

Exploring Storytelling for Digital Memorialization

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Abstract. Memories are an interesting part of everyday lives and memorialization through storytelling is an important way to share memories. The increased use of digital devices in the society has brought about a shift suggesting that people are willing to use technologies to remember the dead. With a view to designing devices and platforms to support memorializing through storytelling we explored how willing and comfortable people are sharing stories about the deceased. Our results revealed longer stories were told about younger people who had been dead for longer. This paper reports on our findings of an exploration of stories told by the bereaved and considers design implications for future work.

Keywords: Memorialization · Storytelling · Natural language processing · Death

1 Introduction

This paper focuses on memorialization and storytelling through the lens of the continuing bonds theory. Memorialization and storytelling provides a sense of connecting community with the deceased while recounting memories [1, 2, 16, 26]. Memorialization is a process of remembering and creating a continuing bond with the dead [19]. It is also an intentional act of preserving the memory of a person or an event [18, 23]. Storytelling is a shared communication that requires three elements: the narrator, the subject and audience [16]. Therefore, digital storytelling in this context involves engaging the memories of the dead using technologies such as: CD's, social networks, E-mail, mobile phones, tangible digital devices and so on [15]. Digital technology can keep reminders, record wills, keep lifetime pictures etc. and hence the HCI community has considered ways digital technology will impact on memorialization [5, 19, 23], although there is a concern that “*digital memorabilia ... seem to lack salience*” [24]. Current designs around memorialization adopt participatory approaches, so an understanding of target groups is necessary to develop positive and ethical designs. With a view to designing and exploring storytelling for memorialization through physical, digital artefacts we wished to understand when and how people tell stories about the deceased and how other factors are responsible for how they tell their stories. We were particularly interested in anecdotal stories – i.e. short stories from the daily lives of people and we wanted to explore how the former two can present to the latter.

1.1 Death Digital Memorialization and Storytelling

Death brings about a barrier in the physical contact between loved ones, but the bereaved continue feel the bonds of those relationships [8] and the need to continuously establish these bonds has led to the process of memorialization. This is explained by the *continuing bonds* theory as proposed by Klass, Phyllis & Steven [13]:

“The bereaved remain involved and connected to the deceased and the bereaved actively constructs an inner representation of the deceased that is part of the normal grieving process.”

The bereaved make this representation through their expressions about the deceased. *Continuing bonds* expression is one of the most effective ways of coping during the grieving process and helps in mood regulation [9]. Mood regulation is focused on gaining positive experiences through certain activities [10].

The *continuing bonds* expression can also be seen from the memorialization perspective [17] as discussed by [4] which explains how the attachment needs of an individual are satisfied through symbolic representation of the memories of their deceased as they serve as sources of security and comfort. The attachment needs of an individual vary – being dependent on the size of their attachment network and their age. The attachment network as explained by the theory of socio-emotional selectivity proposed by [3] relates to how older adult attachment network reduces in size and is targeted towards a few friends and family they prefer to share emotional comfort with.

Memorialization through storytelling is influenced by various parameters and demographic data; including: time since death, relationship to the deceased, years of relationship with the deceased, closeness to the deceased, story about the deceased (i.e. deceased identity) and the storyteller [8, 25]. These measures play a role in the *continuing bond* expression and an understanding of these relationships will benefit future interventional technologies.

It’s been suggested that “*Future systems need to ... target specific types of human memory*” [24] as there are at least 200 human memories types described in the literature. For human memory, [21] presented five memory types which technologies could support: recovery; recollecting; reminiscing; remembering intentions and reflecting. Memorialization is a conscious activity of the human memory, and with an underlying continuing bonds theory and an understanding of the relationships between demographical data memorialization technologies could leverage these properties of human memory.

2 Related Work

Recent work on memorialization and technologies has shown great potential of future systems, with so far only a few scientific works reported.

