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From novelty to normality: reproducing car-sharing practices in transitions to sustainable mobility

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ABSTRACT

This article investigates the role of practices in sustainability transitions. Employing a social practices approach, we analyze the reproduction of car-sharing practices and discuss its role in transitions to sustainable mobility. We assemble data from interviews with 39 households using car sharing in Oslo, Norway, and show three specific ways of reproducing car-sharing practices: (a) FUSS: Frequent, Unplanned, Short-term, and Small-car use, (b) POLL: Planned, Occasional, Longer-term, and Larger-car use; and (c) PERC: Purpose Elected from Range of Cars. After examining contributing factors, especially the role of provider and user contexts, we turn to how car sharing relates to other household practices. We highlight how car-dependent activities and substitutes for daily car use contribute to the reproduction of car-sharing. We then discuss how the reproduction of a new practice can help to explain the process through which a niche-based practice becomes a regime-based practice in the transition from one mobility regime to a new one. The article shows that by understanding the reproduction of practices as several different performances, a social practices approach can contribute to understanding the normalization of new mobility practices in sustainability transitions.

Introduction

The role of cars in cities is changing. New technologies, policies, urbanization processes, and shifts in consumption patterns are altering the path dependency of automobiles (Sheller and Urry 2000, 2006; Urry 2004), and car-sharing services are emerging worldwide (Shaheen and Cohen 2013). Some recent studies have indicated that car sharing can promote environmentally sustainable mobility (Rabbitt and Ghosh 2016; Sovacool and Axsen 2018). Socio-technical innovations of shared mobility with new practices can contribute to changing personal transportation, reducing the need for private cars (Boyer 2016; Hasselqvist and Hesselgren 2019; Schwanen, Banister, and Anable 2012; Svennevik 2019). However, the fossil-fueled, privately-owned car remains dominant, causing local environmental problems like congestion and air pollution, and contributing to climate change. This is not a question of an unsustainable *transportation sector*, but of an unsustainable *mobility system* (Banister 2005). There

is a need to study new alternatives such as car sharing from a mobility-system perspective.

Transition studies have now become established as a research field (Köhler et al. 2017), employing various approaches and theories, with the most prominent alternative being the multi-level perspective (MLP) (Geels 2012). Sustainability transitions refer to how established socio-technical systems shift to more sustainable modes of production and consumption, through long-term and multi-dimensional processes (Markard, Raven, and Truffer 2012). Research on sustainability transitions in mobility has involved historical, contemporary, and future studies, with a heterogeneous system approach that includes industry, science, policy, culture, technology, and markets with user preferences (Cohen 2012; Dijk 2014; Geels et al. 2011; Köhler, Turnheim, and Hodson 2020). Cultural and societal aspects come into focus, adding a much-needed dimension to the techno-centrism of transport studies (Cass and Faulconbridge 2017). Transition studies and the MLP have proven useful for studying automobility and system change, but have been

criticized for devoting an overly large amount of attention to industry and provider prerogatives and lacking bottom-up perspectives that include user practices. Greater understanding is needed of how practices relate to system change (Geels 2010; Köhler et al. 2017, 5, 29–30).

Seeking to meet the call for a deeper understanding of practices in transition studies, some scholars sought to integrate social practice theories (SPT) and to suggest fruitful ways of combining these approaches for empirical studies (Hargreaves, Longhurst, and Seyfang 2013; Huber 2017; Jalas et al. 2017; McMeekin and Southerton 2012; Temenos et al. 2017; Watson 2012; Welch and Yates 2018). Recent work on car sharing shows how SPTs can be useful for studying sustainable mobility, for example, in combination with mobility biographies to show people's decision to car share (Kent, Dowling, and Maalsen 2017) or by conceptualizing sharing as a socio-material practice (Dowling, Maalsen, and Kent 2018). A study of how car sharing endures as a routinely performed social practice has indicated that practice theories can be useful for studying the emergence of car sharing (Kent and Dowling 2013).

In Europe, the sharing economy, with platform services and associated infrastructures for car sharing, has been expanding and enabling changes in how cars are used (Münzel et al. 2019, 2020). Car sharing through platform-business models has been held to contribute to sustainable mobility (Vaskelainen and Münzel 2018). However, recent studies question the environmental sustainability of platform-based accesses, investigating the intentions and impacts of the use, and finding both positive and negative effects (Dill, McNeil, and Howland 2019). In particular, free-floating services with (overly) easy access is questioned, as it might lead to more car use (Becker, Ciari, and Axhausen 2017). Other studies find that the motivation for using peer-to-peer car sharing vary from social, to economic or environmental motives (Böcker and Meelen 2017). In Norway, for example, recent studies have found that reduced automobile ownership and environmental concerns, and the continuing need for a vehicle to go shopping and on weekend trips, are relevant to the emergence of car sharing as a social practice (Julsrud and Farstad 2020; Julsrud, Farstad, and George 2020; Svennevik 2019). Following up on these recent car-sharing studies, and seeking to respond to the call for a deeper understanding of practices in transition studies, this article applies a practice theoretical understanding and data from interviews to investigate what happens when the practice of car sharing is reproduced.

We then discuss how this relates to system change in transition studies.

The next section reviews literature on SPTs and how they have been used within transition studies, indicating the theoretical insights for our empirical study. The next section presents the context of car sharing in Oslo, the procedures for our data collection, the methodology used to conduct household interviews, and the data-analysis process. We then describe our findings and discuss three different ways of doing car sharing. The conclusion summarizes the findings and offers some points on implications for policy, practitioners, and further research.

