hast, es ist eigentlich völlig unerwähnenswert weil selbstverständlich, gerne erwähnen. Es ist wie eine leere Seite, was nicht drauf ist nicht drauf-[ja] Ähm, wird nicht wahrgenommen... oder muss irgendwie... also dann argumentiert werden warum, warum das irgendwie ist.

P6: Mhm. Was studierst du- entschuldigung, was studierst du?

I: Ähm... nen Master so an der Schni?stelle Geographie, Soziologie Hmm ja... kann ich dir gerne gleich auch danach noch ein bisschen was erzählen. Ähm... Genau... gerne kannst du dir auch einen StiM und Papier nehmen, falls dir noch irgendetwas in den Sinn kommt oder so, ähm, wenn du später noch mal irgend- zu irgendetwas davor noch was anzumerken hast gerne zurückspringen. Ähm, wenn du irgendwelche Dinge dir noch in Kopf kommendie jetzt nicht direkt da sind, kannst du auch gerne erzählen, da ist auch häuQg noch interessantes dabei-

P6: Ok, ja, ich, äh, ich mach das so.

I: und äh, vielleicht noch mal als aller erstes, ähm, sagst du E-Bike oder Pedelec?

P6: E-Bike.

I: E-Bike... mhm. Ähm, ja. Dann erst mal, mit so ner ganz oRenen Startfrage. Du... ähm, du hast dir nen E-Bike besorgt und fährst damit zu Arbeit, wie ist das so für dich?

P6: Ja, wie gesagt, wie ich eben schon gesagt hab, mein Radius hat sich dadurch total erweitert, ich kann das einfach machen und ähm, ich mach es nicht im Winter und ähm, ichmach es auch nicht bei schlechtem ähm We?er. Aber ich Qnde das also auch, ich mach das hauptsächlich, also ich mach das eigentl- ein Grund ist, also das ist ja sehr gesund, um mein Gleichgewicht zu trainieren, und um irgendwie solche Sachen zu machen, draußen zu sein an der frischen LuM... ich Qnd das einfach positiv. Mir macht das auch Spaß[mhm]Ich fahre auch gerne Fahrrad. Also das hat viele Vorteile.

I: Wie ist es damit zur Arbeit zu fahren?

P6: Äääähhh, dadurch das ich jetzt auch ein E-Bike habe und ich gar nicht mehr verschwitzt bin oder irgendwas ist das natürlich super! Also... ist schön. [mhm]Ich kann das auch noch dann immer entscheiden, ich hab auch ein Auto, also ich kann auch... wenn es mir nicht so gut geht dann nehme ich das Auto.

I: Mhm. Ähm... ich hab, äh so Karten dabei, (Papier raschelt) um uns so nen bisschen durch das Gespräch zu hangeln, und der erste Bereich über den ich gerne sprechen würde ist im Grunde alles was man so ganz grob unter "materielle Welt" fassen könnte. Ist ein ganz weit gefasster BegriR und diese BegriRe hier drauf sind Ideen aber ist jetzt nicht so ausschließlich, also so was wie Gegenstände die du benutzt, oder die dir auf der Fahrt begegnen, Umgebungen, andere VerkehrsteilnehmerInnen, Technologien die du benutzt beim Fahren auf verschiedene Arten, physische, physikalische Sachen, körperliche, so... alles möglich. Ähm... was... welche, welche Gegenstände spielen denn beim Pendeln mit dem Pedelec für dich alles ne Rolle?

P6: Gegenstände, so was wie Regenjacke und so?

I: Zum Beispiel, ja.

P6: Jaa, also ich brauch nen guten Rucksack, wo ich Sachen reintun kann, ich brauche ein- ich bin Outdoormässig gut ausgerüstet, ich hab eh, Regenjacken die absolut wasserdicht sind und je nach We?erlage kleide ich mich dann damit an... das habe ich mir auch irgendwann mal angeschauW... weil es dann wirklich hauptsächlich zum Fahrradfahren ist. Und, äh, ich dann... das spielt eine Rolle... Rucksack... Noch was? Ne sonst ist da eigentlich nichts was ich- ne sonst fahr ich einfach los. Und das Fahrrad natürlich, mit seinem- ähm, das Fahrrad ist ja- ich hab ein Fahrrad das oben drauf ein, also dies- wie nennt man dieses Teil... Computer oder was, wo einem immer alles angezeigt wird und so und das ist auch genial natürlich, das ich da hin und herschalten kann, die unterschiedlichen Unterstützungsgrade eingeben kann... ähm. Ja, und die Gänge auch so einstellen kann dass das passt mit der Unterstützung, also ich schalte wild hin und her, ich benutze das wirklich viel, hab da aber auch so meine Lieblingsgänge und weiß dann auch so wenn es so hoch geht und der Wind kommt und so dann schalte ich in den Gang und ähm, macht mir auch Spaß, also ich mach das gern. Ja.

I: Ähm, fällt dir noch was zu dem Fahrrad, und der ganzen Technologie die da drin... ein... ist, ein, was spielt da alles eine Rolle?

P6: Ähm, also ich habs nicht so mit Techniksachen aber ich nehme das als nen großen Vorteil wahr und ähm, dieses Fahrrad hier ist ja nen Klapprad und äh, was ich aber gar nicht so viel... also, das muss mein Mann mir dann zusammenklappen weil hinten auf dem Fahrrad ist ein großes Körbchen angebracht und das lässt sich dadurch schlecht klappen. Wenn das Körbchen ab wäre wär das jetzt nicht so nen Problem aber ich brauche das Körbchen mehr als das ich das klappe. Also ich fahre ja am meisten nur in Münster damit rum. Manchmal machen wir auch Fahrradtouren, dann haben wirs mal mitgenommen oder so, aber ehm, das ist schon eher... das Körbchen ist wichtiger als das ich das klappen kann.

I: Ok, also das klappen benutzt du gar nicht so sehr die Technologie?

P6: Ne gar nicht.

I: Gar nicht [antwortet gleichzeitig].

P6: Ne benutz ich gar nicht, also nur in Ausnahmefällen jetzt demnächst steht- oder ich habs ja gerade erst ne Inspektion an, in dem Fahrradladen wo ich das gekauM habe, das ist in Ortsname, das ist mein Geburtsort und der ist ungefähr 50 km von hier und dann will ich- muss mein Mann es mir wieder klappen und ähm dann, kann man da hin fahren, und das da- das Qnde ich aber auch praktisch. Also, brauch man nicht jedes Mal einen Fahrradanhänger oder so.

P6: Jaja, auf jeden Fall.

I: Jaja. Aber ich glaube es gibt auch viele Leute noch, so die das noch so ganz anders nutzen, die das mit in die Bahn nehmen und so, das mach ich hier alles nicht weil die Schule von mir ist... da brauche ich keine Bahn, oder irgendetwas wo ichs klappen müsste.

P6: Ja... mhm. Ähm und wenn du dann fährst ähm, kommt dir da noch was zur Umgebung und Gegenständen in den Sinn, die ne Rolle spielen dabei?

I: Ähm, also Umgebung Qnde ich sehr sehr wichtig, ich bin immer auf der Suche nach dem besten Fahrradweg der da hinfährt, obwohl das nur so 6 km sind, aber ich guck dann immer vielleicht fährt man daher und ich such dann immer schöne Straßen, da gibts in Münster auch einige wo man Naturnah

irgendwie Sachen- ganz viele Bäume, schöne Alleen oder so, stell ich dann auch manchmal wieder um den Weg und denke, "ach ne, heute fährst du mal da her" und so. Also das ist mir schon sehr wichtig. So fährt man- man fährt halt ein bisschen aus Münster raus, Richtung Ortsname und da ist die Schule, in der ich arbeite, genau.

P6: Mhm. Ähm vorhin-

I: Und was gabs noch Technologien, physikalische Gegebenheiten, was ist denn damit gemeint, We?er oder was? Ne.

P6: Zum Beispiel, ja.

I: Achso We?er, ja. Hab ich ja schon gesagt, also ich bin nen Schönwe?erfahrer also wenns richtig doll regnet oder so, dann fahre ich mit dem Auto zur Schule (räuspert)

P6: Und wenns nen bisschen regnet...?

I: (seufzt) Bin ich auch eher geneigt das Auto zu nehmen. Aber nicht immer, aber es ist- ich bin wirklich nen Schönwe?erfahrer, das muss man echt sagen.

P6: OK.

I: Hat auch ein bisschen was mit meiner Erkrankung zu tun, das ich dann irgendwie... ähm... ja, das wär vielleicht auch gesund, wenn ich dann auch fahren würde aber so denke ich mir dann irgendwie "Ach ne... ähm, fällt mir irgendwie heute schwerer dahin und bla..."[6 Sek]

P6: Ja... Ähm, benutzt du noch irgendwelche Technologien oder so, also dann abgesehen von deinem Fahrrad, beim Pedelec fahren?

