

Recruitment, stabilization and defection: Exploring car-sharing pathways of young urban households

Tom Erik Julsrud^a

Cyriac George^b

Abstract

Car sharing is an emerging innovation that challenges the foundations of the incumbent mobility system, which is based on private ownership of motor vehicles. Given that car sharing has been shown to reduce the number of cars on the road as well as vehicle kilometers traveled, it has the potential to reduce road congestion, vehicle collisions, land-use for automobile infrastructure, vehicle emissions as well as energy use (Kent and Dowling 2013; Martin 2016; Shaheen, Mallery and Kingsley 2012; Truffer 2003). Although car sharing may play a significant role in a broader socio-technical transition to a more sustainable mobility system, any such shift would depend, however, not only on changes in technologies, infrastructures and institutions, but also changes in mobility practices at the level of individual users and households. Theories of social practice offer a novel approach to study human behavior and societal change by decentering the human as the site of the social and focusing instead on everyday activities and the formation of habits (Reckwitz 2002; Schatzki, Knorr-Cetina and Savigny 2002; Shove, Pantzar and Watson 2012). Using in-depth interviews with households in Oslo, this chapter analyses frameworks associated with car sharing with an emphasis on the mechanisms of change that are crucial for the practice to begin and take hold.

a Norwegian Centre for Transport Research, and CICERO Center for International Climate Research.

tom.julsrud@cicero.oslo.no (corresponding author)

b Norwegian Centre for Transport Research cyriac.george@toi.no

1. Introduction

This chapter applies a practice theory framework to analyze organized car sharing services, which generally refers to formal arrangements whereby a defined group of users have access to a fleet of vehicles, often on a short-term basis, through use of a booking system (Truffer 2003). Car sharing is a broad concept that covers multiple business models, such as traditional member-based car-clubs, peer-to-peer platforms, and business to business arrangements, as well as operational models, such as station based and free- floating services. A key feature of organized car sharing is a decoupling of ownership and use of cars, where the individual ‘right of use’ is substituted by a collective one.

Car sharing can be viewed as a part of a larger global trend cutting across several business areas, usually described as the “sharing economy” (Cheng 2016; Richardson 2015). There are forms of mobility that embody the sharing economy but are not considered car sharing, such as peer-to-peer ride sourcing, in which passengers are connected to drivers who use personal, non-commercial vehicles, and ride sharing, in which drivers take on additional passengers for pre-existing trips (Shared Use Mobility Center [SUMC], 2016, p. 5-8). Other forms of mobility without ownership that would not be considered car sharing include leasing, which mimics the actual ownership of a vehicle, and traditional car rental services, which are not available for short durations, thus making it difficult, if not impossible, to share with multiple users in the same day.

Coordination of the sharing as well as economic transactions, is usually also done with support of dedicated websites or smartphone applications. Organized car sharing has been given strong momentum due to new mobile technologies and web-based services. However, it is not primarily a technological innovation, but a new way of organizing the fulfilment of mobility needs formerly met by private cars.

Studies have found evidence that households that rely on shared cars instead of private cars drive less and have fewer trips (Ferrero et al. 2018; Martin and Shaheen 2011). According to some innovation scholars, it represent the first steps towards a system that

can play a significant role in the broader socio-technical transition towards a more sustainable mobility system, and (Nykqvist and Whitmarsh 2008) and Dowling and Kent (2015) describe this as one of the most successful sustainable transport innovations in recent decades. This makes car sharing a highly relevant topic in discussions of how to develop more sustainable and livable urban regions. Although car sharing is still in its infancy, it has grown rapidly in recent years and there are now 2.1 million users and 31,000 vehicles in Europe.¹

The roots of car sharing go back to non-commercial grass-root movements in the 1970s and 80s, and the open source digital sharing culture that emerged during the 1990s (Moon and Sproull 2002). These early initiatives often used small fleets of vehicles among local communities. Perhaps more than most other innovations, car sharing emerged as a *user-driven innovation*, where the consumers contributed to develop this as a new social practice to meet needs for car based mobility (Truffer 2003). As with the establishment of the first organized car sharing schemes, discussions concerning the adoption of new technologies and practices must recognize users not as passive receivers of new technologies or systems, but as active contributors to their everyday use.

Socio-technical theories of innovations, especially tools such as the *multi-level perspective* (MLP), have proven to be valuable for analyses of transport innovations, focusing on societal change taking place when the existing rules and practices that constitute the socio-technical regimes are challenged by the emergence of novel and innovative actors. In the MLP approach, niche innovations are considered as key drivers of systemic change, when aligned with reinforcing processes in the existing system (regime) and slower changing exogenous trends (landscape). In the case of car sharing this means that attention is often given to the production side; the technical and economical entrepreneur who develops new systems for sharing vehicles rather than owning. Although niches can be seen as emergent and fluid activities (Geels 2011), the active role of users, as discussed by Truffer (2003) and others (Greene and Rau 2016; Ornetzeder and Rohracher 2006; Shove and Panzar 2005), is largely neglected in this theoretical approach.

The role of the active user is vague in the MLP and critique against this “theoretical blind-spot” has emerged from several scholars within the socio-technical transition studies tradition (Haan and Rotmans 2018; Shove 2010; Walker and Shove 2007). Yet, to understand the possibilities for a larger system transition, it is crucial to analyze changes also on the level of users and households (Chatterjee et al. 2013; Clark, Lyons and Chatterjee 2016; Pooley et al. 2011). At this point MLP runs contrary to other streams of innovation research, in particular studies of ICT-related innovation processes, that see the users as active participants and drivers of innovation in society (Orlikowski 2001; Truffer 2003; Tuomi 2002). To compensate researchers have suggested different ways that emerging social practices are combined or interacting with dimensions of the regime.

