Designing for behaviour change towards healthy living

Carl Megens, Michel Peeters, Caroline Hummels, Aarnout Brombacher*

** Department of Industrial Design, Eindhoven University of Technology,*
{c.j.p.g.megens, m.m.r.peeters, c.c.m.hummels, a.c.brombacher}@tue.nl

Abstract: Looking at the field of public health, we are currently facing a situation where, if no fundamental change takes place, an increasing number of people will have to rely on increasingly expensive health care paid by a decreasing number of people, up to a point that it is no longer maintainable. The call for societal transformation to deal with such major challenges is getting stronger every day.

One of the main societal challenges is how to change people's behaviour towards healthy living. Innovative interventions are often needed to disrupt current situations, creating new opportunities for sustainable growth. Through designing innovative solutions that are outside the frame of reference of people, we can allow people to change their behaviour leading to emerging patterns towards sustainable societal transformation. Outcomes of new concepts aimed at long-term societal change are not easy to predict which brings new challenges for designers. By taking design into the wild, involving real people in their real environments and social structures in the design process, more insight can be created into the emergent and changing behaviour resulting from innovation. For this we created Experiential Design Landscapes, infrastructures where designers and society come together and where designers create propositions together with people to experience and use. In this conceptual paper we discuss these propositions, Experiential Probes, to take a new approach on design by putting people central in the process, allowing them to create meaning for themselves in their everyday lives. Through this process we see opportunities to change people's behaviour and emerge new patterns of behaviour in society, towards in the long run a sustainable healthy society.

Key words: behaviour change, Experiential Design Landscapes, Wellbeing, meaning, societal transformation

1. Introduction

Our society is faced with a number of major challenges, which include the aging society, healthy living, the economic recession, safety and attaining a sustainable level of energy and material consumption in light of the available resources. Brand and Rocchi [1] propose to tackle these societal challenges and move towards a sustainable world by accomplishing a paradigm shift towards a transformation economy, where stakeholders work together on designing local solutions for local issues, that stem from our large global issues (see Figure 1). Solutions to the big collective issues, leading to e.g. true sustainability and well-being, typically require behaviour change on a societal as well as an individual level, where the collective is even more important than the individual. We believe that involving all stakeholders including citizens (or people, clients, users, consumers, depending on

the frame of reference one takes) and aiming at individual/societal behaviour change requires that we move into the wild during the development process.

This move into the wild is necessary since these complex societal challenges cannot be solved by small incremental solutions that are developed behind the drawing board, but they require more disruptive innovative solutions in everyday life to realize behaviour change on a societal level [2]. With disruptive we mean the absence of a well-established frame of reference for people or the market. Not only the product as such is new, but it also enables the creation of radical new meaning for the user, the market and society. And due to this disruptive character, we cannot predict this meaning or any behaviour change; we have to explore it in the wild, in the everyday context with all stakeholders involved.

