Prosumers and smart grid technologies in Denmark: developing user competences in smart grid households

This paper explores and describes resident’s experiences from a smart grid project that involved 20 households in a rural area in Denmark and ran from 2014 to 2015. The study is based on qualitative data from the participating households, collected 6, 12 and 18 months after the start of the intervention. Drawing on theories of social practice and the three intertwined elements of a practice: competences, images and materials, the paper contributes with an in-depth analysis of a complex intervention, focusing on how the participants changed energy practices as a result of the installed smart grid technologies. Long-term studies on such comprehensive energy interventions and derived changes in domestic energy practices are exceptional. The results show that people relate to their natural environment in new ways and construct new practices according to the movements of the sun; that they gradually become skilled practitioners and prosumers; and that they also increase consumption and develop expectations towards the energy company, requesting better dialogue on energy consumption and control. The paper concludes with reflections and suggestions on how findings may be relevant to policy and research in the area.
Scripting, control, and privacy in domestic smart grid technologies: insights from a Danish pilot study

Smart grid research in Denmark has increasingly turned its focus on aggregator trading flexibility achieved by remotely controlling appliances, studying the technologies involved rather than the control. This paper investigates how different types of control were envisioned and designed for a two-year smart grid trial in Denmark with 20 private households. Using the notion of script, processes of in- and de-scription were used to gain insights into perceived and enacted control. Based on empirical data from 26 interviews and three workshops, we show how the in-scription process of control can be characterized as dynamic and includes negotiations between the residents and those responsible for the project. Second, we show how users de-script control, and third, we outline the project owners’ reaction to the user’s de-scription of control. The design of the remote control appears to have promoted a reference for ‘passive consumers’ within a smart grid. This design prompts questions about how the users in smart grid development are envisioned and configured using different ideas about control. With current development and the need for additional energy reductions, consumers who invest in photovoltaic solar cells and electric vehicles lose interest in delivering their energy to the system level.

General information
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Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Hansen, M. (Intern), Hauge, B. (Intern)
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ISI indexed (2013): ISI indexed no
Original language: English
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Publication: Research - peer-review › Journal article – Annual report year: 2017

Almost like being there; the Power of Personas when designing for foreign Cultures

Much research on personas focuses on how to develop and use personas, less on the validation and concrete value of them in the development of products for cultures far away from the actual design site. This article illustrates how such a validation was accomplished through producing a film and it provides an in-depth case description of how personas were developed and used. When designing a waste management system for soft plastic for a small village in India, personas were developed and applied by the designer to maintain a user-oriented focus throughout the participatory design process. During a three-month stay in the village, personas based on real people and the villagers’ everyday life and practices were developed by getting to know people and their ways of life through the use of ethnographic methods (observations, interviews, workshops and a film). The personas created a substantial understanding of the users’ individual needs, interests, values and emotions and helped to overcome the physical and cultural distance, enabling a strongly contextualised design.

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Department of Mechanical Engineering, Engineering Design and Product Development, Technical University of Denmark
Authors: Vestergaard, L. (Ekstern), Hauge, B. (Intern), Hansen, C. T. (Intern)
Number of pages: 18
Pages: 257-274
Publication date: 2016
Main Research Area: Technical/natural sciences
Between Indoor and Outdoor. Norwegian Perceptions of Well-Being in Energy Efficient Housing

An increased societal focus on energy efficiency has led to the development of new building concepts and standards in many countries, such as the passive house standard in Norway which implies a dense building envelope with restrictions on the use of glass and natural ventilation. Generally low-energy building concepts are based on a rational approach to comfort in housing limited to mainly measurable aspects. This, however, hardly reflects what makes residents feel comfortable at home, since it lacks a holistic understanding of residential well-being. Well-being is a complex and multi-faceted concept that includes atmosphere and feeling at home. In a qualitative study of four Norwegian low-energy housing projects, we investigate and discuss the impact of visual and sensory qualities, like view, daylight and access to fresh air, on residential well-being. The study reveals that it is possible to achieve well-being in energy-efficient housing, but some practices jeopardize the energy-design concept and influence energy use. Residents find strategies to achieve well-being by opening windows and doors, despite restrictions on airing naturally. Access to daylight and view and the ability to open windows or balcony doors to let in air, smells and sounds from the outside are crucial for residents’ well-being and thus important factors to consider when designing and building energy-efficient housing where people feel at home.

