

## Distribution - craft and speckled computing

### **Craft Australia Research Centre**

presents, *Distribution - craft and speckled computing*, delivered by Sarah Kettley as part of the *WearNow* symposium held in Canberra in February, 2007. The symposium was held in association with *reSkin Wearables Lab*, a three week intensive research and development program initiated by ANAT in collaboration with Craft Australia, the Centre for New Media Arts (CNMA) and The Australian National University.

This short paper traces distribution as a common thread running through my work with wearable technologies. It has been developed from a talk originally given at *WearNow*, a symposium at the National Museum of Australia in Canberra, in February 2007.

In Scotland where I am based, five universities make up the Speckled Computing Consortium (Scotland). The research group is headed up by Informatics at Edinburgh, while I work within the Centre for Interaction Design at Napier. Speckled Computing is an emerging technology that could well have far reaching implications for wearables, and is envisaged as having immense implications for the ways we interact with and understand the world itself.

The vision of this European funded project is to continue and improve upon work done on Smart Dust at Berkeley in the United States, designing and building what will be the generic enabling technology of Ubiquitous Computing (Arvind & Wong 2004; Arvind 2006). The goal of the research is to redesign the components of a sensing, processing, wireless transmitter receiver at nano scales, allowing the complete package to measure just one millimetre by one millimetre by one millimetre. 'Speckz' will ideally be sprayable, may be painted onto surfaces or suspended throughout host materials, waiting to be activated, capable of self organising to maintain an efficient network, and giving constant feedback on the state of their environment. Applications may include the analysis of fluid dynamics, 'smart' visual fire escape aids, or talking toys. The interested reader is directed to the [specknet website](#) where there is an excellent and up to date overview.

The speckled world is one of distribution - there may be a failure rate of up to forty per cent of nodes in a network at any given time, but the network remains. It is an egalitarian vision in which the system is 'peer to peer' - every node is equal and roles are decided dynamically dependent on the task in hand and resources available. They are programmable semi conductor devices which can sense, compute and network wirelessly.

### **Speckled jewellery**

I entered Napier University's School of Computing as a jeweller seeking to retrain in multimedia, but became intrigued by the notion of wearable computing and stayed on to complete a PhD. I work with the Speckled Group developing social and cultural applications, and seek as a

craftsperson to treat the technology as a material with its own constraints and opportunities. An explicit craft perspective allows a designer to begin with materiality rather than imposing concepts and finding tools to fit. Concepts are instead encouraged to emerge through making and testing with users. This way of working is normal in the world of craft, even characterising our work to a large extent, but in the worlds of engineering, product design and new media art, it is unusual and challenging.

As a result I have also undertaken empirical research with local jewellers to uncover what it is crafts people think they are doing by working in this way, and to understand where the value is being created by craft as a cultural process (Kettlely 2005), and agree with Mazanti that it is a 'form of practice uniquely situated between art and real life' (2004). So it was that I began with a technology and sought to work with its characteristics towards expressive and social outcomes, rather than beginning with a 'need' and designing a solution; and one of the defining characteristics of Speckled Computing is distribution.

In researching conceptual frameworks for Interaction Design, I had come across a number that relied heavily on notions of distribution, such as social networks analysis, distributed cognition, and the interactive mind. Actor Network Theory in particular though, seemed to have a resonance with craft in its unwillingness to be pinned down. Latour describes it as a framework of uncertainty in which groups are formed but do not exist and meaning is constantly changing (2005). 'Actors' may include both humans and non-humans, objects and ideas, beliefs and institutions, groupings of actors, histories and visions for the future. Actors are those entities which have an impact on meanings that are made, something that craft objects undeniably do.

A key driver for the research had been the everyday, and in looking for a way to describe the everyday, these distributed models led me to identify the friendship group as a crucial unit type of user group for interaction design, a building block of the wider social fabric. In looking for a design space within which it would be possible to observe the nature of distributed meaning, it seemed important to define a user group that had its own existing social ties, rather than amassing a 'sample' from a given demographic. The five women who took part in the doctoral work were already a loose friendship group, and through their talk around the networked 'Speckled Jewellery' I made, I was able to get at how they made meaning together as a group, and what meanings they made concerning the jewellery (Kettlely & Smyth 2006). The individual jewellery objects are explicitly treated as parts of an interconnected system of meaning realised through an Actor Network of humans and artefacts, and the experiences and narratives woven around them are treated as emergent, dynamic, and collaboratively formed.

## **ensemble**

*ensemble* is the most recent project I have been involved in. It was supported by the Arts and Humanities Research Council UK through an Arts and Technology Fellowship award, and again made use of Speckled Computing. This work was no longer concerned with the everyday but with

the performative possibilities suggested by formal aspects of jewellery on the body. The aims have been two-fold: to open up assumptions of loss of privacy in wearable computing, and to investigate the way in which participants adopt artefacts in the space by taking on a 'demeanour' (Candy & Edmundsen 2006).

Initial sketches around the themes of movement and touch in jewellery were developed into technology-free prototypes to be used in a movement workshop. Participants were invited to try on and play with objects and jewellery, and to comment on how they felt about them on themselves and on others. The feedback this session generated was very rich in terms of understanding the power of lifeworlds to delimit choices in adornment, and gave insight into how proprioception, the feeling of being in our own skin, is changed by the introduction of new objects as actors in the body's space. This data fed back into the design process to inform the build of the final interactive pieces.

The jewellery was just one part of a larger work and was combined with sound to create an installation. Eight pieces were arranged around a space, each one associated with a speaker, and each speaker associated with a single channel in the soundscape. When a piece of jewellery was manipulated, the sounds in the associated channel were modulated - pitch or tempo might be increased for example.

The project sought to discuss issues of privacy in wearable technology by offering a space for turn taking and reciprocal disclosure of personal information, and the soundscape was designed to conceal pre recorded personal stories. These would be revealed as participants found ways to give and take in interaction through the jewellery objects. In the first installation of the work, this turn taking has been somewhat compromised by the decision to focus on a single, more poetic narrative, rather than including all those collected over six months. Plans are underway to show the work in differing formats, giving the research team a range of different insights into user experience.

## **Summary**

Like the doctoral work, *ensemble* took Actor Network Theory and distribution as key concepts in trying to understand people's experiences of wearing jewellery. A person wearing or even carrying an object is a new composite actor in the eyes of ANT, a different actor than they would be without that object. The radical example is the man-with-gun actor, where neither can shoot without the other. Adornment acts with us to create new meaning in the social environment, and we use it as a prop with which to collaborate socially in meaning making. Within the technological jewellery object, neither aesthetics nor function is paramount, but rather each is an element which is called into play as an actor by makers, wearers and viewers (to borrow a phrase - see Cunningham 2004). Because of this, such jewellery is flexible in how it is made sense of, and plays a range of expected and new, hybrid roles in the social space.

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March 2007

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## Acknowledgements

*Ensemble* was an Arts and Humanities Research Council funded project under the Arts and Science Research Fellowship Scheme (No AR1125551). The team members were Michael Smyth (named applicant), D. K. Arvind, Frank Greig, Iain MacGregor, Ben Paechter, and Sarah Kettley (fellow). Thanks are due to Vangelis Lympouridis for his important assistance with the soundscape design.

Sarah Kettley was able to attend reSkin, ANAT's media lab for wearable technology through Lottery Funding generously awarded by the Scottish Arts Council, (award number L200711443).