Memory Dialogue: Exploring Artefact-Based Memory Sharing

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Abstract

With the proliferation of personal and social computing
there is an increased interest in the field of human-computer
interaction to support people's memory practises. Yet, there
is only a limited understanding of the role of artefacts in the
social dynamics in memory. With *memory dialogue*, we in-
troduce a methodology for exploring artefact-based memory
sharing. Participants created physical or digital memory
artefacts, exchanged them, and reflected on the process.
Our qualitative findings show how this method can help un-
cover the complexity of shared memory. Participants largely
chose bonding experiences and created artefacts as con-
versation starters about differences in their memories.

Author Keywords

Memories; Memory Sharing; Autobiographical memory;
Artefacts; Mementos; Study; User experience.

ACM Classification Keywords

H.5.m [Information interfaces and presentation (e.g., HCI)]:
Miscellaneous.

Introduction

People, with whom we spend time, become witnesses of
our lives. If two people share an experience, both develop
their very own memory of this experience. These mem-
ories are subjectively different – and yet, both are each

other's mutual reassurance that the experience did actually happen. If the relationship ceases, for any reason, the memories become isolated from one another; the reassurance disappears, and it may feel as if the event did not take place. Arguably, to preserve memories we have to share them.

The notion of an object-centred sociality suggests that artefacts play an essential role for our identity formation [1]. Pursuing the analogy of people as witnesses, artefacts pose the material evidence of our existence in the world. They assume a crucial role in situating ourselves in a social environment by equipping us with a position of power, granting us stability, and giving proof of our belonging [3].

As people increasingly use digital means to communicate and share experiences, there is a growing interest among scholars of human-computer interaction to understand the role of technology in memory practises. Considerable research on supporting reminiscing and memory sharing has studied the potential for the capture and retrieval of family memories [7], bespoke memorials for a deceased parent [10], and visualisations as new forms of reminiscent artefacts [18]. Research on digitally-mediated memory practises is conscious about the challenges of introducing technology into personally sensitive contexts and situations. However, there has been limited research on how people would create and share artefacts – regardless of their technological status – to engage with shared memories.

In this paper, we present the results of a qualitative study of artefact-based memory sharing. Our interest is to better understand how people engage in memory sharing using artefacts and examine how dialogic artefact creation can help people explore the plurality of perspectives in memory.

Figure 1: Participants explore physical and digital memory artefacts.

Background

Our work relates most to research on human memory and personal, material, and social memory practises through the lens of human-computer interaction.

Autobiographical memory is the personal memory of an event in one's own past [2]; this memory is primarily an individual record, which is an important factor in the development of the sense of self and their social relations [11]. Reminiscing can be described as the recurring process that continuously shapes an individual's history and therefore identity [20]. Functions of autobiographical memory are particularly the construction and preservation of the self-concept, establishing and maintaining relationships, problem-solving based on previous experiences, and shaping preferences [20]. In the course of the reconstruction process memories shift over time in compliance with present knowledge and beliefs, i.e., multiple recollections of one event are never the same [2].

Two people who have a memory in common keep their own and personal impressions of that shared experience. Already bound up with the individual recollection of the event is the social aspect, however, based on the autobiographical memory one remembers an event from a personal point of view. As there can be no absolute truth in this individualistic notion of memory, intersubjective differences in recollection may pose an intriguing basis for memory-sharing practise. We are interested in examining these differences in shared memories through artefact creation.

Artefacts can be seen as traces of one's identity and origin. The orientation towards objects can be sources of the self, relational intimacy, and social integration [1]. The ideas behind actor-network theory help us unpack the contingent relationship between people and artefacts as complex networks of human and nonhuman actors [8]. Recent research

Figure 2: Individual and joint portraits of a participating pair in their chosen environments.

investigates how technology intersects with remembering and bereavement. Several studies have explored how interactive devices can play an important role in personal remembering to benefit well-being [21]. For example, the custom creation of tangible, digital memorials can support the commemoration of a bereaved parent [10]. An important aim would be to support people in their "self-determined management of shifting, asymmetric relationships", and reflection on their own legacy [13]. Researchers developed first principles for designing technology that support the active reconstruction of a future past [14].