I: Also ich benutze das nicht, aber mein Mann benutzt dann wenn wir Fahrradtouren machen, hat der an seinem Handy, hat der so nen Teil das kann er dann aufs Fahrrad machen, und dann hat er ein Navi fürs Handy. Und wenn wir dann irgendwo... äh, ja, wenn wir dann irgendwo-Was ist das für ein Störgeräusch eigentlich? (lacht irritiert)

P6: Es ist ein bisschen störend, das wird beim Auswerten dann ein bisschen in den Ohren klingeln, aber naja. (lacht) Muss dann sein.

I: Ok, naja, die entkernen da gerade ne Wohnung. Ähm wir können uns auch reinsetzen wenn du möchtest, wenn dir das lieber ist...

Coronabedingte Erwägungen [63 Sek Platzwechsel der zwei Personen)

I: Ähm, wir waren bei- äh dem Navi, genau.

P6: Genau, also mein Mann der macht da so eine Halterung an das Fahrrad und dann benutzt der das Navi, also manchmal ist das ganz praktisch, wenn man dann bei der Lukies (unverständlich) unterwegs ist und sich verfährt, dann weiß man wo man ist oder... Aber auch nicht immer, manchmal.

I: Sorry, ich stelle mir nur kurz ein Wecker, damit ich so- irgendwann gewarnt werde. Super. Ja, ich glaube dann haben wir auch schon relativ viel zum materiellen besprochen. Ähm, der nächste Bereich ist alles was so ganz grob unter Fähigkeiten fällt, ähm, Körperbeherrschung, Wissen, Kompetenzen die

man braucht. [mhm]Was sollte man denn alles können um gut Pedelec zu fahren?

P6: Ich fahre ja E-Bike. Ähm, pRf... für mich ist das... Ich bin früher geri?en und Fahrradfahren ist ja so ähnlich. Und ähm, das ist auch so ein bisschen was was ich jetzt noch gut machen kann, mit meiner Krankheit. Und es trainiert auch sehr viel bei mir, also es trainiert Gleichgewicht, ein bisschen KraM, ein bisschen.. also das sind so Sachen die auch gut sind wenn man so ne Krankheit wie ich habe, MS hat, dann ist das sehr praktisch, fahrradfahren ist super dann. Ähm, ich hab ja jetzt, kann ich dann gleich auch mal- das bezieht sich jetzt auch beides, das materielle und die Fähigkeiten. Und zwar hab ich ja jetzt, ähm, nen kleineres Fahrrad, das hast du ja jetzt gesehen und vorher ha?e ich ein großes E-Bike, diese normalen. Und das fand ich immer schwieriger, oom, mit dem Gleichgewicht. Und mit dem kleineren kann ich jetzt auch langsamer fahre und habe trotzdem das Gefühl, dass ich das Fahrrad gut

beherrsche. Wenn ich aber ehm, und ich kann sehr langsam damit fahren und um die Ecken, es ist ein super Stadtfahrrad wo man viel an und aufsteigen muss. (Räuspern) Das war bei dem anderen irgendwie nicht so, da hab ich das Gefühl gehabt "Oh Go?" also ich bin auch ein paar mal hingefallen damit, also äh, das ist jetzt wirklich für mich viel sicherer mit dem kleineren Fahrrad, mit dem Klapprad. Ja, mhm. Joa... wasvon Körperbeherrschung... Wissen... Wissen meinst du jetzt...? Also ich Qnde man braucht nicht viel Wissen für das E-Bike fahren.

I: Gar nicht?

P6: Also... du meinst jetzt zum Beispiel wenn man- also für mich betreRend? Oder wenn man allgemein, also... ähm, ich Qnd das ist learning by doing.

I: Mhm. Also ich muss sagen ich bin ja eigentlich ein geübter Fahrradfahrer, seit langer Zeit. Aber jetzt hier in Münster habe ich zum Beispiel-

P6: Hast du ein E-Bike?

I: Ne, aber hab ich so ein paar Verkehrsschilder gesehen, wo ich erstmal gedacht hab "Oke, wa- wie verhalte ich mich jetzt richtig?" Also zum Beispiel Verkehrszeichen wie man sich im Straßenverkehr verhält wäre eine Sache die mir direkt in den Sinn kommen würde... [4Sek]Hast du... was hab ich denn vielleicht für nen anderen Zugang... (murmelt)

P6: Also... Verkehrsschilder, ich fahre ja jetzt schon so lange schon in Münster, und schon so lange schon Fahrrad, das ich glaube ich als ich vom normalen Fahrradfahren auf das E-Bike geswitscht bin, war es jetzt nicht etwas wo ich dann mehr Zuwachswissen was Verkehrsschilder oder so angeht, brauchte, weil es das selbe ist... Mmm... Also man muss vielleicht wissen "wie schalte ich hoch wie schalte ich runter",so was, aber das ist ja... also, ne... relativ schnell hat man das drauf. Bei mir war es jedenfalls so. Und dann hat man relativ schnell auch so das Gefühl- also ichhab ja gesagt ich schalte ziemlich viel hin und her und dann weiß man halt welche Kombination von den Gängen und vonder Unterstützung- wie man das kombiniert und so, das ist auch, das ist wirklich learning bei doing. Das ist- [Ja?]Also für mich war das auf jeden Fall so, vom Gefühl her, ja das hat mir auch keiner gesagt, also vielleicht am Anfang so nicht den größten Gang nehmen und losbre?ern (lacht) und ich bin ja auch- ich fahre jetzt auch defensiver weil ich ähm, ha?e vor eineinhalb Jahren auch einen Oberschenkelhalsbruch und seitdem bin ich auch- also es ha?e aber nichts mit dem Fahrradfahren zu tun, aber ich möchte mir nicht noch den anderen Oberschekel brechen (lacht) und deswegen... ich fahr defensiver. Bei mir, ich fahre meistens so 20, das Tacho ist da, das benutze ich dann auch um zu einzuschätzen "Wie schnell bin ich denn eigentlich". Genau. Also um das zu wissen. Da fällt mir jetzt nichts anderes ein, oder hast du da noch ne... ich weiß nicht, was, was ich weiß nicht genau was du meinst.

I: Ne ist auch voll ok, wenn du sagst da ist nichts mehr ist das auch voll ok- [Ja] Und wenn ich jetzt noch was sagen würde, dann beein?usse ich total meine Ergebnisse, also eigentlich war es gerade schon zu viel so auf die Straßenschilder aufmerksam zu machen, muss ich auch noch üben, da nicht dann- dass ist zu verlockend da noch irgendetwas anzumerken. Aber genau, eigentlich sollte ich-

P6: Und Kompetenzen... Kompetenzen natürlich ne gewisse Grund- ähm öh, Beweglichkeit sollte schon da sein und auch Auf- und Absteigen, also und auch hoch und runter und so und das man... vielleicht wenn man... also dieses, das man sich schneller auf eine Situation einstellen kann, also das man- man sollte einfach dann langsamer fahren, ne? Sonst ist das einfach zu gefährlich... Also gut, wenn ich jetzt an ältere Leute denke oder so, dann denke ich mir ok, wenn die natürlich gar nicht mehr laufen können oder irgendwas, oder... dann muss man halt gucken, wie weit geht das dann noch, da... sollten sie ja vielleicht noch tun können.

I: Mhm. Ähm, wir ha?en vorhin schon ein bisschen von dem, ähm von dem Hoch- und Runterregel, kannst du da noch was zu sagen, wann du das wie benutzt?

P6: Ja. Ja, also ich... (räuspert und überlegt) Also ja, wenn ich jetzt zum Beispiel sehe, da kommt ne Anhöhe, in Münster kommt das ja nicht so oM vor. Also zum Beispiel wenn du auf die Promenade hochfahren willst, bei manchen Stellen ist das ja so, das dann so ganz, dann sehe ich schon und schalte das Teil schon vorher hoch, dann mache ich die Unterstützung auf den höchsten oder zweithöchsten Grad und die Gänge runter. Dann ist das ne gute Kombination um das so... das weiß ich aber aus Erfahrung, wie ich das schalten muss und dann zack zack zack, hab ich das drauf und dann... das mache ich dann schon vorraussichtlich. Oder dann wenn wir ne Fahrradtour machen, plötzlich wird es total windig, dann ähm schalte ich einfach ne höhere Unterstützung und dann auch vielleicht die Gänge etwas runter, das mache ich dann aber je nachdem, das mache ich dann je- also der Wind varriert ja auch und kommt dann auch und geht und dann stelle ich das immer wieder neu ein.

I: Mhm. Du hast gerade ja auch ähm, Erfahrung angesprochen, ähm, wie unterscheiden sich denn geübte, oder erfahrene Pedelec FahrerInnen von unerfahrenen?

P6: Ähm, ich kann da nur von mir reden-

I: Oder so, ja.