Literature review

Social practice theories

Theories of social practice conceptualize the practices performed by users and enable, for instance, the repetitive procedure of car sharing to be made the unit of analysis. SPTs see the procedures for enacting an action as a practice: a commonly shared and routinized way of performing something (Reckwitz 2002; Shove and Walker 2010; Watson 2012). SPTs are cultural theories, where the societal aspect is practice (Reckwitz 2002). Furthermore, social structures and technologies do not exist outside or above individuals, but are reproduced through routines enacted by "carriers" or "practitioners" of social practices (Reckwitz 2002; Shove, Pantzar, and Watson 2012; Strengers and Maller 2014, 3). We can understand and analyze a given practice by examining performances in the actual context involved.

The distinction between practice-as-performance and practice-as-entity originates from Schatzki (1996) and has proven useful in empirical studies (Maller 2015; Speck and Hasselkuss 2015). Practice-as-performance is the actual "doing" and constitutes observable actions. This draws attention to micro-level production and reproduction of the "doings" of daily life and refers to specific moments of integration between elements that occur when practices are enacted in particular local situations at certain times. By contrast, practices-as-entities reveal that rather than being the result of individual choice, actions are social. The entities are recognizable, understandable, and describable by the elements that comprise the conditions of existence of a practice. The entity can identify a range of relatively stable elements that configure at the macro-level as blocks and patterns of action (Higginson et al. 2015; McMeekin and Southerton 2012; Spurling et al. 2013; Strengers and Maller 2014).

The "elemental" approach takes into account that, at the moment of "doing," practitioners (the doers) simultaneously reproduce practices in which they are engaged and elements of which these practices are made. Shove, Pantzar, and Watson (2012, 22) suggest it is possible to describe and analyze change and stability by paying attention to the trajectories of elements and to the making and breaking of links between them. They propose a scheme of the coevolution of the three elements: material, competence, and meaning. The elements may exist separately, not yet as a practice, but a "proto-practice." If they are connected and coevolve by links being made, a practice is established. Later, the elements may lose the connection, dissolving the practice and becoming an ex-practice (Schatzki 2011; Shove, Pantzar, and Watson 2012).

The process of developing these fairly short and precise descriptions of the elements includes a simplification and merging of several earlier concepts and discussions (Gram-Hanssen, 2010; Reckwitz 2002; Schatzki 1996; Warde 2005). First, "meaning" includes symbolic meanings, ideas, and aspirations (Shove, Pantzar, and Watson 2012). Meaning is based on past, present, and future because what people do has a history and a setting (Schatzki 1996, 2002). Reckwitz (2002) describes meaning as a collective term for mental activities, emotions, and motivational knowledge. Second, "competence" includes skill, know-how, and technique (Shove, Pantzar, and Watson 2012). Finally, "material" includes things, technologies, tangible physical entities, and the stuff of which objects are made. Despite some earlier dismissal of the role of things in practices (Bourdieu 1984; Giddens 1984), and later acceptance on how objects are related to practices (Reckwitz 2002; Schatzki 2002), things are now commonly treated as elements of practice (Røpke 2009; Shove, Pantzar, and Watson 2012).

Social practice theories and transition studies

Several scholars have called for combining SPTs with other conceptual perspectives and this integration has in particular been pursued by researchers working in the field of sustainable consumption (Spaargaren 2003; Spaargaren, Martens, and Beckers 2006; Warde 2005). Recent research along these lines suggests viewing SPTs as a heuristic tool (Frezza et al. 2019; Gram-Hanssen 2011; Lamers, van der Duim, and Spaargaren 2017; Perera, Auger, and Klein 2018). This has led to fruitful discussions on the usefulness of applying SPTs with other fields of research (Kennedy, Cohen, and Krogman 2015; Welch and Southerton 2019). For example, also management scholars have noted opportunities for using SPTs (La Rocca, Hoholm, and Mørk 2017; Nicolini 2012). By this, they mean that combinations with SPTs can prove useful because of how these approaches direct our attention toward actions: why we do what we do and how we do it.

One study of the connections between sustainable consumption research and transition studies called for using practice theories because practice-based approaches reveal processes of reproduction and change in forms of consumption that can offer conceptual insights into sustainability transitions (McMeekin and Southerton 2012). Recent studies have indicated that to develop a practice theoretical understanding of sustainability transitions more empirical studies are needed to address the recursive relationship between collective agency and the everyday performances of practices that produce patterns of consumption (Welch and Yates 2018).

Using a "systems-of-practice approach" Watson (2012) identified three mechanisms involved when a practice changes: how the elements change, how the people change, and how elements and people relate to changes in other practices. His study indicated that system change in transitions could be explained from a practice-based perspective.

Recently, additional calls have come for applying practice theories in transitions studies (Boyer 2016; Dijk et al. 2019; Greene 2018; Köhler et al. 2017; McMeekin and Southerton 2012; Ockwell et al. 2018; Seyfang and Gilbert-Squires 2019). Given such emerging concepts as the "sharing economy," new understandings of consumption dynamics within wider systems are needed. In addition, SPTs may contribute to transition studies by deepening our understanding of the key social mechanisms and dynamics underpinning transitions in everyday life, and of the role of agency and collective action in processes of social change (Köhler et al. 2017).

The MLP proposes that transitions occur through a dynamic process with interactions involving the three levels of niches, regime, and landscape (Geels et al. 2011; Geels 2012). Niches are the locus for radical innovations, regimes are the locus of established practices and associated rules that stabilize existing systems, and the landscape is the wider context which influences niche and regime dynamics (Geels et al. 2011; Rip and Kemp 1998).

A personal urban-mobility system may, for example, involve a dominant regime of privately owned cars, niches of car-sharing services, and a landscape of climate crises. In this context, "transition" is generally understood as a change from one regime and its dominant practices to a new regime with new rules and new combinations of dominant practices. This process can come about through niches that build up and destabilize the

regime and landscape levels and put pressure on the regime (Geels et al. 2015).