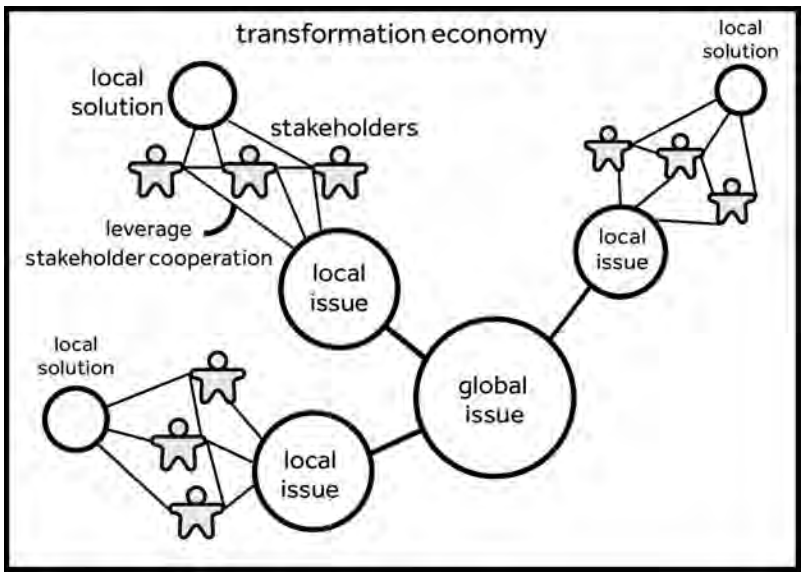

Figure.1 Situational and societal relationships within a transformation paradigm

Aiming at a transformation economy and designing for transformation implies that one has to discuss the direction of transformation. So, what are valuable solutions, and what do we mean with true sustainability and well-being? Designing for transformation means that one is immersed in design ethics, which is not an easy task. Is an attempt to steer human and societal behaviour via technology always morally justified? And if some technologies are considered acceptable, how do we know if the intentions of the designer when designing the product are corresponding with the behaviour of users when interacting with the product, especially when aiming at disruptive innovation?

2. Technological Mediation

We use the concept of Technological Mediation, introduced by Peter-Paul Verbeek [12], to clarify the role of technology in the everyday lives of human beings and specify how we can design in the wild towards transformation. Technological mediation refers to the role of technology in both human experience and action.

Don Ihde's [4] philosophy of technology addresses human experiences, especially the technological mediation of perception. He shows that technologies that mediate between our senses and reality, e.g. a pair of glasses or an infrared photo camera, always amplify specific aspects of reality while reducing others. Ihde calls this

transforming capacity of technology technological intentionality, meaning that technologies are not neutral but they play an active role in the relationship between humans and their world, through amplification and reduction [12].

Bruno Latours' [5, 6] concept of scripts addresses human action, more specifically how artifacts mediate action. Also from this perspective, technologies are not neutral. In the mediation of human action in its environment, specific actions are invited while others are inhibited: the scripts of artifacts suggest specific actions and discourage others, like a plastic cup that invites to be thrown away after use, which is not applicable to a ceramic cup, which asks for cleaning and re-use.

Finally, both structures, invitation-inhibition as well as amplification-reduction, are what Idhe [4] calls multistable, i.e. context- and relationship-dependent. So, depending on the relationship humans have with these artifacts or the context in which it is used, technologies can have different interpretations, intentionalities and identities. For example, the telephone was developed for the hard of hearing to help them hear, while it turned into a communication device for all over the years. And with the current network and smart phones, it is even possible to maintain social relationships at long distance.

When moving towards a transformation economy, we use this multistability in combination with open scripts and intentionality that we explore in the wild, to move towards disruptive innovation and a sustainable society, a method we have called Experiential Design Landscapes (EDL)[3].

3. Experiential Design Landscapes

Since meaning is created in interaction [9], it is impossible to predict whether the resulting outcome of designing for disruptive innovation realizes long-term societal and personal behaviour change. Therefore, we take the design process into everyday life, involving a large group of stakeholders including citizens in their everyday environment, thus realizing valuable propositions together. To do this we created Experiential Design Landscapes (EDL). The EDL method is a design research methodology aimed at designing for and with real people in their natural environments to find ways to structurally change people's behaviour, on a local scale to address our global societal issues in the long run. In this method a design research team takes the design process into everyday life, involving a large group of stakeholders including citizens in their everyday environment, thus realizing valuable propositions together. Experiential Design Landscapes (EDLs) are natural environments, be it physical or virtual, that are part of normal society (e.g., designated area in cities, sports parks etc.) where a design research team meets real people in their everyday life. Open, disruptive and intelligent propositions, which we call 'Experiential Probes', can easily be created, introduced and tailored in the Experiential Design Landscape.

These Experiential Probes, are open, sensor-enhanced, networked products-service systems that enable citizens to develop new and emerging behaviour and, in parallel, enable detailed analysis of the emerging data patterns by researchers and designers as a source of inspiration for the development of future systems, products and services (See figure 2). The environments and designed propositions are instrumented with smart sensoring solutions to analyse changing behaviour and new emerging patterns. Through analysis and modelling insight is gained in the behaviour of people and the influence of the design on the interaction and on society.

The EDL method is society aware, design inspired and driven, and data enabled. The EDL method is based on 4 process steps of envisioning, designing interventions, acquiring data, and analysing and modelling. This method is highly suitable to use within a transformation economy.