P6: Ähm, also Erfahrung beinhaltet dann so was wie das du dann sofort weißt "OK, dann schaltest du den Gang nur so hoch und das dann runter und so und ähm, ja, aber ansonsten (räuspert) ich hab ja gesagt das erklärt sich relativ schnell und dann, als ich dann wirklich die Erfahrung- jetzt hab ich ja wirklich auch schon länger E-Bike Erfahrung, jetzt hab ich dieses neue Fahrrad, da brauchte ich eigentlich nicht lange um da rein zu kommen, also um mit diesen neuen Gegebenheiten ehm... mich hat- es war alles ja eher positiv. Also positiv zum Beispiel, dass es kleiner ist, und nicht so hoch, ich kann viel schneller absteigen und aufsteigen also eigentlich gabs da nur positive Erfahrungen und "Oh, ja, das geht ja viel leichter, du kannst ja auch- der Radius, der Wendekreis ist viel viel kleiner" -äh, größer oder kleiner, ne kleiner... Also es ist einfacher zu fahren und du musst nicht absteigen und du kannst auch mal so ne Kurve fahren, ganz eng, und das ist für den Stadtverkehr total super... Ja.

I: Mhm. Das ist ja interessant. Ähm...

P6: Also das muss ich wirklich sagen, also das an dem Fahrrad halt... also es ist ein bomben Stadtfahrrad! Also da musst du ja schnell reagieren und schnell auf und absteigen, jede Ampel ne mitnehmen, ne und aufsteigen, und so, und dich in den Verkehrs?uss einordnen und so und da manchmal- in Münster gibts ja auch so kleine- da muss man, ähm, zwischen zwei- wie heißen diese

Teile? Balken oder so, wenn du dann da zwischen durch fahren musst.

I: Mhm, so Poller oder so?

P6: Ja genau, und da ist der Radius bei dem Fahrrad- da komm ich dann noch so durch, und früher musste ich dann immer da abgestiegen dann vorher, dann bin ich nen kleines Dings gelaufen und dann bin ich dann wieder aufgestiegen und das geht bei dem Fahrrad wesentlich besser. Der Radius ist einfach.. also ich kann engere Kurven fahren ohne absteigen zu müssen.

I: Mhm, also dann kommen wir zum dritten Bereich, der ist so ein bisschen das immaterielle; Bedeutungen, Gefühle, Sinn-Assoziationen. Ähm, was verbinden Sie denn so- oder Du, was verbindest Du denn so mit dem Pedelec?

P6: Ääh... Freiheit! Freiheit, ähm, einfach wirklich damit losfahren zu können ohne auf irgendwie- auf ne Krankheit oder auf Wind oder irgendwie sowas Rücksicht zu nehmen, das ist wirklich ein großes Freiheitsgefühl und es erinnert mich auch so ein bisschen- hat das, wie ich das ja eben schon sagte- also nicht ganz, weil das ist ja ein toter Gegenstand dieses Fahrrad, aber das Pferd ist nen lebendiger Gegenstand also, ne? Die Beziehung zum Pferd ist natürlich noch sehr bedeutend, aber das hat man mit dem Reiten auch, wenn man einfach draußen ist und einfach dieses Gefühl von, ähm, Natur- ist um einen drum, das finde ich total toll, und das hat man mit dem Fahrrad auch. Und auch wenn man, also eine Zeit lang sind wir auch immer auf Nordseeinseln, also auch Langeroog auch ganz viel Fahrrad gefahren auch- dieses Gefühl von "Du bist in der Natur" oder wenn man jetzt zum Beispiel ein Motorrad oder so etwas hätte das ist ja viel lauter, das ist so- das passt auch in die Natur sehr gut rein, das stört die Natur nicht und das finde ich auch ganz schön am Fahrrad. Und ich finde- jaa, jetzt dieses- also ich finde jetzt mein Fahrrad auch schick, also schön... das vorherige Fahrrad meiner Mutter was ich auch gefahren hab fand ich jetzt überhaupt nicht schön... ähm, das spielt für mich jetzt aber nicht so eine große Rolle. Also mein Mann der hat auch so einen Fahrradblog und der... (blogname) macht der und der hat voll die Leidenschaft für alte Fahrräder und so. Also ich finde die auch schön aber das ist jetzt nicht mein- also ich kauf mir das Fahrrad nicht wegen der Schönheit sondern immer aus praktischen Gründen.

I: Mhm. Aber es ist schön, wenn es beides ist dann.

P6: Ja, absolut! (lachen beide)

I: Ähm, also das war jetzt quasi ne Innenperspektive von dir, ähm, wie ist es denn so von Außen, was kommt da von Außen zu dir als Pedelec-fahrerin?

P6: Von Außen? So was wie Du? (Lacht)

I: Ja, oder was sagen so die Leute, was sagen deine Freunde. was hörst du so, wie nehmen die das wahr?

P6: Achso [gleichzeitig]

I: Oder wie nimmst du das wahr?

P6: Achso also ja, ich glaube die freuen sich auch für mich, also dass mein Radius wieder größer geworden ist und so. Ich fahre hauptsächlich mit meinem Mann, der auch großer Fan ist von Fahrradfahren und ähm, also so, ich hab in Münster jetzt nicht so viele Freund- ah doch, die eine Freundin fährt auch viel Fahrrad, mit der mache ich auch manchmal Fahrradtouren und so und ähm Ja

die ist auch sehr positiv. Die andere Freundin wollte ich immer überzeugen, das klappt aber irgendwie nicht so ganz (lacht) ähm, ja. In der Schule nehmen die das auch wahr, also das Qnden die gut, wenn ich da mit dem Fahrrad komme, aber es ist auch- esist auch, das läuM unter ferner liefern, also hauptsache man ist da und ob man jetzt mit dem Auto kommt oder mit dem Fahrrad ist auch nicht so wichtig, he, ja und dann, ja... ich fahre- nutze nie einen Helm. Also vielleicht ist das auch wichtig... (lächelt hörbar)

I: Auf jeden Fall interessant, ja. Vor allen Dingen weil es ja nicht so- oder weil es ein bisschen kontrastiert mit den anderen Sachen die du beschrieben hast-

P6: Ja!

I: Also dass du sehr vorsichtig fährst, und äh, auf viele Dinge sonst im Straßenverkehr sehr Acht gibst.

P6: Ja ich glaube vielleicht ist das so ein Frauending... die Frisur und so (lacht).

I: Die Frisur (leicht ungläubig)

P6: Ja das habe ich schon oM gehört, also meine Krankengymnastin die auch viel Fahrrad fährt, die fährt auch ohne Helm und die hat sich jetzt so ein Teil gekauM was man um den Hals tun kann, was sich auf- ich weiß nicht ob du daskennst, das ist auch ganz bekannt. Also das pumpt sich auf wenn du einen Unfall hast und das schützt die Halswirbelsäule und das hat sie sich gekauM und nimmt sie dann mit aber sie meinte auch nene, bei Frauen und mit Frisuren und der Helm macht da alles pla?. Jaa, und ich Qnd auch, ich fahr jetzt schon so lange Fahrrad und ich weiß nicht, Qnd ich irgendwie... brauch ich nicht.

I: Gibt es sonst noch irgendwelche "Frauendinge" die dir einfallen?

P6: Ähm... Frauendinge, moment. Ja... ne Zeit lang, also es gibt zum Beispiel Kleidung die unpraktisch ist, beim Fahrradfahren, also enge Röcke oder so etwas. Beim Fahrradfahren brauch man ja immer so Beinfreiheiten, das ist dann manchmal unpraktisch und manchmal zeihe ich mich dann auch danach an. Also ich ziehe mich dann morgens auch so an, wenn ich zum Beispiel zur Schule fahre und denke "Naja...dann zieh mal lieber einen weiten Rock an oder irgendwie so"... mhm. Ja.

I: Noch irgendwelche anderen Dinge die bei Frauen vielleicht anders sind als bei Männer?

P6: Ähm (überlegt) Ich glaube Frauen haben auch mehr diesen Gewinn... obwohl ne, das stimmt auch nicht. Also ne, ja, andersrum. Also Männer haben, also ich kann ja nur von meinem Mann reden, gerade, obwohl ich das auch bei anderen schon wahrgenommen habe- ähm, haben mehr diesen Zugang zu diesen technischen Sachen bei Fahrrädern, absolut. Also ist ein bisschen dieses Vorurteil wieder, und Klischée und so, und das bestimmt auch nicht auf alle Frauen und das heißt auch nicht, das Frauen das nicht auch können, aber ich hab das- bei mir und bei meinem Mann ist das halt so.

I: Mhm.

P6: (räuspert) Mich interessiert das auch gar nicht so. Also immer wenn da so ein Technikding ist denk ich mir immer "Hach, hoRentlich ist das jetzt nicht kompliziert, ich will einfach losfahren" Also, so...