Despite calls from the field of transitions research, proposals for using practice theories in transitions studies have encountered skepticism, even rejection from some quarters (Shove and Walker 2007, 2010, 2014; Watson and Southerton 2015). The different ontologies, combined with the fact that SPTs are seen by some scholars as theories rather than perspectives or lenses, underpin these attitudes. Both the MLP and SPTs are relational approaches applicable to studying socio-technical acceptance and diffusion (Sovacool and Hess 2017), but differ in how they view practices. SPTs adopt a flat ontology in which practices are the primary unit of analysis while the MLP sees practices more with graded levels of structuration, causing a discussion on incompatibilities due to alleged hierarchical views (Geels et al. 2011, 37).

Geels et al. (2011, 37) propose paying less attention to this vertical nested hierarchical view and focusing instead on how the distinction between the levels of the MLP refers only to degrees of structuration and stability. Thus, in connecting MLP-level concepts with practice theories, stable/routinized practices can be seen as "regimes," whereas emerging fluid practices can be seen as "niches." Similarly, it has been argued that SPTs also recognize different degrees of stability within practices (Smith, Voß, and Grin 2010). An empirical study of collaborative consumption for housing indicated two areas where MLP insights might complement SPTs in understanding practice evolutions, niche ripening, and regime resistance, shedding light on the systemic processes that affect practice configurations (Huber 2017).

In their contribution on the integration of the MLP and SPTs, Hargreaves, Longhurst, and Seyfang (2013) argue that both frameworks are "middle-range" approaches that refuse to give predominance to either structure or agency in socio-technical change processes, but instead focus on the dynamics of "structuration" that drive both system stability and change. They argue for integration because, although the MLP offers a useful framework for understanding sustainability transitions in particular systems and regimes, it needs to be extended further to account for activities that cut across existing regimes and systems. In particular, this holds for activities that engage more directly with people's everyday life practices and concentrate on normality as much as on novelty. Shove, Pantzar, and Watson (2012) argue similarly, that the MLP is valuable for understanding novelty and how new innovations within niches break through to form dynamically stable regimes, but they say less about the dynamics

of normality. The dominant focus in the MLP on innovation and transition in specific regimes forces attention to the new and the novel, thereby overlooking the wider systems that hold things in place and maintain normality (Shove 2003).

A recent study using SPTs and MLP acknowledges differences, but proposes that parallels exist between the stability of regimes and practices, and possible disruption by niches and proto-practices (Seyfang and Gilbert-Squires 2019). The present study builds on the view that parallels exist between stability of regimes and stability of practices. These common points of reference concern how regimes and practices are seen as stable and supported by existing rules, regulations, and institutions while simultaneously drawing attention to how innovation and change need to deal with such stable elements. The stability and reproduction of practices results from the repeated integration of elements, and innovation in practices derives from the making and breaking of links between them (Pantzar and Shove 2010).

Whereas Hargreaves, Longhurst, and Seyfang (2013) and Seyfang and Gilbert-Squires (2019) focus on using an SPT approach and the MLP to reveal critical points or constraints blocking transitions in regimes and practices, we examine the conditions under which a practice is reproduced. We apply a practice-informed methodology to analyze the reproduction of a practice, and then discuss how this relates to how the MLP considers the role of establishing new practices in a transition from one regime to another.

By applying both of these approaches, our analysis allows for a study of the role of car-sharing practices in the transition of a mobility *system* instead of a transportation *sector*. Such a transition to a sustainable mobility system goes beyond a solely sectoral change in transport, and further than technological substitutions such as electric vehicles (EVs). New emerging mobility alternatives connect to other practices. The objective of transportation is not the trip per se, it is more about the destination of the trip or the goods transported. Thus, by examining households' practices and involving more of these related aspects, this article aims to contribute to the study of *system* change rather than *sectoral* change.

Changes in consumption and production are central both in sustainability transition studies and in SPTs. A general (mis)understanding is that transitions studies focus on production and practice theories on consumption (Köhler et al. 2017). With this article, we show that both approaches take in both aspects. While sustainability transitions refer to how socio-technical *systems* shift to more sustainable

modes of production and consumption (Markard, Raven, and Truffer 2012), practice theories understand changes in *practices* as interactions between modes of provision and modes of access. These interactions are due to how social practices form historically shaped, concrete interaction points between, on one hand, modes of access, with actors and their lifestyles and routines, and on the other hand, modes of provision, with infrastructures of rules and resources, including norms and values (Verbeek and Mommaas 2008). Building on this insight, we explain how the modes of provision that constitute providers' contexts and the modes of access that comprise user contexts, are part of the practices. With these two distinctions, our analysis goes beyond the simplification of the focus on consumption-for-practice theories and production-for-transition studies, and instead elaborates on the interaction between providers and users to explain the role of practices for system change. Our analysis shows how the distinctiveness of provider and user contexts can be useful for how practice theories can contribute to transition studies.

The research question guiding this study is as follows: under which conditions are car-sharing practices reproduced, and what are the implications of this reproduction for a transition to sustainable mobility? Our study applies a social practice approach to study this phenomenon, investigating the parallels between system change and reproduction of practices. In this way, we seek to contribute to understanding of how SPTs can be applied to help explain system change.

Methods

Our data are drawn from interviews with members of the three car-sharing services *Bilkollektivet*, *Hertz Bilpool*, and *Nabobil,* respectively categorized as a business-to-consumer (B2C) cooperative, B2C corporate provider, and peer-to-peer provider (P2P). We conducted semi-structured interviews with 39 households that are registered members of these car-sharing services in the urban area of Oslo. Households were couples or singles, with and without children. We conducted the interviews in the homes of the respondents during three periods: May–July 2017, October–November 2017, and January–March 2018. The Appendix provides an overview of the interviews, categorized by the number of the households #1–39, with information on location and type of service.[1] We use this numbering scheme throughout this article, and the quotes are marked with *Respondent 1 and 2* when they involve more than one respondent in the household.

