Ubiquitous computing technologies are defining an emerging cultural fabric that is becoming interwoven into everyday life and giving form to ‘digital culture’, through which human meaning and communication derives from the potentials of such technologies. As the pervasive and ambient computing agendas move forward, the possible augmentation of both physical space and the human body with small lightweight sensing and transmitting devices opens up many possibilities for new forms of communication, social interaction, digital experience and community involvement.

While many researchers point to a future in which social interaction, personal well being, and sense of community are enhanced through such technology, others point to a vision that raises concerns around power, privacy, control and personal liberty (McCullough 1996, Cooper 1999). There is thus a need for improvements in theory, design methodologies and practice to ensure that future developments are appropriately human-centred, so as to enhance people’s quality of life rather than detract from it.

Researchers in human-computer interaction have begun to address these issues in a number of ways. Norman (2004) and others have begun to address emotional design, Shneiderman (2002) has argued for human needs analysis that is culturally and personally sensitive. However, the practice of wearables development (i.e. technology worn on, in, or close to the body) is predominantly technology-driven. Commercial proposals have in general been superficial realisations of the potential for digital jewellery that have exploited the body as an opportunistic site for pervasive technologies (Wallace & Press, 2004). The emphasis has been one of technological advancement, in which behaviour, services and functions of more conventional devices have been embedded in objects to be worn in pre-defined ways for pre-defined purposes and activities (IBM 2000; Nokia 2000).

By placing a jewellery at the centre of our research programme we endeavour to address notions of power, privacy and control through a recognition that the sense of making is important; the sensitivities within craft are more than the physical sense of making; the empathic and relational emotional sensibilities in craft practice enable it to be a significant form of practice when designing and making objects that have the potential to operate in an emotionally significant way for individuals. In our previous work we have identified parallels and connections between craft practice and what we call the felt life of experience (McCarthy & Wright 2004). This offers a new approach to understanding people’s relationship with technology, exploring it as experience in terms of its emotional and sensual qualities. In all contexts experience is a complex and obscure term and we contend that whilst we may not be able to design an experience per se, we may design environments which offer the potential for certain varieties of experience.

Intriguingly, elevating the notion of craft, within a digital culture, is a challenge to both the process and context of craft itself (Press & Cusworth, 1998; McCullough, 1996). Indeed, craft practitioners cannot presume that there is relevance for craft objects and craft processes in a world where digital technologies and associated objects are increasingly prominent in public and private lives. Craft practitioners need to communicate and assert the value of this particular set of skills, approach and perspective. However, this craft-centred exploration of the digital domain has the potential to provide insights into interaction design that could be of value more generally. For example, by developing new ways of engaging designers with users’ experiences (Wright & McCarthy 2005) and defining new goals and criteria for human-
centred design such as empathy and enchantment (Wallace & Press 2004; McCarthy, Wright, Wallace & Dearden 2006).

Digital jewellery is, in part, a vehicle for exploring our broader objectives, the insights that the practice of craft (jewellery design) can afford in a specific interaction context. Our previous work on human experience (Wright, Blythe and McCarthy 2006; Wright, and McCarthy 2005; Wright, McCarthy and Meekison 2003) has critiqued some approaches to user-centred design for its over-emphasis on simplistic, and essentially static, categorisations of the individual “user” and use context (e.g. designing for children, or schools, the elderly living at home, the knowledge worker’s office, etc.). Our approach to experience-centred design emphasises a more open, process-oriented view, where the accent is on the dynamics of change. Through the design of digital jewellery we hope to explore aspects of family experience.

Process

A practice-centred methodology has been developed rooted in craft practice where the research tests the appropriateness of contemporary jewellery as a creative strategy and research tool in the further development of ubiquitous digital technologies. Key to this is the formation of an interdisciplinary team of researchers, from art, design & craft, computing science, and electronics.

Jewellery allows us to explore the, often intimate, spaces created by interpersonal relationships and communications. The role of a contemporary jeweller is not to add an aesthetic to a technology, but to force much bigger questions and issues; questioning motivations, relevancies, and forms of digital objects and interaction. Crucially we consider how jewellery can act to play a role within what we each consider personally meaningful for us in our lives, in an emotional context, and how the expression of fragments of this can be enriched through the integration of digital technologies.

