The Contextual Wheel of Practice

Johanne Mose Entwistle
Alexandra Institute
8200 Aarhus N, Denmark
johanne.mose@alexandra.dk

Mia Kruse Rasmussen
Alexandra Institute
8200 Aarhus N, Denmark
mia.kruse@alexandra.dk

Robert Brewer
Dept. of Computer Science
Aarhus University
8200 Aarhus N, Denmark
rbrewer@cs.au.dk

ABSTRACT

The idea of Personalizing Behaviour Change Technologies brings with it promises of more effective technologies, that will have the intended effects of changed behaviour in relations to achieving e.g. better health or reduced energy consumption. Based on our own qualitative empirical studies as well as studies done by others within the energy sector, we will argue that although this approach holds some promise for future persuasive technologies, the insights from psychology on which it builds would have more value when seen as part of a broader nexus that also includes other factors in trying to understand what shapes and influences behaviour. The approach presented in the call lacks an in-depth understanding of the contextual nature of human behaviour which is necessary to develop technologies that can actually lead to change. With the "Contextual Wheel of Practice" we present a theoretical approach and model that bridges insights from both psychology, anthropology, sociology and HCI in the attempt to base development of persuasive technologies on knowledge about both the human as well as the structural and material context within it exist. By doing so we propose a shift in focus from "personalizing Behaviour Change" to "contextualizing practice change"

Author Keywords

Sustainability; practice; practice-orientation; HCI

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

With this call for *Personalizing Behaviour Change Technologies*, it seems that we have partly moved away from viewing people as rational 'homo economicus' and

now embrace the fact that human behaviour is also shaped by different psychological factors like personality traits. One gets the impression that the ideal situation here would be to take psychological insights about different person types and transform these insights into functionalities in persuasive technologies.

But we suggest to take a step back and think about what it is that we are actually trying to do, and on what premise are we trying to do it?

In our case, within the energy sector, we are actually trying to change the *consequence* of behaviour or practices as we will argue in the following. The energy consumption or CO_2 footprint is a hidden and unintentional consequence of different everyday practices and we need to understand these practices and why people perform them before we can attempt to change them and consequentially their energy consumption.

One of the practices we try to understand is 'Cooking'. This practice is particularly interesting to the energy sector because it has a relatively high energy consumption and adds to the so-called 'cooking peak' in the late afternoon/early evening that currently strains the electricity grid. Through a qualitative and quantitative study of residents in a dormitory (not yet published) we have found that cooking cannot be understood as an isolated practice but needs to be seen as part of a greater nexus of practices that constitute their daily lives. It needs to be understood as a socially situated practice that is both highly valued and very closely linked to other activities.

Residents state very explicitly that when it comes to cooking energy consumption is not a major concern. They know that this practice consumes energy (quite a lot) but they do not really see how that can be changed in any profound way without compromising the service they are trying to obtain. So they choose to use energy to obtain this service and maybe save elsewhere instead

Furthermore, we have found that cooking is also associated with other needs such as the need for flexibility and alone-time, which means that ideas for interventions such as encouraging residents to cook and eat together (at off-peak times) will probably have a hard time succeeding.

In this sense "cooking" can be termed a 'non-negotiable' practice for the residents [8]. Non-negotiable means that a particular practice is related to a greater nexus of practices in a way that more or less 'locks it' to e.g. take place a specific time of day or have a certain frequency or duration.

Another practice that we have looked into is "laundry" This is viewed as a negotiable practice, that residents are willing to change. Whereas eating can be difficult for people to shift due to its interconnectedness with other everyday practices, laundry is a more simple or detached practice, and therefor considered easier to change. Either having the option of a postponed start on the washer or allowing the people who go to bed late to do their laundry during the night would not only shift the load; it could also give the residents a greater sense of freedom. But regardless of the potentials of encouraging people to do their laundry during the night, and people's willingness to do so, there are structural obstacles that make such an initiative impossible in the particular case of the dormitory. The laundry room in the dorm is only open from 8am-9pm, because there are apartments situated above the laundry room and they would be disturbed by people doing laundry during the night. Furthermore even though the residents (express that they) are willing to air dry their clothes instead of using the dryer, this isn't possible either because there is no room for air drying and they are not allowed to dry clothes in their apartment because of the mould this may cause in the apartments.

The *Personalizing* approach, on the other hand, takes as a premise that changing behaviour (e.g. changing the time or way of cooking or doing laundry) *is* in the hands of the individual. The individual 'just' needs to be motivated according to his or her personality type or preferences. This understanding has been challenged by others [1:952] and as our example above shows, an individual's behaviour isn't entirely in their hands. Even if the residents are motivated to change their "laundry behaviour" they will not be able to.