We will in this paper explore further how use of car sharing can be analyzed as an emerging *social practice*, casting new light on the innovation process where users play a more active role. Our work is guided by the foundational idea in social practice theory (SPT) that changes in socio-technical systems can be best understood by studying the regular and everyday behavior of actors performing practices (Shove, Pantzar and Watson 2012; Watson 2012). As such, regime and niches are not separate domains, but embedded in everyday actions and behavior. Using shared mobility resources rather than privately owned ones, may, to some extent run contrary to the existing mobility regime. The success of shared mobility depends on the extent to which early users incorporate such practices into their daily routines.

It takes time for new practices to be integrated in the wide complex of existing practices in a household or elsewhere. As for all new practices, car sharing may be stabilized and reinforced over time, or it may fade away. To understand how car sharing may be scaled up to a more widespread mobility practice among urban dwellers, close attention must be on how it is used (or not) in the households’ daily activities. The question is not how it is used by individual family members, but how it fits the mobility needs of the *household* as such. In this respect, young families with small children are a particularly important group, since they, on one hand, are in a life stage where many households tend to adopt their first car and when a number of mobility practices are formed

(Lanzendorf 2010). Taking up car sharing may prevent or delay the purchase of private cars, and it may in the long run also help to counteract the traditional emigration of families with children to suburbs with infrastructures and facilities that makes it difficult to manage without private cars. Moreover, young families may be considered as an important group of early adopters, as other segments tends to follow practices taken up by younger generations (Kuhnimhof et al. 2012).

In the work presented here we examine how organized car sharing is being taken up and utilized by households, as well as how it sometimes fails develop into a routine and is rejected. Examples of failures are crucial as they may help to understand resistance points and barriers related to uptake of shared cars. By following the everyday use of car sharing in four households at various stages in the implementations process, we will illuminate some of the dynamic related to the development of car sharing as a social practice.

2. Theoretical underpinning – car sharing as an emerging social practice

Social practice theories have gained increased recognition as a framework for sustainability research and policy (Spaargaren 2011; Shove et al 2012; Gram-Hansen 2011; Jalas m fl 2017; Røpke et al). This approach builds on the central idea emphasized by Giddens (1984) and others, that to understand and explain social life social practices should be the focus of attention, rather than mental ideas, calculations or norms. More recently Andreas Reckwitz (2002) has suggested viewing Giddens' structuration theory as part of a wider stream of practice oriented theoretical approaches in the social sciences, including contributions from Garfinkel(1967), Bourdieu (1977) De Certeau (1984) and Latour (1993). Despite their differences, he holds that these theories represent a particular sub-type of *cultural theory* where the attention is on studying the emergent patterns of routinized behavior. According to Reckwitz, practice theories involve the intertwined configurations of materials, competence, and cultural meaning. Practices are relatively routinized and sustained ways of enacting a set of elements, and everyday practices are anchored by multiple overlapping ties to the social,

technical and cultural fabric of everyday life. In a more condensed and general formulation, offered by Warde (2005, p.4), a practice is defined as a *routinized type of behaviour which consists of several forms of bodily and mental activities*. In general, it may be described as a configuration of a heterogeneous set of elements, as well as the sustainment and production of links between these.

The exact boundaries of a practice may be difficult to define, but it can be comprehended as *clusters of activities* where coordination and interdependence make it meaningful to conceive them as entities. Such elements include bodily as well as mental activities. Building on the definition above it is possible to outline three main groups of elements to guide empirical investigations. This is: 1) *materials*, including the use of tools and technologies and equipment; 2) *meaning*, referring to the particular idea/image that is related to a particular activity; and, 3) *competence and skills* (learning) that are involved with an activity (Shove and Panzar 2005; Shove and Walker 2010). Cycling for instance, is a practice that entails a specific technological artefact, the ability to use it, as well as certain meanings and understandings on the part of the users, that can vary across time and place. In more specific terms, practices are characterized by the *linkages* that practitioners make or break between a diverse set of preexisting elements within these categories (Shove et al. 2012). The development of connections between elements is to a large extent the work of early users that gives meaning and form to this within their social networks. Car sharing can be seen as a particular type of social practice with a distinctive assemblage of materials, meaning and skill (Dowling and Kent 2015). The material aspect relates to the technological interface, such as the use of web-based applications, use of keys and codes to open the cars, the technologies used to drive the cars, as well as the built environment and the infrastructures. The meaning of car sharing refers to the symbolic images that it evokes, the connotations it gives to more sustainable lives, futuristic technologies, etc. There are several skills needed to use car sharing, some of which are relatively well known (driving a car or different cars); while others are relatively new, for instance, use of a car-sharing app. The required skills are not only related to learning to use the system, but also how to plan for and fulfil mobility needs without a regular car within a particular community of users. c

Accordingly, the implementation and use of car sharing is not a simple replacement of trips formerly made by private car to trips in a collectively owned car, but a process involving a possible transformation in everyday *mobility practices*. As demonstrated by Shove and Pantzar (2005)) in relation to introduction of Nordic walking, the process by which practices recruit practitioners are inseparable from, and co-constituted with, processes of innovation in relation to technologies, knowledge and meaning. Utilizing a social practice theoretical approach in studies of car sharing, directed attention towards how (and whether) shared cars are used in everyday lives (practice as a performance) and how/if elements of meaning, competence and technology together are reproducing a routinized behavior (practice as an entity). As emphasized by Watson(2012), possibilities to change are also a question of how social practices are related to other practices and to *systems of practice* To understand the detailed bundling of social practices at the level of accomplishing everyday life, is crucial for understanding opportunities for innovation and change.

The development of social practices

Practices are not static or timeless entities – they can emerge, stabilize and break down. Shove et al (2012) describe the formation of practices as depending on the integration of pre-existing elements, which have histories and futures independent of the practice, but which can be transformed by it. For car sharing, for instance, a new meaning may be related to a pre-existing technology (or the other way around). The meaning that is attached to a certain (new) practice then is not necessarily unique or new but extracted from earlier practices or cultural ideas and representations.