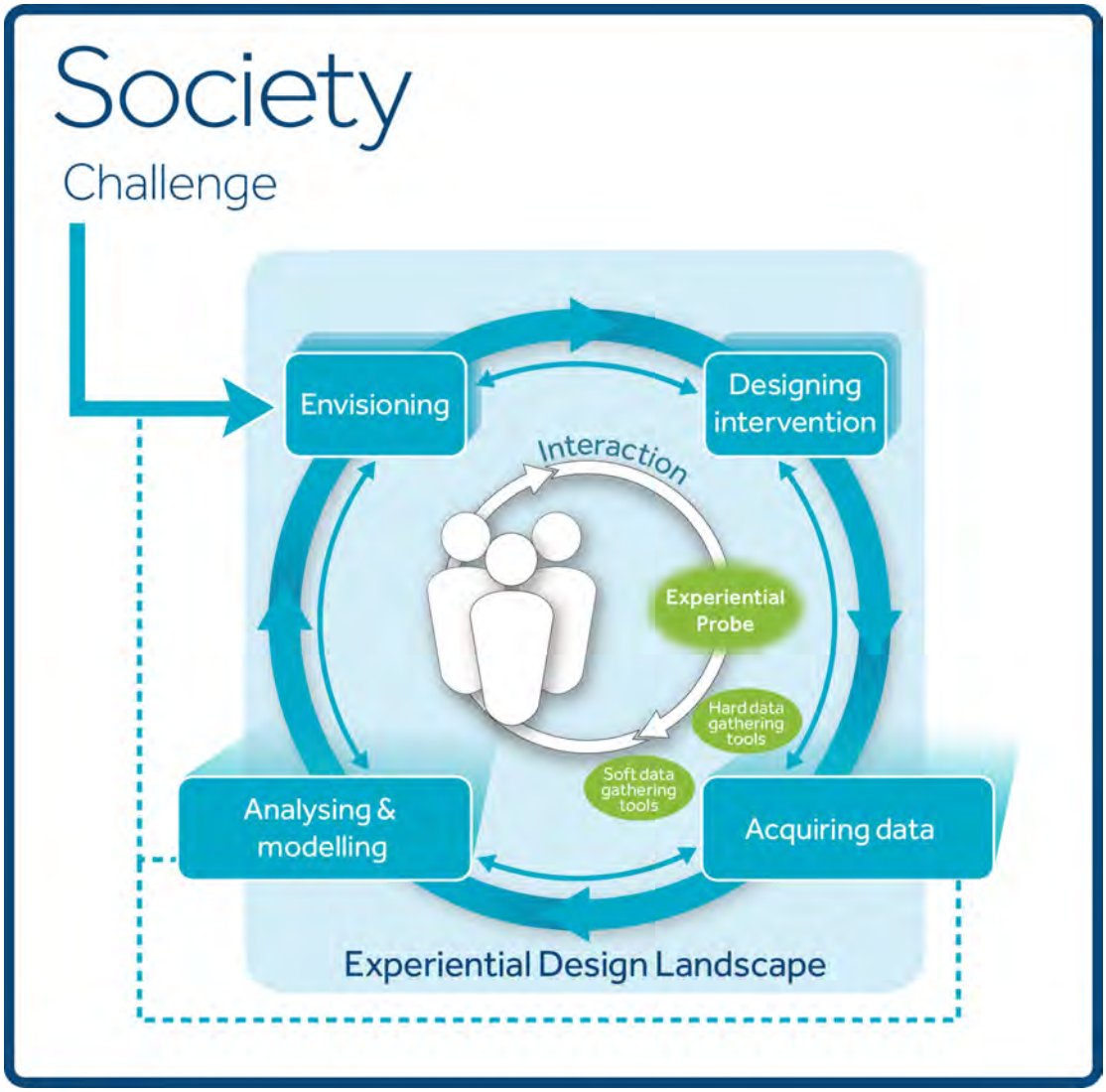

Figure.2 Overview of the EDL method. Through a process of envisioning, design intervention, acquiring data and analysing & modeling insight is created in the interaction of people in their everyday life with the Experiential Probes, aimed at emerging behaviour patterns in society.