Material objects can be social, emotional, and intellectual aspects of everyday life [19]. Especially in the context of remembering, it is physical mementos that are highly valued for their support of different types of recollection, however, they are often abstract in their nature and therefore not fully understood by others without an explanation. In contrast, digital mementos are often perceived as less valuable and are rather seen as triggers for events in the past [16]. So far, it is not clear how the differences between digital and physical artefacts would affect memory-sharing practises.

There has been a considerable research interest in supporting memory sharing through technology. For example, interactive tabletop applications can help people archive their memorabilia in a private context [7] or share them in a social, public context [17]. Bespoke artefacts can encourage playful reminiscing; for example, embodied digital mementos [15] allow families to casually explore sonic mementos of their holidays. Researchers have also developed experimental devices to investigate how memories can be preserved and passed down in a variety of forms [9]. This stream of research also explored how stories can be attached to souvenirs by creating personalised gifts from shared memorabilia [4] or by associating digital

photographs with physical artefacts [12]. A study on family archiving has shown how personal memory is connected with the shared narratives of a family [9].

A distinct format of representing memories is visualisation of personal records. For example, a study on visualising email archives brought up memories of personal events and encouraged memory sharing [22]. By reflecting on the patterns of past communication people were able to develop a sense of self. Based on research on autobiographical memory and reminiscent artefacts the concept of 'visual mementos' proposes visualisations of personal data to support reminiscing about important life events such as travels [18].

Our work resonates the most with recent research on custom artefact creation to reminisce and remember events and people. While these studies were especially carried out in the context of families with a focus on the dynamics between individual and group, we are interested in the dialogic nature of artefact-based memory sharing among two people. In addition, we build on prior studies of memory practises and explore the dialogic potential of artefact creation for reflecting on memories.

Memory Dialogue

We investigate the experience of artefact-based memory sharing, focusing on the multi-perspective nature of memories in relation to different levels of recollection, emphasis, and judgement. Our main question is: *How can artefact creation and exchange stimulate memory sharing?* Participants were asked to select a specific experience they had together, then individually record it as a physical or digital artefact, share it, and reflect on their process of sharing.

Questions of interest included: What experiences would people want to share with each other? Would potentially problematic memories be shared or mainly "beautiful" ones?

How would the participants want to share their memories? What would it be like to create an artefact representing a memory, for the person one had the remembered experience with? How do artefacts stimulate the memory-sharing process? While we may not achieve definite answers to some of these questions, they informed the approach of the study and provided a foundation for the interviews.

Methods and procedure
Our approach combines principles from research through design and research for design [5, 6]: it aims to expand our knowledge about the design process as well as the creation of unique design artefacts. As part of the process individual and joint semi-structured interviews were conducted to understand their experiences with and reflections about the process, and contextualise it in the current memory-sharing practises that participants engage in. We included photography as a research tool to document the exchange of artefacts and gain a more nuanced picture of the participants.

The overall process of memory dialogue had seven parts:

1. Screening. 12 participants took part in the study: 6 pairs (10 men and 2 women), 25-52 years old, from nine countries (Ireland, Italy, Tatarstan, Canada, USA, Israel, Germany, Mauritius, Greece). The group of participants was socioeconomically relatively homogeneous (middle class), covering a range of professions (engineers, researchers, designer, psychologist, mathematicians, architect). Relationships varied from flatmates and colleagues to friends and couples. For several pairs their relationship shifted during the course of the shared experience to a closer friendship or romantic partnership. Participants were recruited by acquaintance, emails, and Facebook. Potential participants were asked if they knew a person with whom they had a meaningful experience together and whether that person would also take part in a research study of memory sharing.

Figure 3: Booklets were distributed to participants to introduce the topic and initiate the process of recording and sharing a common memory.

If so, booklets were handed out to both and a next meeting for interviews and exchanging of artefacts was scheduled. Participants chose the location for the first meeting, which included a park, home, office, and café. The study was conducted in English.

2. Briefing. Custom-made booklets were given out to invite participants to reminisce about a shared experience and to create artefacts about it. The booklets contained hand drawings that guided participants in several steps through the memory dialogue process (see Fig. 3).

