

Dual Media Design

- Sharing memories through digital object

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ABSTRACT

This position note talks about sharing memories through digital object - *Digital Mementos*. After a short review of related work, we argued that there is a risk in designing towards novelty but sometimes missing connections to everyday life and hence fails in making it into everyday objects that become a part of persons life. Based on a case: *The Memory Stone*, we introduce a new design principle – *The Dual-Media Design* – and we will discuss how to design for expected and unexpected use as well as how physical and digital properties of *digital mementos* could better connect new innovations with real-world applications and peoples needs.

1. INTRODUCTION

Physical objects can now easily and inexpensive embed and carry all kinds of digital information. Examples of new physical-digital objects are photo frames, robots, toys, and games, to mention a few. They could be used to save and carry all kinds of digital information such as pictures, audio and video snippets. Some could also capture contextual information, for example where and when the objects have been used. The key idea to hold on here is a how these objects could become a personal digital memento that could be used understood and appreciated by its combined physical-digital properties.

This domain has a fairly long tradition within the HCI and Art and Design community. Some of this work could be traced back to physical computing and Ullmer and Ishii tangible user interfaces [6], or Rekimoto's [7] work on situated communication through physical and digital spaces. Digital memories in the home setting have been discussed by Petrelli and Whittaker [8], as well in CACM special issue [1] on digital memories and ubiquitous computing. From an art and design perspective many has been influenced by Anthony Dunne & Fiona Raby *Fields and Thresholds* project that was presented at the 2nd Doors of Perception conference in 1994 [2,3].

However it's not that easy to combine digital and physical memories in an understandable and useful way. From our own work we can take an example with postcards [9].

"I use the mirror to place my most important pictures and postcards .. then when I use the mirror we come [for a moment] together again .. I would like to be [often] positive reminded of these persons"

We all have our own experiences of postcards and pictures hanging on refrigerators and mirrors in our homes. These common artifacts exhibit often a link between individuals. Our observations showed us that all families in our study only talked about things and furniture that not only have a practical function,

but also carried some personal memories. These things were placed there because they reminded them of a relative, or a situation in the family member's previous life. As one women described it:

"When you where visiting grandmas' you always sat in the rocking chair ... it comes naturally to me to think of her when I sit in this rocking chair."

One problem here is that physical mementos are highly valued but not always that easy to understand. "Le coeur a ses raisons que la raison ne connaît pas" wrote Blaise Pascal, and emotions indeed have logic of their own. Moreover, digital information is as Petrelli and Whittaker note [8] "initially perceived as less valuable, although participants later reconsidered this" and continue they where "somewhat limited in function and expression, largely involving representational photos and videos, and infrequently accessed". We note that a lot of the related work are highly innovative but lack a connection to everyday life and hence fails in making it into everyday objects that become a part of persons life, this additional meaning that was clearly expressed in our study.

2. THE MEMORY STONE CASE

To address the call of this workshop we would like discuss how digital mementos could be better merged into physical objects and everyday life, by expanding their use and creating additional values. Our starting point is a brief summary of a study of a personal digital artifact – *The Memory Stone*.

The Memory Stone is a pervasive health care device for use by pregnant women. The study was conducted from 2004 to 2007, and consisted of a number of workshops, ethnographic surveys, and development of a series of prototypes [5]. Here will we just try to highlight a few critical reflections from the Memory Stone project.



Figure 1: The Memory Stone (MStone)

As noted in the study, a pregnant woman is in contact with several health care professionals in different locations. Many data items

are created during the pregnancy; some are valuable and necessary for the professionals, others are mostly of interest for the pregnant woman and her family. This scattering of information creates problems for the pregnant women.

The Memory Stone (MStone) is a small handheld device, mostly intended for storing and communicating these kind of information. Basically speaking the MStone consists of an embedded computer, a flash memory and a bluetooth radio. The MStone is the size of an ordinary pager, organically shaped, and has a single button (see figure 1).

The emancipatory effects of engaging the pregnant woman and her spouse in the process of handling information about the pregnancy is of course of utmost importance. However, clear in the study was also that the pregnant women who participated in the study valued their personal information equally high as the clinical information. Moreover, other services like storing and streaming music and pictures was considered as critical for the overall user experience. We would like to divide this into two main categories of design recommendations.