General information
State: Accepted/In press
Organisations: Department of Management Engineering, Technology and Innovation Management, Norwegian University of Science and Technology
Authors: Wågø, S. (Ekstern), Hauge, B. (Intern), Støa, E. (Ekstern)
Publication date: 2016
Main Research Area: Technical/natural sciences
Re-designing the everyday; The use and perception of time among cancer patients combining work and treatment

This article describes how time was used dynamically by a group of people at risk of losing their lives. It is shown how these people appeared to experience a change in the relationship between inner and outer time and that time literally was felt in this situation. An empirical investigation of 16 cancer patients performing their jobs while going through demanding treatment programs found time as their main motive for working while being seriously ill. Actions at work point to a time ahead, so by taking part in the time at the workplace they were inscribed in a future presently under pressure by their cancer diagnosis. The article describes how cancer struck women and men perceived time in their different life-worlds, at work, at home on temporary sick leave, and at the hospital, and it shows how these perceptions changed during the process of recovery. To these people time appeared in three forms: A time beyond control, realizing that they had cancer; taking control of time, discovering that they could go to work; the time of the future, which was their new perception of time as cured. This new perception of time reflected the incidental discovery of the cancer, realizing life as coincidental. Having their life time threatened made them feel vulnerable and liminal (neither sick nor well, but on the way to recovery). This vulnerability can be seen as the result of a breakdown of our taken-for-granted space-time world. For these people, going to work seemed to reduce the unbearable waiting time towards recovery by re-establishing links to a well-known life-world, the workplace.
General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Hauge, B. (Intern)
Pages: 193-212
Publication date: 2016
Main Research Area: Technical/natural sciences

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Journal: Time & Society
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Ratings:
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  Web of Science (2017): Indexed Yes
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  Scopus rating (2016): SJR 0.57 SNIP 1.268 CiteScore 1.19
  Web of Science (2016): Indexed yes
  BFI (2015): BFI-level 2
  Scopus rating (2015): SJR 0.299 SNIP 0.884 CiteScore 1.05
  BFI (2014): BFI-level 2
  Scopus rating (2014): SJR 0.33 SNIP 0.704 CiteScore 0.78
  BFI (2013): BFI-level 2
  Scopus rating (2013): SJR 0.361 SNIP 1.409 CiteScore 0.84
  ISI indexed (2013): ISI indexed yes
  BFI (2012): BFI-level 2
  Scopus rating (2012): SJR 0.397 SNIP 0.946 CiteScore 0.81
  ISI indexed (2012): ISI indexed yes
  BFI (2011): BFI-level 2
  Scopus rating (2011): SJR 0.296 SNIP 0.937 CiteScore 0.8
  ISI indexed (2011): ISI indexed yes
  BFI (2010): BFI-level 2
  Scopus rating (2010): SJR 0.494 SNIP 1.019
  BFI (2009): BFI-level 2
  Scopus rating (2009): SJR 0.597 SNIP 1.253
  BFI (2008): BFI-level 2
  Scopus rating (2008): SJR 0.959 SNIP 1.22
  Scopus rating (2007): SJR 0.63 SNIP 1.012
  Scopus rating (2006): SJR 0.545 SNIP 0.936
  Web of Science (2006): Indexed yes
  Scopus rating (2005): SJR 0.245 SNIP 0.802
  Scopus rating (2004): SJR 0.196 SNIP 0.711
  Scopus rating (2003): SJR 0.311 SNIP 0.658
  Scopus rating (2002): SJR 0.459 SNIP 1.017
  Scopus rating (2001): SJR 0.149 SNIP 0.294
  Scopus rating (2000): SJR 0.203 SNIP 1.052
  Scopus rating (1999): SJR 0.306 SNIP 0.786
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Electronic versions:
Re_designing_the_everyday.pdf
DOIs:
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Source-ID: 104578787
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Designing with daylight; the relationship between daylight and health

