

# A CAR-FREE YEAR: PROVIDING VEHICLES FOR CHANGE

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## ABSTRACT

This paper describes an interventionist design research project called a Car-free Year, where three families substitute their cars for a fleet of light electric vehicles during one year. The aim is to study how this intervention changes the families' everyday practices, as well as suggest how design can support and sustain such a change on a larger scale. If radically new paradigms are to be shaped, changes are needed both in what is considered normalities and in people's everyday practices. We argue that design can play an important role in the transition towards more sustainable futures and new normalities.

## INTRODUCTION

In this exploratory paper we describe an interventionist research set-up and work in progress including initial findings in a currently running research project called a Car-free Year. We are studying everyday practices of three families in Stockholm, Sweden, who substitute their cars for light electric vehicles during one year. The light electric vehicles are electric bikes, box bikes, scooters and four-wheeled motorcycles (see examples in Figure 1). The project has been set up with inspiration from a living lab approach where we as design researchers intervene in these families' lives changing their standard transport choice of car to other means of transport. We are interested in understanding how this interventionist approach can be used to study individual changes in everyday practices. As design researchers, we are also searching for ideas of changes in the environment and with the artefacts and services around the individuals. These ideas will be used in the coming design process suggesting possible sustainable future urban lifestyles. Our design research practice, aimed at transformation design, is focused on finding the users

true problems. We believe the interventionist approach of a living lab, combined with participatory action research, provides the possibilities for these problems to emerge and to be designed upon.

In this paper we present initial findings from the on-going project with focus on the families' expectations of the car-free year and the tipping points that they have been able to cross. Furthermore, we analyse how becoming car-free has been enabled by the project providing the participants with possibilities of linking their emotional motives with practicalities.



Figure 1: Examples of the light electric vehicles with the four-wheeled motorcycle to the left and one of the box bikes to the right.

## THEORETICAL AND METHODOLOGICAL STARTING POINT

In this research project we are on the one hand studying changes that occur when we set up a living lab situation by which we intervene in the everyday practices of three families. On the other hand, we use a participatory action research approach as a way of problem solving. We combine these two approaches by using design methods to suggest possible futures. In this section we describe the theoretical and methodological starting points for this combination.

The living lab situation is, in our research project, used as an approach to experiment in a real-life setting and explore emerging possibilities where the users are co-creators and active problem solvers. We define our living lab as an approach for "analysing existing product-service-systems as well as technical and socioeconomic influences focused on the social needs of people, aiming at the development of integrated technical and social innovations and simultaneously

promoting the conditions of sustainable development” (Liedtke, Welfens, Rohn and Nordmann, 2012, p. 1).

The living lab approach is used as a context for learning from experiences, where knowledge gaining is a result from an iterative and intertwined process of doing and reflecting. The iterative process of integrating experiences and reflections upon these is a way for experiential learning, elaborated on by for example David A Kolb who defined learning as “the process whereby knowledge is created through the transformation of experience” (Kolb 1984 p. 38). This view on knowledge is a starting point for our research. With the living lab set-up we can study the participants’ actions and interactions in their ordinary environments as well as encourage reflections upon events and emotions occurring as consequences of these.

Our open design research approach of studying families’ everyday practices during a car-free year is different than for example the Field Operational Test study in the Go:Smart project (Sochor, Strömberg and Karlsson 2014). The overall aims of the two research projects are the same, as for many other innovative transport projects: to study and ultimately change people’s transport behaviour for the possibility of creating sustainable urbanism. The Go:Smart project included development and field testing of the transport broker service UbiGo where users were offered access to a range of travel services; public transport, car sharing, car rental, bike sharing and taxi service, through a monthly subscription. The Go:Smart project used, just like the Car-free Year project does, a combination of quantitative and qualitative research methods to identify motivations and barriers to adopt new transportation behaviours. However, in a Car-free Year we do not study a specific service but rather individual experiences and changes in everyday practice when living car-free as well as suggest changes in the environment and with artefacts and services to support car-free living.

Our main interest in this research project aims at understanding how everyday practises can begin to change and how these changes can be sustained. We are inspired by social practise theory and the thinking of Shove et al. that “more sustainable ways of life could and should be rooted in an understanding of the elements of which practices and systems of practice are formed, and of the connective tissue that hold them together” (Shove, Pantzar and Watson 2012, p. 2). Studying practices “understood as constellations of skills, meanings, and devices” (Tonkinwise 2014, p. 21), we believe can be a relevant starting point for design research, following the ideas of practice-oriented design (Scott, Bakker and Quist 2012).