The three car-sharing services differ in their business models. First, *Bilkollektivet* is a B2C cooperative with a car fleet available for users. Second, *Hertz BilPool* is also B2C car-sharing service but it is a corporate company rather than a cooperative, with a car fleet available for its users. Finally *Nabobil* does not have a car fleet but rather is a P2P service organized as an online platform that provides car sharing between people. As of September 2019, *Bilkollektivet* had a fleet of 400 cars and *Hertz BilPool* had approximately 150 cars in Oslo. *Nabobil* reported over 5500 available cars throughout all counties in Norway (for more on the context of car sharing in Oslo see, for example, Uteng, Julsrud, and George 2019, 190–192).

Based on a pilot study (George 2017), we developed two guides for semi-structured interviews: for users and non-users. The guides included an outline of topics and questions about life situation, daily travels, leisure travels, car-sharing use, motivation and implications (Kvale 2007). We used an audiorecorder and conducted the interviews in the participants' homes. They showed us around the buildings, giving information about the neighborhood, such as the distance to car sharing, parking, bus station, schools, grocery store, and so forth. Conducting the interviews in the homes enabled us to acquire understanding of arrangements such as parking, gardens, common areas, elevators, and playgrounds.

Interviews can provide data suitable for analyzing practices, as respondents may talk about their practices, often in quite revealing ways in terms of actions they otherwise take for granted (Hitchings 2012). Interviews with households are particularly useful for studying mobility practices because people are often able to explain in detail how the use of the services occurs and how infrastructure and technology are involved. In addition, they can reflect on their emotions and skills around the use. Conducting the interviews at their own homes typically encourages them to mention issues that they regard as usual and mostly irrelevant parts of their daily life. This occurs because respondents are closer to the venue of actual performance and this proximity enables inclusion of the materiality and daily life being part of the practice.

Despite these advantages, this means of data collection also has limitations. Because we conducted the interviews in the homes of our respondents we did not actually observe the use of car sharing. In addition, restrictions concerning privacy issues and limited permission for data collection ruled out participant observation. The data collection – including the recorded audios, transcribed interviews, field notes and memos – was facilitated by using NVivo, a software program for managing and analyzing

qualitative materials. During both the phases of data collection and analysis, we wrote memos to organize the coding and preliminary findings (Miles, Huberman, and Saldana 2013).

We followed an iterative analytical process, guided by SPTs and allowing for further discoveries in the data along the way. We started by coding all of the interviews and organizing the findings of practice elements, coevolution between elements, and relationships to other practices. We then analyzed the reproduction of the practice by searching for and identifying patterns of what was involved when the practice reoccurred in these households. During this process, we developed insights into how the performance of the practice varied and did additional coding based on these findings, ultimately discovering three ways of doing car sharing and mapping out interactions between provider and user contexts.

Results

This section highlights how car sharing is reproduced in Oslo. First, we demonstrate the observable doing of car sharing in the city and discuss how this relates to the reproduction of the practice. We discuss three different ways of doing car sharing and then explain the practice-as-entity by giving an overview of how elements coevolve. Second, we show how modes of access and provision affect repetition. Finally, we describe how car-sharing practice relates to other mobility practices as well as household social practices more generally.

Three ways of doing car sharing

Practice-as-performance is the observable action that happens when practices are enacted in specific situations at certain times. Ways of doing practices are often questioned by newcomers who experiment, adapt, and improvise around accepted ways of doing things (McMeekin and Southerton 2012). In describing different ways of performing car sharing, we highlight how the practice is enacted differently in certain space and time surroundings. In the words of Alan Warde (2005, 140), "performances in the same practice are not always the same." We distinguish three particular performances of the practice that we term FUSS (Frequent, Unplanned, Short-term, Small-car use), POLL (Planned, Occasional, Longer-term, Larger-car use), and PERC (Purpose Elected from Range of Cars use). These performances are essential for understanding the conditions under which the practices are reproduced.

First, FUSS characterizes household use of smaller cars, often for quick errands. The coevolution here concerns mainly the meaning of predictable, fast, and easy access; the skills of rapid booking and picking up; and the materialistic element of a close vehicle-hub with smaller cars constantly available. One respondent referred to how using car sharing spontaneously involves feelings of freedom when she said, "It gives a feeling of freedom, just driving – but that can be done in other people's cars, too (# 15).

In addition, they have acquired the wherewithal for using a specific type of car and recognizing cars of similar models. Predictable parking affects the performance and it is part of the frequent use that the vehicles have their own specific parking lot. As a respondent explained, "It's good to know that when I use the car cooperative, there's a parking lot when I come back; really nothing I need to worry about. Just drop off the car and go home" (# 08)

Time calculations are particularly important here, especially for families with young children. The time spent using car sharing versus public transportation is carefully evaluated, and car sharing is used to save travel time for certain errands and activities. Access distance is relevant for this performance, as the vehicles must be reachable within short walking distance. Thus, both the location of housing and the location of the cars play a crucial role.

Second, POLL involves bigger, specially equipped cars for scheduled trips and certain leisure activities. The coevolution here involves the material of safe, high-quality cars, the meanings of security, and the functionality of well-outfitted vehicles relative to cost. In addition, experience with cost- and time-planning, which includes calculating total costs with fuel and kilometer prices and comparing with, for example, train tickets, brings this performance together. Car sharing is included when planning activities as occurs when, say, organizing a weekend trip.

> Typically, we drive to our cabin on Friday evening and return Sunday evening. We'll be going back and forth for a weekend, so we rent until Monday. On the way from work, I pick up a car, drive home, we pack it, have something to eat, and leave. On Sunday, we get back at 10pm. I remove the children's seats and take them inside, and then return the car (# 32).

