

Futures of Digital Death: Past, Present and Charting Emerging Research Agenda

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Abstract

This special issue entitled “Futures of Digital Death: Mobilities of Loss and Commemoration“ explores the topic of digital death and how technologies are reconfigured by and reconfiguring social relationships with the deceased and dying loved ones as well as the larger ecosystem supporting such relationships. This Introduction article starts with an overview of the past research on digital death intended to provide a relevant context for the five papers included in this issue. Then, we reflect on how the current papers or the present research, build on the past and can be used to address existing gaps and to inform future new research directions in order to move the field forward.

The last three decades have witnessed an increased interest in topics of death and dying. Scholars in social sciences, media studies, anthropology, psychology and medicine have explored the social and personal meaning of death in an effort to address the taboo associated with this existential concern (Bos, 1995; Sofka, 1997). As our lives and death become increasingly entangled within the digital, a new strand of research has emerged exploring the opportunities and tensions that technologies can bring within this space. It is therefore not surprising that the topic of digital death has also received an emerging interest within the Human-Computer Interaction (HCI) research. So far, a dominant focus has been on exploring and designing technologies supporting death-centric practices around remembrance of loved ones or inheritance of digital artifacts (Massimi et al., 2010).

With the pervasiveness of digital personal data and people’s needs for meaning making around the issue of (digital) death, less attention has been paid to how people are actively engaging in curating such data for greater personal value. This landscape is now changing with people’s renewed interest in personalized practices around death and dying in both the physical and digital space from ritualized practices to more mundane ones. Ways in which we deal with digital selves, the body and its remains, the memorialization of lost ones, and the spatio-temporal and social context surrounding such practices have shifted the way in which we engage with death, from prescribed and formal practices to more dynamic, flexible and personally meaningful ones (Sas et al., 2016b; Sas and Coman, 2016).

This has led to a new range of research questions that require a genuine interdisciplinary approach. This special issue focuses on the exploration of these emerging practices by bringing analytical, critical, practice-based and creative insights to the debate, and by discussing the design and development of technologies entangled at the end of life.

The Past of Digital Death Research

Unsurprisingly, much work on digital death has taken place in HCI, and can be organized in three strands with a focus on inherited digital possessions, technologies for grief, and technologies for the end of life.

Inherited digital possessions

The topic of digital possessions inherited from deceased loved ones builds on a rich body of HCI work on memory technologies and cherished possessions in intimate relationships and domestic places. This work has looked at how such digital possessions can be designed to better support remembering (Odom et al., 2012a, 2012b, 2014; Frohlich et al., 2000; van den Hoven and Eggen, 2015), or to become integrated with physical ones to increase their evocative power and tangible qualities (Petrelli et al., 2008). The value of digital artifacts for addressing memory impairments has been also explored (Crete-Nishihata et al., 2012; Qu et al., 2019; Sas et al., 2015). Although predominantly visual (Le et al., 2016; Petrelli et al., 2008, Sas et al., 2006, 2013; van Den Hoven et al., 2012) new modalities for such cherished possessions have also shown their value in cueing recall (Sas et al., 2015). Cherished possessions also play important roles in old age supporting reminiscing and strengthening the sense of identity (Lindley and Wallace, 2015; Sas et al., 2015; Sas, 2018; West et al., 2007).

Among cherished possessions, an important types is possessions inherited from the loved ones. A growing body of work has looked into the practices and challenges associated with increasingly larger collections of digital possessions that people leave behind. Their amount can be particularly overwhelming as people struggle to organize and curate them in socially acceptable ways (Sas et al., 2016b). Key tensions surfacing in this space include the one between preserving such collections untouched or actively curating them so that the family members inheriting them can better understand their rich yet often hidden meaning, having them on display or in more private or remote places to be engaged with at appropriate times, different preservation practices for the most recently inherited collections compared to the earlier ones, while accounting less for the often trivial content recorded on social networking sites (Odom et al., 2012a).

Technologies for grief

Another strand of research on digital death has focused on grief technologies designed to support the bereaved people. Here, the most often approach has focused on continuing bonds

with the departed and honouring these relationships. Seminal exemplars (Sas et al., 2014) of thanato-technologies (Massimi and Charise, 2009) include digital altars such as MyShrine (Massimi, 2010), thanato-fenestra (Uriu et al., 2016, 2018), or tangible mourning stones (van den Hoven et al., 2008). While these examples indicate the value of honoring relationships (Massimi et al., 2009, 2010, 2011) they also raise the challenge of facilitating bereaved people's access strong cues which are simultaneously comforting and poignant.