Through applying this method the designers take a first person perspective in the design process, where they work next to and together with citizens in developing new propositions, integrated directly into the citizens' daily lives. With regards to multistability, the interpretations, intentionalities and identities of the proposed designs are not a result after launch (on which incremental steps can be made), but can be explored, steered, challenged and radically changed during the design process, based on citizens' behaviour and the designers' envisioned society. This creates a new process of design in which the designer creates a dialog through design with the people in the EDL. It are these people who give meaning to the proposed concepts through the interaction, providing new ways for structural behaviour change.

4. Examples of an EDL

4.1 Social Stairs

Figure.3 Example of an EDL: Social Stairs. Interactive steps were placed on the stairs to allow for new design opportunities

Social Stairs is an intelligent staircase in an EDL built at the university's main building and that made sounds as you walked up and down its steps (see Figure 3). When people walked together on the Social Stairs, it would burst into a different, more orchestral chime echoing up the stairs. The concept aims at decreasing people's sedentary lifestyle (global health issue) and increasing their daily activity throughout the day by making the stairs more appealing than the elevator. This rising trend in our society has devastating effects on our health [10].

Through early experiential probing it was found that people would engage and invite each other to the stairs. Therefore, these louder and orchestral sounds were designed to address this social aspect. The designers did not predict the behaviour of inviting other people to the stairs, but it did fit their aim for making more people more active. This unexpected behaviour made the stairs social, in the six weeks of the EDL more explorations were created to involve and engage the social behaviour of people in the EDL. Because of the open character of the stairs people created their own way of interacting with the stairs and each other. In the end, interaction and meaning could differ between people, allowing them to find their own way of becoming active and using the stairs more often.

4.2 Face-It

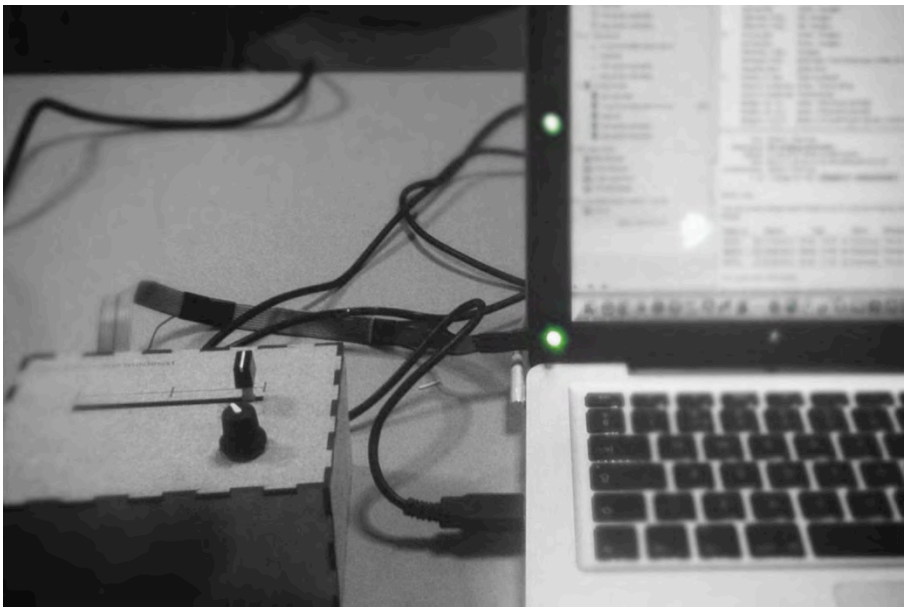

Figure.4 Example of an EDL: Face-It. A screen border with LEDs is placed on a laptop screen. Attached is a control unit with different modalities of interaction.

On a workday, in a sedentary lifestyle, we spend too much time sitting and staring at computer screens. Not all of this time is spent on work, but also on distractions. People at work are easily distracted from work because of, for instance, the urge to visit Facebook (too) regularly throughout the day. First ideas and probes aimed at tracking this event, where more insight was gained in the overall concentration people have during the day. Face-it is a screen frame to be placed on the outside of a notebook screen and acts in the periphery of the viewer (see Figure 4). It consists of a frame with an array of LEDs, which light up sequentially. With a control unit both pace and fade-in/fade-out intensity of the LEDs can be personalized. Face-it is designed to support people in maintaining concentration and focus during work. The designers wanted to see whether the walking LEDs could serve as a new way of relative timing for tasks at work, which could help people to concentrate. The probe was handed to people for a period of three weeks. The rationale underlying Face-it was a tool for time management, but soon it became a pace-indicator supporting people in doing different-paced tasks such as writing emails, searching on the web etc. For each task, people would alter the pace of the LEDs to a pace they found fitting to their job at hand. Others however would synchronize the pace with their music. The designers did not anticipate these kinds of behaviour, but through this probe tried to find ways to make people more aware of their computer use. By raising this awareness they hoped to affect the sedentary behaviour that is combined with computer use.