As Nigel Cross describes, using “designerly” ways of knowing, thinking and acting is a way to form knowledge (Cross 2001). Following the thoughts of Donald Schön, design practice has its own culture and the practitioner’s reflection-in-action can be used as a

basis for research (Schön 1983). In this project we are doing research through design and, as for example explained by Christopher Frayling (1993), this approach can take advantage of being carried out as action research where reflections and actions are intertwined.

In our project we are also inspired by participatory action research, here used in order to address problems the families encounter during their car-free year. In participatory action research “people in the organization or community under investigation participate actively throughout the whole process, from initial design or problem diagnosis to the adaption of the action strategies” (Cassell and Johnson 2006, p. 796). We find the participatory action research approach well suited to be combined with designerly ways of problem solving, both actively suggesting improved alterations and new solutions. Furthermore, we believe that a particularly prosperous combination of the methods can be foreseen when taking a transformation design point of view. The transformational designer, as the facilitator of the emerging solutions to problems, can with participatory action research methods efficiently identify and effectively solve the real problems together with the users. Transformation design which “brings about a reciprocal learning process between the designers and project participants leading to transformative understandings” (Sangiorgi 2011, p. 35) we argue can play an important role in creating sustainable futures.

## PROJECT SET-UP AND METHODS

The car-free year was kicked off in October 2014 and the project has been set up with inspiration from a living lab approach with interventions in the three families’ lives. With this approach the participants are studied in their homes, ordinary environments and everyday practices. As a substitute for the car, the families choose a combination of light electric vehicles through a rental arrangement, which includes-maintenance and advice. The participants can also use public transport, walk and use regular bikes for transportation. Furthermore, during the year the families are allowed twenty-four car trips with a borrowed or rented car.

While the immediate goal of the project is to learn about particular everyday practices, needs and problems in the families’ car-free living, the long-term aim is to articulate design possibilities supporting a sustainable urban life. If light electric vehicles were used on a large scale, traffic congestion and carbon emissions could be substantially reduced. Using design techniques and tools combined with participatory action research, we will at a later stage in the project create design ideas for artefacts, services as well as urban environments.

We are using a combination of quantitative and qualitative research methods, with the main focus on qualitative methods to reach deeper understanding of peoples’ practices, needs and emotions. The quantitative methods are used to measure the changes in cost, time and CO<sub>2</sub>-emissions. The materials created with the

quantitative methods (see example in Figure 2) are also used to trigger discussions in the interviews with the participants.

Initially the participants estimate the three factors; costs for the car use, time spent in the car and CO<sub>2</sub>-emissions from the car, based on the previous year when owning a car. These are then compared with the same three factors used for transport during this car-free year. For the car-free year we are using the app 'Moves' on the family members smartphones to measure how they move and transport themselves. In addition to 'Moves' the families also track their costs for transport and other changes of costs in their everyday lives related to their car-free living.

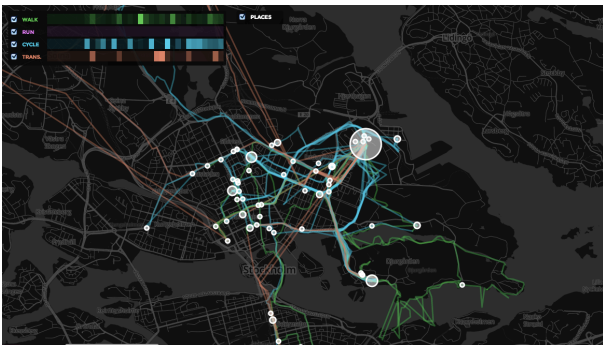


Figure 2: The app 'Moves' provides quantitative data as well as producing material acting as trigger material in the interviews.

However, the main focus of the research is the use of qualitative methods, including design methods, as these provide rich understandings of peoples' practices and behaviours. We carry out semi-structured in-depth interviews with the family members on a monthly basis and thereby gather insights on how the family members act in relation to their transportation and activities, where they would previously have used a car. By analysing the events and probing for emotions, we are using emotions to pinpoint the pains and pleasures. Analysing and clarifying the reasons for the emotions occurring is part of understanding how hurdles can be overcome and how new normalities in the everyday practise can be designed.

Complementing the interviews, we are also using diaries (see example in Figure 3) where the participants in their own words describe the events and how they feel about them. One week a month is a "tracking week" and the participants are asked to use the diary during these weeks. In this way the participants' feelings and reflections are captured as they occur. The research diaries together with the other trigger materials are also used to encourage reflections during the interviews. The reflection-in-action and active problem solving are parts of the participatory action research approach used to create new knowledge on how to live car-free.