In contrast, other body of work has starting to uncover the value of digital disposal for putting to rest aspects of the relationship with the departed (Odom 2010a, b) or for processing stronger grief emotions (Sas et al, 2016; Massimi and Baecker, 2010; Odom et al., 2010b; Sas and Whittaker, 2013). By emphasizing letting go and cutting ties, such work advances a significant shift in grief technologies, with a focus on rituals and a critique of disposal through merely deletion. Noticeable work here include the exploration of disposal practices following digital breakup (Sas and Whittaker, 2013), and the value of rituals in this context, i.e., rituals of honoring, letting go, and self-transformation involving specific symbolic objects and actions (Sas et al, 2016; Sas and Coman, 2016). Such work emphasizes the distinct qualities of digital and physical possessions that need to be accounted for in their disposal.

Technologies for the end of life

Finally, a third relevant, albeit less developed strand of work has focused on technologies for the end of life. More broadly such work tends to employ a lifespan-oriented approach (Massimi et al., 2011) towards the design of technologies for the end of life (Massimi et al., 2012). In this space, there has been a growing interest for technologies aimed to support independent living in old age, better quality of life for people affected by dementia (Lindley and Wallace, 2015) or those supporting life review for terminally ill people (Massimi et al., 2010, 2011, 2012b). Relevant examples of such work tend to be scrapbooks such as *Memento* (West et al., 2007), a digital scrapbook supporting older people to reminisce and to share their memories, or suggestions for designing such digital scrapbooks (Sas et al., 2016a). The agentic value of craft has been already acknowledged for mitigating the victimization that follows the experience of loss (van den Hoven et al., 2008), yet less work has focused on supporting digital craft as means of bereavement work.

The Present of Digital Death Research: Papers in this Special Issue

This special issue brings together five papers illustrating the most representative current topics and how the field is shifting in new directions. The papers can be grouped in three clusters

which differ with respect to the user groups, the explored technologies, and the lifespan approach including type of death. In terms of user groups, consistent with the state-of-the-art, all papers address the needs of the bereaved people either for recent loss (Pitsillides, this issue; Harbinja, this issue) or for honoring the ancestors (Gould et al., this issue). Two papers however extend this focus to account also for the needs of other groups such funeral directors (van Ryn et al., this issue), or the tragic experiences of people dying within a nightclub shooting incident, their remote loved ones connected by mobile phones, and of the deployed police force (Cumiskey, this issue). Papers also cover a broad range of technologies around collections of possessions (Pitsillides, this issue), and in particular emails (Harbinja, this issue), mobile phones and cameras (Cumiskey, this issue), digital altars (Gould et al., this issue; van Ryn et al., this issue), or digitally augmented funeral services (van Ryn et al., this issue). In terms of lifespan and type of death, one paper addresses a less explored topic of violent mass dying (Cumiskey, this issue), while the others look into the topic of after death. These three clusters are further detailed.

Cluster 1: Connecting with dying loved ones during mass shooting

Kathleen Cumiskey's paper **"I wish they could have answered their phones"** opens this special issue. It describes the poignant role of mobile phones and body cameras in the affective witnessing of the Orlando Pulse Nightclub shooting incident which occurred on 12th of June 2016. The study employs content analysis of the later edited and made public video content captured by law enforcement and the victims' Facebook live broadcasting during the event, as well as transcripts of text messages sent between witnesses. Findings suggest three key role of mobile technologies for providing witnessing, as well as companionship during the tragic death of many people involved in this incident, and for providing intimacy with the loved ones in those tragic hours. Mobile technology also hindered rescue attempts to save people escape from the club, as the shooter was also using the phone to deliver misleading information. The paper reflects on broader ethical issues regarding the public sharing of emotionally charged content, and its potential manipulation, so that the authorship, control and privacy of the main participants' their tragic experiences captured digitally become questionable. Violent tragic dying and death are particularly sensitive topics raising important ethical challenges related to their capturing, sharing and consumption both in intimate and public domains.

Cluster 2: Preserving and curating heterogeneous collections of inherited possessions

The creation of relationships between the bereaved and the dead is also the central topic of **Stacey Pitsillides'** design-based research "**Digital Legacy: Designing with Things**". Her contribution builds on previous analysis of the social relations between the living and dead through social media, and research focusing on the expansion of rituals and mourning practices through designing specific 'things' that blend physical and digital interactions. Specifically, she explores the creation of new forms of agency and embodiment of the dead by analyzing how inherited digital and online collections and memorials unfold their meaning. Drawing mainly on Latour's theory of design and a variety of examples, Pitsillides shows how the design of these things can create new forms of legacy and rituals, and how they enable users to negotiate and construct durable biographies of the deceased. Pitsillides not only identifies the role of designers within these networks of people and materials, digital and hybrid things, but also points out the potential of exploring the relationship to the dead by researching the design of these things.