Daylight is not only fundamental for architecture and renovations, modernizations and transformations of cities and buildings – it is fundamental for people’s well-being. Daylight is scalable and may be used strategically in all types of buildings, and particularly in the so-called ‘health architecture’ which focuses on how to increase the solar influx when designing and building houses (Hobday 1999, 2007). But daylight is also complicated because it is measured and valued quantitatively and qualitatively and, furthermore, has seasonal variations, creating challenges when building living areas aiming at as much daylight as possible through the year. Those responsible for designing and building the home, architects and engineers, rely on quantifiable ways of allowing enough daylight into buildings (or reducing too much); yet people living in the homes may have entirely different perceptions and the significance of daylight. This paper describes the views and significance of daylight to people in their everyday lives. Based on a qualitative research project in Denmark about the use of windows, performed from May to August 2012 among 13 families, using in-depth interviews, observations, photos and postcards for storytelling, I will show how daylight is perceived, used, coped with, and negotiated by these people in their homes, thus exploring the social character of a natural phenomenon. A metaphor will be used from biomimetics (Benyus 1997), claiming that the Danish people, like plants, need daylight. With the concept of ‘dwelling’ (Ingold 2000), which implies that people engage in their environment and create possibilities for dwelling at home to feel comfortable and at home in the world, I illustrate people’s day-to-day entanglements with daylight and highlight the social qualities of daylight. The paper concludes that access to daylight is vital for existential reasons (health, social reasons and to feel connected to one’s natural environment), showing the window as much more than a technical artefact. Based on this I argue for the window to be acknowledged as vital for creating dwelling and for its inclusion in bio-inspired design and biophilic architecture that commonly focus on nature and views to greenery, less on daylight.

Introduction - Gender Dynamics and Connecting Comparisons

For a hundred years or more, The Nightingale and other fairytales by Hans Christian Andersen have fascinated readers in China and Denmark and bound them together in a corresponding set of values and preoccupations. Not only do the tales make use of poetic, ironic and humorous means to make a strong claim for the value of social justice, which continues to
feature strongly in both regions, but throughout the 20th century the tales have also linked the vast empire of the east with the tiny kingdom of the north as imagined communities (Anderson 1983). In H. C. Andersen’s eyes, China features as a refined land of porcelain, while Denmark is portrayed as a bucolic haven of peace. Beneath the polished surfaces, however, unruly and unjust social conditions prevail, and, according to H.C. Andersen, both societies stand in need of moral and ethical guidance. In both regions these tales have contributed to creating values and ethics for more than a century now, and the ugly duckling and the nightingale have remained well-loved figures, sending the message that there is an answer to the evils of unjust and societal hierarchies and a hope for social transformation.

**General information**

State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management, Copenhagen Business School, University of Copenhagen
Authors: Christensen, H. R. (Forskerdatabase), Hauge, B. (Intern), Wang, C. (Forskerdatabase)
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Main Research Area: Humanities

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- BFI (2013): BFI-level 1
- ISI indexed (2013): ISI indexed no
- BFI (2012): BFI-level 1
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- BFI (2011): BFI-level 1
- ISI indexed (2011): ISI indexed no
- BFI (2010): BFI-level 1
- BFI (2009): BFI-level 1
- BFI (2008): BFI-level 1
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- 70204_140536_1_PB.pdf
Publication: Research - peer-review → Journal article – Annual report year: 2015

**Lives under the Sun; The sensory qualities of daylight in designing the everyday**

People’s sensations of daylight and their practical, daily engagements with the sun and the daylight are described in this article. Based on a qualitative research project in Denmark the article shows how some Danes experience the world through the sun and its daylight and illustrates its significance to their bodies and lives as they describe it. By taking a biomimetic approach a metaphor is presented that, like plants, some people crave daylight in order to feel well. By showing people’s engagement with the sun and its daylight the phenomenon of natural light becomes imbued with sociality and it is described how people design their everyday in accordance with the sun. The sensation of daylight normally taken for granted and acknowledged as a physiological element in our being-in-the-world is foregrounded and shown as a sense in people that may have a physiological origin when daylight hits the eye, but whose impact on people and their lives may best be investigated psychologically and socially, as when studying how daylight sensation is practiced by people and how it entangles and intertwines with their everyday lives.

