

# From the ZX Spectrum to smartwatches

Anna Cox takes Lance Workman through her life in human-computer interaction

**You're field of expertise is human-computer interaction (or HCI). I saw a great picture online, of you as a little girl in the 1980s showing your nan how to use an old BBC computer. Is this where the fascination with HCI started?**

I think probably it was. In fact in the 1980s the school where my dad then taught science got three of these BBC computers. It was a big thing to get computers in schools back then, and he brought one of them home for the weekend. Of course there was very little you could do with them – just a bit of basic programming. A few years later when the ZX Spectrum 81 came out my brother got one of those and I remember spending my birthday money on one. So from a young age having computers around was very normal for me. That photograph of me with my nan is a bit of a funny family story. This was this new big machine and she was very dismissive: 'Well it's all very interesting, but I really can't see these ever catching on!'

**To be honest HCI is an area I know very little about, I have always felt I really should. Why is it important for us to study HCI?**

The basic answer is that we all use computers all of the time these days. Just looking around this room – we have a voice recorder and a speaker phone. All of these devices have small computers inside. These sorts of things are everywhere – in our cars, in our offices and in our homes. So it is an interesting area to see what people are doing with them. And HCI grew out of psychology – it was one of its founding

disciplines. But now it has a range of areas such as design, sociology and a whole number of perspectives. One aim is to try to improve the design of the system to make it easier to use and to make it a better match to what people are trying to achieve. These days there is a lot of work on innovation. It has become very creative.

**Do you see yourself primarily as a psychologist?**

Yes, that's my home discipline. My



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undergraduate degree was in cognitive science and my work uses theories and methods from psychology in order to understand HCI. I'm not a designer. I don't create new technology – I study people who use technology.

**I see you are wearing a smartwatch – are you the sort of person who can't**

**leave their PC/smartphone/tablet alone?**

Well, this is something I study. A lot of people become quite stressed if they go somewhere and there's no wifi or they leave their phone at home by mistake. I think I'm not too bad. I tend to have quite strong boundaries between my work and my home life. So although I use technology a lot, it's not all about work for me. I tend not to look at work e-mail on my smartphone.

**So do you dissociate work from pleasure when you are using technology?**

I'm pretty good at keeping them separate. We actually published some work recently where we found people have separate e-mail accounts for work and leisure. We are starting to see people develop strategies to keep these separate. And I want this separation too. When I'm using technology for leisure I don't analyse my own behaviour. Sometimes you get a bit of an idea from how you use technology – but for the most part I manage to keep these separate.

**You have written about how people use their smartphones. I have decided not to own one, in order to avoid checking my e-mail all the time. Do you think that I'm doing the right thing in relation to work-life balance?**

There isn't really a right or a wrong here. I think it's about understanding what works for you and your own preferences and strategies. When people get stressed here it is because their preferences are not aligned with their behaviours. So for example, if you are the sort of person who really likes to be connected and you have an employer who says you can't access your work outside of the building – then you may find yourself staying in the office much longer. You might want to have more flexible boundaries between home and work – but your job does not allow for that.

Equally for other people, who like to leave the office and leave work behind but are required to be on call all the time, then they will find that very difficult. So it's about understanding your preferences and work styles and trying to find the sort of solutions that work best for you.

**Tell me about UCLIC.**

UCLIC stands for University College London Interaction Centre. We are a research department at UCL which is funded by both the Division of Psychology and Language Sciences and the Department of Computer Science – so half of us are employed in one

department and half in the other. We teach a few undergraduate courses in each of those departments – there's a final-year option both on computer science and on psychology. But our main teaching is a master's in HCI which has been running since 2004. Prior to that there was the ergonomics department at UCL which we grew out of.

### **Ergonomics is a bit of an old-fashion term these days?**

It's a term that is used mainly in Britain rather than in other parts of the world, where it is usually referred to as human factors – but those two terms are pretty much interchangeable. It is an area of thriving research. It has contributed to safety in a number of areas – for example, in aviation, in gaming and increasingly in medicine, where people are looking at how human factors are involved in all areas of hospital life and at errors that might occur due to human factors.

