Journal of Sustainable Development; Vol. 10, No. 5; 2017
ISSN 1913-9063 E-ISSN 1913-9071
Published by Canadian Center of Science and Education

Transition and Social Practices

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Received: March 10, 2017 Accepted: May 16, 2017 Online Published: September 8, 2017

doi:10.5539/jsd.v10n5p25 URL: https://doi.org/10.5539/jsd.v10n5p25

Abstract

Against the background of environmental problems arising from the growing extraction of natural resources and resource depletion, achieving a sustainable development is an indispensable challenge in the twenty-first century. In this article we want to show how socio-technical and product-service innovations can change social practices – the routine doings in everyday life – and, thus, support transition of socio-technical systems. We introduce theoretical considerations on how social practice theories and the framework of the Multi-Level Perspective in transition research can be linked to better understand transition processes from a micro-macro-link perspective. We then present cases based on desk research in the field of practices in bathing, heating and nutrition to show how these have changed over the past decades. Building on this, examples of concepts for sustainable product-service-design in these areas are introduced as leverage points to change social practices in everyday life. These have been developed in research projects or design student seminar works, respectively. We argue that this implies sustainable product-service-systems should be developed in a user- and actor-integrated framework, such as Sustainable LivingLabs. The integration of users and other stakeholders into participatory co-creation processes enables tailored solutions that take actual routines and dependencies seriously into account.

Keywords: social practices, design, sustainable product-service-systems, transition

1. Introduction

The current and prospectively rising level of global natural resources extraction (Bringezu & Bleischwitz, 2009) brings about significant environmental impacts and make a sustainable development of human kind a necessity in the twenty-first century. Resource efficiency and conservation, including closing loops of product recycling, are important strategies to tackle this challenge. Such sustainable development requires a deeper societal transformation (Wissenschaftlicher Beirat Globale Umweltveränderungen [WBGU], 2011) in which production and consumption patterns of housing, mobility and nutrition are changed (European Environment Agency [EEA], 2013).

In this article we want to show how socio-technical and product-service innovations can change social practices (e.g. Shove, Pantzar & Watson, 2012) – the routine doings in everyday life – and, thus, support transition of socio-technical systems. Transition here means a rather radical and structural change resulting from co-evolution of economic, cultural, technological, ecological and institutional developments (Rotmans & Loorbach, 2010). A well-known concept of transition research is the multi-level perspective (MLP) which describes an interplay of socio-technical regimes, niches and landscapes in transitions (Geels, 2004). Building on the link between the MLP and social practice theories that was elaborated elsewhere (Liedtke, Hasselkuß, Welfens, Nordmann & Baedeker, 2013d; Hasselkuß, Baedeker & Liedtke, 2017) and that was recently proposed in transition research (Geels, McMeekin, Mylan & Southerton, 2015), we aim to show change of practices through sustainable product-service-design. Often strategies for sustainability focus on technological innovation. Actually reaching a dematerialization by a factor 10 (Schmidt-Bleek, 1993) is necessary to reach a sustainable resource consumption of eight tons per capita per year (Lettenmeier, Liedtke & Rohn, 2014). Doubtless, technological innovations are an important pillar for this, however, rebound effects of efficiency gains (Sorell, 2007; Buhl & Acosta, 2016) or wrong application of potentially sustainable innovations (Liedtke, Baedeker, von Geibler & Hasselkuß, 2012) show the limits of the presently anticipated technology oriented strategy to comply with a sustainable development and accomplish a factor 10 dematerialisation (Liedtke, Buhl & Ameli, 2013a). Taking the perspective of social practice theories in a transition framework helps to foster this integrated approach.

The concept of transition already offers a broader perspective by embracing cultural and institutional change. In this paper, we therefore argue for a perspective of resource efficiency in the sense of reconfiguring established social practices towards sustainable patterns of action. We thus refer to a reconfiguration of social practices, which involve consumption of materials (including resource use), towards a lower level of consumption, re-use or longer use of such products, or the design and implementation of low resources product-service-systems (Liedtke, Baedeker, Hasselkuß, Rohn & Grinewitschus, 2015).

We hypothesise that a change of social practices, as routine patterns of action, plays a crucial role in the transition processes. An important field is the transition of current (mainly western) consumption (and production) patterns (Jackson, 2005; Røpke, 2009; Spangenberg & Lorek, 2002; Baedeker et al., 2008; Liedtke et al., 2013a; Schneidewind & Palzkill, 2011; Stengel, 2011). Production and consumption form an integrated value added system; transition, thus, needs to address both as permanently influencing each other. Only sustainability strategies that consistently address efficiency, consistency and sufficiency (Schmidt-Bleek & Tischner, 1995; Liedtke, Buhl & Ameli, 2013b; Speck, 2016) can lead to an absolute decoupling (Jackson, 2008; Schmidt-Bleek, 1994; von Weizsäcker, 2009) of resource use from the increase of societal well-being.

