Imagined people, behaviour and future mobility: Insights from visions of electric vehicles and car clubs in the United Kingdom

Noam Bergman [a,*], Tim Schwanen [b], Benjamin K. Sovacool [a,c]

[a] SPRU - Science Policy Research Unit, University of Sussex, Brighton, BN1 9SL, UK
[b] Transport Studies Unit, School of Geography and the Environment, University of Oxford, South Parks Road, Oxford, OX1 3QY, UK
[c] Department of Business Development and Technology, Aarhus University, Birk Centerpark 15, DK-7400 Herning, Denmark

A B S T R A C T

This study focuses on imagined futures of personal mobility in the United Kingdom in the context of the need to reduce greenhouse gas emissions from transport. Focusing on two innovations, electric vehicles and car clubs, the study investigates how people, behaviour and mobility are imagined in a range of visioning documents about the future up to 2050, a timeline that is critically important for emission reduction targets. We find that people are imagined primarily as consumers in line with the rational actor paradigm, with many visions focusing on low-carbon vehicles as a sustainability solution. This simple technological substitution vision does not play to the strengths of electric vehicles, and diminishes their transformative potential. There are fewer car club visions; these show less car ownership, but retain high mobility and an economic growth perspective. Our findings support the idea that much future mobility visioning is used to support the status quo, rather than to explore a variety of futures with diverse portrayal of people, behaviour and mobility.

1. Introduction

How personal mobility is imagined is an important and topical debate, tying into discussions about greenhouse gas emissions and sustainable development, as well as technological innovation, economic growth and energy security. Growing pressures over road transport's contribution to anthropogenic climate change are compounded by concerns over air pollution and road congestion.

In the United Kingdom (UK), cars became the dominant mode of travel in most people's lives after World War II. Practices, landscapes, institutions, knowledge and cultural representations centred on the privately owned car, collectively making up *automobility* (Sheller and Urry, 2000; Schwanen, 2015a), came to dominate surface transport. However, since 1990 the use and private ownership of the car have stabilized and even declined, particularly among younger generations and in cities (Goodwin and Van Dender, 2013). How significant this 'peak car' phenomenon will be in the long term is not yet clear. On the one hand, systemic change is difficult to achieve because numerous path dependencies in terms of land use, policy, finance, expert knowledge, and people's practices and emotions trap the UK (and the Global North more generally) into continued reliance on the private car (Schwanen, 2016). On the other, there are a range of innovations that could reduce

greenhouse gas emissions and that may durably reconfigure automobility, driving a systemic shift towards more environmentally and socially sustainable mobility in the future. Examples include technological innovations such as alternative power trains, including battery electric vehicles and plug-in hybrids, hydrogen vehicles and biofuels, all with the potential to greatly reduce fossil fuel use.

Other key innovations are social and institutional in nature and relate to, for instance, product-to-services shifts and the integration of information technology into mobility. At the intersection of the last two sit various forms of car sharing, including car clubs – short-term, membership-based rentals provided by a for-profit firm or not-for-profit organisation. Analysis suggests moving towards sustainable personal transport requires a combined strategy of technological improvements and demand side management, such as addressing transport mode usage, trip length and trip generation, although such a package is often seen as politically challenging (Potter, 2007; Marsden et al., 2014).

With many potential innovations and cultural shifts, visions about the future of personal mobility are very much dependent on normative assumptions about modal choice. While there are many studies about how new powertrains and other innovations might diffuse under a range of economic and institutional conditions (e.g., Shepherd et al., 2012; Straw and Rowney, 2013), there are far fewer that critically reflect on how

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* Corresponding author.
E-mail address: n.bergman@sussex.ac.uk (N. Bergman).

visions about the future of personal mobility are constructed and how users are imagined. Here "users" are those individuals who use a car as driver or passenger to satisfy their transport needs. The term is closely related to "consumers" but not identical; the latter is used in this paper to denote users when they purchase goods and services, such as vehicles or access to a car provided by a car club, in a market setting.

A relevant exception to the trend of downplaying the role of users is a recent study (Ryghaug and Toftaker, 2016) that examines how users are imagined in visions about the future of electric vehicles (EVs), constructed by a range of stakeholders from the car industry and government in Norway. The study found that stakeholders loosely divided people into groups by the likelihood or timing of EV adoption, and emphasized 'learning-by-doing', for example leasing an EV to convince potential users to buy one. Consumers were generally portrayed as rational actors concerned with cost; however, early adopters were considered to be of the most interest, and were portrayed as environmentalists, idealists and enthusiasts who were less concerned with cost and performance. This exercise offers insight into the imagining of (potential) users as consumers segmented by if, when and how they might be persuaded to purchase and use an EV. It follows the common practice in the literature on innovation diffusion inspired by Rogers (1995) to identify segments of imagined users in a sequential manner, from 'innovators' and 'early adopter', through early and late majority to 'laggards'. Most diffusion literature, however, does not explore how such frames or categories came to be cognitively constructed, nor does it tend to adequately capture the complexities of energy and climate choices (Stern et al., 2016).

