4S/EASST 2016 – Track on 'Exploring the role of materials in practices and sustainability'

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For more details on the 4S/EASST 2016 Conference on 'Science and technology by other means: Exploring collectivities, spaces and futures', please visit the main conference website. The Conference is in Barcelona and runs over 31 August – 3 September 2016.

Session 1: The "smart" transition of energy, grids and homes
1100-1230, Thursday 1st September 2016

'Home monitoring – how smart meters mediate domestic energy practices in the Netherlands'
Mandy de Wilde, Wageningen University

Almost 20% of the energy consumption in the EU relates to the heating of dwellings. Therefore energy retrofitting of Europe's current dwelling stock has become one of the major challenges for a transition to a low carbon society. This paper draws from in-depth interviews with homeowners in the Netherlands who have been involved in the energy retrofitting of their homes: they have installed PV panels, hydronic heating, high-performance installation et cetera. As part of the process of domestic retrofit, a smart meter has been installed in their home with the aim to monitor their domestic energy performance. A smart meter is an electronic device that records consumption of electric energy and communicates that information at least daily back to the utility for monitoring and billing. Studies on domestic retrofit reveal that retrofitting a home is closely related to the practices that are taking place in everyday life in the home (Karvonen, 2013; Chiu et al., 2014). Informed by theories of social practice and science and technology studies this paper shows how these practices become mediated by the intervention of smart meter technology.

'Washing 2.0 – transforming energy practices in the home'
Shivant Jhagroe, Technische Universiteit Eindhoven

This paper examines how the introduction of smart energy technologies transforms domestic energy practices and regimes. Electricity providers and grid operators explore new energy management systems due to recent challenges in residential electricity systems (e.g. peak electricity demand, distribution loss). Home Energy Management Systems (HEMS), for example, introduce 'smartness' into the home and seek to shift demands to off-peak times, utilise local storage capacities and reduce electricity consumption. 'Smartifying' the home enables sustainable energy consumption and modifies material household practices.

This contribution conceptualises such changes with a Domestic Energy Practices Transition (DEPT) framework. Drawing on insights from Transition Studies, Social Practice Theory and Science and Technology Studies, this framework highlights how shifting energy-demanding practices are tied to broader shifting practices and regimes. It particularly highlights how shifting household practices incorporate new

technologies, materials and skills that resonate with socio-technical and governance arrangements (Strengers, 2013).

The paper presents some EU and US cases of smart homes and HEMS projects. Empirical materials consist of pilot project evaluations and reports, advertisements and brochures, and participatory observations of a Dutch smart homes project. Coding methods and discourse analysis are used to map, cluster and reflect on these projects. HEMS connect big data (e.g. forecasting sun hours), smart appliances (white goods that 'communicate') and local energy sources (PV, battery) to household activities (e.g. washing, cooking, cleaning) in diverse ways. The paper argues that these heterogeneous micro-domestications of smart and sustainable energy technologies are embedded in shifting material infrastructures, market conditions and regulatory arrangements.

'Materialities of the electric car – different designs, users and practice trajectories?'

Marianne Ryghaug & Helen Jøsok Gansmo, Norwegian University of Science and Technology

This paper focus on the role of materials for social practices and sustainability, with a specific emphasis on transitions to sustainable transport. In the paper we analyse the role of the electric car in sustainable transitions. In one way electric cars may be seen as attempts of "skilling" the material rather than the social. Built on envisaged material futures based on present needs and solutions sustainable transport ambitions are delegated to electric cars rather than to people with transportation needs and desires, hence reproducing social practices of transportation with a potential sustainable material twist. On the other hand electric cars may be seen as material interventions co-constructing temporalities of new and sustainable practices.

Through qualitative studies of electric car users and their everyday life practices in Norway from 2010-2015 - a period characterised by vast increase in both sustainable transition policies and private ownership of electric cars in Norwegian households - we demonstrate the way that the material features of the electric car has developed during the last years also shape users of electric mobility as well as different uses and practises. We find that electric cars constitute different forms of materiality with different user groups and with different trajectories related to sustainable transitions. Different cars seem to afford different users, and as pointed out by earlier research, different user roles such as user-citizens and user-consumers who may facilitate transitions and act in different ways in the process of shaping new routines and of system change.

'Experiments in Zero Emission Living – the intrinsic qualities of things'

Marius Korsnes & Jenny M. Bergschöld, Norwegian University of Science and Technology

This paper presents results from experiments conducted in the Trondheim Living Lab, which explores the relation between radical technological change, domestic practices and energy use.