I: Ja, ja OK. Ja wir reden jetzt so ganz abstrakt über ein Temawas eigentlich eine körperliche Routine ist, ähm... und bei Routinen ist eben so ein bisschen das Problem das wir häuQg ganz viel davon nicht wirklich mitkriegen und uns dessen nicht bewusst sind, deswegen gibt es so eine ganz ne?e Methode

um sich in diese Routine hineinzusetzen und ähm, zu gucken ob einem da noch mal irgendwie andere Dinge auRallen. Und ähm, die nennt sich Doppelgängerinterview und der Grundgedanke ist der, ähm, ich bin dein Zwilling, ich hab genau den selben Körper wie du, ich hab prinzipiell auch genau die gleichen Fähigkeiten und die selben Einschränkungen. Aber, ähm, wir haben uns irgendwie die letzten fünf Jahre nicht gesehen und ich weiß nicht wie du dich zur Zeit in deinem Alltag verhältst, und generell gucke ich dir nicht so dabei zu wie du zur Arbeit fährst ähm (lacht) und ähm, ich soll aber morgen für dich zu deiner Arbeit fahren, ohne das irgendwer bemerken kann, dass ich das bin und nicht du- weder deine Nachbarn, die irgendwie immer aus dem Fenster schauen und auch der Bäcker auf der HälMe der Schrecke und auch deine KollegInnen, die schon aus dem Lehrerzimmer runtergucken. Ähm, und ich würde dich bi?en dir so deinen Arbeitsweg wieso nen Film vorzustellen, in einzelnen Sequenzen komple? durch und ähm, mir in der "Du" Perspektive, "du sollst, du musst" zu beschreiben was ich alles nacheinander machen muss, damit ich nicht auRallen kann. Und dabei gehts auch um so Kleinigkeiten wie zum Beispiel, also ich würde mir zum Beispiel die Hose in die Socken stecken. Wenn ich das nicht weiß dass du das nicht immer machst dann falle ich irgendwie auf. Wenn ich irgendwie über rote Ampeln fahre und du würdest es nicht machen oder hier so... oder, also so ein bisschen die Feinheiten und auch gerne so was mit entweder oder, "wenn das passiert dann so... sonst eher dedede". Ja, also was muss ich denn machen wenn ich zu meinem Fahrrad gehe und anfangs, zur Arbeit zu fahren?

I: (Überlegt eine Sekunde) Hm. (seufzt und räuspert sich) Ja,

du musst halt deine, ähm, du musst dich erst mal dem entsprechend anziehen, ähm, ja genau, je nach We?erlage. Dann immer den Rucksack mitnehmen und auch immer- ich hab nen kleinen Rucksack, den musst du auch immer nicht in das Körbchen tun sondern hinten-hinten auch auf deinen Rücken, weil ich auch nicht möchte, es passiert in Münster manchmal, dass einem das rausgerissen wird. Also immerhin der Rucksack ist mein Leben, mit den ganzen Papieren und so, dann-

P6: (unterbricht sie hö?ich) Was was sollte ich denn im Rucksack dabei haben?

I: Achso... Ja meine ganzen Papiere, also drei Sachen kontrolliere ich vorher ob die da sind. Also Handy, äääh (stöhnt) Papiere... und und Geld. Und ähm, Tempotaschentücher habe ich immer dabei (lacht) weil mir beim Fahrradfahren immer die Nase läuM, frag mich nicht warum, ich weiß es nicht, aber ich kenn das auch von anderen, und mir tränen auch manchmal die Augen, aber das ist der Wind. Und ja... und das habe ich halt dann immer und den Schlüssel, das kontrolliere ich auch das ich das mit hab. Und manchmal halt auch Arbeitssachen die ich so brauche, und natürlich- das kommt auch noch dazu. Aber das habe ich dann meistens gesondert, also das tu ich dann in mein Körbchen. Aber meine Papiere und mein kleiner Rucksack der ist immer auf dem Rücken. Ja, dann gehts los und dann habe ich meine Jacke an meistens(räuspert)

I: Am besten in der "Du" Perspektive, also "dann hast du..."

P6: Achso, achja, also hast du meistens deine Jacke an und ähm, eeeh (überlegt) joaa, äh. und dahaaann überleg ich schon schon beim rausgehen- da sitzt mein Mann "Jens, wolltest du dich mal kurz vorstellen" Ähm, in der "Du" Perspektive- jetzt kommt er

Mann von P6: Moin!

I: Guten Morgen.

P3: Hallo! (lacht)

I: Ich hoRe wir stören jetzt hier nicht...

Mann von P6: Nä, gar kein Problem (lacht)

P6: Das ist der mit dem Fahrradblog

Mann von P6: Ja... Seid ihr reingegangen oder was?

P6: Ja da wird es gerade entkernt, das ist total laut!

Mann von P6: Ach da (murmelt Sachen bezüglich der Baustelle.)

P6: Jah (seufzt laut). Ich beschreibe gerade, wie ich zur Arbeit losfahre. Dann

P3: Ach ja ok (entfernt sich und die beiden bereden noch etwas bezüglich ihrer Heizung)

P6: Äh-

I: ...Rucksack auf?

P6: Ja, Rucksack auf, tempotschentücher in den Rucksack, dann gehts los ääähm, Jacke liegt manchmal auch im Körbchen, je nach dem wie das We?er ist, dann fahre ich los, dann entscheide ich während ich-entscheidest du während du losfährst "welchen Weg möchtest du heute fahren?" Also ich fahr nicht immer den selben- "ach ja, jetzt könnte ich auch mal so fahren". Ja... äh und da richte ich mich danach auch, also wie gesagt so viele Möglichkeiten gibt es da nicht, aber wie gesagt so ein paar und dann ja, also dann fährst du los dann bin ich dann meistens, also versuch ich immer, so bei der ersten... wenn ich am Ring bin bei der ersten- versuchst du immer, bei der ersten Kreuzung am Ring, versuchst du immer auch ja noch die Ampelschaltung noch mitzunehmen und fährst darauf zu und überholst dann auch viele Leute und gibst dann richtig Gas und auch wenn sie gerade auf rot gesprungen ist fährst du da noch schnell drüber (lacht kurz) und genau, dann gehts drüber, dann gehts weiter, meistens in so einen kleinen Park und dann äh, ja, dann, dann ist man in diesem Park, dann genießt man diesen Park, dann fährt man wieder schön langsam um die Vögelchen noch mitzukriegen fährst du wieder schön langsam und dann ja. Daaann muss man sich wieder drauf einstellen dass man wieder auf eine Kreuzung kommt, eine Straße überqueren muss und dann gibt es mehrere Möglichkeiten und dann guckst du je nach Autos, wie voll das auf dieser Straße ist, wodu da rüber gehen- fahren kannst, und versuchst dann relativ schnell da irgendwie rüberzukommen ohne abzusteigen, aber manchmal geht das nicht irgendwie anders und dann steigst du auch ab. [Okay]Und ähm, das ist dann auch manchmal etwas holprig, das kann auch sein dass du da manchmal auch etwas unsicher bist und je nach körperlicher Verfassung mit der MS kann das auch sein wenn man dann absteigt und so dass man dann ein bisschen wackelt, äh, jaa, das kriegt man aber meistens kriegt man das gut hin... oder du. Und ja dann gehts weiter, dann kommt der nächste kleine Park und dann genießt du das auch wieder aber jenachdem, oM bist du auch zu spät dran, ein bisschen, und dann ist das wirklich, musst du da auch wieder Gas geben, und da durchheizen und ähm- dann achtest du daganz genau dadrauf deinen Fahrradweg machst du genauso, wie du noch Zeit hast. Also wenn du gut in der Zeit bist fährst du ein bisschen langsamer und genießt die Natur und guckst dich so um und denkst "ach wie schön!" Aber manchmal bist du auch in Vollhetze und saust dann da einfach durch-

I: Dann schalte ich ganz hoch oder...?