As the elements of such emerging ‘proto-practices’ become more tightly integrated, they must be actively maintained through ‘circuits of reproduction’ in order to persist (Ibid). In cases in which the circuits of reproduction are insufficient, the linkages between the constituent elements of practice deteriorate, and the practitioner defects from the new practice before it is fully formed. In such cases, the practitioner either returns to a former practice or begins a completely new one. The processes of rejection

are in general much more sparsely described in MLP, as well as in social practice theories.

Watson (2012) identified three mechanisms by which practices can change. The first refers to changes in the material elements that constitute the practice. This typically refers to technological innovation that allows for or requires a change in behavior. The second refers to changes in the practitioners. Kent and Dowling (2013, p. 89) look to ‘trigger’ events, which take place well after the individual is first exposed to the new practice. In the example of car sharing, the authors cite unexpected events, such as a car breakdown or sudden change in employment situation as instances that compelled individuals to practice car sharing for the first time. The third mechanism refers to changes in the relationship between various practices. This relationship is often characterized as being either bundles or complexes (Watson, 2012). Bundled practices co-exist or co-evolve with one another. Complexes of practices are characterized by more tightly integrated relationships, whereby one is considered necessary for the other to be carried out.

New practices may co-exists or compete with pre-existing ones. Former studies on the uptake of ICT in household have found that, on the one hand, it competed with other household activities, such as TV-consumption or reading, but that on the other hand, it also changed the form and function of these former activities (Røpke and Christensen 2012; Røpke, Christensen and Jensen 2010). As in the case of car sharing, private car ownership, leasing and (traditional) renting are obviously competing practices.

However, the user may or may not see these as competing or co-existing practices. Car sharing can, for example, be a way to supplement the more traditional forms of car ownership. This more or less “niche” oriented behavior may evolve alongside practices that sustain the traditional car-based mobility regimes

<Figure 2.1 HERE >

The doing and saying of practices are held together by a practical understanding, routine and meanings, and there are social in the sense that many different people share the same practice (Gram-Hansen 2008). Practices does not emerge in a vacuum but is situated within constraining *material* and *social frameworks* developed by former practices as well as social institutions, material structures, resources, etc (see figure 1). Individual practitioners establish *specific frameworks* within which multiple practices can be combined and reconfigured. When such private frameworks are combined with the collective frameworks that the practitioner inherits, the result is a *project*, which can be thought of as a meta-practice, or goal-oriented complex of practices (Røpke and Christensen 2012). For instance, establishment of a family, or becoming a dog owner, are projects that usually include and require several interconnected practices. The development of links and elements is an activity that are spurred by discourses and activities inside and outside the sphere of the household. Creating a certain image (meaning) of car sharing is, for instance, a contested terrain where public media, providers of car sharing services, social media communities take part. Available technologies that are introduced on the market can be an impetus for changing practices.

In summary, the establishment of car sharing as a novel way of consuming car-based mobility needs to involve different processes. First, this involves creating links between (pre-existing) elements of how to use the new technologies, development of competence and meaning. This is a process connected to discourses and communication in multiple social arenas, involving producers, popular media, policymakers, researchers, etc. Secondly, the emerging social practices need to be adapted to other household activities and social practices. Failure to adapt and integrate across these different practices may curb the use of car sharing. Thirdly, the links need to be reproduced and sustained through performing the routine-based actions involved in using car sharing over time.

In the next sections we will explore how young families are being recruited to car sharing and how this leads to retention and stability, as well as defection. As we will argue, understanding these “pathways” is important to explain why car sharing is succeeding or not, and what kind of practice this may become among different user segments.

3. Methods and data

This chapter is based on a study involving in-depth interviews with young urban households living within the municipal bounds of Oslo. All were registered members of business-to-consumer car sharing schemes. This was, first, *Bilkollektivet*, a user-owned, non-profit organization. *Bilkollektivet* is the oldest car sharing company in Norway. It was established in Oslo in 1995 and has today close to 4,000 members in the Oslo region. Some were also members of *Hertz bilpool*, a part of the Hertz Corporation, which is one of the largest car rental companies in the world. It is organised in different business areas – car rental and car sharing. The company has as of today more than 100 shared cars in the fleet distributed across approximately 45 locations in Norway, mostly in the Oslo area.

The foundation of our work is a sample of 15 car sharing households using these schemes to a larger or smaller degree.ⁱⁱ The interviews were conducted in autumn 2016 and spring 2017 at the homes of the households. In most cases this involved two adults, and sometimes also children. The average duration of the interviews was approximately 90 minutes. The interviews were conducted in an open-ended manner that allowed each informant to give detailed descriptions and explanations.

Given that we use a social practice theory approach in this study, we were not primarily interested in the decision-making process that went into the use of car sharing, but how it was used to fulfil mobility functions, and to what extent it had evolved into a “routinized type of behavior” (Warde 2005). Informants were also questioned about their feelings on and relationship with urban life, environmental sustainability, and sharing in general. All interview recordings were transcribed and later analyzed using appropriate software (Nvivo).

In this study we address the initial phases where car sharing is taken in to use, experimented with and – in some cases- developed into “stable” routines and practices. To illustrate these processes, we will highlight a handful of cases where using shared cars developed with different outcomes. By looking into these cases we intend to get an

understanding of what's inside "the black box of technology adoption" (Millet, Oget and Cavallucci 2017), i.e. the processes where a new innovation finds its way into the lives of potential users, or is rejected. Thus, although our findings build on several studies, we will use these cases to demonstrate some of the processes related to implementation and use of car sharing systems. The cases make it possible to explore the applicability of a practice approach and to suggest how to further use this in studies of user-oriented innovation.

