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Remembering today tomorrow: Exploring the human-centred design of digital mementos

Simon Bowen[a],*, Daniela Petrelli[b]

[a]*Art & Design Research Centre, Sheffield Hallam University, Furnival Building, 153 Arundel Street, Sheffield S1 2NU, UK*
[b]*Information Studies, University of Sheffield, Regent Court – 211 Portobello Street, Sheffield S1 4DP, UK*

Abstract

This paper describes two-part research exploring the context for and human-centred design of 'digital mementos', as an example of technology for reflection on personal experience (in this case, autobiographical memories). Field studies into families' use of physical and digital objects for remembering provided a rich understanding of associated user needs and human values, and suggested properties for 'digital mementos' such as being 'not like work', discoverable and fun. In a subsequent design study, artefacts were devised to express these features and develop the understanding of needs and values further via discussion with groups of potential 'users'. 'Critical artefacts' (the products of Critical Design) were used to enable participants to envisage broader possibilities for social practices and applications of technology in the context of personal remembering, and thus to engage in the design of novel devices and systems relevant to their lives. Reflection was a common theme in the work, being what the digital mementos were designed to afford and the mechanism by which the design activity progressed. Ideas for digital mementos formed the output of this research and expressed the designer's and researcher's understanding of participants' practices and needs, and the human values that underlie them and, in doing so, suggest devices and systems that go beyond usability to support a broader conception of human activity.
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1. Introduction

"*meaning, not possessions, is the ultimate goal of [people's] lives, and the fruits of technology […] cannot alone provide this. People still need to know […] that they are remembered and loved, and that their individual self is part of some greater design beyond the fleeting span of mortal years.*" (Csikszentmihalyi and Rochberg-Halton, 1981, p. 145).

Designing for the personal sphere requires a change of perspective: from technology-focussed (efficiency and effectiveness at work) to human-focussed (aspirations and desires at home). Technological advancements and improved capabilities are undoubtedly exciting, but a blind adoption might lead to design in the wrong direction. Evaluations of implemented smart home technology, for example, showed there is still the need to better understand the environment where people live, and the meaning they attach to it, rather than simply realising new technological possibilities (Taylor et al., 2007).

In a similar vein, life-logging now allows recording of every conversation, computer interaction and piece of information encountered, as well as audiovisual logging of personal experiences (Bell and Gemmell, 2007; Kern et al., 2007; Mann, 2004). This approach fails to understand people's motivations for remembering past experiences and what they value as mnemonic representations of their lives. Some work has looked critically at life-logging (e.g., Sellen et al., 2007; Harper et al., 2008), but the starting point is still life-log data already collected. Our approach in developing technology that supports personal memories started at the opposite end and focused on motivations and values. Instead of looking at what use people may have for life-logging we looked at what they considered worth

*Corresponding author: Tel.: + 44 114 225 6748; fax: + 44 114 225 6702.
E-mail addresses: s.bowen@shu.ac.uk (S. Bowen),
d.petrelli@shef.ac.uk (D. Petrelli).

remembering and how technology could be designed to support this highly personal activity.

This paper describes our collaborative work as researcher (Daniela) and designer (Simon) to understand the potential for the digital equivalent of mementos, as objects that prompt personal reflection on past experiences. Such *digital mementos* (as we conceptualised them) might be digital devices to aid remembering or traces of people's digital lives that become mementos (such as the emails they send or receive, the photographs they take, the websites they visit), or a combination of both. Daniela's field studies of families' practices and objects for remembering provided insights that were developed by producing ideas for digital memento devices and software in discussion with those who might use them. Simon led this design activity applying a methodology where provocative 'critical artefacts' were used to stimulate ideation. Fig. 1 illustrates the sequence of activities and our roles in each.

