Designing Everyday Computational Things

Doctoral Dissertation

Johan Redström

Department of Informatics
Göteborg University
Viktoriagatan 13, Box 620
SE – 405 30 Göteborg, Sweden
www.informatics.gu.se
Abstract

The prospect of ubiquitous computing in everyday life urges us to raise basic design issues pertaining to how we will live with, and not only use, computers. To design for everyday life involves much more than enabling people to accomplish certain tasks more effectively, and therefore, traditional approaches to human-computer interaction that focus on usability are not sufficient. To support critical discussion of, and reflection upon, the design of everyday computational things, both new design philosophies and a richer collection of design examples are needed.

This thesis reports on the development of a design philosophy based on investigations of the design space of everyday computational things. Using experimental design, a collection of design examples illustrating how computational things can become integral parts of everyday environments has been developed. These investigations have been centred on: amplification of things and environments using computational technology; different forms of information presentation; the use of everyday materials in the design of computational things; and the aesthetics of computational things in use.

The specific results are a number of design examples, including support for local interaction, access to digital information using physical objects as tokens, information displays such as the ChatterBox and Informative Art, and examples of Slow Technology. The general results are presented as a design philosophy for everyday computational things. This design philosophy is aimed at design for meaningful presence, rather than efficient use, and states that computational technology is a design material, that time is the central design parameter and that aesthetics is the basis for design for presence.

Keywords:

Human-computer interaction, interaction design, design research, experimental design, ubiquitous computing, aesthetics.
Acknowledgments

I would like to thank my supervisor Bo Dahlbom, for both freedom and support. To my co-authors – Per Dahlberg, Lars Hallnäs, Lars Erik Holmquist, Patricija Jaksetic, Peter Ljungstrand and Tobias Skog – warm thanks for inspiring and stimulating collaboration and for making this thesis possible. Special thanks also to the rest of friends, past and present colleagues, at the PLAY research group: Staffan Björk, Roberto Busso, Jennica Falk, Rebecca Hansson, Linda Melin, Andreas Roth and Joakim Wigström. Although some of you are not co-authors of the papers included here, your ideas and comments certainly have had a great influence. Many thanks to all of you who have provided feedback on this work by commenting and criticising, discussing and contributing ideas.

Thanks to friends, colleagues and personnel, at the Viktoria Institute, the Interactive Institute and the department of informatics, for creating such a vibrant and interesting environment to work in. Thanks also to friends at the department of philosophy, especially my supervisor Björn Haglund and Helge Malmgren.

To friends and family – mum, dad, Maria, Bibi and Bertil – thanks for love and support. To Maria, thanks for everything.

Sponsor acknowledgments: During the work with this thesis, I have been employed by the Viktoria Institute and the Interactive Institute. Funding has been provided by SITI through the Mobile Informatics program, by NUTEK through the PROMODIS program, and by SSF through the Interactive Institute.

Göteborg, May 2001

Johan Redström
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Cover: Detail from photo of the Fan House.

Note: a digital version of the thesis in full colour is available at http://www.viktoria.se/~johan/thesis/ This web-page also includes errata and links to additional material, such as video clips of the design examples.