This performance relates to other practices of the households, such as the use of cabins, family traditions, holidays, and seasonal activities.[2] Respondents usually reserved a car as they would book a trip, especially for peak seasons such as Easter or Christmas. Cabin trips involved car sharing, as illustrated by these two accounts:

> If we are going on weekend trips or have booked a cabin, we use the car collective. Because of the remote location, the car collective is the only option to get to the cabins (# 29).

The last time we were at the cabin, we rented a car through the car collective here. It was a big station wagon (# 37).

In other words, this particular use can be challenged by other alternative trips such as flying abroad or traveling to destinations accessible by train. Thus, this reproduction of the car-sharing practice closely relates to other practices and car sharing is used to accomplish a planned trip.

Finally, PERC concerns car sharing with several types of specific vehicles for certain commitments. Important here is that the performance of the car-sharing practice exists and is reproduced precisely by involving diverse use of a selection of models, compared to private ownership and dependence on one particular vehicle. These respondents used car sharing both for transporting goods and to reach distant areas and the objectives were succinctly summed up by one respondent who told us, "It is either to pick up or bring something that is too big to take with me easily on the subway or bus. Or, it involves traveling to a place that's difficult to reach by public transport" (# 26). Others explained how they from time to time needed different kinds of vehicles. They preferred car sharing to owning because they could opt for a vehicle that corresponded to a specific purpose and were able to avail themselves to different cars at different times. If they had to own one particular vehicle, they could not find one single model that would be suitable. As explained by one household member,

If you buy a car, then you have that one car, for all kinds of purposes. In principle, it must work for

everything. While here [with car sharing] we have it all, and I enjoy having the freedom of choice when I need a small car or a large one (# 21).

Awareness that car sharing can be used for different types of errands links the practices together and affects reproduction. This performance of car sharing is recurring under circumstances in which car-sharing services provide a diverse selection of different kinds of vehicles. The members of one household noted,

Respondent 1: We don't always need a big car or a small one. Once we had to pick up a cabinet, so we took a van … If we have a lot of stuff with us, we can take a station wagon, and if not, we can opt for a small car.

Respondent 2: If we go on a day trip, to an art exhibition, say, we'll take a tiny car. If we go on Easter holidays then we take a …

Respondent 1: … a station wagon. Not having to own, that is very good (# 16).

This implies that this type of reproduction is the most diverse, and concerns both bringing things and traveling to places. It involves both spontaneous and planned trips, and thus spans the two other practices by involving a wide range of cars and trips.

Analyzing a practice-as-entity makes it possible to unveil what the practice consists of by identifying elements and how they relate to each other. Table 1 identifies the various elements that configure blocks and patterns in the three ways of doing car sharing. Shove, Pantzar, and Watson (2012) propose that

Table 1. Coevolution of elements.

Material	Meaning	Competence
	Links being made	
FUSS		
Small car	Short distance	Booking experience
Electric vehicles (EV)	Easy access	Efficient reservation and pick-up routines
Closeness	Predictable	Knowledge on location and availability of cars
Immediate parking	Fast and available	General knowledge on approximate costs and
Housing location	Freedom	time use from previous use, detailed time
	Spontaneity is important	and cost calculations are not necessary
	Environmental concerns, do not want to own car	
	Faster to use car sharing sometimes instead of public transport	
POLL		
Large cars	Longer distances	Cost calculations
Special equipment	Safety	Alternative travels
SUV, station wagon, not EV	Comfort	Have previous experience with using this type
	Predictability	of car, also know-how on family planning
	Planned, non-impulsive use	for whole trip including reserving car and
	Price concerns, value high-quality car	picking up
PERC		
Variety of cars	The variety is valued	Calculations of price, time, and what can be
Ranging from small EV to large SUV and moving vans	Need or want to use different types of cars for different occasions	transported
	Cost or environmental concerns	Have learned how to use different cars
		Skills with price planning and experience with purpose-selected cars

elements already exist separately from the practice, becoming a practice when they are interlinked. Our findings support this view of elements as existing pre-practice: we note how pre-existing elements come together in the three ways of reproducing the practice of car sharing. The table shows that the elements are connected to the three ways of doing car sharing—FUSS, POLL and PERC. We acknowledge that they are interlinked, but distinguish these three separate categories to emphasize how each of the practices differs in its reproduction.

Modes of provision and access affecting repetition

In addition to demonstrating three ways of doing car sharing, our analysis indicates how modes of access and provision are part of the reproduction of car-sharing practices. Synthesizing the provider and user contexts, we can see that the practice of car-sharing concerns already existing elements that are tied together in a new way (especially in comparison to, say, owning a car). This shows how car-sharing practices are different from car-owning practices because certain aspects of car use are distributed differently and shifted from the user context to the provider context. As a respondent explained, "I don't want to have to take care of car maintenance. With a cooperative, someone else takes care of the cars, so you do not have to. You feel in a way that you have a car without having it" (# 26).

To illustrate this, we present how user and provider contexts interrelate (see Figure 1). The circles illustrate the different aspects that are involved, and are placed on two sides to show how it belongs to the provider or user context. The circles are situated inside a larger circle, exemplifying the drifting interrelations inside the practice and demonstrating that

these move around and in aggregate constitute the practice.

The following section first elaborates on how from the perspective of the provider the practice is about maintenance, insurance, and customer service. Attention subsequently turns to the vantage point of the users, where the practice is more about cost calculations, quality valuations, and saving efforts.

The providers' contexts vary on the basis of how they offer cars through services rather than ownership in accordance with various business models. On one hand, we find differences in the use of B2C cooperative and B2C corporate regarding the forms of ownership and membership. Some members of the B2C cooperative regard themselves as co-owners of several different cars, as noted in this statement.

> What I think I have boasted the most about, when people at work ask, "Don't you have your own car?" Then I say that I have hundreds. They are customized to our needs for particular days, are of a certain size, and are exactly what we need (# 08).