De Vries and Rutherford [8] presented findings of a typical memorialization process by measuring relationships that exists between demographic data and content of online memorials which revealed that: a higher proportion of females write memorials compared to males. [8] also reported the frequency distribution of whom memorials were written about: child (70%), friend (above 30%), family group (above 20%), grandchild (above 20%), parent (20%), siblings (above 10%), other relatives (above 10%) and

spouse (below 10%) as well as varying content of the memorial which includes: letter to the deceased, emotional expressions, tributes, obituary, cause of death and others. Musambira, Hastings and Hoover [20] also reported (in online memorials) a higher participation of the females compared to the males.

Massimi and Baecker [15] revealed that younger generations hold more digital than non-digital remains and tangible assets were shared among household with a strong emotional attachment of the bereaved to digital/non-digital inheritance due to aesthetics. These findings suggested novel ways to designing technologies that will serve inheriting generations, support the bereaved and address existing life-logging technologies and has further informed designs using digital and non-digital remains.

Phylactery (Fig. 1) was designed by Cowling *et al.* [7] to record and play back stories of objects placed on it, asking the question “*What would the world look like if the IoT wasn’t about rendering our physical world tractable to computational systems and was instead about the preservation of the unique personal meanings that accumulate around our material objects?*” It was designed to “*explore the possibility space for an Internet of Meaningful Things*”, and we suggest that preserving memories for memorialization is particularly meaningful.

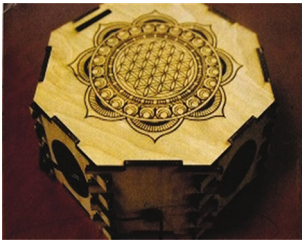


Fig. 1. Phylactery: A tangible *object* that record stories of tagged objects. (Source [7], p. 44)



Fig. 2. *Story Shell*: A bespoke memorial system. (Source [19], p. 474)



Fig. 3. *Pensieve Box*: A bespoke memorial system that beeps during anniversaries associated with the deceased life time. (Source [5], p. 400)

Moncur *et al.* [19] developed a *Story Shell* – “*a bespoke, tangible, digital memorial*” that collects artefacts in the form of photos, music, books in addition to stories about the deceased (Fig. 2), finding that the very act of engaging participants in the design of these artefacts did itself serve as a memorial for those individuals. *Pensieve Box* is a similar implementation, developed by Chaudhari *et al.* [5] – a bespoke application that collects materials of the deceased such as photos and is set to beep during particularly anniversaries connected to the deceased, such as birthdays, wedding and death (Fig. 3).

A variation from the western context norm of designs around memorialization was the focus of Uriu and Odom [23] – *Fenestra* is a domestic memorialization technology that uses a wireless mirror display, photo frame and candle light based on the concepts of *butsudan* – a Japanese Buddhist home altar that supports mourning culture in Japan. They found that “*participants drew on Fenestra as a resource for their everyday memorialization practices in valued and, at times, unexpected ways*”.

Digital memorialization has also explored some potentials of the spaces holding the physical remains of the deceased. This was illustrated in Spomenik a geo-located audio based mobile memorial system for Slovenia's World War II victims linked between communities (local and diaspora) by Kirk, Reeves and Durrant [14] in death space. Their work presents some initial observations and reflects on "the challenges of designing digital ubiquitous technologies for culturally sensitive spaces".

3 Present Study

The goal of the study was to understand the relationships between the following factors: storyteller's age and gender, comfort of storyteller, years of relationship to the deceased, deceased age, length of story, time since death and relationship to the deceased in a memorialization practise. The years of relationship to the deceased was selected as a proxy for measuring the closeness of an individual to the deceased. The following research questions emerged to understand relationship between these variables:

1. What is the relationship between the storyteller and their comfort in storytelling, and the deceased?
2. What affects the length of the story?

4 Method

We designed a mixed method – qualitative and quantitative – study to explore our research questions. Research in the study of grief as explained by [13] shows a methodological consistency in the use of qualitative and quantitative methods. We designed an anonymous online survey, echoing the common usage of online memorials and social media, which was described by [2] as a naturalistic setting for grief expression.