<Table 2.1. Here > Household case studies

All the household studied are located within the center of Oslo, where the municipal population is approximately 675 000. At a city level the target is to reduce emission from private cars by 50 % by 2030 ('Oslopakke 3'). Oslo Municipality wants to facilitate increased car sharing as means to support these general measures. The local government (headed by a Vice Mayor from the Green Party) has taken bold steps to curb use of private cars in the inner city, reducing on-street parking spaces, creating car-free zones and increasing toll road fees. Car sharing is mentioned in policy documents, although there are no fixed goals for upscaling of this. Recently, national transport providers are currently showing strong interest for car sharing as a part of a strategy to become door-to-door providers of transportation. In March 2018 the national railroad company (NSB) signed a deal with GreenMobility, a Danish company offering shared battery electric vehicles in Copenhagen. The agreement will make 250 shared electric cars available around train stations in the Oslo region during 2018. Also, city developers and real estate organizations have the last 1-2 years been promoting car sharing as part of new building complexes. Since costs for building parking lots are high, particularly in dense urban areas, this is assumed to be an attractive option that resonates well with the emerging policy regime to remove private cars from the inner city. Thus, car sharing is a topic that have received significant attention among policymakers, business developers and transport authorities the last years. In the public opinion, it is increasingly recognized as an arrangement that is future oriented, practical and efficient

to meet transport challenges at the city level. As such it has moved from playing a relatively peripheral role in the 1990s transport discussions to being in the center of ongoing discussions about future urban mobility.

4. Results

In this section we will first give an overview of how car sharing has been adopted and used in each household. Obviously, we cannot give a thorough description of all activities related to car sharing in the households, but they serve as a window into the everyday practices of taking up car sharing. Second, we will discuss in more detail the processes of developing car sharing as a “routinized form of behavior” (Warde 2005) in the households, referring to these cases.

Household A: Freedom from owning

Household A consists of two married parents, a mother and a father, and two children, both boys, ages four and one. Both parents have advanced degrees and are established professionals in their fields. They do not own a car, and commute to work primarily by bicycle and sometimes public transit and walking when the weather does not allow for bicycling. The household lives in the Grünerløkka neighborhood of Oslo, which is characterized by high population density, walkability, mixed-use zoning, good public transit and active street life. Shared cars are used when they visit friends living outside the city center, and for weekend and holiday trips.

The couple was actively looking for an alternative to private car ownership and started using car sharing very shortly after learning about it. For them, car sharing was a way to be free of the burdens associated with private car ownership, while maintaining the most important benefits. One of the household members stated categorically “The joy of getting rid of a car is so immensely great that I'd go to great lengths to never own a car again.” Citing the difficulties and stresses associated with parking, maintenance,

expenses, and insurance, he and his partner both felt car sharing provided an optimal level of freedom and flexibility.

Living without private cars is largely based on using alternatives of bikes and public transport. A part of the decision to get rid of the car and using Bilkollektivet was to invest in an electrified cargo bike that is used extensively to deliver children and buy groceries.

“...I think we’ve seen, after buying the bike, that we do more things when we have the bike than before. So it kind of improves that when we have an easy transportation option and we do other things...like we take that trip to Aker Brygge, and before we were perhaps like “oh the tram is too full and the baby’s too small” and we don’t bother.

The everyday life in the family is much centered around children-related activities and use of transport services is a backbone in much of the leisure activities as well as social contact with others. Relying on shared cars requires more planning and less spontaneous mobility: The female partner explains that, “... basically all our friends also have children within sort of, not necessarily exactly the same age range, but close to the same age range. So it’s a lot of kids. So it sort of changes how you visit one another, because everything is very often planned well in advance, so there’s little spontaneity. That doesn’t really happen a lot, no”.

Sharing cars involves a lack of opportunity to “privatize” the vehicle with various equipment. One implication is that it is necessary to bring along private child seats, and this was cited as a major frustration. The household uses car sharing in spite of these frustrations and expects that their use would only increase as the two children grow older and car seats are no longer an issue. As one of the partners explains about car seats, “I think that when the children get older, it (car sharing) actually becomes more attractive”. If a household can be recruited to the practice of car sharing when they have young children (i.e. when they need to deal with things like car seats) the eventual removal of that requirement (i.e. when the children are older) will only make the practice seem more convenient in comparison. As we will show below, convenience, being as important as it is, is not static though.

When the household began using car sharing, economic concern and convenience were chief priorities. As time went on, the importance of the environmental meanings associated with car sharing increased. The male partner stated clearly, “the scales have changed... the economic and convenience reasons are less important now than when we got into it”. In other words, economics and convenience were the recruitment mechanism, and environmental meaning, especially in the context of parenthood, was more of a retention mechanism that helped stabilize the practice. As one of the informants explains:

“Suddenly, the climate aspect, I see it a bit more. I think it’s also a good thing for the children, that we’re a family that whenever we’re going somewhere, we can go by train. And that they are accustomed to going there by train and not just hop into the car and go wherever”.

As such the meaning of using a shared car may have been in a flux during the years as it also had become more of a routine.

Household B: Walking and running

Household B consists of two cohabiting parents, a mother and a father, and their two children, a three-year-old girl and a one-year-old boy. One parent has an advanced degree and is an established professional, whereas the other is currently studying at university after working for several years in the food services industry. The student parent immigrated from Italy to Norway about 10 years ago. The working parent typically commutes on foot whereas the student parent commutes by train. The household resides in the *Gamle Byen* neighborhood of Oslo, which is very much part of the urban core, but also one of its quiet residential areas.

In general, the household preferred not to drive, but the birth of their second child convinced them that it was a good idea to have access to a car from time to time. Unlike Household A, neither of the adult members of Household B have ever owned a private car. According to both household members, the recruitment to car sharing was very straightforward and based on utilitarian calculations. As the male partner stated:

“I don’t like owning a car...I’m not that interested in cars. Using a car is a tool for getting something done – transporting something, transporting us, going somewhere.

For me, a car is not anything more. With car sharing, I don't have to take care of it. I don't have any responsibilities in fixing it because I know that will not be something for me. I'm not one who wants to go down and wash the car or fix something either."

