

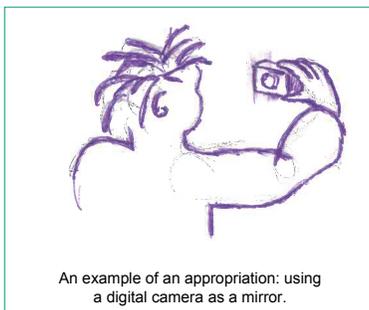
How do users invent new purposes of use?

A cognitive approach to appropriation

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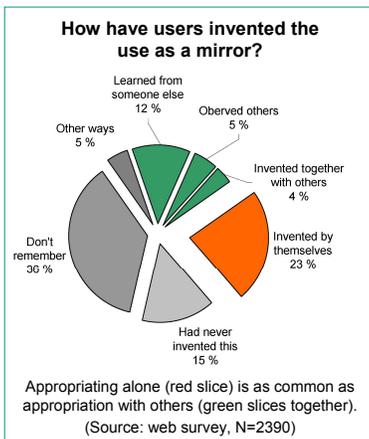


Appropriation of everyday technologies

Appropriation refers to the processes of inventing new purposes of use for technologies. It is a pervasive phenomenon of all human interaction with tools, technologies and artefacts. People adapt the surrounding technological resources to their ongoing activities all the time.

Picture to the left exemplifies appropriation of everyday technology: using digital camera as a replacement of a mirror. This kind of appropriability is a sign of good design: if new uses are easy to invent, then the technology is suitable for more contexts of use. Digital cameras are a good example of such technology.

Previous research has studied appropriation mostly as a social process: how technology is adopted into working practice, and how its use is negotiated between different workers. This line of research sees appropriations as a result of an ongoing evolving process. But is this the only possibly focus? Are all appropriations socially learned and adopted? What is the role of an individual? How much do we know about the ways how and how much an individual user appropriates, either alone or as a part of a group?



Appropriation by an individual

It appears that appropriation by individuals plays an important role in appropriation. The figure in the left shows results from a recent web survey (see more below), showing that many digital camera appropriations arise in situations in which individuals act alone. Existing research does not tell much of these situations, e.g., how individual users explore the technology or invent new uses in different settings. Therefore, the purpose of the present research is to explore the following questions:

- 1) What cognitive processes contribute to events when a user finds a new purpose of use for technology?
- 2) How do these processes operate?
- 3) How can these findings be made useful for HCI?

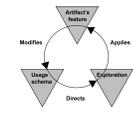
These questions have evolved out of studies that have used many methods to develop a theory for appropriation:



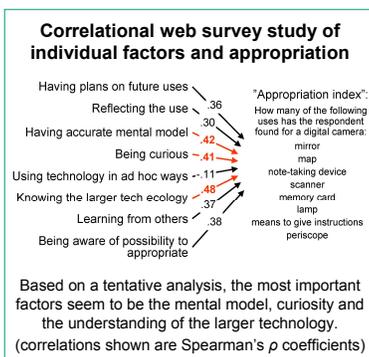
Naturalistic observation of mobile multimedia messaging (CHI2006)



Repeated interviewing of users in a 9-week trial of a novel mobile comic strip creator (CHI2007)



Theoretical reflection of appropriation in light of ecological psychology (Human Technology 2008)



In search for the most important appropriation factors

The figure in the left lists 8 different factors that can be contributing factors to individual's appropriation. To find out which ones are more important than others, a correlational web survey (N=2390) was carried out in Finland in November 2008 – January 2009 about digital camera appropriation, with the following research design:

- Independent variables: Each factor represented with 2 to 7 Likert scale statements
- Dependent variable: Appropriation Index which gives a score for the respondent's ability to appropriate. This is calculated from responses to 8 tree-structured sets of questions on different digital camera appropriations (listed in the figure).

The survey was tested in two pilot studies before its final launch. Analysis is currently in progress. At the current state, no definitive answer has been obtained, but it seems that users' understanding of technology (i.e., mental models of cameras and their larger technology ecology) as well as a general curiosity to try new photography techniques will be the most important factors contributing to appropriation. If these findings hold in later stages of the analysis, this research will have clear implications for how appropriation should be understood in HCI and how technologies should be designed to support appropriation.