**General information**

State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Hauge, B. (Intern)
Pages: 71-91
Publication date: 2015
Main Research Area: Technical/natural sciences

**Publication information**

Journal: Senses and Society
Window Stories: The significance of windows to Germans - a qualitative, anthropological investigation of the qualities of a window

This research project has investigated 17 households in Germany (cities and rural areas). The main aim was to learn about the significance of the window to these people: What they think of their windows, how, when and why they use them in their everyday life, if they have a favorite window and why, as well as the opposite. The report also includes a special focus on overheating and people’s strategies against this. Knowing about what people appreciate in a window and their actual practices and the reasons for their behaviour may be useful in many different ways, for instance to inform public strategies for overheating or to communicate with people in a more user informed way. The people participating in the study lived in different houses and had different backgrounds. They were involved in the project over a period of 3-4 months. The prolonged participation was facilitated through a variety of ethnographic tools that required their involvement, such as making a diary of their heating experiences during a random week in the summer of 2014, taking photos of windows and sending postcards with specific tasks.
Fresh Air Practices in English and Scottish Homes
This article presents anthropological research results on how and why English and Scottish families use the fresh air from outside into the home (FAFOH). The introducing exchange was often heard in the English and Scottish families visited. Throughout the entire study the opposite only occurred in a few cases: The man opening the window, the woman closing it, in her own words: "so that I stay snug".

General information
State: Published
Organisations: Department of Management Engineering, Technology and Innovation Management
Authors: Hauge, B. (Intern)
Pages: 4-9
Publication date: 2013
Main Research Area: Technical/natural sciences

Publication information
Journal: Natural Ventilation News. Newsletter of the CIBSE Natural Ventilation Group
Issue number: 07
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Natural_Ventilation_News.pdf
Publication: Communication › Journal article – Annual report year: 2013

The air from outside: Getting to know the world through air practices
This article evolves around air: how we experience air, become knowledgeable about our environment through air and include sociality in our actions relating to air. Based on a qualitative study in Denmark about how people use air from the outside and let it into their homes, the article investigates the relation between the air we breathe and learn from and the air we 'perform', such as airing our homes. The study indicates patterns of use that reflect on air as a vital element in our being-in-the-world as well as being socially and bodily significant for shaping our everyday life. The article begins by showing air as an integrative practice with three dimensions: functional, bodily/sensory and social. It is shown how knowledge of the environment is constructed in the process of 'practising' air, how this knowledge is transferred into a sense of being-in-the-world and how emotions are part of this becoming.

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State: Published
Organisations: University of Copenhagen
Authors: Hauge, B. (Intern)
Pages: 171–187
Publication date: 2013
Main Research Area: Technical/natural sciences

Publication information
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BFI (2015): BFI-level 2
Scopus rating (2015): SJR 0.473 SNIP 1.588 CiteScore 1.11
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.548 SNIP 1.595 CiteScore 0.83
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 0.47 SNIP 1.046 CiteScore 0.77
The significance of the window - a qualitative, anthropological study of what the window means to people: Report

General information
State: Published
Organisations: University of Copenhagen
Authors: Hauge, B. (Intern)
Number of pages: 5
Publication date: 2013

Publication information
Original language: English
Main Research Area: Technical/natural sciences
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The_significance_of_the_window.pdf
Publication: Research › Report – Annual report year: 2013

Vinduets betydning - en kvalitativ, antropologisk undersøgelse af hvad vinduet gør for folk: Rapport

General information
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Organisations: University of Copenhagen
Authors: Hauge, B. (Intern)
Number of pages: 64
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Main Research Area: Technical/natural sciences
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Klimaets sociale tilstand

General information
State: Published
Organisations: University of Copenhagen
Authors: Gundelach, P. (Ekstern), Hauge, B. (Intern), Nørregaard-Nielsen, E. (Ekstern)
Number of pages: 216
Publication date: 2012

The rituals of everyday life: The use of lighting and fresh air at home

General information
State: Published
Authors: Hauge, B. (Intern)
Publication date: 2012
Main Research Area: Technical/natural sciences
Publication: Research - peer-review › Paper – Annual report year: 2012

When the Meaning of Work Frames the Meaning of Life: The Significance of Work to Danish Cancer Patients working while in a Treatment Programme

General information
State: Published
Authors: Hauge, B. (Intern)
Pages: 99
Publication date: 2012

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Editor: Katsas, G. A.
ISBN (Print): 978-960-9549-77-6
Chapter: 114
Main Research Area: Technical/natural sciences
Publication: Research - peer-review › Book chapter – Annual report year: 2012

Anthropological Investigation and Analysis of the Significance of Fresh Air from the Outside and Into English and Scottish Private Home: Executive Summary

General information
State: Published
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Authors: Hauge, B. (Intern)
Number of pages: 4
Publication date: 2011

Publication information
The Significance Of Fresh Air From Outside: Getting To Know The World Through Air