The shared cars are not a central part of their mobility routines. They use it about once a month usually for weekends trips. As important as it is to investigate the meanings associated with car sharing and other modes of mobility, it is also important to address the absence of meaning. Automobility persists and has been resilient for so long, in part, because of the strong meanings associated with private car ownership. For Household B, the lack of any positive meaning associated with cars made it easier to live without owning one - i.e. abstain from automobility. It should be noted that both members of this household are avid walkers/runners. The female partner explained:

"We always walk, it's our way to live...it's our way to get to know new things, to know better where we live. And it's a chance to move your body a little bit. If you're working or if you're studying, you can just go and have a walk. It's healthy and it's relaxing. There's no stress about it. Of course, it's a little bit more time consuming, but it's your time – it's time for yourself."

This quote indicates that living without owning a car relates to an identity of having a lifestyle with healthy habits and low stress levels. The everyday mobility routines are linked with not only to the instrumental aspects of getting from point A to point B, but also the pursuit of broader lifestyles. It also points to a change in the relationship between related practices. Walking or taking public transit, for example, often require the practitioner to plan according to transit schedules and weather conditions. Similarly, it may relate to new practices like showering at the workplace following a morning run. For the informant, these changes were not seen as a burden, but a part of an overall lifestyle.

"Of course, it takes some extra time when I get there, but the door to the office is about the same. It takes about 40 minutes if I walk to the kindergarten and walk to the office. It takes about 40, maybe 45 minutes when I run, and I run a detour, and I shower."

Household C: Moving to the suburbs

Household C consists of a married couple from Iceland who have been living in Norway for several years. They have two children, a girl of age 3 and a boy of age 1. Both parents are working professionals with advanced degrees who commute to work by public transit. The household resides in the Bøler area of Oslo, which is within the municipal boundaries but functions very much like a residential commuter suburb. Six months prior to the interview, the household relocated from Grünerløkka (same neighborhood as Household A). Although the household was satisfied with living there, they wanted to own a home instead of renting, but were priced out of the housing market in Grünerløkka.

Although the current residence is within walking distance of a metro station, the local kindergarten and a grocery store, there are very few opportunities for leisure or non-grocery shopping within the neighborhood – a marked contrast with Grünerløkka. It is worth recalling that the informants in this household were reluctant to own or lease a car and were quite satisfied with car sharing in their previous neighborhood. When asked if they would have preferred to stay in Grünerløkka and continue to use car sharing if they could have afforded it, both informants replied affirmatively.

Household C described two separate trigger events, each one having taken place within the context of parental responsibilities. The first event convinced them to become car sharing users. The second event convinced them that their needs warrant the leasing of a private car.

When asked when they started using car sharing, the father described the time during which his wife was pregnant with their second child. There were regular checkups at an out-of-town hospital, which required access to a vehicle on a regular basis, but not all day, every day. The informant was introduced to the car sharing service provider through an Internet search. Although he was pleased with the booking and payment process, he was less satisfied with quality of the vehicle. Despite this dissatisfaction, the experience opened a window of opportunity for the family to start using the service more regularly.

Recruitment to the practice was followed by retention – the household began using shared cars from another service provider, which had an equally functional booking and payment system, but better cars. They distinguished between the initial reason for using car sharing and the reasons for continuing to use it:

“when we started, it was primarily just to drive to the hospital. To get that freedom, we were less stressful knowing that we could take the car in and drive it... The other benefits, like, we can go to other places that public transport can't go – just an added bonus.”

The recruitment, though, was predicated on mobility needs associated with pregnancy-related travel. Although car sharing retained the practitioners within the household for more than a year, they eventually decided to stop using car sharing. Both informants described an incident that took place two weeks prior to the interview in which one of their children needed timely (but not emergency) medical attention. The situation did not warrant an ambulance, but they were told by the hospital staff to bring the child in for a screening. In terms of timing, this was considered more serious than a pregnancy-related checkup. Booking a shared car and driving it home to pick up the family would have taken approximately 30 minutes. This was considered unacceptable and the family ordered a taxi, which took 15 minutes to arrive – also a longer wait than they preferred.

As one of the household members explained, “that was somewhat a turning point. We felt that if something happens, it's better to have a car so that you can rely on yourself.” Almost immediately after this experience, the family decided to lease a car to have access to one whenever they needed.

At present the car sharing station (Hertz) is 20 minutes away using the Metro. In sum this is too far to be very attractive. For the household car sharing had become a very temporary thing.

“We have recently been thinking about getting a car – about leasing a car. When I finish my father's leave, I go back to work and later, this summer, her company is moving to Røa. So it's going to take her 50 minutes, almost one hour to get to work. And the same for me – 45 minutes to 1 hour. What we think is that if something happens – they have to be picked up at the kindergarten or they get sick or something. It would take at least an hour to get back. So we think it's too long – that's why we're thinking about getting a permanent car.”

The security aspect was a decisive, but the decision was also affected by the difficulties of getting efficient public transport connections to their workplaces.

5. The dynamics of a new mobility practice in the households

Recruitment

As mentioned, recruitment to a practice is related to establishment of links between elements of meaning, materiality and learning. Elements may very well be preexisting, but connected to a new type of technologies, so that older connections are fading away or moving into the background. In the process of becoming car sharers, the circulation of elements, and the process of making connections could be seen in the households. The materiality of using websites, getting codes, finding ways to garages and finding alternatives to cars, needed to be anchored in an element of meaning as well as engagement in experimentation and learning. Car sharing practices where in all cases “*proto-practices*” (Shove et al 2012), as they were not yet well established; the practices, including dimensions of learning, meaning and materiality were in the making. As such the elements and their interlinkages were under construction.

