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journal homepage: [www.elsevier.com/locate/ijhcs](http://www.elsevier.com/locate/ijhcs)Photo mementos: Designing digital media to represent ourselves at home<sup>☆</sup>Daniela Petrelli<sup>a,\*</sup>, Simon Bowen<sup>a</sup>, Steve Whittaker<sup>b</sup><sup>a</sup> Art & Design Research Centre, Sheffield Hallam University, Cantor Building, 153 Arundel Street, Sheffield S1 2NU, UK<sup>b</sup> University of California at Santa Cruz, Psychology Department, High St, Santa Cruz, CA 95064, USA

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## ABSTRACT

We examine photos in the family home as examples of *mementos*, cherished objects kept in memory of a person or event. In a ‘memory tour’, we asked participants to walk us through their family home selecting and discussing significant mnemonic objects. With each personal narrative we recorded memento location, i.e. the room, place within the room and any nearby objects. Although photos were not the most popular mementos, when chosen they were highly significant, and often unique. These photo mementos were usually not representational but symbolic, where only the owner knows their many layers of meaning. Photos from different times in the person’s life were strategically placed in different rooms. Their location afforded different functions, e.g. photo mementos in family spaces reinforced family bonds, photo mementos in personal spaces were for immersive reminiscing, whereas those in public rooms had an aesthetic value and to spark conversations with visitors. Finally photo mementos were rarely isolated: they were clustered in displayed albums or stored with other memorabilia in boxes or drawers to represent a stage in life. We explore the implications of these findings by designing potential new home photo technologies, looking at how new designs might support the types of behaviours observed. Through four conceptual designs we examine how photo technology might integrate into the practices and aesthetic of the family home. The concepts led to a set of concluding considerations that need to be taken into account when designing new forms of display technology that are part of a larger domestic photo system.

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## 1. Introduction

In more than a century of practice, photos have been the subject of investigation in philosophy, anthropology and sociology. The meaning of photos and the role of photography in human history have been investigated in cultural studies. Photography is a multifaceted medium that supports human activities as diverse as: documenting reality for historical purposes (social history); expressing, provoking and communicating one’s feelings (photography as art); supporting and spreading a commodity culture (advertisements) (Wells, 2004). Although photography may seem to be an objective capturing of reality, it is not neutral as it reflects the photographer’s values and viewpoint (Price, 2004).

Since the early days of photography personal pictures have played an important role in the *domestic* environment. “Home photography was not for public display, but for fun amongst friends” (Holland, 2004, p. 118). The formal albums of the Victorian

middle-classes may have evolved into a (more or less organised) collection of snapshots of the ‘Kodak’ generation, but the essence of home photography has not changed. Amateur photographers create an individual view, deciding how to represent themselves and the world around them. Chalfen (1987) showed that even in a domestic context, photographs reconstruct a partial view of reality, following a number of social constraints and expectations, e.g. photos tend to be of ‘happy memories’ even in time of deep economic crisis. Photos should therefore be interpreted as “cultural artefacts surrounded by social and cultural context” (Chalfen, 1987, p.161). Similar arguments on the semiotic value of photos as situated artefacts are put forward by Edwards and Hart (2004). Photos, particularly those to which we give prominence through framing and display, have a physical presence; they are image-objects with a function beyond the recording of events and relationships or the deliberate sharing of experiences in social settings (Edwards and Hart, 2004). Indeed, photos are often on display at home to construct identity: “photos serve the purpose of preserving the memory of personal ties” (Csikszentmihalyi and Rochberg-Halton, 1981). By persistent display, photos become part of the fabric of our homes and contribute to *autotopographies*. An autotopography (Gonzalez, 1995) is a “private-yet-material

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memory landscape ... made up of the more intimate expressions of values and beliefs, emotions and desires that are found in the domestic collection and arrangement of objects" (Gonzalez, 1995, p. 133). "In the creation of an autotopography – which does not include all personal property but only those objects seen to signify an 'individual' identity – the material world is called upon to represent a physical map of memory, history and belief. The autobiographical object thus becomes a prosthetic device: an addition, a trace, and a replacement for the intangible aspects of desire, identification, and social relations." (Gonzalez, 1995, p. 134)

The work reported in this paper follows Chalfen (1987) and Edwards and Hart (2004) in making arguments that photos must be understood in context of their display, together with other objects in place, and interpreted through the values expressed by their owner. Understanding photos in context is essential for our goal of identifying principles for the design of digital photo technology that integrates with the home and supports people in expressing their values. Not all personal belongings become part of an autotopography, and likewise not all personal photographs carry the same type of meaning. Our attention here is not directed toward all personal photos or all forms of display. Instead we focus on those few photos specifically selected as important, highly affective and expressing value: "The photographs that we keep for ourselves [] are treasured less for their quality than for their context and for the part they play in confirming and challenging the identity and history of their users." (Holland, 2004, p. 117). Our field study was designed to go beyond exhaustive enumerations of domestic objects and their functions such those collected by Csikszentmihalyi and Rochberg-Halton (1981).