3. Choosing a memory. Each pair was asked to jointly decide on a memory that is important to both of them, relates to a specific experience they had together, a person they both know, or a place they experienced together. They were asked not to talk further to each other about the chosen item, in order not to affect each other's process of reminiscing and creating. The process of choosing the memory would happen without an observer present to give participants the opportunity to privately speak and decide.

4. Creation. Participants were given a time span of a week to reflect on the memory and create an artefact recording the personal memory. Each participant would do this individually to not influence each other's process of creating. Therefore this phase was not documented by an observer to give the participants enough privacy. Participants were free to choose their preferred way of representing their memory, e.g., through text, audio, video, collage, drawing using analog and/or digital means.

5. Individual interviews. Before exchanging their artefacts or conversing with the other person about them, all participants were interviewed individually to investigate what kind of personally meaningful memories they wanted to share. They also reflected on what the other person might bring

into focus in their respective version of the memory. These individual interviews were carried out before exchanging their created artefacts. The aim was to explore personal thoughts on memory sharing and the creation process.

6. Exchange. When meeting both participants again, they were asked about their typical reminiscence practice and if they already knew that it would be meaningful and memorable for them, when they had the experience back then. Participants were subsequently asked to exchange their memory artefacts. The observer was present during this phase but stayed silent at a distance to give the participants some privacy. After exchanging and exploring the received artefacts, each participant responded to the artefact they received (see Figures 1, 4, and 8).

7. Joint interviews. The joint interview aimed to develop an understanding of the participants' experiences when sharing their artefacts with each other. They discussed their thoughts on the received artefact, commonalities, differences, and the overall process of sharing memories with one another through artefacts. Our intent was not to examine the content of the artefacts, but rather to explore how memories of the same subject were expressed and valued differently by the two participants. It was also not so important, how the memories differ in detail, but how differences would be interpreted by the participants.

Data collection and analysis
The semi-structured interviews resulted in a rich source of material for helping understand the memory-sharing activity that the participants engaged in throughout the study. 18 interviews were conducted in total (12 individual interviews, 6 joint interviews). Each interview session lasted around 90-120 minutes and was audio-taped. Immediately after each session, the observer's initial impressions were noted down, and later the recordings of the interviews were

Figure 4: Participants discussing their exchanged artefacts.

transcribed. Recurring themes that emerged in different interviews became the basis for the subsequent analysis.

The transcriptions of the interviews were iteratively coded, i.e., annotated and organised into the main phases of the study, i.e., choosing, creating, and sharing. During the analysis, high-level themes were iteratively identified, such as 'bonding experiences', 'orienting towards the other', and 'negotiating difference' each of which gather a range of aspects that characterised the relationships between experiences, memories, and artefacts. When encountering a new aspect earlier interview transcriptions were revisited to examine the associated topics.

The photographs that were taken during the study complemented the analysis of the notes and transcriptions. Particularly the photos capturing participants while exchanging artefacts helped to see their first reactions. For all participants individual and pair portraits were taken at a location chosen by the respective participants (see Fig. 2 and 5). The rationale behind including photography was to capture momentary impressions such as facial expressions and body language during the artefact exchange and to gain a more personal approach to the participants. We deliberately decided against video which we considered to be more intruding. During the analysis it proved beneficial to go back to the photographs and recall the participants' responses during the interviews and the sharing process.

For this study it was crucial that participants would share an experience with each other that was personally meaningful to them. In order to encourage sharing without filtering, participants have been reassured that highly personal aspects of content would not be published if not wanted. Therefore, recorded memories are intentionally not shown in detail. Instead, we focus on the participants' reflections on the process, impact, and outcomes of sharing memory artefacts.

Figure 5: Individual and joint portraits of a participating pair in their chosen environments.

Findings

The following are key insights that emerged from the interviews, observations, and discussions during the study.

Bonding experiences

Overall, participants chose positive memories to be shared (5 out of 6), although two participants shared a memory with "mixed feelings". Remarkably, all shared memories could be described as bonding experiences. Participants emphasised this by describing the memory as *"intense"*, *"significant"*, *"the most intimate"*, and a *"grinding point"*.