Furthermore, Strengers [6] describes how practices that consume energy in the home are highly negotiated and manipulated between family members in the home, and thus not an individual choice. Often, the individual interested and engaged in personalized technology is not the one performing and deciding on the activities consuming the most energy in the home (like cooking, cleaning, laundry etc.).

Through our own broad studies of how people live their lives in their homes, and consequently consume energy, we come to the conclusion that people and their behaviour (and energy consumption) are shaped by many other factors than 'just' internal personality traits.

We argue that internal psychological factors only become useful when seen in a more holistic view and closely related to more contextual factors as we describe below.

These additional factors must be considered when developing persuasive technologies and should also make it clear when such technologies may be limited in their impact and other types of interventions like e.g. changes in social norms and expectations [8] or policies should be considered instead.

Like others before us within the field of HCI [4] our understanding of what shapes everyday life and therefor energy consumption, is based on a practice theoretical approach. The recent definitions of practice are multiple [e.g. 2, 5, 6, 9], but what they all have in common is that they move their focus from looking at the individual as the focus of analysis towards understanding the "organisation and reorganisation of shared activities and routines" [4]. While psychology and behavioural economics focus on individual behaviour and motivation in their analysis, the practice theoretical approach looks at practices as "complex bundles of activities that invariably involve human (and nonhuman) participation, but are not constituted solely by or from human intentionality and action" [2 derived from 5,6,9].

Like Gram-Hanssen [2] we understand practices as collectively shared structures of know-how, institutionalized knowledge, engagements and technologies, but there should also be room for individual differences and seeing rational knowledge input and aspects of attitudes as part of the explanation of practices [2:155]. This means that our daily practices are shaped and constituted by many different factors of which the current focus of analysis in psychology and behavioural economics — namely individual behaviour, rationality and motivations — are only a part. This doesn't mean that we shouldn't look at what each individual is doing, but the individual is interesting to look at, as *carrier* of practices (Schatzki 1996 in: [2]) instead of as rational, free, intentional agents of behaviour.

What we propose is to shift the focus from personalized behaviour change to contextualized practice change because this emphasizes the complexity and social situatedness of change.

Inspired by a practice theoretical approach to understanding energy consumption and insights from empirical studies of everyday life we have developed the following approach and model that bridges insights from the different disciplines.

The Contextual Wheel of Practice
The 'Contextual Wheel of Practice' shown in Figure 1 is a graphical compilation of different definitions of a practice theoretical approach. Furthermore, it is inspired by the analytical concept of Socio Technical Systems [3]. But it also adds to the current understanding by encompassing levels or factors, which are not explicitly mentioned by the definitions of practice above, just as it tries to encompass insights from psychology which is also not part of the

current practice theoretical approach. The model becomes a graphical outline of how practice theory attempts to mediate between structure and agency, the human and non-human, and the concrete and abstract factors that shape our daily practices.

The four quadrants are: 1) Societal Structure, 2) Infrastructure, 3) Materiality, and 4) Values and Knowledge. The centre is the individual background variables like gender, age, and personality type.
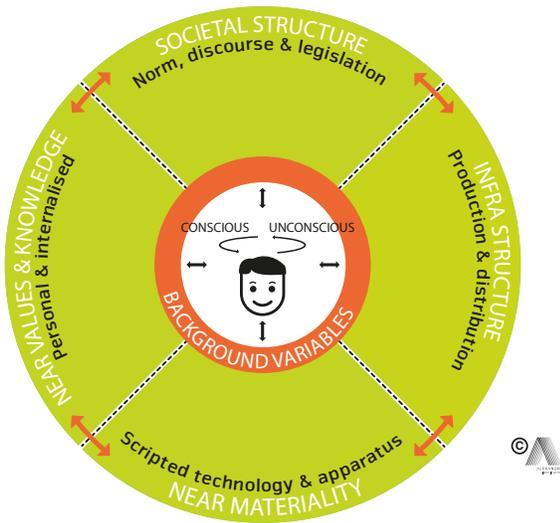

Figure 1. Contextual Wheel of Practice

The four quadrants deal with different 'groupings' of factors: 1) Societal Structure and 2) Infrastructure deal with the structural factors that shape our practices such as norms, institutions, legislation on the one hand and distribution and production of energy on the other. These two quadrants contain the structures that will often be shared by a group of people, whose lives will be structured by shared factors. The actor level or the individual factors that shape our practices are 3) Materiality, such as things, technologies, and apparatuses in particular when we try to understand energy consumption, but also e.g. architecture, and 4) Values and Knowledge, which are personal and internalised, but also very much grounded in and affected by shared culture.