This questionnaire was designed to provide participants with an opportunity to write and edit their stories without time or social pressures. Data collected includes:

- Participant demographics
 - age
 - gender
- Time since death
- Comfort of the storyteller
- Years of relationship with the deceased
- Deceased age
- Anecdotal stories
- Length of story
- Relationship to the deceased

The survey was made available for the period of two months: August-September and was deployed fully anonymously, with consent built in to the survey to ensure

well into his 70s...His sheer determination to do things himself and not waste anything came from his tough youth during WWII when he was only 15 when war broke out". Participant (#28 time since death = 11–15 years) said *"a very jovial and exciting person...I was able to ride a bicycle in my late teens because of him"*.

4.4 Emotions Around Bereavement

Stories often included feelings of bereavement and reflected the emotional connection of participants to how the death occurred. For example Participant (#5, time since death = 21+ years) wrote *"Though I had lost Grandparents previously I was most affected by the sudden death of my best friend James when we were 15 years old.....died on Saturday evening..... It seemed unfathomable that he was no longer with us,.....bright, wonderful boy had gone....."* Participant (#22, time since death = 21+ years) recalled that *"It all began with a light feverish condition...as the night was fast approaching his health condition degenerated into severe body pains with nauseating and vomiting"*.

5 Results

Participant Demographics

The participants (n = 36) comprised of 16 males (44.4%) and 20 females (55.6%) of 18 to over 75 years (Median age = 27 years).

What is the relationship between the storyteller and their comfort in storytelling, and the deceased?

The majority of participants told stories about family members (84%). Comfort of the storyteller measured on a Likert scale of 1 (not comfortable) to 5 (extremely comfortable) was higher amongst family than non-family (coded as others) (Fig. 5). This relationship is approaching significance (Kruskal Wallis, $p = 0.056$), but the number of non-family participants was low. Family relationships includes: parent, spouse, child/grandchild/great grandchild, siblings, and aunt/uncle/other relatives. The others-group includes non-family related relationships such as friend/family friend, neighbor and co-worker/colleague.

The comfort of the storyteller was not affected by the time since death, the length of their relationship with the dead, the storytellers' age or their gender (Kruskal Wallace, $p > 0.05$ in all cases). There was no bias caused by the respondent age and their likelihood to talk about deceased who they had known for longer ($p = 0.408$) or who were older ($p = 0.35$).

What affects the length of the story?

The length of the story, measured by number of words, varied substantially (mean 73.7, standard deviation 89.4). The age, gender and comfort of the storyteller did not affect the length of the story, neither did the type or length of the relationship with the deceased (ANOVA, all $p > 0.05$). This illustrates that although a storyteller may be uncomfortable, this comfort/discomfort does not influence the length of story they tell.

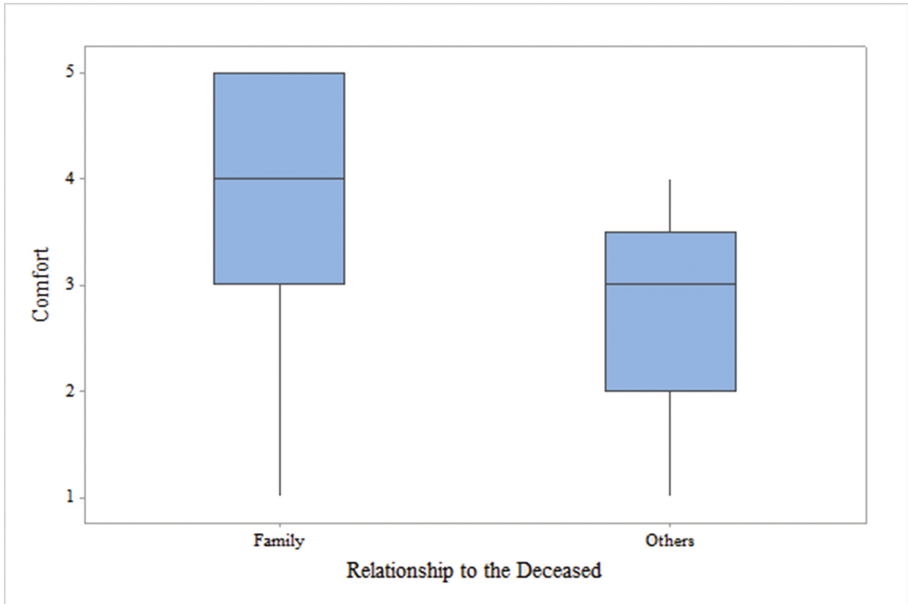


Fig. 5. Family members reported higher levels of comfort than non-family in storytelling (median/mean 4/3.867 and 3/2.8 respectively)