5. Discussion

5.1 Open scripts and intentionality

The two examples in this paper show two different specific EDLs that ran for respectively six and three weeks. With these examples we want to show the difference between the role of design in an EDL and the more common known product development processes. In order for the designers to probe for new and even unexpected behaviour

the nature of the propositions are very open for interpretation. Both the Social Stairs and Face-it do not have a clear functionality. Lockton [7] describes a so-called nanny state in which products know what's best for you and dictate a preferred behaviour. Both the Social Stairs and Face-it's behaviour however are open to any type of meaning. The way to interact with these probes is not predefined; there is no right or wrong way to use the probe. By developing the probes based on these open scripts and intentionality and by setting them out into the wild for a longer period, the designers lose control over the meaning of the probe. This has led to people behaving with the probes in ways the designers could not have imagined themselves. This then served as new inspiration to further develop the concept into valuable and meaningful ways for the people. In this way a design dialog is created between designers and the people in the EDL. In the Social Stairs EDL the designers did not anticipate that people would actually invite others to play together with the stairs. Once this behaviour arose the designers saw new opportunities for the design to emphasize this behaviour.

5.2 People create meaning

People create meaning. This may sound trivial, but in a world of design requirements, functionality and problem solving it is not. Designers have been trained to fully define the functionality of the objects they create. Every part of the object is designed in such a way to fulfill a user need and solve a problem. Maslow [8] stated: "if the only tool you have is a hammer, you treat everything as if it were a nail." The concept of a hammer is designed for this functionality; hammering nails. The vast amount of other uses of a hammer however prove Maslow is wrong; from doorstop to coat hangers to paper weights (this list is endless). In each of these cases the hammer gets a different meaning created by its user, not its designer. There is no division between subject and object. The meaning of things exists neither inside our minds nor in the world itself, but in the space between us and the world, in the interaction [9]. We perceive the world in terms of what we can do with it, and by physically interacting with it we access and express this meaning. Meaning is created in interaction.

Societal Transformation

Please notice we use the word people, not users. Users can be seen context-less. The only thing that can constitute them is the actual use of the product. People however have lives, a home, family, friends, jobs, and all the other aspects that define their lives. If we want to reach healthy living and wellbeing for these people in society, we will have to search for ways to change and emerge new behaviour in that everyday life, in their own natural context. Structural behaviour change does not occur over night, therefore the EDL method has a longitudinal character.

Design has always been placed in society and had its impact on society, also with respect to Technological Mediation. Design is not just about problem solving, as is often thought, implying that the solution space is already determined by the problem definition. It's about opening up, questioning, reframing, exploring [11]. Through the EDL method, by bringing open-ended design proposals based on open scripts and intentionality to society we can open up and explore societal transformation. This way the impact design has on society is explored during the design process together with the people in society, creating ways to explore how the Technological Mediation takes place. The examples in this paper show the first attempts at this and these attempts seem promising. The designers in these examples gained insight in how to design for people to change their behaviour towards a healthier society. That doesn't mean that the described examples are the solution to our societal

problems and raise the wellbeing in society. The societal issues are complex by nature and cannot be solved by single solutions. Related to the Transformation Economy we see these examples as described in this paper as local solutions to (a part of) the local issue. A combination of multiples of these new types of design solutions can ultimately in the long run create a new society where the society has chosen to collectively aim for their wellbeing and a structurally healthier society. True sustainability and well-being in society cannot be created solely at an individual level but requires joint behaviour change on a societal and an individual level. In an EDL, companies, academia, government, non-governmental organizations (NGOs) and society itself, will therefore have to work together to create local (bottom-up) solutions, which will eventually contribute to a larger whole

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