### **You are involved in developing a platform for assessment of cognition in dementia – how will this work?**

This project only started recently. In fact, our first big meeting is on Friday. The idea behind the project is that dementia is caused by problems in many different parts of the brain. Often we assume it affects the areas of the brain that are involved in memory. But equally it can affect the parts of the brain involved in vision. The aim of this project is to improve diagnosis of visual problems. So we plan to take existing tests and build them into a more automated system that makes use of those tests and of eye-tracking technology. We are looking to create a technological solution for testing so that people who are at high risk could get early diagnosis. It's all about automating the way that we diagnose visual problems related to dementia and perhaps increase the rigour in diagnosis and push that out into hospitals.

### **I read that you were involved in a study that suggests digital gaming during leisure time is associated with better recovery from working stresses, particularly when that gaming involves online interaction with other people.**

Gaming gets a lot of bad press, and we tend to think we should not spend time playing video games because it will be harmful. But there may also be benefits associated with these games, and some types of game more so than others. In our study we analysed the correlation between how long people spend gaming and measures of recovery from work-related stress. As part of this we asked

questions about the types of games people play. Of course there are many types of games from Candy Crush – which is just you and your phone – to much larger-scale, multi-player games that involve interaction on the internet using, say, Skype. In such games you have to interact with other people a great deal. You have to create teams and plan to work together. We found that when you are involved in that type of game you recover more rapidly from work-related stress. Of course this is a correlational study – so we can't for now say what is cause and what is effect here. Our findings show that people who are involved in playing that kind of game also score better on recovery from work-related stress.

We are following this up in the lab. We give people a horrible task to do to create a need for recovery and then we give them one of a set of interventions. In one you may play a game, in another you may watch TV and in yet another you may just sit there and read for 20 minutes. It's at an early stage but it looks like we get a difference in recovery depending on what kind of activity you have been involved in. It may well be that playing a social game after work really aids recovery.

### **Do you play games yourself, and if so do you play social ones?**

I wouldn't identify myself as a gamer as such – but I do play games. I play mainly casual mobile phone games and sometimes the social ones – like Words with Friends, which is a bit like scrabble. That sort of game may involve a little chat with a friend. So if someone plays particularly well I may make a comment. But most of the ones I play are not social. 2048 seems to be very big right now. It's a puzzle game where you are trying to match tiles and reach particular targets in the game. I enjoyed that one so much that I have told other people about it and then they have wasted large amounts of their lives!

### **Our lifestyle seems to have changed enormously in recent years because, as you say, we often carry computers around with us. Do you think overall this is a positive development?**

I think it's made lots of things easier. Much of the technology helps people to stay in contact with others they would have lost touch with. That's one of the positive things. The flipside is the fact that we are more connected to things like work, and this might bring some negative effects. In the main, people are really pretty good at finding ways of managing these things. That is one of the interesting things that

HCI has found – people don't all use a piece of technology in exactly the same way. It's really interesting to see how people have taken a piece of technology that was designed to be used in a certain way, but they have adapted it to fit in with their lifestyles in a way that works for them. So on balance, for me, recent technological developments are a positive thing.

### **HCI has moved on very rapidly – so what's the next big thing?**

Unlike most areas of psychology HCI doesn't have areas that people have been studying for years on end. Because the technology moves on so fast – the research that we do also changes very rapidly, otherwise it becomes out of date very rapidly. In terms of what is happening now and in the near future I think wearable computing, like smartwatches, is coming along very rapidly. Also activity trackers are being used more and more so there has been an increase in the amount of research here.

A problem with smartwatches is how can we input text on what is a very small screen? At the moment it is very much a notification screen which shows you what is on your phone. There are some ways in which you can use them as input devices – such as predetermined messages such as 'I'm on the next train' or 'I'll be home in time for tea' or whatever. But as it stands, given the size, it's very difficult to compose a new message via your watch. So that is the sort of thing that people are looking at right now and how it will have an impact on our lives in the future.

### **You talked about recovery from work stress – what about your own ways of recovering from work stress? I hear a rumour that you've done a bit of snowboarding!**

I can see you have done your homework! Yes I used to snowboard a long time ago – before I had any children. Then we stopped going because it's not very compatible with a baby. Then earlier this year we booked a holiday to go snowboarding – and I found it's just like riding a bike. I was a little bit nervous about doing it again after so long. But it came back straight away. The great thing about it is that you have to concentrate. If you want to disconnect from work snowboarding is great – because you can't think of anything else!

### **Finally, we've talked a fair bit about smartwatches. If we were to meet again 10 years' time, will we all be wearing smartwatches?**

Yes.