

Summary

Implications of Social Practice Theory for Sustainable Design

The aim of this thesis is to contribute to the development of approaches for the design of durable, mass produced consumer goods that contribute to reductions in household resource consumption. This aim is based on the observation that in spite of many years of research into and implementation of various strategies for sustainable design, product development still contributes to increasing rather than decreasing levels of consumption. Because social practice theory has been identified, from several angles, as promising to inform more effective approaches, the main question addressed in the thesis is:

Can drawing on social practice theory inform design approaches that are more effective in addressing the issue of high and rising levels of household resource consumption than existing approaches?

Because the question concerns an area of research that is still relatively immature, the thesis primarily explores what drawing on social practice theory implies for sustainable design approaches. It is more speculative towards the second part of the question concerning the effectiveness of such approaches. The question has been addressed using a research through design process, in which prescriptive design theory is developed through a series of empirical projects. Topics of the empirical projects were the resource intensive but strongly different household practices of bathing and staying warm at home.

The thesis consists of three main parts. Part I builds the theoretic foundations of the research by analysing current approaches to sustainable design in detail (Chapter 2), studying social practice theory from a design perspective (Chapter 3), and reviewing

earlier efforts to integrate social practice theory into design approaches (Chapter 4). Part II forms the core result of the thesis and describes the practice-oriented design approach that was developed, making a distinction between taking practices as a unit of analysis (Chapter 5) and taking practices as a unit of design (Chapter 6). Part III illustrates how the approach could work drawing on the two empirical projects on bathing (Chapter 7) and staying warm at home (Chapter 8) through which the proposed practice-oriented approach was developed.

Part I: Theoretical foundations

In this chapter, current approaches to sustainable design are narrowed down to interaction-oriented approaches – also referred to as ‘design for sustainable behaviour’. Although containing strong points, particularly concerning their applicability in design research, education and professional practice, interaction-oriented approaches have some important limitations. They can be summarized into two main points of concern, being a focus on tinkering within the status quo while missing opportunities for larger scales of change, and a risk of not achieving intended change, or even opposite effects with designed interventions.

Social practice theory has been identified as a promising theoretical basis for more effective approaches. It offers an elaborate conceptual framework for understanding social stability and change that is fundamentally different from the (social-psychological) theories underlying interaction-oriented approaches. Most importantly, human action is in interaction-oriented approaches viewed as individual behaviour that can be explained through causal models, while in practice-oriented approaches human action is viewed as performances of practices that are governed by an entity. This entity, however, is not determining the performance. Rather, it both guides and is formed and maintained by the collective sum of its performances. In practice theory, practices are the central unit of analysis and people feature in a secondary role as carriers and performers of these practices.

Earlier explorations of the implications of this shift in theoretical basis for (sustainable) design render a different type of outcomes that lie at a larger scale of change. They also indicate that the shift implies several more and less fundamental changes to design processes and to views on the role of designers and products. Further exploration of the implications of a shift from interaction-oriented towards what has been coined practice-oriented sustainable design is required to assess its potential, which is what this thesis has set out to do. In this exploration, a distinction is made between taking practices as a unit of analysis, focusing on what currently is, and taking practices as a unit of design, focusing on what could be in the future.

Part II and III: Proposed approach and Empirical projects

The result of this exploration is a practice-oriented approach to sustainable design (depicted in Figure I) that consists of two main phases, being an analytic and generative phase. The analytic phase moves from a selected target practice to opportunities for intervention and the generative phase from these opportunities to desirable reconfigurations that work. The first part of the model recommends four related analytic activities: *quantifying consumption indicators*, *tracing historic career*, *exploring similar practices* and *mapping the target practice*. The second, generative part consists of cycles

of three activities: *suggest and trigger*, *facilitate performances*, and *combine, evaluate and refine*. In this phase, a desirable reconfiguration, or proto-practice is increasingly refined through several iterations. Although presented in considerable detail in order to convey the full extent of knowledge gained through the research, the approach is explicitly intended to invite adjustment and further development. Below, the empirical projects are used to illustrate the process and outcomes of the proposed approach.

Analysis of the *consumption indicators* of bathing revealed a current Dutch average of 340 litres of warm water use per person per week, which is mainly used for showering. A target level of reducing this to 105 litres per week was selected based on historic developments, diversity in consumption levels and a United Nations recommended minimum. Subsequently, *tracing the historic career* of bathing from Roman times to today and *exploring similar practices* in India and Japan revealed elements that make up practices with a lower resource demand. Moreover, these explorations formed a frame of reference to *map the target practice* of showering in the Netherlands. At the end of the analytic phase, it was concluded that (close to) daily showering, with its constant flow of warm water is certainly not the only, arguably not the most effective and clearly not the least resource intensive way of bathing. The opportunity selected for further