The work of developing connections between the elements (i.e.links) is in general considered a slow and gradual process. However, the initial decision of becoming car sharers seemed to be affected by certain happenings or shifts in individuals’ life situations. For household A, the active users, the arrival of the 2nd child incentivized them to use the car sharing service. Shifts put them in a situation where several considerations needed to be made, where of course economic consideration also where involved. The role of informal interpersonal networks, as well as social network sites was evident, and knowing about other users were affecting the recruitment process. This may be seen as a “mimesis” (Möllering 2006) of practices, that motivated and encouraged to use. Still, these triggering events and the mimesis process would not have much effect if the practice was without any element of meaning that could be associated with the material tools and infrastructure. Circulation of elements – available

technologies, components of meaning and pre-existing competence – made recruitment an opportunity. Obviously household *resources* were also important for the ability and interest to change: This included economic, as well as social capital as well as technical and intellectual capabilities. The availability of transport infrastructure in the inner city of Oslo made living without a car possible.

Stabilization

After the initial considerations and decisions, the households enter a stage of experimentation with elements; developing meaning; skills and experiences from using technologies. The materiality of using shared cars was both similar to, and different from, private cars. As noted by Warde, cross fertilization of practices, is one pathway towards changes in practices (Warde 2005), as well as an interest and motivation to create new links. Car sharing was in a certain sense a cross fertilization where old practices were given new meaning. The material difference to private cars was related to the interface as well as the accessibility.

A central part of stabilization of the practice was to develop a common sense of “what this is” at what it means to them as a family. Although the technology of shared cars is much similar to private ones, the meaning was very different. This was for Household A related to a wish for living local and simple lives in an urban setting. This was related to use of other modes than cars, such as cargo bikes and walking. The car was an antidote to the local urban life and associated with high expenses, practical difficulties and stress. Turning to car sharing was, thus, also the blessing of not having a private one. In a striking contrast to the traditional view, where owning a car is related to independency and status, private cars were framed in negative way, related to stressful and unhealthy suburban life styles. The identity of being urban and active was (to some extent) connected to a non-use of car rather than car sharing per se. The new social practice of sharing cars was seen as a prolongation of the traditional forms of privately owned vehicles, but also in contrast to this (See table 2)

<Table 2.1 HERE >

In the first two cases, sharing of cars was associated with an attitude opposing the general materiality of ownership; seeing this as a negation of traditional cars and the lifestyle affiliated with them. In the third, however, it was more closely linked to an economic and practical meaning. In the households A and B, we saw a general preference for sharing. They were attracted to the idea and “movement of sharing”: positive to other forms of sharing like AirBnB, ridesharing, food sharing, etc (Hawlitschek, Teubner and Gimpel 2018). All households had experiences from being engaged in such app-based sharing practices. The positive effect of car sharing on environment was recognized, although to a lesser degree than we expected. Household A stressed that even though this was not a driving motive, the normative dimension of environmental values had grown stronger.

The emerging practices are not developed in a vacuum, but are related to a wider discourse where providers of car sharing services, the media and other users take an active part. The meaning element is an ongoing discourse where a mix of what may be seen as traditional regime actors – car companies, technology providers – as well as niche actors take part. Different images of car sharing could be seen also among the users. Moreover, the meaning was not fixed, but transformed during practice. In the household A the meaning changed; from economic and urban values towards environmentalism; indicating a meaning being in flux.

The stabilization of car sharing also included a need for *building competence* related in particular to mastering the different technical interfaces, but also learning to handle practical barriers. Relying on shared cars demanded a higher level of planning of activities, and this could be critical during holidays when the demand for cars is high. But there was also a question of learning to find available alternatives to cars. The practice of car sharing was as much about *learning to live without cars* as living with a shared one. The backbone of the everyday mobility for the households interviewed was not shared cars, but public transport, although the services were not always seen as sufficient. Experimenting with alternative solutions included more active engagement in

other ways of movement such as biking, walking, and running. Learning was also related to finding new ways of solving everyday needs of deliveries, such as delivery of children to kindergarten and doing grocery shopping. (See table 3)

Car sharing thus entered several other related practice fields such as shopping, leisure and changes much of the “system of practices” (Watson 2012) within the household (see table 3). For instance, shopping habits were affected, when groceries and heavy deliveries were more often delivered directly to home.

<*Table 5.2. HERE*>

Car sharing was integrated and “stabilized” as a routine in some of the cases. This involved a regular use of car sharing, making it work as part of the households’ daily rhythms; and relating it to the different other practices and projects in the family. Still, this was very low-frequent rhythms, as the shared cars mainly were used during weekends and occasional leisure trips.

We saw how car sharing in the household A and B required adjustments in other practices. For instance, shopping seemed to be reoriented towards shopping groceries on the Internet, as well as more use of home deliverances of heavy goods. But other mobility practices were also affected, where extended use of walking and biking in particular were necessary to meet their everyday mobility needs. Thus, the broader complex of practices in the households was reconfigured as the shared cars (and the reduced use of cars) were settling as a practice. Turning to running, as they had done in household A, initiated new bundles where changing of clothes, showering, etc. was becoming part of the everyday mobility practice. This was, however not directly related to using shared vehicles but as a consequence of coping with less instant access to a car.

Defection

When linkages between the elements of an emerging practice deteriorate, the practitioner defects from the new practice before it becomes a mainstream part of the

mobility system. For car sharing to succeed, it implies changing routines and behavior of its users over the long term. The traditional way of using cars are being reconfigured by differences in the elements of which it is formed. A successful stabilization of practices may take hold and be a part of the households “system of practices”, as long as it is not stopped by barriers. Managing without cars was, however, not without problems. A decision to stick to a car-free way of life is founded on certain meanings and values that in most cases also contains “rational arguments” like cost saving. The meaning is never static or one-dimensional, yet conflicting ideas of the meaning of car sharing may be a sign of a practice that is unstable. For household C, the value and meaning of using shared cars as a smarter economic choice, were questioned as they moved to the suburbs. The economic argument was relevant, but there were also associations of car sharing being more risky and uncertain. For them the steps towards leasing rather than sharing were very small.

Much of the same triggering events that can make households move in to car sharing could rebound and make car sharing difficult again. For household C, having children made car sharing first attractive, but later difficult.