General information
State: Published
Organisations: University of Copenhagen
Authors: Hauge, B. (Intern)
Publication date: 2011
Event: Paper presented at 12th International Conference on Indoor Air Quality and Climate, Austin, TX, United States.
Main Research Area: Technical/natural sciences
Publication: Research › Report – Annual report year: 2012

Analyse antropologique de l'importance de l'air frais de l'extérieur à l'interieur dans les maisons francaise: Résumé

General information
State: Published
Organisations: University of Copenhagen
Authors: Hauge, B. (Intern)
Number of pages: 4
Publication date: 2010

Analysis of the significance of fresh air from the outside and into the home – a qualitative, comparative study in the following countries: Denmark, France, England and Scotland: The Significance of Fresh Air from Outside: Getting to know the World through Air

General information
State: Published
Organisations: University of Copenhagen
Authors: Hauge, B. (Intern)
Number of pages: 7
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Anthropological Investigation and Analysis of the Significance of Fresh Air from the Outside and into English and Scottish Private Homes: Interviews and analysis performed from early September till mid November 2010

General information
State: Published
Organisations: University of Copenhagen
Authors: Hauge, B. (Intern)
Number of pages: 48
Publication date: 2010
Fresh air at home: A sensory experience and social ritual
In a qualitative study conducted in autumn 2009, the Danish anthropologist Bettina Hauge has shown how people make use of fresh air to air out their private homes. Her analysis of the results shows that ventilation practices may be divided into three categories: functional (practical causes), aesthetic (sensory) and social (caring for and impression on others). Anthropological studies of this kind are useful in understanding why people act the way they do, and analyzing specific practices may give hidden insights into the lives of ordinary people.

The significance of fresh air
In a qualitative study on the use and significance of fresh air in private homes, the situations and times in which fresh air was used, several interesting social aspects relating to this practice came forward, challenging to some extent the practice theories focusing on skills & competencies as a major domain of the practice performed (a.o. Shove 2003, Shove & Pantzar 2005). Actions relating to the use of fresh air appeared as an integrative practice, constituting particular social domains. Deconstructing the use of fresh air highlighted 3 main dimensions relating to its significance: a functional (practical features); an aesthetic (bodily and sensory features); and
a social dimension (care and impression management).

The findings encourage to step away slightly from the current focus in design anthropology on action, moving towards a more phenomenological perspective of 'being' rather than 'acting' (realizing, of course, their interrelationship).

**Anthropological Investigation and Analysis of the Significance of Fresh Air from the Outside and into Danish private homes: Executive Summary**

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Organisations: University of Copenhagen
Authors: Hauge, B. (Intern)
Number of pages: 4
Publication date: 2009

**Publication information**
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Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
Fresh_air_Danish_study_EXE_summery_2009.pdf

Antropologisk undersøgelse og analyse af betydningen af frisk luft udefra ind i privatboligen (herefter kaldet FU): Interviews og analyse gennemført fra medio okt. 2009 til medio nov.

**General information**
State: Published
Organisations: University of Copenhagen
Authors: Hauge, B. (Intern)
Number of pages: 35
Publication date: 2009

**Publication information**
Publisher: University of Copenhagen, Department of Sociology
Edition: Version 2
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Main Research Area: Technical/natural sciences
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Antropologisk_unders_gelse.pdf

Capturing the Intangibilities of Virtual and Physical Spaces

**General information**
State: Published
Organisations: University of Copenhagen
Authors: Hauge, B. (Intern)
Publication date: 2008

Main Research Area: Technical/natural sciences
Publication: Research - peer-review › Paper – Annual report year: 2008
Kræframte - på arbejde: betydninger af et arbejdsliv for livstruende syge

General information
State: Published
Organisations: University of Copenhagen
Authors: Hauge, B. (Intern)
Number of pages: 391
Publication date: 2008

Publication information
Publisher: Sociologisk Institut, Københavns Universitet
ISBN (Print): 978-87-7296-270-2
Original language: Danish
Main Research Area: Technical/natural sciences
Publication: Research › Ph.D. thesis – Annual report year: 2008

Følelsesfællesskabet: Det kvalitative interview i emotionelle felter

General information
State: Published
Authors: Hauge, B. (Intern)
Pages: 76-99
Publication date: 2005

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Publisher: Arbejdsmiljøinstituttet
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Main Research Area: Technical/natural sciences
Publication: Research - peer-review › Book chapter – Annual report year: 2005