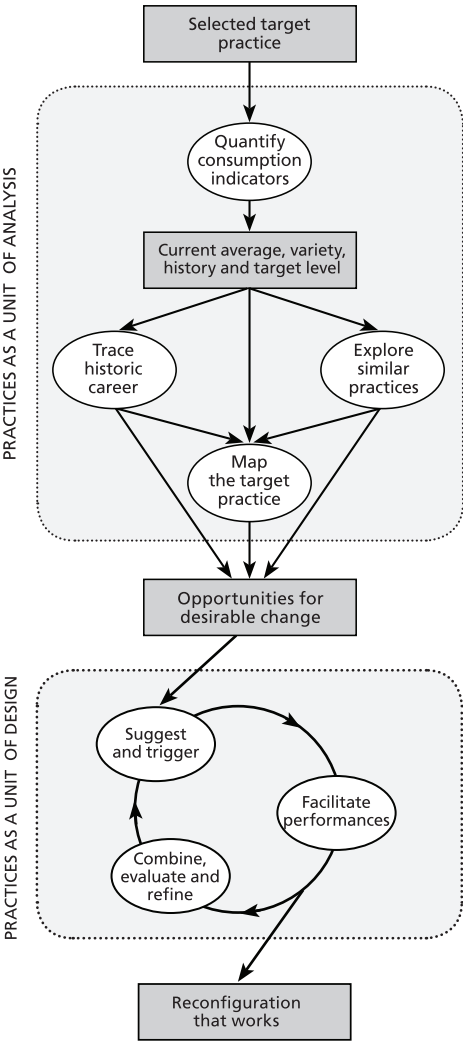


Figure I The proposed practice-oriented approach.

exploration was described as: 'a way of bathing that is based on contained rather than flowing water'. Through an iterative process in which bodily performances were central, this opportunity was fleshed out into a proto-practice coined splashing. Splashing was *suggested* to study participants in the form of a proto-practice while at the same time, participants were *triggered* to improvise and experiment in their *performances*. *Combining and evaluating* these performances shows that splashing has strongly lower resource requirements than showering and that it can 'work' as a form of bathing. Looking at the cases in which the practice worked for study participants, an average water consumption of 66 litres per week was measured. Further *refinement* of the proto-practice and its elements is required to enable its spread into society and longer-term studies with larger numbers of participants are recommended in order to assess its resource saving potential.

The staying warm at home projects followed a similar process, except that they were less elaborate in generating and evaluating a proto-practice. Based on current knowledge, it is not possible to assess whether the proto-practice resulting from these projects can contribute to desired reductions in household resource consumption. However, the overview of practices of staying warm at home and the identification of opportunities for design and their exploration do provide valuable insights for sustainable design. Tracing consumption indicators for domestic heating in space and time highlighted Japan as a country of inspiration. After providing an overview of shifts in Dutch practices of staying warm at home in the past century, Japanese ways of staying warm in winter were explored in more detail and revealed a diversity of ways of staying warm ranging from person-oriented to space-oriented heating and insulation. Additionally, analysis of the target practice pointed attention to the concept of base temperature as a main indicator for levels of energy consumption. Lowering this temperature is argued to be achievable by offering people possibilities for person heating in addition to space heating. While proto-practices of person heating were developed, further study is needed to flesh out their relation to space heating and base temperatures, because in their current form there is a risk of contributing to increased rather than decreased levels of consumption.

Conclusions

Having developed a practice-oriented approach to sustainable design and in parallel, outcomes such an approach could render makes it possible to reflect on the effectiveness of the approach in relation to existing, interaction-oriented approaches to sustainable design. Based on the research described in this thesis, it can be argued that the proposed practice-oriented approach can be more effective in addressing issues of high and rising household resource consumption than these existing approaches. Key to its effectiveness are four distinguishing characteristics, being:

1. Explicit attention to history and diversity in analysis of the target practice
2. A focus on extensive improvisation and experimentation
3. Treating bodily performances as the locus of design activity
4. Striving for an open design

The first two characteristics contribute to a larger scale of change, and the second two to a higher chance of achieving desired change. Explicit attention to history and diversity helps the designer to reveal the status quo, and provides insight into possible less resource intensive configurations of elements. A focus on extensive improvisation and experimentation further facilitates moving beyond the status quo towards desirable reconfigurations of existing resource intensive practices. Third, treating bodily performances as the locus of design activity contributes to the development of reconfigurations that work in the complex dynamics of everyday life and finally, striving for an open design increases the chances of such reconfigurations being and remaining appropriate for the variety of situations they end up in.

The thesis closes by identifying two specific areas for further research. First, reflecting on the process of developing the proposed practice-oriented approach in the light of its own recommendations highlights the importance of approaching sustainable design as a set of practices in its own right. Secondly, in order to look beyond the scale of product design and single practices, opportunities seem to lie at the integration of design and governance while using practice theory as a common ground. Besides these two specific directions, the thesis concludes by inviting other design researchers to engage with practice theory and further explore its potential for design research.