Chosen experiences were also marked as a transformation point from one relationship status to another: from acquaintances to friends, or from friends to a married couple.

> *"It's maybe the first thing we did that brought us closer. From that moment we spent more time, we were more friends [...] like something that changed a bit the relationship."* [P3a]

That transformation point could be an intense period with new challenges, during which help was offered and a leap of faith was given, or *"a fresh start of a new phase of life"* [P6b]. Interestingly, seven participants mentioned that they knew already at the moment when the experience took place that it would be memorable to them in the future.

Participants mentioned artefacts that related to the chosen experience such as e-mail conversations, pictures, sketchbooks, tickets, or receipts. Pictures were mentioned by nearly all participants as adequate artefacts to record and recollect the experience, and two participants actually embedded pictures into the created artefact. However, there was also a participant who did not have any photographic or any other kind of record apart from the personal memory:

> *"We never took a picture and there were things that I was not sure if I was imagining them or if they actually happened. So it was interesting because with that process we actually can tune, also get both versions and also distinguish what's imaginary and inside our brains and what is actually happening."* [P2a]

To create the artefact representing their shared memory seven participants indicated that they reminisced using only their own memory:

> *"I have it here in my mind. Just through like internal pictures if you can call it so, and feelings I guess. No media."* [P2b]

Five participants, however, consulted their personal digital belongings such as photos, e-mails, websites, or short messages to refresh their memory.

Orienting towards the other

Participants created artefacts in a range of media, both physical (7) and digital (8), and chose a form for their artefact that was most comfortable for them to create. Especially, text-based artefacts (7) were created by participants because it was considered to be most comfortable, natural, or effortless. One said for example: *"I guess writing it down is like the easiest for me."* [P4b]. Besides comfort and ease, one participant mentioned that the form was meant to match a remembered artefact:

> *"I wanted to do something that was appropriate to the thing that we originally made [...]"* [P1a]

Besides preference and habit, some participants chose a digital format because of the feature of having a copy of the artefact. For some participants it was also the meaning of the artefact that was significantly shaped by the orientation

Figure 6: Participant reassembling a puzzle while listening to a digital audio recording.

Figure 7: A puzzle with actual photos of the remembered event (left) and a collage of photos resembling the shared experience (right).

towards the other person. Four participants reflected on the other person during the creation of their artefact.

> *"The text I'm writing, even though it's just my thoughts pouring into the text, surely is being affected by my relationship with him as a result to be the format in the way I'm writing and the way I'm expressing myself, it's directed to him, is affected by our relationship [...]"* [P2a]

Several participants incorporated the relationship they have with the other person and the knowledge about their preferences into the content and quality of the artefact. In addition, for some participants the artefact creation required them to be selective about what to include and the level of detail with the respective other person in mind:

> *"I'm remembering memories but in the context of another person's memory as well. So there is an influence there about the things I'm choosing to remember [...]"* [P1a]

Artefacts as conversation starters
In total there were 15 artefacts – 7 physical artefacts (one 3D-model, 2 papers with pictures on, 1 hand written note, 1 printout of text and pictures, 1 puzzle, 1 drawing) and 8 digital artefacts (6 written documents, 1 audio, 1 video).

While physical and digital artefacts were nearly balanced, the digital artefacts were mostly text-based and the physical artefacts were more visual and diverse. Some participants created more than one artefact, for example, a digitally written text and a video [P2a] or a puzzle accompanied by handwritten notes and a music piece intended to be listened to while assembling the puzzle [P3a], (see Fig. 6).

When asked to individually reflect on the received artefacts, most participants immediately discussed their thoughts together. In almost all cases the artefact served as a catalyst for conversing about memories. This was especially the case when a physical object was created, as it was harder to 'read' than a written document. For example, one artefact was completely non-textual, a letter-sized paper with four photographs, while the other participant had created a 3D model; when exchanging the artefacts the two participants immediately started to share their thoughts.