The Trondheim Living Lab is a newly built, 100m^2, detached single family home that is planned to reach a zero emission balance over the course of its lifetime. The qualitative experiments, conducted in the laboratory between October 2015 and April 2016 involves six groups of residents, each living in the house for 25 days. Two and two groups were similar: two student groups, two families with two young children, and two groups with couples around 60 years old. The empirical material consists of interviews before, during and after the resident period, direct observation, diary records, photography and self-filming, as well as detailed records of energy consumption and indoor climate.

The Trondheim Living Lab offers a unique opportunity to understand how moving between homes with different energy ambitions affects energy use, energy related skills and energy understandings by experimental means. In this paper we investigate how two different perspectives on material agency in human-material interactions can generate diverging but findings in terms of understanding how a high-tech 'automated' home can be perceived by its inhabitants. The two theoretical approaches are practice theory (Shove et al., 2012) focussing on how materials, meanings and competencies together influence energy use, and social psychological perspectives on the social significance of objects for human experiences of living conditions (Persson, 2007).

'Anthropological explorations of technologies as enacted materials in everyday practices'
Mia Rasmussen & Laura Lynggaard Nielsen, Alexandra Institute A/S

Energy consumption is in many ways invisible – mediated through practices and things. While practice theory has helped nuance the view of energy consumers as rational resource managers by showing how consumption is constituted, negotiated and changed through the performance of everyday practices, most energy research is still challenged when it comes to the material aspects of energy consumption. Technologies are often defined by "objective" qualities, like their energy consumption, flexibility potential, optimal settings etc.

In this paper we propose instead to explore the different ways in which technologies are enacted and entangled in people's everyday lives. Taking an ontological approach, things are not objective entities interpreted differently by different actors. Through different enactments, things are different versions of themselves. Following this perspective the same technology may be two completely different things to different people, or may be enacted differently by the same person, depending on the context.

This approach offers new perspectives on the complex interplay between people, technologies and energy consumption. Energy consumption is not just shaped by values and knowledge of individuals but also very much by the technologies surrounding us; the affordance of these technologies and our relationship to them. Technologies play an active role in the configuration of energy consumption as more than tools. We therefore need to start drawing on a deeper material understanding to design solutions that do not just take into consideration the functionality or effect (e.g. carbon footprint) of technologies, but also their enactment, entanglement and affordance in people's everyday lives.

Session 2: Reconfiguring practice through material changes
1400-1530, Thursday 1st September 2016

'Urban gardening and the politics of environmental citizenship'
Jens Lachmund, Maastricht University

European cities have witnessed an increasing popularity of gardening as a form of civic engagement. Such activities include the illicit sawing of flowers on public lawns or abandoned plots – often dubbed "guerilla gardening" – and the establishment and maintenance of formally acknowledged community gardens. As diverse as these activities are, they share a common preoccupation with gardening as a pathway to a more liveable, sustainable, and at the same time, more close-to-nature urban order. This paper draws on a heuristic of social practice to investigate the role of the materiality of the urban site in the constitution and enactment of urban environmental citizenship. It focuses on Berlin, notably on the greening of so-called "tree pits", as the patches around the bottom of street trees are called. The paper uses semi-structured

interviews with citizen-gardeners, passers-by, and municipal officials to unravel how these tree-pits became transformed into mini-gardens, and how these sites where contested among different urban publics. As the paper argues, environmental citizenship cannot be reduced to a set of virtues that motivate people to engage in gardening. The tree-pits and their materialities and biologies are seen as "affiliative objects" (Suchman) that, through their associative practices (e.g. digging, watering, story-telling), position residents as "responsible" citizens. As the paper concludes, the politics of citizenship that is implied in these practices of gardening can be neither reduced to a subversion of the neoliberal city, nor does it simply instantiate an overarching governmentality.

'New designs for sustainable food practices – the case of vegan material innovation'
Richard Twine, Edge Hill University

Vegan eating practices constitute an important point of investigation within contemporary discussions on sustainable food transitions (Twine, 2014). This paper continues a research project aimed at understanding vegan transition from a practice theory perspective (e.g. Shove et al., 2012). It affords the opportunity to focus on the role of materials in potentially facilitating more plant-based eating and vegan transition. It explores what vegans and vegan manufacturers do, specifically with food materials, and the relationship between these practices and food norms, modes of sociality and aesthetic constructions of food. This focus illuminates the close relationships between materialities, meanings and competences. For example certain vegan food practices (such as some practices of substitution) can be read as a way of normalising and domesticating the meanings of vegan food. Three sets of data inform this paper. Firstly interview data conducted with 40 UK based vegans. Secondly, focus group data with participants in a South Manchester plant-based cookery course, and thirdly, online data associated with the 'invention' of aquafaba - the use of chickpea brine as a new ingredient in plant-based cooking practices. The paper contributes to the growing literature on practice theory and food (e.g. Warde, 2015), relationships between design, experimentality and everyday life (Scott et al., 2012; van der Weele and Driessen, 2013) and a better understanding of the agency of food materialities in achieving transitions to plant-based eating.