The article is structured as follows. First we briefly introduce the elsewhere (Liedtke et al., 2013d; Hasselkuß et al., 2017) elaborated link between social practice theories as an increasingly popular approach to study sustainable consumption and the MLP framework. Then we outline changes in social practices that can historically be observed for the examples of bathing and nutrition (section 3), before we introduce examples of product and service innovations that can support change of social practices in a user-integrated perspective as well as educational strategies (section 4). As concluding remarks directions for future research are discussed.

2. Transition Research and Practice Theories

The MLP takes a perspective on the social, cultural and institutional circumstances that allow for (mostly technical) innovations to break through and the social changes that follow the innovations. We hypothesise that a change of social practices, as routine patterns of action, plays a crucial role in transition processes on their own that can have consequences for elements of socio-technical regimes (e.g. social innovations, cf. Howaldt & Schwarz, 2010; Avelino et al., 2015) or sustainable product-service-systems (Liedtke et al., 2015). An integrative model of sustainable practices was elsewhere proposed (Liedtke et al., 2013d; Hasselkuß et al., 2017), which links the MLP of transition research and social practice theories. With this model activities and daily routines involving consumption (Warde, 2005) are analysed as so called social practices as a theoretical approach from sociology (Reckwitz, 2002; Shove et al., 2012). Shove et al. (2012) argue that social practices consist of three interlinked elements of *meanings*, *competences* and *materials*. Thereby social practices are important drivers of products and/or services and thus resource consumption. Also social practices very well reflect the use phase of products, which often times is highly relevant for their environmental impact, e.g. in clothing (Paulitsch & Rohn, 2004) or heating/space heating (Liedtke et al., 2012). Households and their members can thus partly influence the environmental impacts by changing their social practices in many examples (Spangenberg & Lorek, 2002). Thus practices are a very good level for transition analysis.

Links between the MLP and social practice theories have sometimes been explored (e.g. Watson, 2012; Hargreaves, Longhurst & Seyfang, 2013) and the MLP also builds on Giddens' (1984) theory of structuration – which puts social practices on centre stage as well – but there has also been mutual criticism (see Røpke, 2015). Recently it was explicitly proposed to elaborate on fruitful links between both from within transition research (Geels et al., 2015). The multi-level perspective (Geels, 2002; Geels, 2004) analyses transition as the dynamic between 'landscape', 'socio-technical regime' and 'niche'. The socio-technical regime is defined as a dynamically stable system including culture, values and patterns of action. Transition refers to rather deep diving changes at the level of 'regime'.

Drawing on Watson (2012) we view 'regime' as configured by interdependent social practices (see Figure 1). Watson argues: "[...] practices (and therefore what people do) are partly constituted by the socio-technical systems of which they are a part; and those socio-technical systems are constituted and sustained by the continued performance of the practices which comprise them" (Watson, 2012, 2).

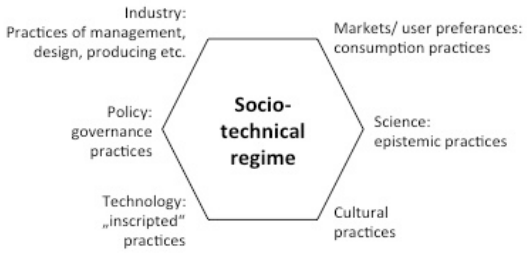

Figure 1. Socio-technical regime elements (Source: Hasselkuß et al., 2017; own depiction, adapted from Geels 2002)

This means that dominant institutions in the 'regime' are shaped by systematically (re-)produced social practices by actors in that system. Change of such social practices (e.g. "market/user preferences") might exert pressure on other regime-practices and eventually the regime (Liedtke et al., 2013d), which would lead to transitions. Possibilities to change practices will be discussed in the following sections.

In this section we next review empirical case examples of change in images and meanings associated with doings or the products/materials used in social practices. We exemplify this for practices of bathing, and nutrition.

2.1 Practices of Bathing

In the example of bathing practices (Bakker & Jong, 2008, based on Shove, 2003) it becomes visible why social practices of how actors use technical artefacts is most relevant for the study of sustainability transitions (see also Liedtke et al., 2013d).

