



INTERVIEW with the late Gary Marsden

Gary Marsden died suddenly and unexpectedly in December 2013. He was only 43. He was a professor in the Computer Science Department at the University of Cape Town. His research interests spanned mobile interaction, computer science, design and ICT for Development. He is a co-author of a book published in 2015, with Matt Jones and Simon Robinson, entitled, *There's Not an App for That: Mobile User Experience Design for Life*. He was also a co-author of *Mobile Interaction Design*, which was published in 2006. He won the 2007 ACM SIGCHI Social Impact Award for his research in using mobile technology in the developing world. He made a big impression on the HCI world. We have decided to keep his interview from the 3rd edition.

Gary, can you tell us about your research and why you do it?

My work involves creating digital technology for people living in Africa. Most of this work is based on designing software and interfaces for mobile cellular handsets as this is currently the most prevalent digital technology within Africa.

Because the technology is deployed in Africa, we work within a different design

space than those working in more developed parts of the world. For instance, we assume that users have no access to personal computers or high-speed Internet connections. We must also take into account different literacy levels in our users and the cultures from which they come. Not only does this affect the technology we create, but the methods we use to create it.

As a computer science professional, I want to understand how to create digital systems that are relevant and usable by the people purchasing them. For many people here, buying a cellular handset is a significant investment and I want to make sure that the discipline of interaction design is able to help deliver a product which maximizes the purchaser's investment.

How do you know if the systems that you build are what people want and need?

This is currently a hotly debated topic in the field and it is only recently that there has been sufficient work from which to draw conclusions.

The first challenge crops up in designing a system for people who have very little exposure to technology. For many of our users, they have no experience of

digital technology beyond using a simple cellular handset. Therefore, participatory techniques, where users are asked to become co-designers, can be problematic as they have no abstract notions of basic ideas like the separation between hardware and software. To overcome this, we often take a technology probe approach, allowing users to comment on a high-fidelity prototype rather than require them to make abstract decisions about a series of paper sketches.

For many of the systems we build, we are interested in more than simple measures of efficiency and effectiveness. Sure, it is important that technology is usable, but in the resource-constrained environment, it is critical that the technology is useful; money is too scarce to spend on something that does not significantly improve livelihood.

To measure impact on people and communities we often borrow from the literature on development and measure issues like domestication – the extent to which a technology is appropriated into someone’s day-to-day living. In a lot of our work we also partner with non-governmental organizations (NGOs) who are based in a community and are looking for research partners to provide digital solutions to problems they meet – for instance, we have worked with a voter education NGO that wanted to use digital technology to better inform voters about their choices in an upcoming election. In that project we would adopt the goals of the NGO (how much people understand their voting choices) as part of the success criteria for our project. Often NGOs have sophisticated instruments to measure the impact they are having, as their funding relies on it. We can use those instruments to measure our impact.

To understand how our participants truly feel about a system, we use ‘poly-

phonic’ assessment, as reported by Bill Gaver. The method employs unbiased journalists who interview users and report their assessment of the system. We have adopted this approach in our work and found it to be highly effective in gaining feedback on our systems. Furthermore, it overcomes a strong Hawthorne effect experienced by researchers who work in resource poor environments – users are so grateful for the attention and resources being given them, they rate any system highly in an attempt to please the researchers and keep them investing in that community.

At present, there is no clear consensus about how best to evaluate technology deployments in developing world communities, but it is clear that the technology cannot be evaluated solely on a human-computer interaction level, but needs to be considered on a livelihoods and community impact level.

Have you encountered any big surprises in your work?

My work seems to be endlessly surprising which, as a researcher, is highly stimulating. The first surprise when I moved here 12 years ago, was the penetration of mobile handsets. In an era when handsets were considered a luxury in Europe (1999), I saw people living in shacks talking on their mobile handsets. Clearly domestication was not an issue for cellular technology.

When I started to run research projects in Africa, I was surprised by the extent to which much HCI research and methods incorporated assumptions based in the developed world – for example, the issue I mentioned earlier around participatory design. Also, the early HCI literature I read on the internationalization of interfaces did not stand me in good stead. For example,

my colleague, Marion Walton, built one interface consisting of a single button on a screen. We asked participants to click on the button, but one participant was unable to do this. When we pointed out the button to him, he said, 'That is not a button, that is a picture of a button.' Of course, he was correct and we learnt something valuable that day about visual culture.

Finally, the environment in Africa leads to surprises. The strangest problem I have had was trying to fix a computer in rural Zambia that had suddenly stopped working. On taking the casing off, I discovered white ants had eaten the green resin out of the circuit board and used it to build a nest over the power supply (where it was warm). Although it now looked like

a beautiful lace, the motherboard could not be salvaged.

What are your hopes for the future?

My hope and my passion are to create a new generation of African computer scientists who create technology for their continent. Whilst the work I am engaged in may be helping to some small degree, it is not sustainable for outside people or teams to create new technology for everyone who lives in the developing world. As an educator, I believe the solution is to teach interaction design in African universities and empower Africans to create the technology that is most appropriate to them and their environment. ■