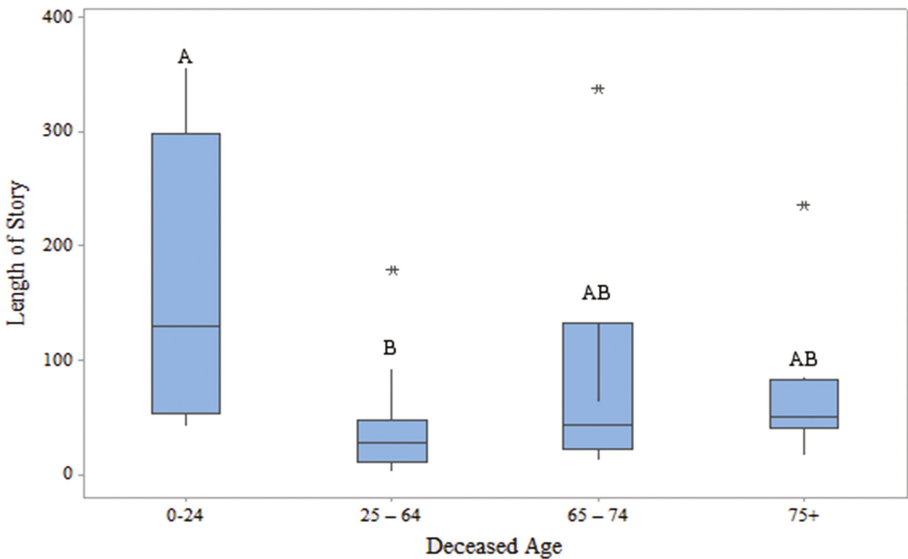


Fig. 6. Stories about young people are significantly longer than those in the 25–64 categories, means that do not share a letter are significantly different.

Deceased under the age of 24 had the longest stories told about them (mean = 166.6), and they were significantly longer than the 25–64 group (mean 39.4; ANOVA $p = 0.040$, $F_{3,31} = 3.13$; Fig. 6). Longer stories were told about people who had been deceased for over 21 years (mean = 229.7) than all other age groups (ANOVA $p = 0.040$, $F_{5,34} = 2.70$; Fig. 7).

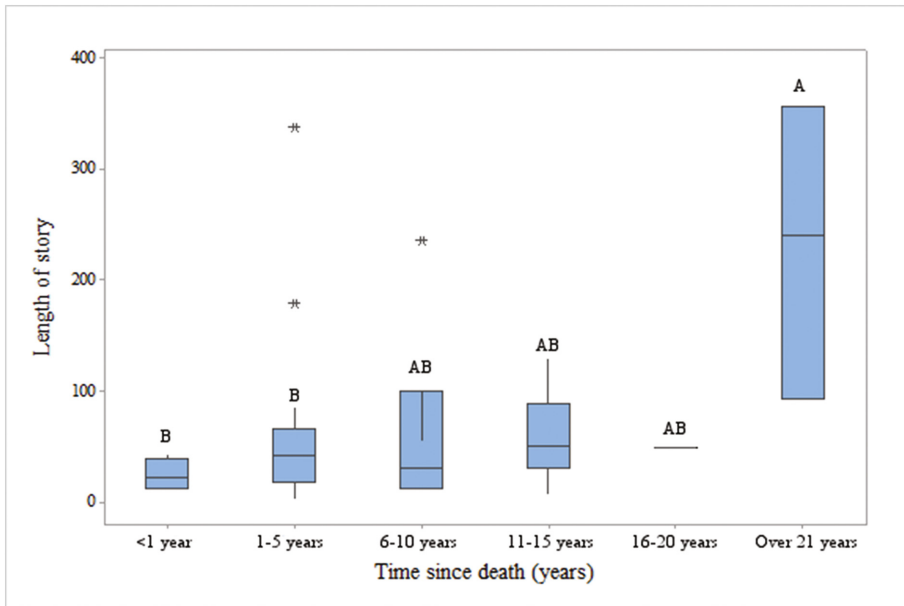


Fig. 7. Significantly longer stories were told about people who had been deceased for over 21 years. Means that do not share a letter are significantly different.