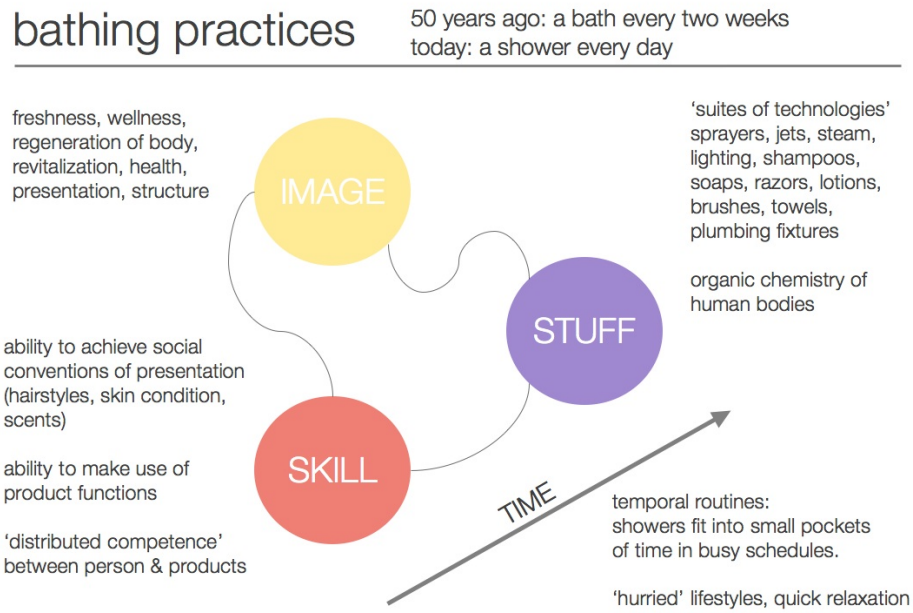

Figure 2. Bathing practices (Source: Bakker & Jong, 2008, based on Shove, 2003)

Figure 2 shows the relation of elements of bathing practices. Looking at the elements of bathing practices 50 years ago and today it becomes visible how neither skills (i.e. competences) nor stuff (i.e. materials) have significantly changed (with the exception of newer shower heads and diffusion of (multiple) showers in every household). What has however changed significantly is the images (i.e. meanings) which are now linked to things like wellness, freshness, presenting yourself and as a way of relaxing in an accelerated life. Here meanings have reasonably influenced bathing routines which show in demand for water, including energy for warm water. For example it was shown for the Netherlands that despite water saving shower heads the water

demand for showering rose by 30%; this is because there is a tendency to take showers longer and more often (Foekema, van Thiel & Lettinga, 2008). In a recursive way daily practices of taking showers (re)produce the above mentioned new kinds of meanings associated with showering (relaxing, wellness etc.) and thus elements of socio-technical regime (water and energy provision, markets, culture etc.).

2.2 Nutrition: The Development of Social Practices of Food Consumption

The field of nutrition has seen several changes of social practices in recent years. After the home of people had been the centre of nutrition until the late 20th century, an increasing employment of woman, smaller households and other factors changed the skill/competences and image/meanings of food preparation. It is not mainly the deed of a housewife anymore who is semi-professionally concerned with the preparation of foods and can thus focus on a variety of aspects. Today, a broad share of food preparators and purchasers are students, single grandmas or solitary living carpenters who do not spend similar amounts of time, effort and priority on nutrition. As a consequence, two major trends emerge: More food is consumed out of home (Nestlé, 2016), and consumers divide into the groups of skilled/interested and unskilled/uninterested eaters (Eberle et al., 2005). In the most recent study available, Nestlé (2016) also reports that German consumers increasingly buy food online and, after being very price sensitive in the last decades, are increasingly willing to pay more for higher quality and socioeconomic standards. While in 2011 only 16% were willing to pay a premium for fair trade products, 2016 this share has more than doubled to over 35%. Such a result can be interpreted as an indicator of one recent shift in the meaning of nutrition in Germany: more consumers tend to associate food with a pleasure that is worth time and effort, as opposed to being a necessity that should be satisfied as cheap and fast as possible.