Extending our previous work (Wallace (2006), Wallace, Dearden & Fisher (2005), Wallace (2004), Wallace & Press (2004), Wallace (2003), Wallace & Press (2003) ) we focus on criteria of personal emotional significance in the personal histories of individual participants. This involves using shared stories and personal biographies as inspiration for highly personal and emotionally based jewellery and digital interactions. Examples of pieces resulting from this process are ‘Sometimes’ (figure 1) and ‘Blossom’ (figure 2)

![Figure 1 ‘Sometimes’ (stills from video) Jayne Wallace](image)

The form and digital potential of the neckpiece “Sometimes” (figure 1) refer to objects, memories, human connections and experiences, which are described as meaningful by the participant. The digital potential of the jewellery is to trigger a small number of silent filmic image sequences, of personal significance to this particular wearer, on digital displays in the near radius to the necklace. The digital potential is future focused, where these sequences could occur on digital screens and displays in a personal or public environment. The digital occurrences are not intended to be frequent; they will only happen rarely and in randomised succession. The quietness of both the jewellery piece and these interactions mean that the
hustle and bustle of a location are not altered, only the imagery draws attention to the event, indeed the 'digital visit' may be missed entirely or glimpsed as it fades.

The imagery will have a particular meaning for the wearer, but is not identifiable to others as belonging to the wearer. The films of a white horse in marshland and a pastry cutter making indentations in pastry are sufficiently ambiguous to open up interactions for other people who see them. The necklace has an ambiguity of function, there are no buttons, no obvious ways of controlling the digital aspects of the piece and in extension to this the necklace remains visually dormant, using other digital devices and displays as vessels for the visual interactions.

“Blossom” (figure 2) is a hand-worn piece, made from wood, glass, silver and vintage postage stamps. The form and digital potential of the piece refer to the participant's shared love of nature, precious relationships with her Grandmothers, connections to family and family land in Cyprus.

![Figure 2 'Blossom' Jayne Wallace](image)

This piece is made to act essentially as a connection to human relationships and to a specific place. The jewellery object, residing with the participant in London, is connected to a rain sensor, planted on the participant’s family land in Cyprus. Inside the glass dome of the jewellery piece the old Cypriot postage stamps are closed like the petals of a flower, attached to a mechanism, waiting to receive a signal sent initially from the rain sensor. Once the rain sensor has registered a predetermined quantity of rain in Cyprus, which may take months or even years a signal is sent to the jewellery object and the mechanism is activated, slowly opening the petals like a flower blossoming. The piece sustains the flower metaphor further by blossoming only once.

The object acts as a memory trigger through its form and materials to past relationships experienced by the participant and as a connection to a specific place as the events of nature in one geographical location influence the internal physical form of the jewellery object in another. The jewellery piece involves a passive interaction and an ambiguity of function. The piece relates to time, and preciousness. It offers a way of viewing objects with digital capabilities in an atypical way, one that echoes and values the fleeting quality of many of our experiences and the lasting quality of many of our feelings for other people. It uses digital technologies as a way to harness the ephemeral characteristics of a flower blossoming, rather than for the more common uses of digital technologies of repeatability and immediacy.

**Intergeneration project**

We are currently engaged in a project that concentrates on the concept and design of shared digital jewellery objects for two family members, from different generations. We are working with a mother of 75 and her daughter of 45. Our methods and approach echo our past research, again focusing on meaningful personal experiences from the participants’ lives. Unlike past projects, however, we aim to make jewellery for two people, and to echo fragments of personal emotional significance for both. The neckpieces (“Journeys between
ourselves” Figure 3) are made from porcelain, paper, felt, light sensors, motors, motes, accelerometers and batteries.

Figure 3 'Journeys between ourselves' Jayne Wallace (in collaboration with Dan Jackson, Cas Ladha, Patrick Olivier, Andrew Monk, Peter Wright and Mark Blythe)
These images show the pieces almost completed.

The pieces are a response to shared images, stories and experiences from both participants and centre largely on the role of specific books in their lives. Light sensors in each piece detect a wearer touching and holding the porcelain form. The partnering piece then softly trembles in response. We developed this haptic and tactile way of interacting with the neckpieces with the hope of facilitating a gentle, human centred mode of communication. We consider the resulting reflection and critical analysis of this dialogue as an important output of this research endeavour. Our intention is not to dictate to our participants an intended function, role, or context of “use”, but to explore our participants’ feelings about the pieces and their significance in their lives and relationship.

References