6 Discussion

Our findings revealed how important the time since death and the age of the deceased are to the length of story during memorialization. The results of our findings can highlight the role of the deceased in the *continuing bond expression* theory postulated in [9].

The study from [8] compared the patterns in the distribution of comfort of storyteller across the relationship to the deceased and was particularly interested in the distribution of how memorials were written across family and friend relationships. Our findings revealed comfort around family-related death compared to others (non-family deaths) which contrast to the study in [8], though their work was tied to a specific relationship (e.g. child) and ours covered all familial relationships. The comfort did not impact willingness to tell stories, as evidenced by the length of stories. This explains that grief (measured by comfort) may not prevent a storyteller from participating, supporting the continuing bonds theory.

Another measure of how a storyteller will participate in memorialization is the length of the story, which was characterised more by the deceased than by the storyteller. This supports the identity preservation aspect of storytelling, the storyteller is driven more by the need to preserve the identity of the deceased than by their own relationship and comfort, as explained by socio-emotional selectivity theory proposed by [3].

7 Limitations of the Study

One of the challenges and perhaps because of the sensitive nature of the study was the recruitment technique – snowballing although existing work adopted similar approach, it is likely to be restricted to a certain characteristic of the population only. Ideally, we'd want a good representation across the age demographic (and others), however, a small explorative study about the practices and parameters was sufficient to gain an understanding of the area to inform future work of the research team.

This study examined the emotional state based on text input only – since studies have shown great potential from online memorials where text is usually exchanged during memorialization and the bereaved decide when to post and what to post a priori. The emotional state based on *speech* memorialization technologies was not covered, but could be particularly effective. Similarly, due to the small nature of the exploratory study, data was collected via an online survey and was thus fairly low in content, longer form methods such as interviews could generate more data and longer stories, though inevitably introducing bias from the research team.

This study identified relationships between parameters involved in the memorialization process. The causality of these relationships could be based on other forms of closeness to the deceased (e.g. emotional closeness) which was not included in our survey because of the complexity and uncertainty of the measurement scale [22].

8 Implications for Design

We view memorialization as identity preservation to continue bonds with the deceased. The place of the deceased is continually reconstructed through means which people keep the deceased “alive”: by calling up good memories; reinterpreting bad habits; and continuing in activities that were shared together [2, 26].

In future work we wish to design devices and platforms to support memorializing through storytelling. Our results suggest that the drive to tell stories about the deceased is sufficiently strong that people will tell these stories even when uncomfortable, with the direct implication for design that we could deprioritise making people comfortable, as long as the situation allows for effective story telling – allowing focus on other areas. Further, the findings that there is no relationship between comfort and demographic data other than perhaps familial vs. non-familial mean that selecting specific demographics who would be more comfortable telling stories about the deceased is non-plausible – an avenue that we had previously considered. The especially important implication is that people are willing to share stories of the deceased even for recent

bereavements – a group of people we thought would be unwilling to participate, who we believe memorialization support would be particularly powerful for – perhaps even assisting in the bereavement process.

The strong result that the stories told about people who died young are significantly longer is particularly interesting, and suggests a possible direction. As does the result of longer stories about people who died many years previously. The latter could be interpreted as even after a long time, people still wish to talk about those deceased people, and perhaps that need is underserved – leading to the longer stories in our sample. The understanding of interfaces as a medium makes it imperative to think about both users and storytellers [10, 11] in these contexts.

Overall, we find that these results support the *continuing bonds theory* as a lens for research into memorialisation technologies; that story telling seems powerful; and that even whilst talking about the deceased is perhaps inherently fairly uncomfortable, people are still willing to tell these stories – suggesting that digital memorialization though storytelling may be powerful and have real meaning for their users.

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