The defection from car sharing that we saw in case C also illustrates how the life events that initiate recruitment or defection are part of wider and interconnected changes in their lives and their “life projects”. Their relocation to the suburbs involved joint evaluations about the life situation of their children, their household economy, and finding the right place to work to pursue their careers. In this new situation, car sharing kept some of its meaning (as smart and economically beneficial), but the materiality of distant car sharing pick-up places and a less efficient public transport system made it hard to reproduce the practice and maintain the links.

6. Conclusion

The typical mobility careers for urban dwellers are to move out to suburbs when the family grows larger. In this process they often purchase their first private car and commuting becomes more prominent. Our three household cases are in this respect

particularly interesting, since they represent families at a life stage when acquisition of a car and relocation to the suburbs is common, and when long-term car-dependency may commence. As such, they are carriers of mobility practices that deviates from the traditional transportation regime, where a car-based life style is adopted. In order to move in a direction of a low-carbon transition pathway, it is necessary that households like those discussed here (A and B) continue to live “local lives” without taking up traditional private car driving habits. How likely is it that this will happen?

As we have seen, there are several challenges related to this notion, such as increasing housing prices for small families in the inner city, lack of efficient public transport in the suburbs, and perceptions of car sharing as insufficient whenever there is a need for urgent transportation. In an element-based practice approach most of this relates to sustainment of links between (a positive) meaning of car sharing and the materiality aspect of having easy access to alternatives. For most car sharing households, daily life is about managing without a car most of the time but having access for special occasions. Defection from car sharing may not be a long step to take, in particular if the meaning aspect is based on “utilitarian values” such as price and convenience. When the practical value becomes less obvious, shifts to leasing, hiring or buying cars is nearby.

Managing to establish everyday life based on shared rather than private cars requires investment and efforts in finding ways to solve household mobility needs compatible with other mobility needs and habits. Households must be able to establish car sharing as stable practices that are in a balance with the other needs and practices. As we have seen, this is a fragile construction that easily can fall apart. As a proto-practice the elements of meaning, competence and materiality need to be reproduced and enacted to be established as a routinized way of using cars. Using shared cars tends to involve extended complexes and bundles of sub-practices involving, for instance, using computer apps, walking to parking spots, combining multiple modes of transport, and so forth. It also implies development of competences and skills to solve mobility needs in alternative ways, using Internet-based shopping, home deliverances of heavy goods, and finding local leisure activities. This suggests that an “active attitude” from the involved is necessary, based on a determination and intention to develop car-free life styles.

References

- Bourdieu, Pierre. 1977. *Outline of a theory of practice*. Cambridge: Cambridge University Press.
- Certeau, Michel de. 1984. *The Practice of Everyday Life*. Berkley: University of California Press.
- Chatterjee, Kiron, Geoff Andrews, Miriam Ricci, and Graham Parkhurst. 2013. "Qualitative Insights into the Effect on Travel Behavior of Joining a Carshare." *Transportation Research Records: Journal of the Transportation Research Board* 2359:76-84.
- Cheng, Miming. 2016. "Sharing Economy: A review and agenda for future research." *International Journal of Hospitality Management* 57:60-70.
- Clark, Ben, Glenn Lyons, and Kiron Chatterjee. 2016. "Understanding the process that gives rise to household car ownership level changes." *Journal of Transport Geography* 55:110-20.
- Dowling, Robyn, and Jennifer Kent. 2015. "Practice and public-private partnerships in sustainable transport governance: The case of car sharing in Sydney, Australia." *Transport Policy* 40:58-64.
- Ferrero, Francesco, Guido Perboli, Mariangela Rosano, and Andrea Vesco. 2018. "Car-sharing services: An annotated review." *Sustainable Cities and Society* 37:501-18.
- Garfinkel, Harold. 1967. *Studies in Ethnomethodology*. Englewood Cliffs: Prentice Halls.
- Greene, Mary, and Henrike Rau. 2016. "Moving across the life course: A biographic approach to researching dynamics of everyday mobility practices." *Journal of Consumer Culture*:1-23.
- Haan, Fjalar J. de, and Jan Rotmans. 2018. "A proposed theoretical framework for actors in transformative change." *Technological Forecasting & Social Change* 128:275-86.
- Hawlitshchek, Florian, Timm Teubner, and Henner Gimpel. 2018. "Consumer motives for peer-to-peer sharing." *Journal of Cleaner Production* 204:144-57.
- Kuhnimhof, Tobias, Ralph Buehler, Matthias Wirtz, and Dominika Kalinowska. 2012. "Travel trends among young adults in Germany: increasing multimodality and declining car use for men." *Journal of Transport Geography* 18(2):238-46.
- Lanzendorf, Martin. 2010. "Key events and their effect on mobility biographies: The case of child birth." *International Journal of sustainable transportation* 4(5):272-92.
- Latour, Bruno. 1993. *We Have Never Been Modern*. New York: Harvester Wheatsheaf.
- Martin, Elliot, and Susan Shaheen. 2011. "The Impact of Carsharing on Household Vehicle Ownership." *Access* 38.
- Millet, Charlyne, David Oget, and Denis Cavallucci. 2017. "Open the 'black box' creativity and innovation: a study of activities in R&D departments. Some prospects for engineering education." *European Journal of Engineering Education* 42(6):1000-24.