P6: Ja dann schaltet man hoch, genau, und dann wird man auch Risikobereiter, wirst du auch Risikobereiter weil dann istes dir egal, hauptsache du kommst irgendwie zur Arbeit, genau... Und ähm,

ja.. Was ist denn da noch? Ja dann gibt es halt wie gesagt noch diese Balken, diese Poller wo man dann, wo du dann auch teilweise hast du ja dann jetzt das neue Fahrrad und fährst dann auch ganz super darumherum und ärgerst dich aber wenn dann Leute gerade- Fußgänger, also daist auch ein Kindergarten und eine Kriche und da sind auch öMers mal Leute, also ärgerst du dich wenn die da einfach durchgehen und du willst da aber gerade schön durchfahren, das geht dann aber nicht, also musst du wieder absteigen. (seufzt) Ja... dann ist das ein bisschen holprig und du wirst ein bisschen holpr... unwirsch (lächelt hörbar) aber nur innerlich natürlich. Und dann gehts weiter, dann nimmst du dein Tempo runter weil da ist ja der Kindergarten, da können ja Kinder rauskommen und dann fährst du da langsamer (spricht beschwingt) auch wenn da keine sind aber können ja welche kommen. Dann kommt, ähm, ja, ganz zum Schluss kommt dann eine Brücke, du musst so über Bahnen- eine Bahnenschienengeschichte fahren, un dann kommt dann eine Brücke mit der es da drüber geht und die ist- da geht es total hoch und mit diesem neuen Fahrrad ist es total einfach, ähm, früher mit dem alten Fahrrad musstest du da immer absteigen und da musst du auch durch so ein Ding durchfahren, durch so ein Poller, oder so eine Schranke-

I: So ne Schranke (sprechen gleichzeitig)

P6: Und dann musstest du da immer absteigen und dann um wieder hochzukommen musstest du, wenn du Glück ha?est, das lag an deinem körperlichen Zustand, der MS, konntest du ganz runterschalten in den ersten oder zweiten Gang, höchsteUnterstützungsstufe anmachen und dann schnell draufsetzen und dann konnte man wieder hoch. So. Mit dem neuen Fahrrad ist das so das man dann da durchfährt, durch diese Schranke und man kann das gleich alles richtig einstellen, dieUnterstützung ganz hoch, die Gänge ganz runtern und dann schlängelst du dich da durch und dann- ZACK- gehts hoch, also das ist gar kein Problem mehr. Das ist nicht schon wieder dieses im Kopf "Ah, ja, mal gucken ob das klappt" und so, ja! Und dann ist man eigentlich auch schon fast da. Also da, ja. Vor der Schule nimmt man dann das Tempo runter, steigt auch ab, weil auf dem Schulhof wird kein Fahrrad gefahren und so, und dann stellt mans ab und ach ja- und ach ja! Das sind auch noch die Gegenstände die wichtig sind: Schlösser! Ich hab jetzt auch an dem neuen Fahrrad, und so ist es jetzt auch versichert, ähm, ein Schloss das muss ich dann immer eigentlich um abschließen, das ich das an ein Teil schließe was im Boden verankert ist. Ja und darum bemühe ich mich dann auch immer. Ja.

I: Dann spielt der Untergrund ne Rolle dabei?

P6: Ach der Untergrund. Der Untergrund spielt beim Schulweg keine große Rolle aber wenn ich ähm, wenn wir Fahrradtouren machen, also mit dem kleinen Fahrrad jetzt, das hat kleine, also kleinere Reifen und ich hab ja gesagt- es ist nen super Stadtfahrrad aber es ist nicht so gut für Strecke. Also da ist das andere Fahrrad besser gewesen weil es große Reifen ha?e und wenn es kleinere Reifen hat wenn du auf sandigen Böden und so fährst kommst du schneller ins Schlingern. Also das ist echt noch ein Unterschied, aber es ist nicht so, dass man das nicht meistern kann. Also ich würde esnie eintauschen! Es ist ein bisschen schwieriger..

I: Mhm. (Schmunzelt) Mhm, OK. Gut, ja perfekt, wir sind sehr gut in der Zeit. Ja cool, ähm (blä?ert in Unterlagen) Ähm, unter... unter welchen Umständen pendelst du denn nicht mit dem Pedelec, wann nutzt du ein anderes Verkehrsmi?el?

P6: Also wenn ich, ähm, meinst du jetzt auf dem Weg zur Arbeit?

I: Mhm.

P6: Also ich bin ja ein Schönwe?erfahrer, also wenn das We?er schlecht ist, dann nehme ich mein Auto, genau. [Okay] Oder im Winter eigentlich auch, wenn es gla? ist fahre ich fast nie Fahrrad, weil

da hab ich dann echt Angst dass ich mich da ablege...und...

I: Ja? Ja, und, äh, und bei Kälte sonst, hast du da irgendwie ne Daumenegel, oder ist das dann...?

P6: Also ich fahr schon bei Kälte, also wenn ich zum Beispiel in die Stadt fahre- also ich fahr bei Kälte nicht zur Arbeit aber wenn ich in die Stadt fahre, ich mach fast alles mit dem Fahrrad jetzt, also ich fahr in die Stadt und dann auch wenns kalt ist auch im Winter und so, nur nicht wenn es gla? ist, oder wenn es schneit, oder dauerregnet, dann nicht. Aber ähm, ansonsten ich hab sehr- also wenn es ein bisschen regnet fahr ich auch in die Stadt. Und ich hab- bin ja ausgerüstet mit- ich hab Outdoorjacken jetzt, dann passe ich meine Kleidung da an.

I: Mhm. Ja, wie unterscheidet sich denn das pendeln mit dem Pedelec vom pendeln mit dem Auto.

P6: Äh (überlegt) ja, also da sind ja diese ganzen, also diese ganzen Umgebungssachen und so, das Gefühl man ist in der Natur, man tut was für die Umwelt, das hat man ja alles nicht wenn man Auto fährt. Äh (stöhnt) ja. So. Also und. also Autofahren ist für mich manchmal auch von Vorteil, das ist aber auch wieder so nen Frauending, weil dann meine Haare noch trocknen können wenn ich noch nicht ganz fertig bin, also ich muss dann schneller, also ich muss dann unter die Dusche und dann mach ich- lass ich die LuM trocknen einfach, und im Auto können die dann weiterröcknen, beim Fahrradfahren geht das ja nicht. Also dann werden sie, dann gehen sie durcheinander wenn sie noch nicht so richtig trocken sind (lacht) das meine ich- das kann man nicht als Mann nicht haben-

I: Bjoa, das ist nicht nur ein Frauending (die andere Person redet zustimmend gleichzeitig und lacht) das geht mir auf jeden Fall auch so. Ja, die... die Sturmfrisur, du hast ja meine Frisur von gestern noch gesehen, ich weiß nicht, (lachen beide)

P6: Stimmt, dann liegen sie so "tschouuu" und passen sich dem Wind an-

I: Ja und vor allem vereinzeln die sich und dann hab ich einfach so ein riesen Wuschel da oben drau_ängen das ist- ja.

P6: Ja guck, das haben Männer auch, ja das würde ich auch gar nicht auf Frauen beziehen.. (lache beide herzlich)

I: Ja... (beide lachen). Ähm, unterscheidet sich das pendeln fürdich von anderen Wegen, die du zurücklegst?

P6: (atmet lange ein) Ehm, ja, das ist mehr Routine, also das ist automatisierter, ja, das würde ich schon sagen. Soll ich das beschreiben oder ist das so- reicht das?

I: Ähm, ja?

P6: Also es ist einfach, wenn ich dann- weiß ich OK, wie- hab ich ja gerade gesagt, diese ganzen Kontrollsachen, dann weiß ich "Zack, los gehts" und wenn ich dann sonst... ja, Fahrradtouren sind ja anders, da macht man noch mal, da geht man ja anders ran.

I: Mhm. Ja, wie gehe ich da anders ran?

P6: Dann überlegt man sich ach nimmt man vielleicht noch irgendwie sich nen kleines Picknick mit oder was- wie macht man den Weg, und dann zieht man sich natürlich auch noch mal anders an... und... (überlegt, murmelt) [6Sek]

I: Ähm, seit du angefangen hast mit dem Pedelec zu pendeln, hat sich das auf deine andere, auf deine sonstige Wahl von Verkehrsmitteln ausgeübt?

P6: Ähm, jaa. Weil ich einfach wesentlich- also ich fahre wesentlich weniger mit dem Auto, viel weniger. Weil ich mache jetzt fast alles mit dem Fahrrad. Wir haben jetzt auch das große Glück hier Stadtnah zu wohnen, wir haben halt auch das große Glück fast alles mit dem Fahrrad zu machen, das ist super. Also, ich hab auch ne Garage dahinten, also wir haben ne Garage und da steht das Auto, mein Auto drin, und das Fahrrad steht da an der Seite so vor, und wenn ich das Auto benutzen will muss ich das Fahrrad erst rausstellen um das Auto rauszuholen. Und jetzt ist das einfach so und ich benutze- also für mich ist das eigentlich OK weil ich das Fahrrad wesentlich öfter benutze als das Auto, das heißt, auch wenn es so steht kann ich eben schnell dahingehen, das Fahrrad rausholen, Garage wieder zu und los gehts denn ich brauch das Auto ja kaum. Weil sonst ist es schon umständlich, immer erst das Fahrrad erst rausholen, das Auto rausfahren und das mach ich ja fast nie, weil durch das Fahrrad brauche ich das Auto ja fast nicht mehr. Das Fahrrad hat ne größere Priorität.

I: Wie war das als du noch ein Fahrrad ohne Motor hattest und noch kein Pedelec?

P6: Da hatte ich überhaupt kein Zugang zum Fahrrad, das fand ich Fahrradfahren eigentlich eher furchtbar und so... also da wars- das hat aber was mit meiner Krankheit zu tun, weil es wirklich dann, ähm, die negativen Gefühle überwogen alles. Also dieses Gefühl "Ich hab keine Kraft, ich schaffe das vielleicht heute nicht, das hat mich innerlich alles schon alles immer gestresst.