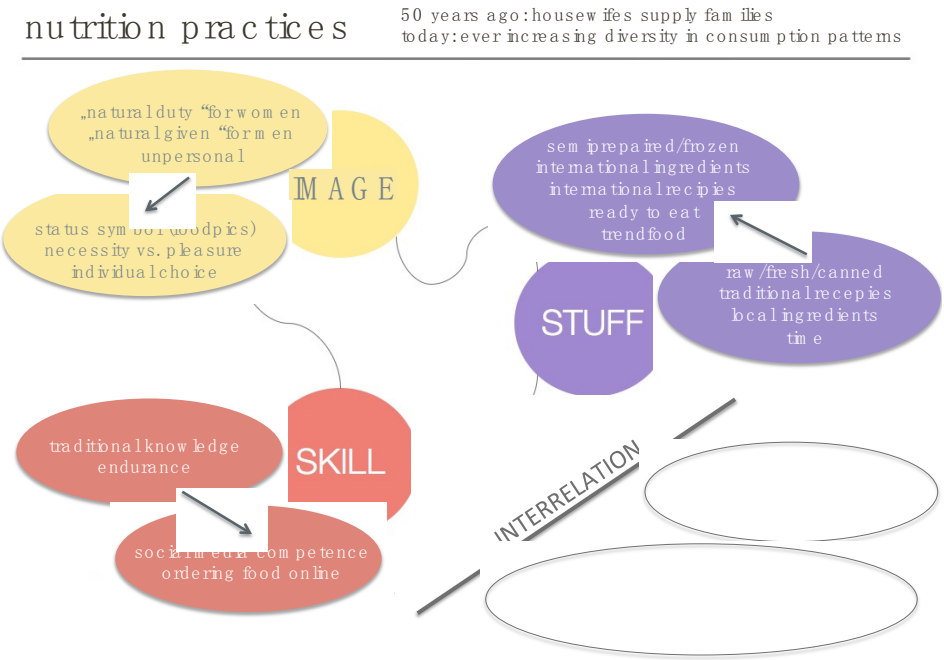

Figure 3. Changing social practices of nutrition. (Source: the authors based on Bakker & Jong, 2008)

Such changes in the image/meaning do not necessarily come with a change in stuff/material. But they do provide an opportunity for a transformation in the social practice of nutrition as a whole, thus leading to more sustainable food consumption. Whether or not such changes occur relies on several factors such as the (perceived) capability to choose between more or less fair produced goods (Hanss & Böhm, 2010).

3. Strategies to Influence Change of Social Practices

3.1 Design of Sustainable Products and Product-Service-Systems

The design of sustainable products and services or integrated product-service-systems (Liedtke et al., 2015) is a possibility to influence social practices by way of intentional transformational elements, also referred to as transition design (e.g. Irwin, 2015).

3.2 Transformational Products

Theory and methods for so called transformational products were developed by Hassenzahl and Laschke (2015). They are intentionally designed as "pleasurable troublemakers", which put users into "complex, meaningful personal and social situations" (Hassenzahl & Laschke, 2015). Users are disturbed in their routines of e.g. heating instead of automating processes which should stop them from acting on impulse and support reflexive action. This makes a distinction to "nudging" approaches because users should be made aware of 'bad' habits and the need to take action to initiate learning.

Bathing

One example for such transformational products applied to change bathing practices is the "Shower Calendar" (Laschke, Hassenzahl & Diefenbach, 2011). The emphasis here is on giving feedback on water consumption but, going further, do it in a playful way and starting a competition e.g. with other family members about who saves more water. This aims at raising awareness and make people communicate.

The product works with coloured dots which are displayed electronically. These show the individual amount of water with a starting 'budget' of sixty litres. When showering the dots decrease in size. This means that there is no automated intervention to decrease water consumption but people are actively reminded to make a change. The prototype was tested in two families for one month: water use was significantly reduced by parents, however less so for the children's water demand. Participants had a positive feeling towards the calendar which would result from a non-judgmental, non-coercive feedback. Since feedback was direct and individualised water use could be reduced immediately and "competition" for water saving could be started (Laschke et al., 2011).

3.3 Sustainable Product and Service Design

Design and business case for ICT recycling

As part of another student research project Michels (2013) analysed sustainability potentials and business models for recycling ICT products, using tools and methods described in the Wuppertal Institute's "Designguide" (Liedtke et al., 2013c). The Designguide aims to provide background information, an assessment catalogue, and a toolset for the integration of aspects of sustainability into the design process. Based on these tools, Michels assessed and designed the idea of a community based concept called "CYCLE" which aims at bringing the resources used for producing electronic products into loops as long as possible. Recycling of e.g. mobile phones is very low due to several barriers (Welfens, Nordmann, Seibt & Schmitt, 2013). He developed a range of different possibilities, not only focusing on recycling but also different use patterns (i.e. social practices) in ICT. Most people would now rather consume products only instead of using and appreciating them due to short innovation cycles and product life-cycles. Thus the CYCLE concept also addresses better product quality, repairability and lifetime, encouraging sharing and leasing models by establishing a brand community, or improving the market for used products. Then also improved local logistics and improving recycling possibilities were induced. This sustainable product-service-design concept thus shows the possibilities that can be realised if a holistic perspective is taken on user practices and when offering respective products and services around a community.

