

## Abstract

In this work, intuitive use is defined as the extent to which a product can be used by subconsciously applying prior knowledge, resulting in an effective and satisfying interaction using a minimum of cognitive resources. Image schemas are proposed as new design guidance, and the usefulness of image schema theory for design for intuitive use is investigated.

Image schemas are sensorimotor and subconscious forms of knowledge representation. Thus, they fulfil the preconditions of intuitive use and hold great promise for user interface design. The promises of image schema theory are discussed in the light of existing linguistic and psychological research and empirical research questions are derived from this discussion.

The first research question relates to using image schemas for conveying abstract information in user interfaces. The results of four experiments show that user interaction is more effective, mentally efficient, and satisfying with user interfaces that conform to image schema theory than with user interfaces that do not conform to the theory. The size of the effect is dependent on the task given to the users, the difficulty of the task, and the presence of other image schema instances in the user interface.

The second research question relates to the practicability of image schemas as a design language for designing intuitive use. Two studies investigate the inter-rater-reliabilities during the application of an image schema vocabulary to the description of tasks, interactions, user interfaces, and user utterances. The results show high to medium agreement among the designers using the image schema vocabulary. In another study, designers used the image schema language in a human-centred design process for the development of two new prototypes of an existing enterprise resource planning system. Image schemas proved especially useful in the process of translating requirements into design solutions. To support future design processes, an online database was developed that gives product designers access to image schema definitions and provides examples of image schema instantiations in user interfaces.

As a result of these studies it can be concluded that image schema theory provides valid hypotheses for design for intuitive use and that an image schema design language is reliable and practical and can benefit the early phases of product design. Image schemas can not only complement but even go beyond the scope of the existing guidance for designing intuitive use like user interface metaphor, population stereotypes, or affordances. Questions for further research are discussed.

**Keywords:** Human Factors, User Interface Design, Intuitive Use, Image Schemas, Metaphor, User Interface Metaphor, Population Stereotypes, Usability, Design for Intuitive Use, prospective design