For these users, the co-owning aspect ties the practice together and is essential when reproducing the practice. Some respondents said that they were even willing to pay more because of their role as co-owners and their wish to support this nonprofit cooperative.

On the other hand, we note three similarities in the use of P2P, B2C cooperative, and B2C corporate. First, the providers offer insurance and this plays a role in reproducing the practice. Insurance creates understandings of security and predictability and is seen as uncomplicated and affordable for some of the car-sharing users. Second, the change of repair responsibilities from car owner to car-sharing provider effects reproduction. The car-sharing companies are responsible for maintenance. Households
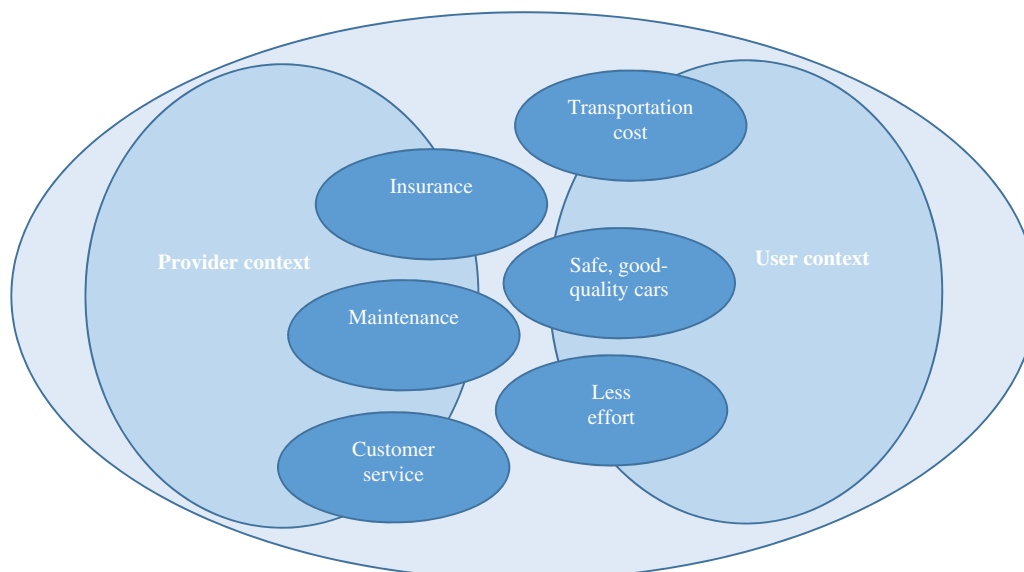

Figure 1. User and provider contexts are part of the practice.

can use a car, without having the competence, capacity, or capital to keep up with the maintenance. As stated by this respondent, "I trust the cooperative to take care of the cars. I feel that I've got technical backing, mechanics and such when needed. No need to think about maintenance, changing tires, and all that" (# 08). Finally, the providers' booking services, keyless technologies, and customer service affect the reproduction. Users can communicate with the providers and get help with problems such as unlocking the cars, notifying about dents and lack of fuel, and getting technical support.

Turning now to the user contexts, we discuss how cost, quality, and ease are involved in the reproduction of the practice. First, price perceptions and cost planning for using car sharing emerge as important in tying the elements together and repeating the practice. The cost aspect is always involved, but cost perceptions vary from household to household. Some include car sharing in the family budget as transportation or holiday costs; others do not calculate the specific cost but rather are of the mind that car sharing is cheaper than ownership. They highlight that the costs are predictable because they do not have to pay for unexpected repairs or maintenance as they would with car ownership. Some make plans for their car-sharing expenses, setting aside a certain amount each month, as in this household.

> We have a budget of 40,000 to 50,000 NOK [US$4,200 to US$5,300] each year for car use. It is still cheaper than owning. We pay a fixed amount to an account we have for car use; we both pay 1,500 NOK each month. We drive a lot during Easter, and for several cabin trips, and we rent over a longer period in the summer (# 09).

Second, some respondents emphasized the importance of the value of using car sharing because of the type of car they get for the price. In particular, families with small children said that if they had to own their own vehicle, they could never afford a car of such high quality. They did not want to use an older, unsafe car when driving the children, so they used car sharing to get access to newer cars.

> The cars are always new and the fact that you know that when you drive long distances with two children, makes me feel safe. You have a safe car with winter tires that have been installed by professionals. I think that's the great thing about the car collective. They have proper cars, and if anything is wrong, it is fixed straight away (# 13).

Finally, ease affects the reproduction, as an absence of maintenance obligations are part of the practice. This exchange describes how accessing instead of owning requires less effort from the household.

> First respondent: Personally, I really like the idea of sharing instead of owning. It's like so many other things. I don't own CDs anymore, I have Spotify.

No ownership, but I have music anyway. I like *not* owning a car. I don't have to worry about how much value is lost, or about maintenance

> Second respondent: We don't even have to wash the car or change the tires …

> First respondent: I can have a smooth-running new car whenever I need it (# 21)

They appreciate the time freed up by not having to deal with ownership and maintenance, thus distribution of responsibly is part of the practice.

Car-sharing practices and other practices in households

Other practices in the households related to car-sharing practices in mainly two ways: as parts of reducing daily driving and as car-dependent activities. On one hand, car-sharing practices related to reduced use of cars for daily trips. Some users lived within walking distance of schools and workplaces, whereas others relied on public transportation or bicycles. In addition, the increased use of the Internet and home-delivery services reduced the need for daily car use:

> First respondent: Things have become so much easier. We can arrange everything online, to free up time …

> Second respondent … using services. We buy services; we buy housekeeping, grocery deliveries, and other home-delivery services. (#21)

On the other hand, car sharing involved the continued use of cars for certain trips. Other practices where the households needed a vehicle, such as cabin trips, sports activities, family visits, and celebrations affected the use of car sharing. Some used car sharing for shopping or for regular activities, such as weekly winter ski practice. They planned the activity and booked a car for a certain period, such as explained by a respondent who told us, "Our daughter went to a ski school in the winter, which was the only longer trips we did. Then we booked a car for five weekends in a row, so that we had a car for going on longer trips like that" (# 13). This implies that other practices are relevant to how car-sharing practices are reproduced. Practices requiring occasional car use support the normalization of the use and play a part when car-sharing practice goes from novelty to normality.