Our participants selected and described their own mementos while walking through the different rooms of their home. This self-directed approach, with the participants leading the tour, the self-selection of objects and their directing the conversation engendered rich personal narratives, allowing affect and emotion to emerge. This approach is motivated by autobiographical memory studies (Brockmeier, 2010) that see narrative as core, as the main way personal experiences are communicated to others and to ourselves: "We are at once authors and reader of our stories [] As readers we are continuously re-exploring the significance of earlier episodes of the story in light of what transpires later". A rich, self-directed narrative is essential for the interpretation of a memento that is the anchor of the memory into the material world and acts as mediator between past and present, the self and the others (van Dijk, 2007). The photographs discussed in this paper have the same expressive symbolic properties: they are artefacts, three-dimensional objects, deliberately made and collected, having a role in building identity and maintaining connections (Edwards and Hart, 2004). The openness of our approach allows the "user" of the picture to do the talking: "Users bring to the image a wealth of surrounding knowledge. Their own private pictures are part of a complex network of memories and meaning with which they make sense of their daily life." (Holland, 2004, p. 117).

There are two main contributions of this paper. The first is the new data and analysis we present about how photographs function in an ecology of personal objects that express memory and identity in the home, unpacking the role photographs play in this context. We collect and analyse expressive participant narratives about these complex sets of contextualised personal photos. That analysis shows how *type* of pictures, the display *location* and its *function* are all interrelated. The second contribution is to use this analysis to generate *new design concepts* for innovative display devices and systems for the home, reflecting on general principles for such technology. This complex network of physicality and meanings is instrumental to the conceptual designs we put forward to illustrate principles for a more affective relation

between people and their personal digital photos in domestic spaces.

The paper is structured as follows. In the next section we review HCI work on digital photos. Section 3 describes the field study: the methodology, the data collection, and a summary of results. Section 4 discusses the findings in detail, every subsection covering a topic, namely: the role of photos as mementos; the relation between different formats of photo display (or photo concealment) and their meaning for the owner; the relation between location and use; and the importance of the home aesthetics for the development of digital photo technology. Section 5 describes how design was used to further explore our insights into home practices around photo mementos, and the four conceptual designs we produced. Section 6 discusses general implications for the design of domestic digital photo display technology, combining insights from the field study and design work. Section 7 concludes the paper.

## 2. Related research on personal digital photography

Digital photography has excited the interest of researchers since its inception. We review aspects of the huge literature most directly related to this paper: techniques for photo management; the social dimension of digital photos; and digital photo displays at home.

### 2.1. Systems for capturing, organising and retrieving photos

Much research in computer science has focused on new systems to support users in organising and retrieving personal digital photo collections. Central to these systems is the idea of capturing context to facilitate later retrieval. Early research used the metadata available on the camera, e.g. place and time captured through GPS and camera-timestamp, to automatically organise photos with respect to space and date (Chen et al., 2006). Content analysis was then introduced to complement metadata in clustering photos: colour analysis and time to detect a scene and mark an event (Platt et al., 2003; Cooper et al., 2005); content analysis and GPS information to automatically identify relevant buildings (O'Hare et al., 2005); and face recognition to organise personal photos into albums (Zhang et al., 2005). This trend of enriching metadata has expanded to include other contextual information such as weather conditions (Naaman et al., 2004), movement detection (to detect walking or standing via accelerometer data in a SenseCam (Qui et al., 2011)), tags and social use (Sawant et al., 2011). All these techniques performed well in lab evaluations, but studies in the home show that people do not use photo systems to organise their collections and often fail when retrieving (Whittaker et al., 2010). While one might argue that it is just a matter of time before photo management software is widely adopted, evidence show that advanced features (such as content analysis and speech annotation (Rodden and Wood, 2003)) are not used and not generally found to be useful.

Besides technology-focused research, managing photos has also been explored in terms of workflow. An early analysis showed several workflow phases: capturing and editing on camera; downloading onto a PC, editing and backup; preparing for printing or sharing (Kirk et al., 2006). Further studies showed how many people and multiple devices are part of a complex ecosystem of home photography (Neustaedter and Fedorovskaya, 2009). A distinction between management of the digital and the physical emerged in several studies that identify tensions between house members who find themselves unable to retrieve valued photos that have been organised by others (Neustaedter and Fedorovskaya, 2009; Durrant et al., 2009).

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