Nutrition: Designing a new product and analysing for its business case

As part of a student research project in industrial design, Maleska (2013) analysed the idea of insects as protein source, assessing its sustainability potentials and market chances for the German market – which would generally be regarded as not yet open for such a nutritional idea. She identified the target group of fitness and health oriented consumers, especially those into athletic sports, as most suitable for first mover consumers. This target group is expanding in Germany with more than 7 Million members of fitness clubs in 2011. She therefore developed the idea of a protein-rich kind of cereal bar made of eatable insects called "BugProtein" because the target group is also interested in protein-rich meals. Assessing the sustainability potentials, based on the MIPS-approach, of such an offering she found resource savings of factor 7.8 compared to some of the competitive products already at the market.

This can show how sustainable product design can also be a business case and lead the way to new kinds of resource-efficient nutrition, which is generally considered one of the most important fields of action for sustainability transition (EEA, 2013; Lukas et al., 2016).

3.4 Education, Competence Development and Experiments: From Action to Knowledge

From the perspective of transformational education, a methodology was developed for the stakeholder-integrated design of learning materials called "Open Didactic Exploration (ODE)" (Bliesner et al., 2014). In its theoretical

roots, this model also draws on insights from transition studies and social practice theory.

This method contributes to educational concepts on how behaviour patterns are formed and how they can be addressed through a specific focus on norm-oriented learning of interpretation patterns. Such patterns are socially mediated in the sense that they reflect similarly shared beliefs in a societal group. In the concept of social practices these patterns are referred to as meanings. In its larger theoretical background ODE therefore refers to transition theory (Geels, 2004), Giddens' (1984) structuration theory and theories of social practices. The element of meanings in social practices is, thus, directly linked to the idea of interpretation patterns, addressed by the ODE method. The concept therefore offers an attractive link between individual learning processes and the social environment. The ODE concept accordingly addresses and strengthens competencies for every person to advocate their own convictions, also against shared rules or expectations of significant others. Through changing one element of practices, a change in such practices can occur (see Shove et al., 2012). We assume that changing meaning can be supported bottom-up through educational means like ODE.

4. Conclusions

In this article we introduced from our research experience how a social practices perspective can inform transition research in the MLP and how product-service-innovations or educational strategies can support change of social practices. Using the examples of bathing and nutrition we have shown that historically significant changes of (user) practices can be observed and linked to different environmental impacts. Addressing social practices is thus a viable option for integrated sustainability strategies. This perspective equally takes individual actions and possibilities as well as (infra)structural barriers and dependencies of everyday life time structures into account. Educational strategies like ODE can additionally support change of meanings and norms such that new definitions of "normal" everyday practices can emerge.

Directions for future research both should theoretically substantiate the link between social practice theories, transition research and other approaches to acting sustainably as well as empirically develop and test product-service-solutions, preferably in a Sustainable Living Lab research infrastructure (Liedtke et al., 2015). Furthermore, links between the concept of MLP and social innovation (Howaldt & Schwarz, 2010; Howaldt, Kopp & Schwarz, 2015) should theoretically and empirically be explored. The integration of users and other stakeholders into participatory co-creation processes enables tailored solutions that take actual routines and dependencies seriously into account. Like the example of "BugProtein" shows such design concepts can identify and start from target groups that are open for it and explore market options. Ideally, stakeholders like business and other regime actors should be integrated into the design process at early stages in order to develop adoptable novel socio-technical solutions.

Acknowledgments

The foundations of this research go back to results from several different research projects: "SusLabNWE" (funded in the European Union's INTERREG IV B new; co-financed by the Ministry of Innovation, Science and Research of the Federal State of North Rhine-Westphalia, Germany), ,"Return & Recycling of Used Mobile Phones" (funded by German Federal Ministry of Research and Education), "Material Efficiency and Resource Conservation" (framed by the environmental research plan (UFOPLAN) launched annually by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and by the Federal Environment Agency), "Education for Ressource Conservation and –efficiency" (framed by the environmental research plan (UFOPLAN) launched annually by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and by the Federal Environment Agency) as well as student work in the seminar "Advanced Design Evaluation Methods" (Bergische Universität Wuppertal, UWID 2013; Prof. Dr. Christa Liedtke).

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