David Phillips and Klaus Wiegerling:

Introduction to IRIE Vol. 8

Abstract:

Ubiquitous Computing, an idea introduced by Mark Weiser[1], and often bracketed with slight modifications under the concepts of Pervasive Computing or Ambient Intelligence, imagines in the extreme case the entire mesosphere saturated by information and communication technologies (ICT). All of the essays of this issue probe the practices, ideologies, and power relations of UbiComp development. They note both the successes and the failures of a variety of ethical and theoretical approaches to UbiComp and they offer alternative approaches. Thus they provide a much-needed intervention into the creation of new forms of subjectivity, awareness, and power.

Authors:

Prof. David J. Phillips, Ph.D.

- University of Toronto, Canada
- E-Mail: davidj.phillips@utoronto.ca

PD Dr. Klaus Wiegerling

- University of Stuttgart, Germany
  E-Mail: Wiegerlingklaus@aol.com

[1] Weiser, Mark (1991): The Computer of the 21st Century. Scientific American 265 (3) 1991

ISSN 1614-1687

Ubiquitous Computing (UbiComp), an idea introduced by Mark Weiser[1], and often bracketed with slight modifications under the concepts of Pervasive Computing or Ambient Intelligence, imagines in the extreme case the entire mesosphere saturated by information and communication technologies (ICT). In this fantasy, ICT will accompany all aspects of our life. Our everyday world will be made intelligent, and all our actions, at all times and everywhere, will engage some kind of ICT support. We will be appropriately guided, monitored, and provided with our needs and desires. In a sense, UbiComp, as the total connection of all material and not-material entities, becomes a theological-philosophical term -- a term for god, omniscient and omnipresent.

More prosaically, Ubiquitous Computing systems generally consist of interlinked capacities for memory and data storage, for perception and environmental sensing, and for the interpretation of contexts and situations. These activities might be carried out using various kinds of technology. And indeed, a whole host of technical research fields are working toward this goal, from mechatronics to materials science, from network engineering to computing and AI research. Of course, ubiquity or omnipresence will never be total. For technical, economic, and other reasons, there will only be pockets where Ubiquitous Computing systems come into effect.

Present research scenarios often focus on military sites of activity, as well as on workplaces such as factories, offices, and hospitals. Nevertheless, this research entails applications that will have more or less impact on every domain of life. We must now, in the relatively early stage of UbiComp development, take into account its potential, without knowing how far this potential can be realised in detail, and without knowing the fields in which pervasive ICT will find acceptance. Any research program that may so radically infiltrate our daily life requires some kind of ethical framework, to complement and counterbalance the economic and militaristic motivations supporting the research, and to provide direction with respect both to traditional values and to our hopes for the future. The eight essays in this special issue begin to construct that framework.

Two related themes resonate through this collection. The first is the problem of the invisibility of ubiquitous systems. UbiComp media intentionally and by design disappear into and become one with the contexts that they mediate. In certain sense we may say that UbiComp, by disappearing, diminishes the confrontational character of reality.

The second, related, theme is agency. The more invisible, pervasive, and transparent these systems become, the more they disappear and are taken for granted, the harder they will be to consciously confront, oppose, or engage. Moreover, UbiComp will necessarily perceive and act upon subjects and situations as ideal types, or stereotypes. Situations may be reduced to typical moments. Ambivalence and ambiguity may be lost. If the mechanisms by which these systems produce and ascribe identities, situations, and contexts are unavailable for engagement by the subjects of the system, then those subjects may lose the skills and resources necessary to negotiate the construction of these identities, situations, and contexts. It may simply become necessary to accept the system's reification of the typical.

Two of the essays critique the model of the human subject common in some current UbiComp research. Soraker and Brey critique the behaviorist presumptions underlying UbiComp design paradigms. Curry argues that UbiComp models have not yet grasped the fact that reference – the pointing to of existing entities – is always a social achievement.

Other essays probe the construction of UbiComp's "seamlessness" (Ratto) and call for the integration of discursive openness. Several suggest that UbiComp media leave readable "clues" to its activities. Hubig suggests that the media incorporate levels of parallel communication; Swift calls for a discursive code structure for negotiation; Hofkirchner et al describe a two-stage model for persuasive actions by UbiComp systems, allowing the subject to explicitly agree to the goals and ends of the system's knowing actions.

But too much discursive openness defeats the purpose of UbiComp. At some point, to be effective, the subject must trust the system. Heesen and Siemonet describe how engagement and openness at a political level, especially about issues of privacy and autonomy, facilitate the trust necessary for comfortably seamless UbiComp. Hubig, too, discusses this kind of "meta-mediation" – communication among developers and users of the media, between users and the media system, and collectively within society at large about the media.

Finally, the essays point to avenues for new consideration of the ethical implications. Brown and Adams

[1] Weiser, Mark (1991): The Computer of the 21st Century. Scientific American 265 (3) 1991

advocate incorporating and integrating the practical ethics of the site of UbiComp. Ratto offers infrastructure studies as a resource for the critique of and response to seamless, practically invisible, and pervasive information systems.

All of these essays probe the practices, ideologies, and power relations of UbiComp development. They note both the successes and the failures of a variety of ethical and theoretical approaches to UbiComp and they offer alternative approaches. Thus they provide a much-needed intervention into the creation of new forms of subjectivity, awareness, and power.