- Moon, Jae Yun, and Lee Sproull. 2002. "Essence of Distributed Work: The Case of the Linux Kernel." Pp. 381-404 in *Distributed Work*. Cambridge MA: The MIT Press.
- Möllering, Guido. 2006. "Trust, institutions, agency: towards a neoinstitutional theory of trust." Pp. 355-76 in *Handbook of Trust Research*, edited by R. Bachmann and A. Zaheer. Cheltenham: Edward Elgar.
- Nykvist, Björn, and Lorraine Whitmarsh. 2008. "A multi-level analysis of sustainable mobility transitions: Niche development in the UK and Sweden." *Technological Forecasting & Social Change* 75:1373-87.
- Orlikowski, Wanda. 2001. "Improvising Organizational Transformation Over Time: A Situated Change Perspective." Pp. 223-74 in *Information Technology and Organizational Transformation. History, Rethoric, and Practice*, edited by J Yates and J Van Maanen. Thousand Oaks, Ca: Sage.
- Ornetzeder, Michael, and Harald Rohrer. 2006. "User-led innovations and participation processes: lessons from sustainable energy technologies." *Energy Policy* 34:138-50.
- Pooley, Colin G., Dave Horton, Griet Scheldeman, Miles Tight, Tim Jones, Alison Chisholm, Helen Harwatt, and Anne Jopson. 2011. "Household decision-making for everyday travel: a case study of walking and cycling in Lancaster (UK)." *Journal of Transport Geography* 19:1601-07.
- Richardson, Lizzie. 2015. "Performing the sharing economy." *Geoforum* 67:121-29.
- Røpke, Inge, and Toke Haunstrup Christensen. 2012. "Energy impacts of ICT - Insights from an everyday life perspective." *Telematics and Informatics* 29:348-61.
- Røpke, Inge, Toke Haunstrup Christensen, and Jesper Ole Jensen. 2010. "Information and communication technologies - A new round of household electrification." *Energy Policy* 38:1764-73.
- Shove, E. 2010. "Beyond the ABC: climate change policy and theories of social change." *Environment and planning A* 42(6):1273-85.
- Shove, Elisabeth, Mika Pantzar, and Matt Watson. 2012. *The Dynamics of Social Practice*. London: Sage.
- Shove, Elisabeth, and Mika Panzar. 2005. "Understanding innovation in practice: a discussion of the production and reproduction of Nordic Walking." *Journal of Consumer Culture* 5(1):43-64.
- Shove, Elisabeth, and Gordon Walker. 2010. "Governing transitions in the sustainability of everyday life." *Research Policy* 39(471-476).
- Truffer, Bernhard. 2003. "User-led Innovation Processes: The Development of Professional Car Sharing by Environmentally Concerned Citizens." *The European Journal of Social Science Research* 16(2):139-54.
- Tuomi, Ilkka. 2002. *Networks of Innovation. Change and Meaning in the Age of the Internet*. Helsinki: Oxford University Press.
- Walker, Gordon, and Elizabeth Shove. 2007. "Ambivalence, Sustainability and the Governance of Socio-Technical Transitions." *Journal of Environmental Policy & Planning* 9:213-25.
- Warde, Alan. 2005. "Consumption and Theories of Practice." *Journal of Consumer Culture* 5(2):131-53.

Watson, Matt. 2012. "How theories of practice can inform transition to a decarbonized transport system." *Journal of Transport Geography* 24:488-96.

Tables

HH	Type of user	Family Size	Scheme
A	Active	2+2	Bilkollektivet
B	Active	2+2	Bilkollektivet
C	Former active	2+2	Herz
D	Almost	2+1	Herz
E	Almost	2+1	Bilkollektivet

Table 2.1 Household case studies

Elements	Private Cars	Shared Cars
Materiality	Physical interface; Direct access; familiarity design;	Physical and web-based interface; Distant access; Shifting physical interface; Need for adjustments;
Competence	Driving skills, technology skills, rules and regulations	Driving skills; ICT related skills; knowledge of alternatives to driving;
Meaning	Instant accessibility, economic status marker; object of identification; traditionality	Freedom of ownership; simplicity; urbanism; innovative mindset

Table 5.1 Sample of practice elements related to car sharing and ownership

Practice fields	Sub-practices	Relationship
Dealing with the materiality of the car	Parking	Complex
	Maintenance	
	Ordering, pickup and drop-off	
Shopping	Driving to a store	Bundle
	Home delivery of goods	
	Home delivery of food/groceries	
Sharing	Informal	Bundle
	Formal	
Leisure	Short trips out of city	Bundle
	Cabin/Cottage trips	
	Longer vacations	
	Urban Leisure	

Table 5.2. Car sharing practice fields

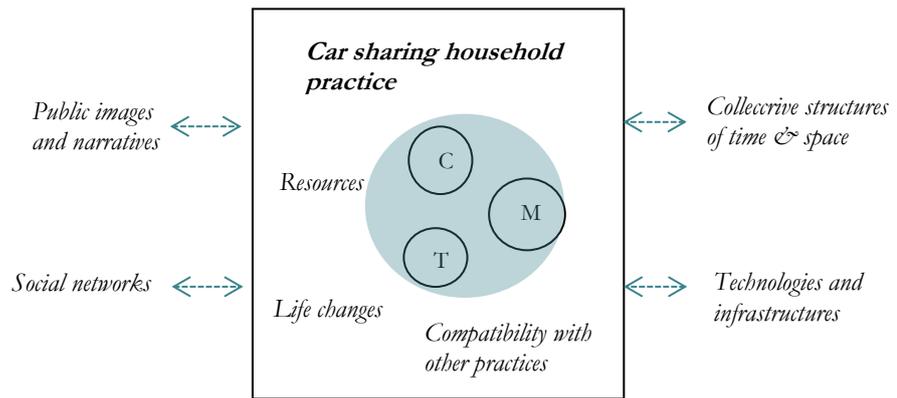


Figure 5.1 Factors that are central for development of car sharing as a social practice in households

ⁱ Bert, Julien; Collie, Brian; Gerrits, Marco; Xu, Gang (2016): What's Ahead for Car Sharing? The New Mobility and Its Impact on Vehicle Sales. In: *Boston Consulting Group*. Online <https://www.bcgperspectives.com/content/articles/automotive-whats-ahead-car-sharing-new-mobility-its-impact-vehicle-sales/>.

ⁱⁱ The data collection is the first round of interviews within the TEMPEST project, where a larger number of interviews with car sharing households will be conducted across four European countries.