Our study complements and extends the above work by critically examining how future visions of personal mobility are constructed. By investigating future-exploring documents by diverse and different stakeholders, it aims to identify how the future is imagined in terms of people, behaviour and personal mobility. The study is mostly descriptive in nature, seeking to portray the expectations and often unstated assumptions articulated in the examined documents. However, it is also inevitably normative in places, for instance when it assesses the observed portrayals. Different types of documents are identified in the literature, such as forecasts, which extrapolate from current trends; pathways, which look at possible routes to a (desirable) endpoint; and *visions*, or explicitly normative elaborations of desirable futures (e.g., Mcdowall and Eames, 2006).

In this paper, we take the position that *all* imagined futures are normative, as they inevitably make assumptions about the future in terms of behaviour, technological and economic development, and more. Even documents which intentionally focus on plausible futures tend, for the most part, to choose futures with assumptions that incumbent stakeholders consider desirable, such as continued high use of private vehicles; less desirable or (politically) more difficult futures with reduced car use are ignored or portrayed as implausible. The line between plausibility and desirability, in other words, is rhetorically porous. We therefore consider dichotomies between 'plausible' and 'desirable' futures less useful, and refer to all imagined futures as *visions*, and all the documents we study as *visioning documents*. Many of the documents contain different *scenarios*, i.e., narratives of trajectories in the future following specific assumptions about policies, prices, technological advances or other events. Scenarios can include *projections*, quantitative predictions about the future, e.g., in terms of EV numbers on the road or their percentage among private vehicles.

Given the current dominance of automobility, the study focuses on two innovations in private car technology, ownership and use: EVs and car clubs. EVs are arguably the automotive industry's 'winner' in the low-carbon vehicle technological innovation race (Bakker and Farla, 2015; Sovacool, 2017), and are prominently featured in the UK Government's new Industrial Strategy Green Paper (HMG, 2017). They offer technology-driven reduction in greenhouse gas emissions, whilst potentially continuing the dominance of private vehicle ownership. In contrast, car clubs are a fairly successful niche, with nearly 200,000 users, mostly in London (Steer Davies Gleave, 2015), that challenges some of the basic

assumptions of automobility by severing the link between functionality and ownership. They offer a cultural and behavioural shift that potentially forms part of an emerging mobility services paradigm.

Between these two innovations, both technological improvements and the more challenging management of demand are considered; they are qualitatively different in institutional make up, drivers, and perceptions, allowing for a broader, more informative investigation of how future (more sustainable) mobility systems are imagined. These specific innovations are clearly distinct from recent developments in public transport, cycling and 'smart' mobility (including connected and autonomous vehicles). However, given that both (hybrid) EVs and car clubs have been around as alternatives to the still hugely popular, individually owned ICEV (internal combustion engine vehicle) for more than a decade, they are also cases from which wider lessons about the relationships between visioning and innovation in personal mobility can be drawn. We note, however, that we found far fewer documents focusing on car clubs, which also reflects a lacuna within UK research on transport by academics and researchers in non-university settings alike. While our original intention was to use the two equally in our research, we made EVs our main case study, using car clubs as a counterpoint to highlight implicit and explicit assumptions about transport futures.

We have chosen to investigate the UK for multiple reasons. Pragmatically, it was where the project's research team are based and funded. But beyond that, the UK is the sixth largest economy in the world (Giles, 2016), and is in the top fifteen in terms of national CO_2 emissions (Boden et al., 2015). The UK is also in need of more efficient, low-carbon transport systems, given that transport accounts for roughly 25% of national CO_2 emissions, approximately 2/3 of which comes from cars and vans (CCC, 2014). Focusing on the UK is also useful due to several differences in automobility and transport policy between it and other North-West European countries, including Germany, France, the Netherlands and Denmark. For instance, national government remained longer committed to road building (until well in the 1990s) and privatisation and deregulation have affected (public) transport to a greater extent than countries on the continent (Shaw and Docherty, 2013). In addition, despite devolution and localism, central government (the Department for Transport and the Treasury) remain very influential in transport policy in large parts of the UK, especially outside London and Scotland (Mackinnon et al., 2010; Mackinnon, 2015; Schwanen, 2015b). Lastly, while studies like Levidow and Papaioannou (2013) suggest the importance of visions and imaginaries for innovation processes in personal transport, there have so far not been any studies that have systematically analysed visions on future mobility in the UK.

We turn next to look at the importance of visions and imaginaries, and how they frame users, before detailing our own research design, then move on to results and analysis and a final discussion.

2. Background

2.1. Visions and imaginaries

In innovation studies there is now a well-established literature on visions of the future highlighting their generative potential. Visions, and the expectations they articulate, can motivate engineers and designers to initiate projects (Van Lente, 1993), be used to attract financial support for research and innovation (Fujimura, 2003), and raise interest from a wider range of stakeholders into a particular innovation, and thereby increase the legitimacy and uptake of innovations (Schot and Geels, 2008; Geels and Verhees, 2011). In fact, Ruef and Markard (2010) have argued that actors associated with a particular innovation might strategically inflate expectations or technological promise to attract resources and attention. This over-optimism can lead to a period of *hype*, during which attention (from media and the public) and expectations peak. Rather than being some latent or unintended side effect, visions and expectations are a key part of the process of technological innovation (Van Lente and Rip, 1998, Brown et al., 2000; Borup et al., 2006;