
Materializing and Crafting Cherished Digital Media

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Abstract

People's digital media collections are often large and poorly organized. In sharp contrast to collections of physical possessions in the home, in the digital realm there are few possessions that are considered special. As a result, digital possessions are infrequently used, e.g. for reminiscing or storytelling. By studying cherished physical and digital possessions and designing novel products or systems, this PhD explores how digital media can become more cherished. More specifically, newly created designs will aim to integrate physical and digital realms and encourage novel creation or augmentation of digital media, here called *digital craft*, as a promising means to increase attachment to digital possessions.

Keywords

Physical and digital media; cherished objects; craft; design research; interaction design

ACM Classification Keywords

H.5.2 [Information Interfaces and Presentation (e.g., HCI)]: User Interfaces – User-centered design; H.5.m [Information Interfaces and Presentation (e.g., HCI)]: Miscellaneous;

Context and Motivation

With developments in technology people are nowadays collecting huge amounts of digital media, such as photographs, videos, and e-mails. These ephemeral possessions accumulate alongside physical possessions, which have been a subject of material culture studies for some time [e.g. 2]. As people spend more and more time working with digital media, their digital possessions play a role in everyday life, memories, and communication just as their physical possessions do. Capturing, storing and sharing digital media can thus be seen as an extension of the collection and use of physical possessions, which are still kept and cherished. Studies in HCI and social sciences have informed the design of novel systems that integrate the physical and digital realms by looking at the practices of storing and using cherished physical and digital things [e.g. 7, 9].

Without exception these studies have found that people have more difficulties finding cherished digital possessions than physical ones, which indicates the physical has certain affordances over the digital. However, in addition to the ubiquitous role of digital media in everyday life, cherishing a small collection of digital possessions can support meaningful use of media and limit digital overload [11]. Therefore, this PhD research aims to explore the possibilities of combining physical and digital media to support the selection and creation of cherished digital possessions.

Background and Related Work

While current media technologies allow us to capture and store huge amounts of digital data, media archiving systems have not developed as rapidly. People experience great difficulties in organizing their vast media collections: they do not know what they have, cannot retrieve certain files, and hardly ever access their files [3]. At the same time they have few digital possessions that are special to them. While media archives are growing, the time people have at their hands to organize and use their media is diminishing, which has led life-logging approaches to aim for effortless 'total capture' and management of everyday digital media [1]. In contrast to these effortless management objectives studies have shown that the few digital possessions that are special and cherished are often self-made, augmented, changed through use over time, or have been in other ways the focus of engagement for a longer time [e.g. 5, 8]. Specific examples, such as time capsules [10] and technology heirlooms [6] have aimed to increase engagement and time spent with (digital) media, and have resulted in increased attachment to these media. This indicates that increased engagement and time spent on the

creation or augmentation of digital media, or *digital craft*, is a strong motivation for cherishing digital possessions. The PhD research will therefore be centred on support and encouragement of digital craft.

Statement of Thesis

This PhD research explores how craft with digital media can be supported with newly designed products or systems that integrate physical and digital media and interactions.

First, this includes answering the following research questions regarding the physical-digital integration: 1 - What are the affordances of physical and digital media? 2 - How can digital media best be materialised through different kinds of objects or physical interaction? 3 - How can physical objects be augmented with digital media?

Second, it includes exploring the notion of craft in the combined physical-digital domain: 1 - What would people like to create in the combined physical-digital realm? 2 - What media is used for crafting cherished possessions? 3 - How would people want to use their crafted possessions? 4 - What newly designed tools or systems could support people in crafting combined physical-digital possessions?

Research Goals and Methods

The PhD project employs a design research approach: combining product design and scientific research by using research methods to conduct experiments and draw knowledge from prototypes [4]. More specifically, the main body of work will be a number of design iterations consisting of the development of prototyped products or systems that can support digital craft, and

qualitative user evaluations of these prototypes. These design iterations will inform the exploration of craft in the digital domain as well as questions 2 and 3 about the physical-digital integration, by aiming for design solutions that integrate elements from the physical and digital realms.

Insights in craft will further be gathered through a literature study across HCI, design and social sciences addressing traditional craft, and the use of digital media for crafting and sharing the results of craft. The physical-digital integration has further been informed by a focus group study done in the first year of the project. This study explored cherished physical and digital possessions and physical-digital integrations through a semi-structured explorative discussion and a variety of design exercises.

Research Situation and Dissertation Status

This PhD project is a collaboration of the Digital World Research Centre at the Department of Sociology, University of Surrey (UK) with the Department of Industrial Design, Eindhoven University of Technology (The Netherlands) and is sponsored by Microsoft Research Cambridge through its PhD scholarship program. The PhD is primarily HCI focused but will have a multidisciplinary character because of my background in interaction design and current position in the sociology department. As such, I will combine methods and theories from social sciences with design research. I am currently at the end of the first year of the three-year PhD program and I aim to defend my research proposal by January 2012 and finish the PhD by October 2013.

In the first year of my studies I have undertaken a broad literature review, conceptual design work, and a focus group study, the results of which have helped to direct the project as outlined in this document. The focus group study, consisting of two 2-hour sessions with a total of nine participants, was done to compare value of physical and digital cherished objects and explore issues of transitions and integrations of physical and digital media. As a preparation participants were asked to select cherished physical and digital possessions from their homes, which were used as input throughout the sessions. An analysis of 24 physical, 14 digital and 6 hybrid (physical instantiations of digital information [7]) selected objects showed that one of the main reasons for valuing digital possessions is craft, often accompanied by a sense of accomplishment. This finding initiated the direction for research into craft in the digital realm as a means to increase attachment to digital media.

Further, participants' difficulties in categorizing physical and digital objects illustrated that the definitions of physical and digital are changing and more and more products sit between physical and digital or combine elements of both. However, in current products the physical is often primarily a carrier for digital content and interesting possibilities can be explored by considering new forms of integration of physical and digital, for example by exploiting material properties or through tangible interaction.

Finally, the visibility of physical and invisibility of digital media appeared to influence their potential for support for memories, sharing, and defining and displaying identity. This confirmed that combining the visibility of the physical with the dynamic character of the digital,

and thus making the results of digital craft more embedded in everyday life, will support the potential these cherished objects have for e.g. defining the self.

The research activities for the remaining two years include a specified literature review into craft, currently being done, and two to three design iterations consisting of the development and evaluation of prototyped products or systems that can support digital craft through the integration of physical and digital. The aim is to finish the first design iteration before the end of the second year (September 2012) and use the third year for one or two design iterations that build on the findings from the first iteration. By attending the Doctoral Consortium I hope to gain valuable new insights and feedback from people working in different fields that can help to further define and frame my multidisciplinary project. More specifically, at the time of attending the Consortium I will have developed a number of designs, which will still be open for suggestions from the other participants before going into the prototyping phase. Further, I will be developing the methodology for the evaluation study, for which feedback will be valuable as well.

Expected Contributions

Based on the addressed research goals and approach the contributions of this PhD to the HCI field will consist of: a number of prototyped and evaluated design solutions informed by user involvement and literature review; insights in designing for combining physical and digital realms; and insights in designing for crafting with digital media. It will further contribute to research on tangible user interfaces and media studies.

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