Discussion

The theoretical framework from SPTs applied in this analysis has provided a way to explain the

reproduction of car-sharing practices. The framework looks at how performances are not always unvarying for the same practice. This is useful in responding to the call for attention to practices in studies of system change in transitions to sustainable mobility. The insight is also instructive for highlighting how a novelty such as a niche for a new practice can be reproduced and therefore normalized, becoming part of a new mobility regime. The analysis thus relates to the discussion in SPTs about what practices are *for* and to transition studies of how a niche practice becomes a regime practice.

These issues relate to the three distinct "circuits of reproduction" through which practices are maintained and stabilized (Hargreaves, Longhurst, and Seyfang 2013, 406; Pantzar and Shove 2010, 458). The three ways to stabilize a practice are through *combinations of complementary* practices, *certain connections* between particular elements, and *content in current* practices coming from previous practices and later serving as a foundation for future practices.

First, car-sharing practices are stabilized through *combinations of complementary* practices. The analysis contributes in the SPT discussion on what a practice is used *for*, and thus how it unfolds and normalizes (Hui, Schatzki, and Shove 2016; Shove and Walker 2014). The investigation outlined above has shown that the reproduction of the practice of car sharing relates to the continuity of other practices such as leisure-time activities, weekends at cabins in the mountains, or out-of-town celebrations with family and friends. Practice theories hold that repetition of practices is interlinked with other practices, and our study has found support for this view. This implies that other practices support the use of private cars, and continued *car* use, instead of, for example, public transport. When car-sharing services are available, households can continue their car-dependent practices without owning cars.

This particular feature of the service can play a role in a transition to sustainable mobility if the aim is to change the regime of private car ownership and to reduce the use of private cars in cities. For households, car-sharing practices are reproduced because other practices that require cars are reproduced. For example, transport to skiing activities requires car use. We found that skiing practices were stable, and thus supported the need for occasional and special purpose car use. If the objective is to reduce car ownership in cities, perhaps one way to achieve this may involve being able to use public transportation or car sharing to get to skiing destinations.

This observation relates to how car sharing plays a role in the transition of the mobility *system* rather than being limited to a transport *sector* transition. Our study offers input to debates on the role of practices in sustainability transitions by showing that neighboring practices contribute to reproduction. Whether a practice is reproduced relates to what the practice is *for,* the practice of car sharing does not exist in a vacuum, but unfolds in user and provider contexts that shape the practice and interlink the elements.

Second, car-sharing practices are stabilized through *certain connections* between particular elements. Car sharing involves meanings of occasional instead of daily car use, and this is strongly linked with the material aspect of platform technologies for accessing cars. As mentioned, we found that some connected stable practices create a demand for occasional car use. At the same time, increased biking and public transportation options affect the need for daily car use. In addition, new regulations for limited parking and norms about less driving and environmental concerns, serve to reduce daily car use. In stabilizing the car-sharing practice, we found new connections between meaning elements of environmental concern with respect to using cars and skills elements of booking cars for trips. The structure, culture, and practices in the established regime of daily use of privately owned cars are changing. There is not yet a fundamental shift from one dominant regime to its successor, but we see that car sharing has a role in changing the dominance of privately owned, daily car use. This might be part of a step toward a new regime with a new mix of, for example, connected, autonomous, shared, and electric vehicles. There is not yet a "new" regime. Car sharing has not replaced car ownership–but car sharing is playing a role in changing the established regime and is being stabilized through connections between elements. The stabilization of car sharing with new links between particular elements is part of reconfiguring the existing culture, market, and user preferences, policies, and technologies in the current regime.

On the contrary, we find that car sharing is part of maintaining the established mobility system with its dominance of private use of cars. From the standpoint of the broader debate around platform services and their sustainability implications this research using SPTs and MLP contributes to supporting the view that car sharing maintains and serves to perpetuate private car use. Car sharing, nonetheless, still involves cars used in private settings, as opposed to carpooling, public transportation, or bicycling. Car-demanding activities are solved with car-sharing; private car use is still required, supporting a continuation of a car-demanding mobility system. Using shared cars

instead of car owning is more about a shift from owning to accessing; the rise of car-sharing services is linked with the stable practices that require personal car use. Thus, the study supports a cautious view on how car sharing contributes to environmental sustainability. Easier, cheaper, and faster access might also mean increased use of cars.

Third, car-sharing practices are stabilized through *content in current* practices coming from previous practices. The analysis contributes to the discussion of the normalization of new practices in transitions. We show how different ways of doing car sharing are relevant for understanding how new practices emerge. By highlighting the three different doings of car-sharing practices – FUSS, POLL and PERC – we show how these practices can support the understandings of how niche practices can contribute to a transition by playing a role in a new regime. As a new niche practice, car sharing becomes part of the regime because it represents a continuation of private car use. Car sharing is not a new dominant regime practice, but it plays a role in the transition of the mobility system. Car-sharing practices address the need for occasional, rather than daily, use of private cars—changing the role of private car use.

Finally, our analysis has also drawn parallels between MLP and SPTs by demonstrating how practice as performance, and contexts of providers and users, can help us to understand the process of moving from niche to regime practice. By showing empirically what is involved when a practice is reproduced, we shed light on how a practice evolves from novelty to normality. We find that the stabilization of these new practices relates to changes in the consumption as well as the production side.