First, it's important to enable easy ways to connect such a device with a multiple range of devices, like phones, PC and TVs. In our case we used a prototype software that enabled the MStone information to be accessed through an assembly with another device; audio could be streamed from the MStone to a MP3 player, or images on the MStone could be shown on a "regular" TV, or a digital camera and a GPS could produced geotagged images to save on the MStone. This kind of everyday and easy access of information in many different context and configurations was critical in our case.

Secondly, information will come in any flavor and format. MStone handles hence a broad range of media and needs various tools for tagging and accessing information. Simple research prototypes that only handle a limited amount of media might fail. Moreover, ownership of information, data security and personal integrity were major concerns and need effective but easy solutions.

3. DUAL-DESIGN PRINCIPLE

So far we have highlighted some design recommendations of technical nature. I would now like to turn the attention towards a more fundamental issue when it comes to how the Memory Stone, or alike concepts, could melt in and become a part of an everyday interaction with digital memories.

As noted above was the mixture of clinical information and personal information considered important in our case. We would like to expand this idea by connecting it to a design principle that we have used in many cases when introducing new communication media - the dual-design principle [9].

The essence in this design practice is to design a system that could simultaneously provide the users with improvements in their current daily life practice as well as pointing to new styles of solving daily routines.

We need to ensure a design process that can maintain symmetry between these two dimensions, i.e. combine an understanding by observations with innovations that demands for action and change. In this respect we fully agree with Ehn [4] who claims that there is a fundamental need for balancing between tradition and transcendence – the "dialectical foundation for design".

4. DISCUSSION

To bring the dual-design approach to the realm of digital mementos we can start by observing that the usefulness of everyday objects often comes in both expected and unexpected ways.

This duality could also be used to handle the physical-digital aspects. We easily find many examples where old well-known physical objects are reused to embed new digital functions even if a newer physical design might work better. We refer this instance of the dual-design principle as dual-media design.

The dual-media design approach is especially effective in integrating specific semiotic qualities to design models. In this way we have found it possible to test new unproven ideas in ways that still make sense to people. However dual –media design will not work if we not truly understand common practice and how people can influence these everyday activities by modifying used technology. Combinations of ethnographic, participatory design, interaction design and industrial design could lead to smarter dual-media design, and hopefully an improved design practice for digital mementos.

5. REFERENCES

- [1] Czerwinski, M., Gage, D. W., Gemmell, J., Marshall, C. C., Pérez-Quñones, M. A., Skeels, M. M., and Catarci, T. 2006. Digital memories in an era of ubiquitous computing and abundant storage. *Commun. ACM* 49, 1 (Jan. 2006), 44-50.
- [2] Dunne, A. and Raby F. 2002. *Design noir: the secret life of electronic objects*, Princeton Architectural Press
- [3] Dunne, A. and Raby F. *Fields and Thresholds*. Presentation at the *Doors of Perception 2*, November 1994, <http://www.mediamatic.nl/Doors/Doors2/DunRab/DunRab-Doors2-E.html>
- [4] Ehn, P. 1992. *Scandinavian design: on participation and skill*. In *Usability: Turning Technologies into Tools*, P. S. Adler and T. A. Winograd, Eds. Oxford University Press, New York, NY, 96-13.
- [5] Enquist, H. and Tollmar, K. 2008. The memory stone: a personal ICT device in health care. In *Proceedings of the 5th Nordic Conference on Human-Computer interaction: Building Bridges* (Lund, Sweden, October 20 - 22, 2008). *NordiCHI '08*, vol. 358. ACM, New York, NY, 103-112.
- [6] Ishii, H., and Ullmar, B. 1997. *Tangible Bits: Towards, Seamless Interfaces between People, Bits and Atoms*. In *Proc. of CHI '97*, 22-27.
- [7] Rekimoto J, Ayatsuka Y., and Hayashi K. 1998. *Augmentable Reality: Situated Communication through Digital and Physical Spaces*, IEEE 2nd International Symposium on Wearable Computer (ISWC'98), pp.68-75
- [8] Petrelli D. and Whittaker S, 2010. *Family memories in the home: contrasting physical and digital mementos*, *Personal and Ubiquitous Computing*, Springer.
- [9] Tollmar, K. and Persson, J. 2002. Understanding remote presence. In *Proceedings of the Second Nordic Conference on Human-Computer interaction* (Aarhus, Denmark, October 19 - 23, 2002). *NordiCHI '02*, vol. 31. ACM, New York, NY, 41-50.