The three families were selected out of seventy-four applications. We advertised the call for participation in a social media flow on Facebook targeted at people with an interest in sustainability. When selecting the families,

we picked families owning cars and with children of different ages, living in different parts of Stockholm and in different types of accommodation to get a variation of everyday practices, needs and problems.

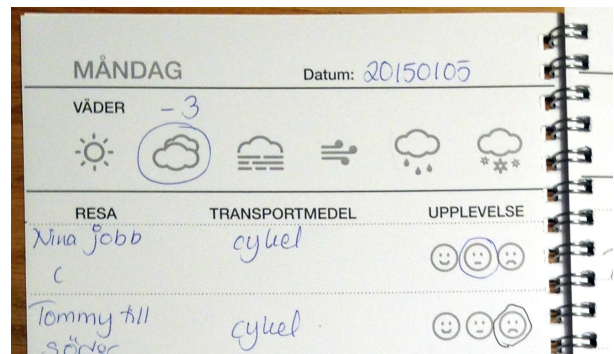


Figure 3: Part of a diary page describing events and emotions. MÅNDAG = Monday, VÅDER = Weather, RESA = Travel, TRANSPORTMEDEL = Way of transport, UPPLEVELSE = Experience.

## BECOMING CAR-FREE

In this initial phase we have focused not only on the practicalities of setting up a living lab situation, but also on understanding the participants expectations of the coming year and the reflections they have on looking back at their previous year. Furthermore, our goal has been to understand what made the participants willing to change their standard choice of transportation from cars to light electric vehicles and pass the tipping point to start living car-free. In this section we discuss the results and analyse the findings so far.

All three families were already before they joined the project standing at the doorstep of becoming car-free, but without being able to make that final stride. The barriers were worries about how they would cope long-term with their everyday practices, such as getting to work, taking the children to sports activities and going grocery shopping, as well as the short-term hassles of selling the car. However, they truly disliked owning a car for both practical and emotional reasons. They did not like the maintenance responsibility, parking issues and costs related to car ownership, and they associated the car with unsustainable lifestyles.

The families anticipated many challenges with the car-free year, such as how to get to their summerhouses and how to be able to bring the children to sports events at the outskirts of Stockholm. At the same time, they were all curious of how they would find solutions to overcome hurdles and also of how people around them would react. Their emotional motives for joining the project were on the one hand intrinsic as the car was felt to unnecessarily require their personal energy and went against their ideals of living more sustainably. On the other hand, the motivations were also of more extrinsic character, including an urge to show others that it is possible for an urban family with children to manage without owning a car.

Most of the people around the family members; friends, relatives and colleges, own cars and do not question the practice of owning a car. However, none of the adult family members seemed to be afraid of breaking the social norms. They are careful not to judge families that choose to own a car but at the same time they want to see and hear the reactions from their social context.

When analysing the participants' first experiences of becoming car-free, we understand that our interventionist research project has aided them to pass the tipping point. It was not enough with their desire to change. Instead what was needed was an intervention where they could try new ways of doing things in their everyday practices and get support by experts regarding the practicalities of car-free living. The combination of a trial-period where the standard alternative had been altered, but not completely eliminated, and secure access to continuous support, made them finally take the leap into car-free lives. With a practical trial set-up the families could link their emotional desires with the practicalities of everyday practices.

#### IMPLICATIONS FOR DESIGN

It is hard to break norms and it is difficult to change peoples' behaviour into more sustainable ones. Yet, if we are to shape radically new paradigms, changes are needed both in what is considered normalities and in people's everyday practices. Designers can play important roles in this transition towards more sustainable futures and new normalities.

Research suggests that even people who want to live sustainably are "constrained by the current infrastructure of society – regulations, economic policies, infrastructures and norms" (Mont and Power 2013, p. 68). We believe that designers have the possibility to visualize how new infrastructures could work and what they would look like. Design competence can be used to question norms, and by focusing design efforts on consequences, rather than artefacts, make the norms explicit. By altering peoples' standard alternatives to sustainable choices, rather than unsustainable ones, i.e. to nudge people (Thaler and Sunstein 2008), we have the possibilities to shape new systems of practice. In this project we have literally provided the participants with light electric vehicles in order to change their transport practices. Our next step is to explore how design methods can be used as vehicles for change towards sustainable futures.

Being engaged in transformational design, we focus our attention on the design of practicalities and thereby provide the links needed between peoples' desires and motivations to live more sustainable and the practical solutions to do so. We argue that transformational design can spread solutions and designs for local circumstances to more global networks. We hope that we through this research project can provide a "cosmopolitan localism" (Manzini 2010) where the

lifestyles and practices of these Stockholm-based individuals can encourage other families to start living car-free as well as inspire designers, planners and authorities to create solutions adapted to car-free living.

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