I: Aha, mhm. Ähm, seitdem du angefangen hast mit dem Pedelec zu pendeln, hat sich das irgendwie- oder, erst mal- welche Orte oder Aktivitäten verbindest du denn noch mit dem Pendelweg, wenn du den Pedelec fährst?

P6: Äh, du meinst wie ein Café wo ich dann mal zwischendurch halte?

I: Zum Beispiel, ja.

P6: Ja mache ich nie.

I: Gar nicht?

P6: Gar nicht, es gibt keine anderen Orte, ich halte nicht an um mich irgendwie auf eine Bank zu setzen und die Natur zu genießen, um mich auf einen Park zu sein, also ich fahre einfach nur zur Schule direkt.

I: Direkt? Also von zu Hause zur Schule, nach zu Hause-

P6: Ja direkt, immer nur. Also ich hab da nie andere, das ist für mich automatisiert. Das ist für mich wie mit dem Auto sozusagen.

I: Auch nicht mal einkaufen oder so was?

P6: Ganz selten, also ganz ganz selten also-

I: Eigentlich nicht...

P6: Eigentlich nicht, ja.

I: Und ist das jetzt speziell fürs Pedelec, hast du vorher mit dem Auto auch andere Dinge noch auf dem

Arbeitsweg gemacht?

P6: Nein.

I: Auch nicht.

P6: Mhm, das ist das selbe gewesen. Obwohl nein- das stimmt nicht! Ts, also das muss ich jetzt sagen, Auto- da bin ich dann öMers noch einkaufen gefahren, weil wenn ich einkaufen fahre muss ich auch, ähm, hab ich meistens ne große Tasche, und die kann ich besser ins Auto tun, oder ein Körbchen, und das kann ich mit dem Fahrrad nicht machen. Ich fahr mit dem Fahrrad nicht gerne einkaufen. Mein Mann aber wohl, deswegen haben wir öMer mal Stress (lacht). Also der will immer mit dem Fahrrad einkaufen und ich will immer, ich sag immer "Nein, aber dann kriegen wir nicht genug Sachen mit, und bla ubd bla "ich trag die alle" und ja... so (räuspert).

I: Ähm, habt ihr ein Auto, oder...?

P6: Wir haben zwei, er hat auch eins. [zwei Autos] ich benutze mein Auto aber fast nur für die Arbeit, um zur Arbeit zu kommen, oder mal zu meinen Eltern zu fahren, ich fahr sonst nicht viel Auto.

I: OK. Ähm, machst du noch irgendetwas während du zur Arbeit fährst?

P6: Was wäre...? Musik hören oder was?

I: Zum Beispiel, ja.

P6: Nein, keine Musik, ich mag lieber die Natur hören-

I: Also die Umgebung wahrnehmen...-

P6: Ja, also Vögelchen und so...ja. Ich telefoniere auch wenn ich Fahrrad fahre gar nicht, das machen ja viele. Das kann ich auch gar nicht, Gleichgewichtmäßig.

I: Was ist denn normale Mobilität in Münster?

P6: Ich glaub das Fahrrad spielt schon ne große Rolle hier... also ähm, ja. Also ja, aber beides auch, Auto und Busfahren... Ja. Bin ich auch vielleicht die falsche Ansprechpartnerin, aber was ich so wahrnehme ist natürlich wenn Semesterferien sind sind weniger Studenten da und dann gibts auch weniger auf den Straßen, das merkt man so richtig, und wenn... ja, wenn denn dann wieder Semesteranfang ist dann legt das wieder voll zu. Ja.

I: Ähm, wie haben jetzt sehr sehr viele positiven Dinge angesprochen äh, aber mich interessieren genauso alle negativen Aspekte, die genauso irgendwie ne Rolle spielen. Fällt dir in den Bereichen irgendwelche negativen Dinge auf beim Pedelec? Also entweder die negativ sind an sich, oder die es schwieriger machen oder solche Dinge...

P6: Ich hab ja die freie Wahl wie ich es mache, also ob ich's mit dem Auto oder mit dem Rad mache, deswegen ist das für mich überhaupt... äh... keine... ähm-

I: Wenn du drüber nachdenkst, fällt dir nichts negatives ein beim Pedelec?

P6: Nä.

I: Ähm, was spielt denn so im ganz weit deQnierten Bereich Sicherheit noch alles ne Rolle beim Pedelec fahren-

P6: (Unterbricht die Frage) Meinst du Sicherheit wegen Diebstahl oder was für Sicherheit?

I: Zum Beispiel, ja.

P6: Ähm, (räuspert) ja, also das kann ich sagen, was jetzt, ich hab jetzt ne Fahrradversicherung abgeschlossen bei dem Laden wo ich das Fahrrad gekauM habe, die ist auch wirklich super, Qnd ich, die hat total gute Konditionen, ähm, man soll aber dann auch das Fahrrad mit einem bestimmten Schloss, was auch dabei war, äh, was ne bestimmte- gabs halt ne Vorgabe für die Schlösser und ähm, das versuche ich auch immer zu machen. Das ist vielleicht noch etwas, das ist das einzig negative, was mir jetzt vielleicht noch einfällt, was mich manchmal nervt. Dieses ewige Abschließen, das dauert manchmal halt länger. Also du kannst ja- mit nem normalen Fahrrad kannst du einfach ja- (unterbricht um mit ihrem Mann zu sprechen)

Es folgt ein Gespräch über das kapu?e E-Bike im Keller, dessen Motor nicht anspringt (47:50 – 49:24)-rad hat Wackelkontakt- Motor springt nicht immer an [Problem ha?e ich bei Leih E-bike in Wuppertal auch]

P6: Das ist wahrscheinlich- das ist sonst auch noch ne negative Sache, die Ba?arien, und die Akkus (seufzt) ja... die Akkus, die, die die sind einfach, die haben bis jetzt immer denGeist auf gegeben irgendwann (murmelt genervt) also ja, das-also eins nach dem anderen, mit den Akkus ist schon blöd gewesen mit dem alten Fahrrad, weil das dann plötzlich, und wir wussten immer nicht, warum ist das so? Also das hat dann plötzlich keine Unterstützung gerade- gerade mehr angezeigt bei den kleinen Bordcomputern und dann wussten wir nicht, woran liegt das.

Mann von P6: Joa wir ha?en schon ein Problem einenAustauschakku zu kriegen, das man ne Referenz hat ob das Problem am Akku liegt oder nicht, das war schon schwer, der Fahrradhändler ha?e schon erst mal keine mehr, und dann ha?e er es repariert, dann war es aber doch nicht repariert, und ähm- also das ist eben, man sagt sich wenn man sich ein Fahrrad kauM und dann nach irgendwie drei Jahren so ein eklatanter Fehler drin ist-

P6: (springt ein) Das war schon ziemlich teuer.

P3: Da wird nen Autofahrer nicht mitmachen, da wird da die Leute schon auf X krempeln, so, das geht nicht, da kann man nicht so ein teures Produkt verkaufen was dann nicht ausgereiM ist irgendwo...

P6: Ja wenn dann sind es die Akkus die Probleme machen

Mann von P6: Die Akkus halt-

P6: Sonst war das immer nie ist das dann ein Problem gewesen, hat immer alles funktioniert aber die Akkus- hat alles Fuktioniert sonst, aber die Akkus

Mann von P6: Die sind auch immer so schwer, hier der alte istja so schwer, der neue von dir den kannst du ja auch noch mitnehmen, ne?

P6: Das kann ich auch noch positiv erwähnen, genau. Das, der, die Akkus sind viel viel kleiner geworden, also ich nehm es wirklich nie mit, aber man könnte es rausmachen, es ist wirklich ganz leicht zu handeln jetzt mit dem Akkus, und früher- "zeig mal das alte Ding" (Wendet sich an ihren

Mann) aber du, du weißt ja wie sie aussehen, ne? (an den Interviewer gerichtet)

Mann von P6: In den letzten Wochen hat der, ähm, den ich auf dem Fahrradladen kenne, der da arbeitet hat gemeint die klauen wie die Raben jetzt zu Coronazeiten. In den letzten eineinhalb Wochen-

P6: Du musst sagen wer Fredde ist. (reden gleichzeitig)

Mann von P6: ...12 Akkus...

I: An dem Fahrradladen direkt?

Mann von P6: Ne, die haben gesagt 12 Kunden von denen, in den letzten eineinhalb Wochen sind zu denen gekommen- nurvon uns haben die 12 Kunden gehabt.

P6: Aber wer ist Fredde, du musst doch mal erklären!