Conclusion

This study has investigated the conditions under which car-sharing practices are reproduced and the implications for studying system change in the transition to sustainable mobility through qualitative research involving members of car-sharing services in Oslo. We distinguished three specific performances of the practice: FUSS (Frequent, Unplanned, Short term and Small-car use); POLL (Planned, Occasional, Longer-term and Larger-car use); and PERC (Purpose Elected from a Range of Cars) and showed how reproduction of the practice relates to how the practice is performed. The article explained the mechanisms affecting repetition of the coevolution of elements and showed how practices exist in the interactions between modes of access and modes of provision. We further demonstrated how car sharing relates to other mobility practices and household practices more generally.

Our empirical findings indicated that maintenance, insurance, and financing the cars are essential parts of the practice, going from the user context in car owning to the provider context in car sharing. Households have price perceptions favoring car sharing, prioritizing the extra time they spend on car sharing rather than car ownership, and planning travels and activities involving the use of car sharing. All of these factors support reproduction of the practice. We showed how practices that reduce the need for daily car use – such as online shopping, public transportation, and bicycles – affect the use of car sharing by reducing the need to own a car for daily use, instead creating a new demand for using cars occasionally. Further, we argued that stable and occasional practices such as certain shopping and sports activities, as well as cabin trips, affect the repetitive use of car sharing because of the continued need to be able to use cars in private settings. We also discussed how platform-enabled sharing economies do not always have outcomes favorable to sustainability: shifting to access instead of owning, and maintaining car-dependent activities, can in one scenario lead to more use of cars.

For policy makers and practitioners such as the operators of car-sharing services, our research offers insights on the factors that are important for the normalization of car sharing. A part of this is the concern of how car sharing is a kind of continuation of private car use, and this has implications for how policy makers should be involved in supporting car sharing. Specific regulations for car sharing such as subsidies for dedicated parking can be part of both the FUSS, POLL, and PERC use. Easy access to parking can, for instance, support FUSS spontaneous use, where cars can be chosen for shorter trips instead of bicycles or public transport. Another indirect way of supporting a shift from car-owning to car-sharing can be through promoting alternatives that reduce the need for daily car use, which we have shown contributes to the reproduction of car sharing because of the increased requests for occasional car use. By revealing the three different ways of doing car sharing, we offer insights of what types of cars are used and in what settings and these insights are likely to be relevant for provision of shared services. This article highlights that some associated practices such as trips to cabins or skiing destinations are important and may deserve further attention as part of efforts to expand car sharing. By shedding light on the user and provider contexts in the practice, we demonstrate the central importance of, in particular, maintenance responsibilities.

The limitations of this study mainly concern the data from household interviews with members of car-sharing services, and the focus on only the user

side and normalization process. Nonmembers and providers were not included, as we focused on user practices. Nevertheless, through the analytical process we acknowledge that although the present data is useful for studying the practices of car sharing, additional data from providers and policy makers could be useful for contributing to understanding of system change. We did not actively consider what hinders or breaks up the practice and paid limited attention to other aspects of system change such as new regulations and other mobility services. In addition, the use of the B2C cooperative option was more common among our respondents than the use of the P2P alternative. Accordingly, these newer services were not as widely represented in the resultant fieldwork. For a better understanding of the transition from one mobility regime to another further research could investigate these dimensions as well as how car sharing disrupts established mobility practices. Finally, we recommend more detailed consideration of the tensions between the flat and hierarchal ontologies of SPTs and the MLP.

Notes

1. Interviews were conducted as part of the data collection in the research project TEMPEST (see section on Funding for details) and have been used in other studies of car sharing (Julsrud and Farstad 2020; Julsrud, Farstad, and George 2020; Svennevik 2019).
2. Access to cabins and the role that these second homes play in Norwegian culture is relevant for these trips. The significance of the destinations as part of Norwegian lifestyles is central, as mountain and shore-side cabins represent a common leisure form for a significant proportion of the Norwegian population (Berker and Gansmo 2010; Garvey 2008; Kaltenborn and Clout 1998).

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Appendix: Data collection

Interview number and location	Type of car-sharing service
# 01 Etterstad	B2C Cooperative
# 02 Carl Berner	P2P
# 03 Bøler	P2P
# 04 Smedstad	B2C Corporate
# 05 Torshov	B2C Corporate
# 06 Barcode	B2C Corporate
# 07 Vika	B2C Corporate
# 08 Storo	B2C Cooperative
# 09 Sinsen	B2C Cooperative
# 10 Manglerud	P2P
# 11 Veitvet	P2P
# 12 Pilestredet	P2P
# 13 Keyserløkka	B2C Cooperative
# 14 Ulven	B2C Corporate
# 15 Ekeberg	B2C Cooperative
# 16 Tøyen	B2C Cooperative
# 17 Fornebu	B2C Corporate
# 18 Nesodden	P2P
# 19 Grünerløkka, lower	P2P
# 20 Bygdøy Allé	B2C Cooperative
# 21 Rosenhoff	B2C Corporate
# 22 Sagene	B2C Cooperative
# 23 Schouterrassen	B2C Cooperative
# 24 Høybråten	P2P
# 25 Tøyen, nr prison	B2C Cooperative
# 26 Ensjø	B2C Cooperative
# 27 Sinsen west	B2C Cooperative
# 28 Årvoll	P2P
# 29 Vålerenga	B2C Cooperative
# 30 Bislett	B2C Cooperative
# 31 Torshovparken	B2C Corporate
# 32 Kampen	B2C Corporate
# 33 Adamstuen	B2C Corporate
# 34 Kvadraturen	B2C Corporate
# 35 St Hanshaugen	B2C Corporate
# 36 Bogstadveien	B2C Cooperative
# 37 Solli plass	B2C Cooperative
# 38 Hovseter	B2C Cooperative
# 39 Ruseløkka	B2C Cooperative