Participants were often surprised by how complementary their artefacts were. Most sets of artefacts complemented each other in terms of format (physical model and paper printout), selection of images (actual own photos and associated photos), modality (textual and visual), but also in correspondence to the chosen subject. Participants responded to these differences positively characterising it as an enrichment and endorsement of their own version:

> *"When I saw this drawing, I actually could remember the whole day and also compare to what I wrote."* [P6a]

Participants P3a and P3b when reflecting on their artefacts – a puzzle of personal photos and a collage of photos taken from an image search linked to the memory: *"The photos are different but it still says the same thing"* [P3a] (see Fig. 7). Participants reflecting on their artefacts – a sketch and a text that can be seen as one annotating the other:

P6a: *"I think in a way they are complementary. One can read and look at the picture."*
P6b: *"I would like the idea of the text, that you could lift the piece of paper and find the figure."*

The possibility of a joint artefact created by both participants was considered by some, but dismissed by seven of the participants as potentially problematic. They did not wish to create a combined record that would integrate elements of their individual records:

"I personally feel that it's better that they stand by themselves, because it should be each person's perspective [...]. It doesn't necessarily have to be merged to be more authentic." [P5a]

"Because it's a new thing that you are putting together, a new event, a new piece of creativity. To think about putting two things together creates something new, that didn't exist before. I think that artefact would remind us of this moment instead of [the original memory]." [P1a]

Figure 8: Participants exploring their received digital artefacts.

Negotiating difference
While the participants had very few differences in the emotional judgement of the shared memories, there was considerable variability in effort, prioritisation, and detail.

Participants invested different amounts of time and effort when creating their artefact. Similar to choosing a present for another person it reflects the decisions on the way of creating: the chosen medium and tools. Those decisions may also indicate the importance of a memory:

> *"Depends on the memory. The amount of time that you are investing is relative to the significance, I think."* [P2a]

The participants, who considered the other person when creating the artefact, appeared also to put more effort into the creation of the artefacts. When receiving a particularly complex artefact participants responded very positively to the thought, idea and effort that was put into it – regardless whether it was digital, physical, or hybrid.

Besides differences in detail some participants had different focuses in their recollection. In one case priorities were evidently different as one participant could not remember a dangerous situation that had occurred for both during the period of their shared experience:

P5b: *"In a way I think it's really sweet that she doesn't remember the big dangerous moment, where we nearly died."*
P5a: *"And I think it's interesting that you made the comment about this art gallery."*
P5b: *"It was a strong feeling."*
P5a: *"I remember it now [...] I had forgotten about that."*
P5b: *"Really?"*
P5a: *"Yeah."*
P5b: *"I nearly cried. How could you forget?"*

Instead of viewing varying levels of recollection as an undesirable aspect of memory, participants mostly observed how their individual memories were expanded by the respective other as they shared them. More generally, differences in perspective were appreciated by most participants as an opportunity to revisit a shared experience together and reflect on their own memory.

Discussion
In the following we reflect on our findings and discuss implications for future research and design in the context of artefact-based memory sharing.

Memory dialogue as research method
The memory dialogue process helped us to learn about the role that artefacts can play in memory-sharing practises. The multi-step process provided sufficient time for participants to individually reminisce and create artefacts presenting their version of a shared memory without constraining the form of the resulting artefact.

A particularly surprising aspect is that the process proved to be well suited to accommodate sensitive content. Despite the fact that the shared memories were predominantly positive, participants opened up towards each other and, to some degree, also to the researcher. Memories that are

emotionally charged imply particular challenges and requirements for the making and sharing process.

It is also remarkable that all experiences chosen by participants were bonding experiences marking transition points in their lives and relationships. However, these events were not 'ceremonial' in nature such as a wedding or moving in together. They could rather be seen as a foundation for subsequent strengthening of the ties.

Our experiences with this first iteration of memory dialogue indicate that the format encourages participants to openly engage in reminiscing and reflection about the nature of (their) shared memories. In addition to the interviews, the artefacts afforded an exchange of memories akin to the notion of "reminiscing through design" [21]. The artefacts then functioned as prompts for detailed conversations about the shared memories; conversations that may have not unfolded in such a detailed fashion in an interview-only format.