Mann von P6: Ja jemand vom Fahrradladen da... und der... dermeinte, musst du mal überlegen, "nur über uns waren 12 unten", jetzt kannst das mal auf die Fahrradläden hochrechnen und, ähm, am helllichten Tag... klauen die die, und wenn die Leute auf dem Markt sind gehen die hin, klauendie Dinger. Letztens hat einer versucht einen zu klauen, jetzt mit dem, äh, schön mit dem Schraubenzieher in den Akku, dahat das ganze Fahrrad angefangen zu brennen, musste die Feuerwehr das ganze Fahrrad löschen. Tsss, es ist, also, die sind echt stumpf die Jungs, diese Fahrraddiebe. Und eh, das ist auch, man muss die Jungs auch dann relativ schnell auf frischer Tat ertappen. Der vom Fahrradladen der hat auch, hat der mir erzählt, so nen Lasenrad hater sich hier mal gekauM, so ein E-Lastenrad, so ein richtig teures, weil er das zum Einkauf kriegt. Innerhalb von einem Jahr ist es ihm einmal komple? auseinandergebaut worden, hinter seinem Haus. Hinter also so wie bei uns, direkt hinter seinem Haus, nachts, komple? auseinandergelegt, also sah man auch das jemand komple? das Werkzeug gehabt haben muss, der muss sich das genau überlegt haben, alle Teile abgebaut, dann hat er ein GPS Sender selber eingebaut, weil er dachte, ok, wenn es mir das nächste Mal passiert dann weiß ich Bescheid. Joa, jetzt ja vor ein paar Wochen meinte er gleiches Spiel, dieses Mal nur anders- War das Fahrrad weg, und dann hat er da geguckt im Handy, 800 Meter entfernt stand das in so nem Hinterhof, hat er erst mal das Fahrrad geholt, die Polizei eingeschaltet und ähm, die Polizei hat nur gesagt "Ja wo haben sie's denn stehen?" "Ja, bei uns im Hinterhof" "Ja, wenns sie so nen tolles Fahrrad haben, haben sie denn keine Garage?" Meinte der auch so "Ey, ich hab doch keine Garagenp?icht, nur weil ich nen teures Fahrrad habe, das ist doch nicht- vielleicht kümmern sie sich mal um denjenigen der mir das geklaut hat, ich bin der Geschädigte- falls ihnen das entgangen ist." Meinte auch so, ey dann gibst du da alles mögliche an bei der Polizei und es kommt echt fast nie was. Also ich hab echt nur einen gehört jetzt letztens der nach 8 Monaten gesagt hat- er wollte sich gerade ein neues Fahrrad kaufen, und ha?e quasi schon, ha, halb irgendwie schon bei so nem Farradladen angefragt, was er für nen Fahrradhaben wollte, so und dann und ein Tag später ruf jemand an und sagte "Ja, wegen des Fahrrads und so" und da dachte er schon, dass es von dem Fahrradladen wär und dann war das aber dervon dem Fundbüro der sagte "Ja das Fahrrad wäre jetzt da und da gefunden worden und er könnte sich das jetzt abholen". Aber... die meisten geklauMen Räder, pRf, also...

I: Aber im Grunde bietet das E-Bike ja die perfekte Möglichkeit gegen so etwas vorzugehen, ne, wenn da immer Strom ist, dann kannst du irgendwie den Peilsender immer wieder au?aden und dann ist, wäre ja die Möglichkeit gegeben, wenn sich da Fahrradhersteller und Polizei zusammentun, deutlich mehr Leute auf frischer Tat zu ertappen und-

Mann von P6: Wenn man das wollte würde das einfacher geben. Also die Holländer machen das ja, die haben das ja mitden Fan Moof, diese ElektriQed, die 2er, die neue Serie, ähm, die haben alle, die haben

alle nen GPS eingebaut und die haben sogar von Van moof so nen Team was sich dann nur darum kümmert wenn jemandem das Fahrrad geklaut wird. Dann machen die halt den ganzen Krams und sorgen dafür, dass das Fahrrad wieder rankommt. So dass die Fahrraddiebe auch mal ein bisschen merken, hier ähm-

I: "Das Fahrrad, das nehme ich lieber nicht"-

Mann von P6: Besser die Finger von, weil sonst gibts Ärger. Und ähm, weil viele andere die sind echt, ähm, also ich hab das ja gesehen die sind so, so stumpf, also die haben echt ne Akku?ex inner Tasche, Akku?ex raus, höchstens ne Minute, die kommen durch alle möglichen Schlüssler durch, und wenn einer sagt "Hey was machst du denn da?" Steht der dann mit der Akku?ex da, ja gut, was willst du machen, da musst du ja auch ein bisschen vorsichtig sein, mit ner Akku?ex ist auch nicht ganz ohne. Und ähm, ja, wir ha?en auch, das ist noch nicht lange her, bestimmt vor... 6 Wochen? Da stand auch so ein Typ hier im Hinterhof, so ein Rucksack auf, Hoddie, 17, 18, so nen Drogis?yp irgendwo und guckt sich die Fahrräder auf, so, so von (Name der Frau) auch so "hmm, hmmm" (imitiert die verdächtige Person) und ich so "Hm, was macht der Vogeldenn hier morgens um 11, bin ich um die Ecke gegangen, da kam er schon aus dem nächsten Hinterhof raus! Dann ist er die Straße runtergegangen da hab ich zu nem Nachbarn gesagt "hier, geh mal hinter dem Vogel her!" Und dann am Ende der Straße ist ihm wohl aufgefallen, dass ihm hier der Nachbar gefolgt ist und dann hat er sich wohl verpisst irgendwie. Also wahrscheinlich hat er gemerkt das man ihm irgendwie, ähm, hier auf die Finger so ein bisschen guckt, aber aus dem Hinterhof haben wir schon glaube ich 2 Fahrräder geklaut- die sind hier... also, pR.... die sind hier schon unterwegs, da muss man aufpassen.

P6: Deswegen steht es ja jetzt auch in der Garage...

Mann von P6: Mm. Ah ja. Musst du auch sagen.

P6: Ja vorher, ehm, da... da hinter... hinter dem Haus gibt es so nen Geländer, so ein Treppengeländer, da hab ich es immerda angeschlossen und jetzt, seitdem (Name des Mannes) da jemanden beobachtet hat der da hinten im Hinterhof war stelle ich es jetzt immer in die Garage, die Garage ist dann abgeschlossen und da ist es dann jetzt sicherer... Das ist natürlich auch ein bisschen nerviger, dass ist ein nerviger Aspekt mit diesen E-Bikes. Weil die einfach teurer sind und man dann mehr Sorge hat.

Mann von P6: Man muss die einfach irgendwo hin packen, wo die nichts sichtbar sind, wenn die sonst irgendwo rumstehen, durch diese Akku?exnummer, das hat sich hier herumgesprochen, und da sind die Leute stumpf, die Mähen alles durch, auch die Ke?e die der (nennt Namen eines Freundes) ha?e, mit dem Lastenrad, das ist die letzte Stufe unter Motoradstufe, das ist die höchste Stufe die es überhaupt gibt für Ke?en, sah man noch den Blauschimmer meint er. "das ist mit der Akku?ex, da ist einer mit der Akku?ex durchgegangen" und ähm, wenn man da nicht dabei ist, dann kommt man ganz schwer dahinter, und dann das Ding ist, dermeinte "Wenn ich da nicht diesen GPS Sender da eingebaut hä?e, wär ich nie darauf gekommen, wie soll ich das wissen, dass das Fahrrad 800 Meter, um die Ecke irgendwo steht.

I: Ja... oder hydraulischer Bolzenschneider. Ist ähnliches Prinzip (P3 stimmt ihm zu) auch super klein, auch viel leiser, wo du auch quasi alle Schlösser durchbekommst. Es ist halt, es ist halt echt... viel zu einfach geklaute-

Mann von P6: Das wird auch irgendwie auch als Kavaliersdelikt gesehen, als ob das 100 Euro kosten würde oder so, aber wenn man sich das mal vorstellt, dass die Dinge 4000 Euro, 8000 Euro teilweise kosten-

P6: Deswegen werden die ja auch geklaut.

Mann von P6: Wenn ich ein Auto klauen werde ich ja auch nicht anders behandelt, das ist ja auch nicht ein Kavaliersdelikt.

I: Ja... ja, voll. (Mann von P6 verabschiedet sich)

P6: Ja das ist ein negativer Aspekt, dass man da wesentlich mehr drauf achten muss, und dass man das abschließen muss und wie gesagt, man kann's halt auch nicht... (nennt Namen des Mannes) achtet da halt drauf aber ich achte da manchmal nicht so drauf mit dem Abschließen, muss man echt sagen, und denke mir "ach komm, ich bin nur ganz kurz im GeschäM", das nervt mich dann auch immer, dass man dann ständig immer, wenn man ein neues GeschäM anfährt, muss man's wieder abschließen, "wo kann ichs hinschließen", das kostet dann mehr Zeit.

I: Mhm... Also bräuchte man eigentlich auch noch ein bisschen andere Infrastruktur irgendwie?