'Practice hacks – exploring the centrality of materials in social change'
Matthew Hanchard, University of Sheffield

Digital maps are entangled in broad arrays of social practice. For example, Google Maps and associated features (ranging from Ajax embedding of maps in websites through to Street-View) are deployed in various settings. As mediating technologies, digital maps are drawn on tacitly, at the level of discursive consciousness; as resources embedded in relatively stable routines.

Focusing on moments of rupture, where barriers or limitation are met and routine is disrupted, opportunities emerge to explore practice entities in flux. Where participants meet limitation, and modify practice to work around barriers, new ad-hoc arrangements are formed, which I label practice hacks: a knowledgeable (re)arrangement and instantiation of practice elements serving to re-establish routine.

In this paper, I develop a central argument grounded in recent research. Drawing on n=35 interviews, n=3 focus groups, and a survey with ~250+ respondents, I argue that materials are central to developing practice hacks. They are central to social change, both in altering social practices and in reshaping social positions and established identities. This problematizes the notion of materials gaining significance through practice. Using excerpts from qualitative data, the centrality of the material in developing practice hacks is discussed against two contexts relevant to sustainability: mundane mobilities e.g., mode of transport and choice or route; and everyday economies e.g., choice of home as landed capital investment. The discussion

is sensitised by practice theory, drawing on Nick Couldry, Anthony Giddens, Wanda Orlikowski, Andreas Reckwitz, Ted Schatzki, Elizabeth Shove, Lucy Suchman, and Ann Swidler alongside influences from Mobilities literature.

'Integrating complex materials into practice – the case of tablet computers'
Carolynne Lord, Lancaster University

The significance (and energy intensity) of the ever-expanding ecologies of IT devices is undeniable, and important especially when considering the sustainability of everyday life (Røpke and Christensen, 2013). How can we capture and describe the effect of these multiple and complex objects (from apps to tablet computers) and their roles in multiple social practices? Established terms developed within STS such as inscription (Akrich, 1991), domestication (Silverstone et al., 1992) and normalisation (Hand and Shove, 2007) prove to be somewhat static and inflexible when it comes to explaining the profusion and increasing complexity of tablets, smartphones and related objects in-use.

In response, this paper develops and explores concepts of integration, using the tablet computer as an example with which to consider how such an object in-use is integrated within differing practices and alongside coexisting technologies (apps, other technologies, infrastructures). The complexity and multiplicity of the tablet computer presents a number of specific challenges: What is the tablet computer? What is its role in-use? Of which practices does it become a part? Using empirical material from interviews with a selection of tablet owners, I hope to present some initial ideas about how we might better describe and thus, understand how such complex objects are integrated within different social practices.

'Young people and ICT – materials shaping resource-intensive practices?'
Toke Haunstrup Christensen, Aalborg University and Els Rommes, Radboud University

The extensive use of information and communication technology (ICT) in everyday practices results in increasing levels of consumption of energy and materials. Academics, NGOs and policymakers are beginning to address this issue and develop policies and campaigns to promote "sustainable" use of ICT.

The use of ICT is particularly widespread among young people, and this paper investigates the practices related to young people's use of ICT. More specifically, we focus on the use of smart phones and laptops. The paper focuses on how the material qualities of smart phones, laptops and their related applications/programmes (e.g. social media apps and internet browsers) co-construct user practices related to these devices and in this way play a role for the overall energy consumption. The material qualities include the portability ("always-at-hand") of small devices, visual and audio notifications and the design of social media and websites like YouTube with design features such as continuous suggestions of videos. The analysis also includes a discussion of the implications of the research findings for strategies and interventions aimed at reducing the energy consumption related to young people's use of ICT.

Theoretically, the paper will apply a practice theoretical approach with STS concepts that bring the role of materials in shaping practices to the fore. In particular, we will draw on Madeline Akrich's (1992) concept of (design) scripts. The analysis is based on focus groups with young people carried out in the Netherlands and Denmark.