Potential for memory dialogue as a practice
Overall, our participants responded positively to sharing memories through artefacts. While they found the experience of creation, exchange, and reflection enjoyable, some participants even stated that they were surprised how meaningful the process and the resulting memory artefacts were for them. The items are subtle in what they imply about the memory and may contain no inherent chronology. Compared to memoirs and diaries the physical memory artefacts are not composed linguistically and therefore not directly readable by others. How a received artefact is interpreted, then depends on many things, including the closeness of the relationship between participants or the specificity of the chosen memory.

For some participants the memory sharing can be regarded as a cherishing of possibly undervalued events that ended up becoming personally important over time. The remembered events were typically rooted in everyday life and it was apparent how the sharing experience raised their profile in their memory. For some participants the exchanged artefacts could be even viewed as tokens of gratitude to the other person and appreciation of their shared memory.

Most participants perceived the memory dialogue as a personally significant memory-sharing experience. While it was not our intention to conceive a product or service, the positive responses suggest interesting design possibilities for memory-sharing experiences. How could such a process be supported beyond the scope of a research study? Is it possible to translate the procedure into something like a memory dialogue kit? The physical artefacts tended to be considerably more intricate and multifaceted confirming previous research [16]. It is not clear whether this is due to limited digital capabilities of current software or limited digital competencies of the participants. Either way the aim would be to find ways to foster a high level of effort and creativity during the creation whether physical and/or digital.

The results suggest that the dialogic character of the process led to considerable investment of time and effort during the making of the artefacts. If memory dialogue as a game or app was designed towards the creation and exchange of meaningful memory artefacts, it should encourage each participant to envision their memory partner and, to some degree, address the artefact towards them. However, there is the risk of losing friction points with overly framing the artefact according to the image of the other person. It was particularly the variability of artefacts in format and content that led to fruitful conversations.

Future work
While the results are promising, one limitation of the study lies in the relatively homogeneous sample of participants

with an under-representation of female participants. Future iterations of this research should include more diverse segments of society.

The participants of our study exchanged artefacts in person, which meant that the participants tended to immediately share questions and comments. In this sense, the artefacts acted as props for a verbal memory dialogue. How would the artefacts be created and perceived differently if they were meant to be exchanged as stand-alone objects without immediate contextualisation? By letting the artefacts 'speak for themselves' the dialogic role of the artefact would be expanded, they might become statements in their own right, and could grow in terms of material richness.

Our study focused on pairs engaging in a dual conversation. It would be interesting to vary the range of people involved in this process. On the one hand, it might be worth considering groups such as families, friends, and teams engaging in social memory practises. How would the intersubjective dynamics play out in groups? On the other hand, the process of reflecting on a personal memory might not require an additional person. What could we learn as researchers and individuals through a 'memory monologue'?

Conclusion

As our social relationships are increasingly mediated through digital technologies, we already record and share our memories with the people around us through various means. While there has been considerable research interest in developing and evaluating services and devices in support of social memory practises, we were particularly interested in the role that artefacts can play in memory sharing regardless of their technological status.

During the memory dialogue process, participant pairs chose bonding experiences as the moments they wanted to reflect on through artefacts. Those participants, who chose a physical form and addressed the other person while making, tended to create more complex artefacts. This observation encourages further research on dialogic artefact creation in the context of memory sharing. Regardless of their materiality and complexity, the artefacts encouraged participants to reflect on their memories and the artefacts they have built to represent them. The conversations brought up differences in effort, priority, and detail.

In summary, we contribute a novel method for exploring artefact-based memory sharing, and qualitative insights into people's memory practises involving artefact creation. The insights might be of interest when designing novel solutions for sharing memories. The memory dialogue process has also shown a valuable method for uncovering and reflecting on different memories from multiple participants of the same experience. While it might set up tensions over aspects that had been forgotten about or remembered differently, overall it can be a useful vehicle to share cherished memories as well as those that are complex, tricky, or hidden. Furthermore, the format might help to playfully create a way to talk about things that are otherwise difficult to discuss. Ultimately, we hope this study will inspire future research on memory sharing and dialogic artefact creation.

Acknowledgements

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