A specific type of inherited digital possession are collections of emails. **Edina Harbinja's** paper "**Emails and Death: Legal Issues Surrounding Post-Mortem Transmission of Emails**" offers a reflection on the less explored legal and policy implications regarding the default transmission of emails on death to heirs without the deceased's explicit consent. The paper unpacks the tension regarding the email's status of *property* which both users and email providers subscribe to in the terms of service, and the legal view point which contests information's more broadly and in particular email's status of *property* unless its content is original and copyrightable. Moreover, because of their nature, emails are among those digital remains whose content is likely to be highly personal, private and sensitive. The paper concludes with the articulation of an in-service solution arguing for user's increased control over their collection of emails so that the transmission to heirs should not be by default but upon accounting for deceased's right to autonomy and privacy, and their explicit consent for such post-mortem transmission.

Cluster 3: Honoring the departed loved ones and ancestors within the broader funeral industry

Two papers are part of this cluster focusing on digitally augmented funeral services, and digital altars for honoring ancestors. **Luke van Ryn, James Meese, Michael Arnold, Martin Gibbs, Bjorn Nansen and Tamara Kohn's** paper "**Managing the consumption of death and digital media: the funeral director as market intermediary**" offers a case study exploring the role

of funeral directors as intermediary of funeral technologies and services within the broader funeral economy. The paper reports the analysis of digital media for broadcasting funeral services based on triangulated data captured through observation of Funeral conventions in UK, US and Australia, focus group with 30 funeral directors, innovators and managers, as well as semi-structured interviews with 26 funeral directors, entrepreneurs and consultants. Findings indicate the key role of funeral directors as intermediary between customers and providers of services such as online memorial, DVD presentation, or webcasting which shapes the financial and commercial aspect of death rituals. Funeral directors also mediate the tension between the historically conservative funeral industry and the emerging digital innovation, with the adoption of the latter being perceived as risky, as well as potentially advantageous when it is appropriately communicated to customers. The paper concludes with a discussion of funeral economy as an illustration of a broader moral economy, where decisions are not merely rationale but also informed by rich cultural and moral values, as well as the emerging patterns surrounding digital funeral services where the roles of bereaved and consumer are increasingly blurred.

While van Ryn et al. focus on researching death and digital media in Western funeral industries, **Hannah Gould, Martin Gibbs and Tamara Kohen** expand this perspective in “**Uploading the Ancestors**” by looking into recent developments in the Japanese funerary industry. This paper continues the critique of funeral industry albeit in the context of Japanese ritual practices around death and after-life. Authors offers an insightful comparison of offline and online religious media facilitated by butsudān, the traditional domestic Buddhist altar for honouring the dead. In a context of aging population, no longer collocated multigenerational families, weaker ritual networks, and decreased use of traditional and yet expensive butsudān, funeral industry has shown signs of innovation with the proposal of technologically mediated butsudān, either as online ones for live-streaming of memorial services, or digital ones embedding digital displays within the altar for showing media such as photos of deceased. However, while digital butsudān provides unique affordances such as mobility, animation, low cost, and compactness for the limited living spaces representing innovative solutions for the growing burden of care for the dead and ancestral obligations, their uptake remains problematic given that funeral industry continues to remain highly traditional.

The Future of Digital Death: Charting Emerging Research Agenda

After having looked at the key past and relevant present research on digital death, we now describe our efforts for charting new research directions, either emerging from the state-of-the-art, or for addressing gaps and challenges to support the field move forward.

Understanding the role of technology in tragic dying events

While most of previous work on digital death has focused on after life (Massimi et al., 2009, 2010, 2011; Massimi 2010; Massimi and Charise, 2009; Uriu et al., 2016, 2018) efforts to explore the dying have been considerably limited. As shown by Cumiskey in this special issue, technology such as mobile media have also been used by victims and survivors of a mass shooting tragic event to connect with their remote loved ones. Such data which later has been publicly shared allows the understanding of a less explored topic of violent dying. This is an interesting future research direction albeit considerably more work is required to understand and address the serious ethical concerns of publicly sharing such data with regard to the privacy and respect for dignity of those involved in such tragic events.