P6: (seufzt laut) Joa... wie soll man es machen, ich hab keine Idee. Keine Ahnung, es gibt ja solche Teile in Münster, wo man es auch abstellen kann, aber ich... ich nimm das Fahrrad immer mit, ich hab's immer bei der Hand, also ich fahr vom GeschäM, und dann nehm ichs wieder mit, zum nächsten GeschäM und ich geh nicht, ich stell's nicht irgendwo ab und mach dann ne Runde in der Stadt, das ist eher selten sag ich. Ich nimm's immer mit, von GeschäM zu GeschäM, ja.

I: Fällt dir noch irgendwas zur Fahrradinfrastruktur oder irgendwelche Fahrradthemen ein, die in Münster hier anders sind als an anderen Orten?

P6: Äh pR (überlegt). Münster hat diese kleinen Fahrradwege mit diesen roten, also die, ähm, die Qnd ich schon auch manchmal sehr eng, also auch beim Überholen und so, ähm, ja, das Qnd ich eng, da würde ich mir breitere wünschen, andererseits denke ich mir auch so ja, das ist ja ein riesen Projekt wiedermal, also das fänd ich schon sehr schön, wenn das irgendwie mal so, nach und nach mal passiert, aber da bin ich wahrscheinlich schon alt (lacht) bis das jetzt alles mal umgebaut ist. Ansonsten Qnde ich Münster aber schon sehr Fahrradfreundlich, und ich jammer auf hohem Niveau und ich, und wir haben so schöne Sachen, die Promenade und auch einige neue Radwege jetzt, die werden ja auch immer mehr ausgebaut, liest man auch, in der Zeit, also ich hab die WM um die lokalen Temen abzugreifen und dann steht da auch oM "Neue Fahrradwege" und so. Das Qnd ich schon auch toll. Also ich Qnd es ja auch unterstützenswert, ich mach ja auch dieses Interview mit dir weil...

[Mhm](räuspert) Mh, ja, und sonst, zur Infrastruktur... äh pR... nö, weiß ich jetzt nicht, gib mir mal nen Stichwort.

I: Phf... wenn nichts kommt ist auch völlig OK, ist ja auch n ur so ne Frage ins blaue, weil Münster halt so ne Fahrradstadtist-

P6: (redet gleichzeitig) Jaja, du kannst mich nicht beein?ussen!

I: Dinge die noch irgendwie anders sein könnten...

P6: Äh pR, ja natürlich, Fahrradwege sind vorhanden, die gibts ja in anderen Städten gar nicht, im Ruhrgebiet oder so hast du ja so was gar nicht. Also hier gibts schon Fahrradwege und die sind auch vorhanden, und Münster ist auch sehr grün, es hat die Promenade, ähm, schöne... das ist ja schon auch nen Fahrradweg der total toll ist, so die Fahrradautobahn sozusagen von Münster (lacht) Ja... also, Ja... Aber ich bin auch wie gesagt, ich hab in Münster studiert, ich hab, ich weiß nicht, Berlin kenne ich noch vom Fahrradfahrenher, fand ich Münster immer bessern, Berlin fand ich auch immer gefährlicher,

also Münster fand ich besser ausgerüstet Fahrradtechnisch, mehr Fahrradwege und so was, ähm, Freiburg waren wir, daaa fand ich auch... die sind auch gut, also die haben auch viele Fahrradwege und das ist auch sehr toll angeblich da.

I: Mhm. Spielt beim, äh, Pedelec fahren die Tageszeit noch irgend eine Rolle?

P6: (überlegt lange) Prrhhh.... achso, wegen Licht und Abendsund so?

I: Zum Beispiel, ja.

P6: Zum Beispiel ja, ist eigentlich auch relativ egal, weil das Licht ist immer an und das kann ja auch anbleiben, weil es ist ja so ein System, was gar nicht zieht, es macht es ja jetzt nichtmehr schwerer und so und, ähm, ich bin nen bisschen unsicherer wenn's dunkel ist, beim Fahrradfahren. Aber ja... so viel fahr ich auch nicht dann abends, also es geht. Obwohl im Winter, natürlich, sind ja die Zeiten anders, also ne... also das ist dann- also früher war das schlechter, mit den alten Fahrrädern, aber mit den neuen Systemen, die ziehen ja nicht, wenn das Licht an ist, das macht es dann ja nicht schwerer, genau. Und was ich gerade noch sagen wollte, was ich total toll Qnde, so als Fahrradfahrerin, ist zum Beispiel Amsterdam. Amsterdam Qnde ich ist echt ne wunderschöne Stadt wo mansuper Fahrradfahren kann und Holland sowieso, ne, also Holland ist ja echt ausgebaut da. Oder mein Mann war mit seiner Tochter in[5 Sek]Kopenhagen, mein Go?, also Kopenhagen, und da haben sie auch Fahrradurlaub gemacht, also da waren die auch und waren auch total am schwärmen, dass die Fahrradwege total breit sind, und dass es so toll ist da Fahrrad zu fahren und so. Mhm. I: Also es geht auf jeden Fall schon noch nach oben..?

P6: Es geht, es ginge nach Oben, da ist LuM, da ist Spiel (beidelachen) Doch, so wäre es natürlich total toll.

I: Super, ähm, so abseits vom Fahren, was ist denn da noch wichtig wenn man ein Pedelec hat?

P6: (Was meinst du damit?)

I: Ähm, du ha?est vorhin zum Beispiel schon Versicherung angesprochen und so Askepte die so runterherum drumherum sind, die man irgendwie beachten sollte...

P6: Achso, achso, ja, also ne Versicherung macht Sinn, weil es halt auch echt teuer ist, dieses Fahrrad, und ähm, ja das sollte man machen, dan ähhhh, ja Bekleidung auf jeden Fall Qnd ichsehr wichtig, Outdoorjacken, regenfeste Jacken, das Qnd ich auch immer nen großen Aspekt, die praktisch sind auch vor allen Dingen- Regenhose in Münster vor allen Dingen... obwohl (spricht zu sich selbst) ich die eigentlich auch fast nie benutzte... ähm (räuspert) ja, wie gesagt, ich nehm ja keinen Helm, ähm...

I: Ist das, ist das irgendwie normal ne Regenhose zu benutzen oder ist das... ?

P6: Ne Regenhose? Also meine Freundin, die hat die immer, und die viel Fahrrad fährt auch, die fährt aber auch noch viel, die pendelt viel mehr, die fährt mit nach Hamm und im Zug und so, die kannst de auch mal, die wird bestimmt auch nen Interview mit dir machen, die kann noch viel mehr zum pendeln erzählen (räuspert) mmhm... Die hat immer ne Regenhose. Also ich hab halt Jacken die ziemlich weit nach unten gehen, und ich hab ja meistens Röcke an und wenn die Leggings unten nen bisschen nass wird ist's mir auch egal... ja, also so...mhm.

I: OK. Ähm, gibts noch irgendwelche kleinen HandgriRe oder so was, die man beherrschen sollte mit dem Fahrrad-

P6: Kleine HandgriRe?

I: Um es im Schuss zu halten oder sowas?

P6: Äh... zum putzen und so was?

I: Zum Beispiel.

P6: Äh... ja... also da bin ich ganz schlecht drin (beide lachen). Also, mein Mann hat mir letztens gesagt ich sollte das mal wieder putzen. Ich sehe da keinen Sinn drin, solange es dem Fahrrad nicht schadet brauch es nicht geputzt werden, außerdem sieht es dann nach viel fahren aus. Nein, aber ich müsste... das Öl steht schon da vorne... ich sollte es mit rausnehmen und ölen. Es ist ein ... damit es ein AuRorderungscharakter hat, aber ich hab's heut' morgen nicht gemacht. Also das muss ich mir angewöhnen, jetzt gerade, ich hab mir das vorgenommen bei dem neuen Fahrrad, ich will das jetzt regelmäßiger ölen, ansonsten... brauch man keine kleinen HandgriRe. (lacht) Ich nicht...

I: Cool. Ähm... ich glaub... Ähm, ich Pedelecfahren eine Art von Fahrradfahren oder ist das was anderes?

P6: Es ist ein... das ist ein, also im Groben würde ich das unterFahradfahren fassen mit... äh... Motorisierung halt. So... ja. Also ich würd es- es ist für mich auf jeden Fall Fahrradfahren.

I: Ähm... ja. Gibt's noch irgendwas- was du wichtig findest, was du noch ergänzen wollen würdest?

P6: Mh... fällt mir so grad nicht ein... nö, nö.

I: Ja, sehr gut, sehr gut. Dann hab ich noch ein Kurzfragebogen, den würde ich dann (...)

A.8 Code Template

The Code Templates A8.1 Template Version 1 (V1), A8.2 Changes to Template Version 1 (V1a) and Template Version 2 (Synthesis of changes and re-grouping) as well as the full final template can be obtained from the author. Most of the final template is visible in the graphs on the practice.

A.9 Erklärung der Wissenschaftlichen Ehrlichkeit / Declaration

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