ICT in everyday life - energy impacts and the sustainability of innovation

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ICT in everyday life – energy impacts and the sustainability of innovation

This poster summarises our work on the use of ICT in everyday life and the implications for energy consumption. It also raises the question of whether ICT innovation points in the direction of sustainability.

The results are based on interviews with Danish households on their use of ICT, participation in events like the Danish Broadband Days and literature studies. Our theoretical approach is informed by practice theory.

1. A practice theory perspective

A practice is a configuration of competence, material and social framework

In the continual flow of activities it is possible to identify clusters of activities where coordination and interdependence make it meaningful for practitioners to conceive of them as units – like cooking, having parents, playing football. A practice is recognisable across time and space.

When a practice is performed, practitioners make linkages between their activities and other clusters of activities that configure the practice. These elements can be grouped in material objects, competence and storage/knowing.

Practices correlate with the social and material framework

In a given society, some overall trends in the combination of practices are determined by the social and material framework that has been established through previous practices. Prudential performance of practice reproduces and transforms webs of social and material structures that frame the practices.

Everyday life unfolds in time and space

Each individual follows a path in time and space, carrying out practices that take time and place in space. It is a challenge of everyday life to manage participating in practices within the limitations set by time and space and by the need for coupling one's own path with the paths of others.

The connection between everyday life and the environment

Consumption comes in as an aspect of the practices people are engaged in, because the performance of a practice usually requires the use of material artefacts, such as tools, materials and infrastructures. The use of resources always takes place in relation to social practices.

2. Integration of ICT into everyday practices

The pervasive integration of ICTs in practice

ICTs have become integrated in a wide range of everyday practices such as “staying in touch” with friends and relatives, doing personal work, sport, volunteer work, bank transactions etc.

Computers, mobiles and smart phones, tablets, internet etc. have developed into a general infrastructure that has become part of everyday activity.

The rationale of ICT integration emerge from each practice, such as using ICTs in special materials for renovating houses, offer new members to a club, improve sports performance, social and so on.

Diversification of practices

The integration of ICTs into everyday practices is in many cases accompanied by changes and diversification of these practices. An example of diversification is the practice of “staying in touch” with friends and relatives: the communication now involves a wide range of ICT mediated practices ranging from face to face conversations, to mail, to photos and videos, audio clips and more.

For instance, Gertrude uses Flickr photos web album to stay in contact with her relatives. She uploads and shares photos, with them from her vacation in Italy, with her neighbors what she does in her yard and on their street. Similarly, the former neighbors upload pictures from their own life in Singapore and share them with Gertrude.

3. Environmental impacts

Electricity consumption: A new round of household electrification

The pervasive integration of ICTs in everyday life and the resulting diversification of them often tend to make the practices more energy intensive. In this way, the offer of ICTs can be seen as a new round of electrification of everyday life and households.

Electricity is used for basic functions as providing light, transporting sound, heating, powering mechanical devices, and processing data.

• Lighting forms the basis of the first round of household electrification.

• The expansion of today’s appliances is a new round. The integration of the household equipment is a wide range of domestic appliances. The replacement of muscular strength by the mechanical power and the use of heating/cooling led to a dramatic increase in electricity consumption.

- The third round of household electrification is based on the computer and the various communication networks. ICT can be said to replace or enhance brain capacity – the ability to calculate, manage, communicate, and regulate.

Without the substantial increase in electricity for household electronics, Danish residential electricity consumption would have declined (see graph of Danish residential electricity consumption).

Time and space

Many studies on the second- and third-order impacts of ICT have focused on the potential for environmental improvements. Considering the changes in time and space in everyday life suggests a different perspective.

The growing use of ICT in everyday life and practices supports a partial decoupling of practices from their previous time-space location (e.g. communicating with family members while commuting to work). This partial decoupling enables the activation of “dead time” and increased multitasking, which contribute to a more densely packed everyday life. In energy terms, a more densely packed everyday life implies a tendency towards second order and third order increases in the total consumption of energy, since the performance of each single practice involves energy use. Also, the partial decoupling enable the calibration of specific social and material structures, and through increased multi-tasking and thereby increasing energy consumption for transport.

ICTs do have great potentials for reducing the energy intensity of everyday life, but the realisation of these potentials does not come automatically as an effect of technological change.

The sustainability of ICT innovation

ICT is cheap due to the combination of:

- Moore’s law
- The use of under-priced energy and other resources (not taking environmental and social externalities into account)

- The laws of competition – reflecting the high degree of global inequality.

The low price of ICT encourages all kinds of use – sustainable as well as unsustainable – and contributes to the high replacement rates.

Some innovation focuses on environmental efficiency improvements of ICT but does not keep up with through replacement costs. Many innovation is directed towards entertainment – a large market constituted by the global middle classes.

For many, price is the biggest challenge and how prices on energy and resources have reached ICT innovation in unsustainable directions. The demand on ICT innovation is to encourage ICT innovation to focus more on resource savings and transformation of social practice for transport, food, finance etc. But political intervention is needed to spend up the process and ensure a socially more balanced development.

Publications

Journal papers

Inge Røpke: Staying in touch with friends and relatives.

In: Julian Gebhardt et al. (Eds.): Experiencing Broadband Society. Peter Lang, 2010.

Inge Røpke and Toke Haunstrup Christensen: Transitions in the wrong direction? Digital technologies and sustainable housing.

In: Inge Røpke: The unsustainable directionality of innovation – the example of the broadband transition.

Energy impacts: A new round of household electrification.


Handbooks


Inge Røpke: The unsustainable directionality of innovation – the example of the broadband transition.


Book chapters and conference proceedings

Jesper Olje Jensen, Kirsten Gram Hansen, Inge Røpke and Toke Haunstrup Christensen: Households’ use of information and communication technologies – a future challenge for energy savings!


Toke Haunstrup Christensen and Inge Røpke: Can practice theory inspire studies of ICTs in everyday life?


Inge Røpke, Kirsten Gram Hansen and Jesper Olje Jensen: Households’ ICT use in an energy perspective.