Furthermore, the Contextual Wheel of Practice divides our factors into two other groupings. Infrastructure and Near Materiality cover the material and very concrete group of factors that shape our practices. Societal Structure and Values and Knowledge as the group of 'human' factors that shape our practices on different levels. Thus the Contextual Wheel of Practice also mediates and encompasses factors from both the very concrete and the very abstract realms as significant factors that both constitute and help us understand the practices that have energy consumption as their consequence.

The four quadrants are highly interdependent, such that e.g. the state of infrastructure will very much rely on the state of institutions and legislation, and legislation will depend on values and knowledge in the individual, but also on e.g. technological advances.

The Contextual Wheel of Practice helps us see what shapes practices and thus how changes in practices can occur through changes in any of the four quadrants. Having said this; many factors are in play when it comes to shaping our behaviour and because we also argue that the different factors are interrelated and don't just affect our practice, but also each other, the introduction of change will never be a simple cause and effect process. Furthermore, introducing changes in one quadrant may not have the intended affect, because the practice in mind may have been more significantly affected and structured by elements from other quadrants.

CONCLUSION

The instigation of change might be brought about by trying to affect behavior – but it can also be brought about by focusing on other parts of practices, and these other factors will surely affect the possibilities we have for instigating change.

The language of elements or factors brought to the fore by this model is useful because we want to emphasize the need to focus on the whole ecology of practice. In understanding energy consumption as the consequence of different practices it is not enough to focus on attitudes, behavior and choice [7], therefore the Contextual Wheel of Practice bridges insights from different disciplines like psychology, sociology and anthropology. This is valuable because we need to understand *all* these realms of human nature, culture and society and instead of talking about personalized behavior change – we propose to shift the focus to contextualized praxis change, because this focus emphasizes the contextual and interrelated nature of people, practices and change.

This understanding could enable us to develop technology with a real impact, but just as importantly we could be able to judge when technology is not the answer and we should be looking elsewhere in the Contextual Wheel of Practice for change.

What we hope to get out of the workshop

Discussions and suggestions on how to bridge the psychological and anthropological/sociological understanding of human behaviour, practices and what instigates change, so that insights from all disciplines will inform the development of technology. At the same time we hope to share our views on why we cannot rely on psychology alone, but also need anthropology and sociology within this field. As a specific outcome, I wish to get feedback on our Contextual Wheel of Practice for future

work. Being new to the CHI community, we also hope to get a chance to engage actively with other practitioners from different disciplines.

Authors Bio
Johanne Mose Entwistle is the principal anthropologist at the private applied research company, the Alexandra Institute in Denmark. Johanne received a MA in Social Anthropology from the University of Aarhus in 2008 and has been working in the intersection of people, technology and energy. Her work is carried out in inter-disciplinary R&D projects together with fellow researchers, private and public organisations. Johanne is new to the CHI community.

REFERENCES
1. Brynjarsnottir, H. Håkansson, M. Pierce, J. Baumer, E. Disalvo, C. 2012. Sustainably Unpersuaded: How Persuasion Narrows Our Vision of Sustainability. In *Proc.* CHI 2012. 947-956

2. Gram-Hanssen, K. 2009. Standby Consumption in Households Analyzed with a Practice Theoretical Approach. *Journal of Industrial Ecology* 14(1) 150-165

3. Kjerulf Petersen. 2011. Livsstilsbegrebet - i miljøsociologisk perspektiv. *Dansk Sociologi* 2(22) 31-45

4. Pierce, J., Strengers, Y., Sengers, P., and Bødker, S. 2013. Introduction to the special issue on practice-oriented approaches to sustainable HCI. ACM Trans. Comput.-Hum. Interact. 20, 4, Article 20, 1-8

5. Reckwitz, A. 2002b. Toward a theory of social practices. *European Journal of Social Theory* 5(2): 243–263.

6. Shove, E., and M. Pantzar. 2005. Consumers, producers and practices: Understanding the invention and reinvention of Nordic walking. *Journal of Consumer Culture* 5(1): 43–64.

7. Shove, E. 2010. Beyond the ABC: climate change policy and theories of social change. *Environment and Planning* A 42, 1273-1285

8. Strengers, Yolande. 2011. Designing Eco-Feedback Systems for Everyday Life. In *Proc. CHI 2011*, ACM press, 2135-2144

9. Warde, A. 2005. Consumption and theories of practice. *Journal of Consumer Culture* 5(2): 131–153.