

Globicomp—doing ubicomp differently: introduction to the special issue

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The bulk of the research community's work to date has been focussed on the so-called 'developed' world—contexts where there are already well-established technical infrastructures and digital resources. These contexts have users who have relatively high level of computer literacy, typically have a high degree of textual literacy and have undergone a formal education. Examples include sophisticated 'smart' homes with digital noticeboards and even interactive fridge doors [3]; embedded technologies for amusement parks [2]; and, cities and urban dwellers with time to, "marvel at mundane everyday experiences and objects that evoke mystery, doubt, and uncertainty. How many newspapers has that person sold today? When was that bus last repaired? How far have I walked today? How many people have ever sat on that bench? Does that woman own a cat? Did a child or adult spit that gum onto the sidewalk?" [1].

But pervasive digital technology is no longer the preserve of the developed world. The ITU reports that in the developing world, some 68% of people have access to the cellular network [4]. Furthermore, 90% of the world's population, and 80% of its rural population, live within range of the cellular network. Therefore, there are hundreds

of millions of users, and billions to come in the next 5 years, in places like India, China, and Africa, whose first, and perhaps only, experience of computing will be in the form of mobile and other ubicomp technologies.

This Theme Issue is about the billions of people who previously lay outside the domain of digital technology. Take Sambasivan et al.'s contribution, for instance. It examines how technology is diffusing through resource-poor groups in the urban slums of India. In particular, they examine how the constraints built into the technologies are overcome, as these new users come to understand the technology and appropriate it for their situations.

And it is not just 'developing' countries. What about those who were previously marginalised in our 'developed' world—the urban poor, the ill-educated, the homeless, the computer non-literate; i.e., those without access to what many of us take as essential digital infrastructure? Woelfer and Hendry's paper, then, looks at the types of digital systems required to support young homeless people in Seattle, WA; a city that is one of the homes of digital innovation globally, yet through this work, we see many of its citizens have hitherto been bypassed by digital progress.

Many of these users will never live in the sorts of home, or work in the types of office, or daydream in the parks, or take a day-off for the sorts of amusement park envisaged by earlier ubicomp research. A new discipline, currently called HCI4D, is trying to re-imagine how we conduct user research for these new communities of users. As this research grows, we find that we have to reconsider the methods we have held dear and challenge the assumptions that underlie them—for example, how does one do participatory design with someone who has never seen a computer interface before? Putnam et al. tackle this issue in their contribution, seeking to find methods appropriate for creating designs for these new groups of users. In her

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contribution, Light shows us that using a ‘standard’ visual formalism such as a map is problematic for those from other cultures. Her work shows us the extent to which we have to re-imagine our discipline and the designs it produces if we are ever going to create technology that is truly ubiquitous in usage.

Several papers in the issue illustrate the transformative nature of the new ubicomp. Dearden et al., for instance, examine how to use cellular technology to address the basic need of providing food through improved farming techniques. Bringing external and local knowledge into one place. Their work addresses core development needs and shows how digital technology can help in this regard.

Rather than using technology to bring information to the developing world, Bidwell et al. explore how digital technology can be used to preserve indigenous knowledge; in this case, around herb lore. In their work, they show how assumptions subconsciously built into technology from the developed world do not properly mesh with the ways in which the Namibian lore experts wish to express and store their knowledge.

In putting together this special edition, our goal has been to challenge established views of ubiquitous computing—we can no longer focus solely on vertical ubiquity (where

there are many computers in a given location) but must consider horizontal ubiquity, where computers and computer networks are present across the entire planet and affects every one of us. In fact, we believe that what is now considered the developed world will come to be seen as the “over-developed” world, as the other 80% of the planet explores what is possible with a single handset and a global network.

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