

The (anticipated) use of electric vehicles in private households – will their adoption support or impede multimodality? - An evaluation of in-depth interviews

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In times of climate change sustainable transport is one of the biggest political and societal challenges. The massive use of private cars is problematic. However, the car is deeply entrenched in our culture (Buba et al., 2010), and it won't be possible to completely substitute private car use by public transport or non-motorized forms of individual mobility. Governments and industries all over the world thus focus on electric vehicles (EVs) and consider them as one important new mobility technology having a potential to be much more sustainable than the current technology. Germany for example provides 500 million Euro in 2010-2011 for the development of the technology and infrastructural preparation of an EV-market (BMU, 2009). Being a rather ambitious program, the question of the potential adopters of the new technology and their (anticipated) use of EVs in relation to other mobility alternatives stays largely unanswered. Will EVs really bring about the expected relief? Will they indeed be able to substitute gasoline-driven cars or will they rather replace eco-friendly travel (public transport, bike)? Who will adopt them?

If consumers compare the conventional (gasoline-driven) car with an EV, than they normally evaluate the EV as a loss rather than an adequate or even superior technology (e.g. ADAC, 2009). Current battery insufficiencies lead to long recharging times and a restricted operating distance. Additionally, because of the heavy battery weight, the vehicles themselves are often built as rather small and light-weight vessels. Nevertheless, seen the actual mobility figures (MiD, 2008) electric vehicles could theoretically handle almost all daily trips which are today covered by a gasoline car.

Thus the question is whether there is a possibility to call consumers' conventional automobile principles into question ("bigger-faster-further", cp. the so-called 'Rennreiselimosine', Knie & Berthold, 1996) and to bring consumers back to their original spatio-temporal and purpose-driven mobility needs as a basis for the evaluation of electric vehicles (and, in combination with them, of other means of eco-friendly travel). Seen the (theoretically) few trips an EV will not easily cover (e.g. long-distance holiday trips), can the new technology open a way for the concomitant consideration of eco-friendly modes (in this case the train) and thus for more multi-modality?

The aim of our research is the advancement of an existing computer-based communication instrument (<http://www.mobilitaetsdurchblick.ch/d/home.htm>) that will support individualized travel planning in the context of personal mobility consultations. The instrument aims to make recommendations to private households about the optimal utilization of different transport modes in their private context, on the basis of personal needs and daily requirements. An experimentally controlled pre- and post survey will evaluate the effectiveness of the communication intervention, deduce different forms of future EV- utilization and give hints on the environmental impact of electric vehicles.

In Eindhoven we will present our first research step. In spring 2011 will be conducted 20 in-depth interviews with people in different socio-demographic and spatial settings. In the interviews we will ask for the spatio-temporal character of daily trips within a household and for the knowledge about different means of transport in the household's environment. On the basis of the

theory of planned behavior (Ajzen, 1991) we will then identify people's attitudes, subjective norms and perceived behavioral control towards different transportation modes in relation to their daily mobility patterns. Being led in an open and in-depth manner, we additionally strive to capture more basic needs and fears underlying those three factors. A special focus will be put on the question which of the described trips could, in the eyes of the interviewees, be substituted by an EV or other forms of eco-friendly transport and which external and infrastructural conditions should be met before a change in means of transportation seems conceivable.

The results of those interviews will form the basis for the advancement of the computer tool.

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