Both field studies and design activity were human-centred, a term we use instead of user-centred recognising: the need to firstly understand meanings and values and the way they can affect the use of technology (Strain, 2003; Frohlich and Kraut, 2003); the need to consider the numerous stakeholders affected by a product or system as well as its users; that design should advance human dignity rather than unquestioningly produce usable, marketable or desirable products and systems (Buchanan, 2001); and that over-reliance on a single conceptualisation such as 'the user' (or 'the stakeholder', etc.) can stifle creativity (Wright et al., 2006).

In this work, reflection is not only the final products' function (ideas for digital mementos), but also the means by which the enquiry progressed. Reflection was core to the field studies, discussed in Section 3, that encouraged participants to think about their own life and what was of value to them, and what was worth preserving for the future. Reflection prompted by 'critical artefacts' was a central principle of the design methodology, discussed in Section 4, which explored possibilities for digital mementos with groups of stakeholders in an open and exploratory manner.

2. Related work

2.1. Personal memories and digital technology

While much research in HCI has looked at personal reminiscence with photos (Crabtree et al., 2004; Frohlich et al., 2002; Rodden and Wood, 2003), only a few studies explored how digital technology could support affective personal memories.

Narrative and sound has been considered very evocative in personal recollection and a few studies investigated this concept. The *Memory Box* (Frohlich and Murphy, 2000) works as a jewellery box: recorded narrative is attached to a souvenir that then plays when the object is removed from the box. Children used it as a personal journal, while adults perceived its value only if the narrative-enriched objects were given/received as gifts – but not for personal use. The work identified a clear need for a self-contained, simple technology for recording and playback. *Sonic Gems* (Oleslik and Brown, 2008) provide a tangible interaction with sounds: an audio device is embedded in a ball-like case (a gem) and is triggered when the gem is taken out of a bowl. The design derives from a field study conducted in the home investigating the evocativeness of domestic sounds, and confirms that audio has potential for capturing sentimental memories, although much research is needed to explore effective human interaction with digital sound. The *FM Radio (Family Memory Radio)* (Petrelli et al., 2010) is a first step in this direction: technology for uploading and playing back self-registered sonic souvenirs was imbedded in an old fashion radio and evaluated with families that listened to sounds recorded in their previous year's holidays (Dib et al., 2010). The results show that a new and innovative design, departing from the tradition of technology-centred appliances, is more appealing in the home context and could afford a natural interaction with digital belongings.

Two design studies have investigated the interaction possibilities offered by enriching objects and memorabilia with sensors for the purpose of personal recollection. The *Living Memory Box* (Stevens et al., 2003) is intended to support the collection, archiving and annotation of family memories. In the design concept proposed, the *Living*
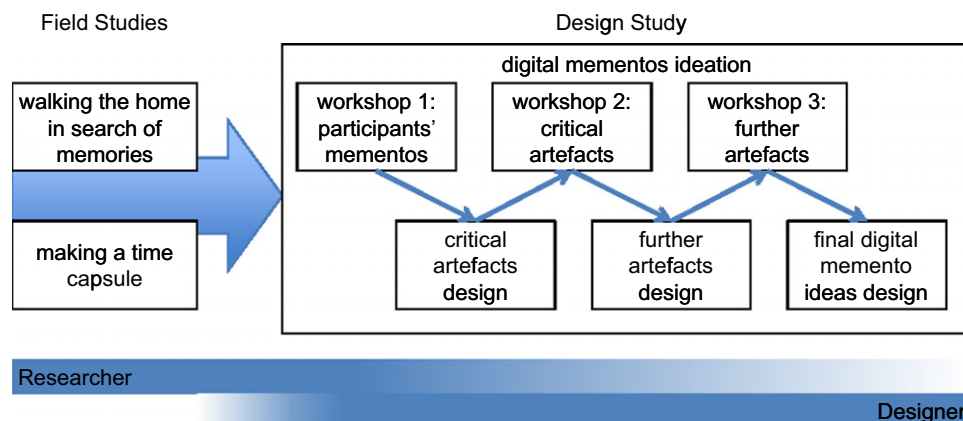

Fig. 1. Overview of field studies and design study.