Embedding digital craft in death technologies

As shown in the state-of-the-art, death technologies have focused mostly on curating digital possessions such as collections of photos, emails, text messages inherited by loved ones, or content on social networking sites which can be memorialized. Considerably less explored technologies in this context are those leveraging craft for helping bereaved people process grief. Digital craft offers a less explored avenue to support bereaved people do something and therefore it has the potential to address the passive victimization following loss (Hoven et al., 2008; Sas and Whittaker, 2013; Massimi and Rosner, 2013; Sas et al., 2016b). Such future research direction on digital craft could also be informed by the emerging HCI and interaction design focus on art therapy (Lazar et al., 2018).

Beyond honouring rituals

Previous work in death studies and HCI has explored death rituals, albeit with a predominant focus on honouring rituals (Massimi et al., 2009, 2010, 2011). Physical or digital artifacts harnessed in honouring rituals emphasize holding on, preservation and protection. Sas and Coman's (2016) investigation of personal grief rituals have shown distinct range of artifacts and practices involved across the three main types of grief rituals: honouring, letting go, and self-transformation. We argue for the importance of exploring the less researched latter two

types of death rituals, and the value of digitalizing them. For instance, if deletion poses challenges as a disposal practice, novel interaction methods and devices for ephemeral storage may offer interesting future research directions (Sas et al., 2016b). In turn, such future research direction can challenge Western held assumptions about death and dying to support conversations about broader framing within both Western and Eastern cultural and religious contexts.

Interactive art-based death technologies

Most digitalization of honouring rituals involves video streaming or photo displays (Uriu et al., 2016, 2018; Massimi 2010; Massimi and Charise, 2009). Although the value of gestures in death rituals has been previously suggested (Sas and Coman, 2016), there has been surprisingly limited work involving tangible interaction, such as the mourning stones (van den Hoven et al., 2008). We argue for the value of extending tangible interaction to support innovative digitalization of death rituals, integrating for instance public displays (Kray et al., 2006; Dix and Sas, 2008, 2010), virtual reality (Sas, 2004), interactive art (Höök et al., 2003; Morrison et al., 2007) and art therapy (Lazar et al., 2018).

Beside the above technologically-driven directions, other suggestions for future work address the broader social issues of digital remains and death technologies such as economical, ethical, and legal ones.

Economical aspects of digital funeral industry

Two papers in this special issue, i.e., Ryn et al. and Gould et al., explore the issues of digital death and dying within the broader context of funeral industry. Such work extends the stakeholders of digital death rituals to include funeral directors. It is also part of an emerging shift attempting to contextualize death and dying rituals not only within the domestic sphere, but also in the larger socio economic infrastructure. This shift resonates with the emerging interest in HCI research from technology-centric design to infrastructure-centric design (Jack et al., 2017; Khairuddin et al., 2019; Zhang et al., 2019). Öhman and Floridi (2017) coined the term *digital after-life industry* which they defined as “activity of production of commercial goods or services that involves online usage of digital remains” (p. 644) emphasizing the specific commercial interests underpinning it. Future research on digital remains would benefit from taking such broader socio economic perspective to better contextualize the development of technological solutions and services.

Ethical issues surrounding digital remains

An important research direction reflected also in this special issue is that of the ethics associated with the inheritance of digital remains. Cumiskey (this issue) and Harbinja (this issue) both emphasize the important ethical concerns of sharing personally sensitive information usually embedded in one's digital remains without the deceased's explicit consent. The key ethical principal here is that of autonomy focused on the respect for the deceased person's ability to make decisions (Beauchamp and Childress, 2001). Control and privacy of one's personal data such as emails (Harbinja, this issue) is also a reflection of respect of their autonomy (Sanches et al., 2019). Öhman and Floridi (2018) advanced the ethical framing of digital remains as the "informational corpse of the deceased" arguing for the need for frameworks to regulate the commercial use of such remains aligned to the value of human dignity and prevention of commercial exploitation. However the examples above are limited and more interdisciplinary research is needed in this particularly important area.

Legal issues of digital remains and their inheritances

The multidisciplinary approach to the ethics of inheriting digital remains has also started to be explored from the perspective of law studies. Harbinja's paper in this special issue argues that emails as digital remains are not legal possessions and that they cannot be by default inherited. She also extends the stakeholders of digital death technologies to the policy makers and developers of email platforms and social media. Harbinja also highlights their responsibility to safeguard such highly personal content and to support the explicit consent for their post-mortem transmission if the deceased desires so. Important questions in this context include (i) how can multiple interdisciplinary perspectives be integrated to help develop comprehensive models of digital death practices? (ii) how can we foster a future-oriented approach to research on digital death so that we can better support it in years to come?, and (iii) how can we better support the research ethics and sensitivity, as well as the wellbeing of researchers working in this challenging space? Future work aiming to address such concerns and questions will be particularly important.

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