Post-mortem Digital Legacy: Possibilities in HCI

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Abstract. As designers and stakeholders attentive to HCI issues, it is paramount to understand questions such as death and post-mortem digital legacy and how they affect systems development. This paper presents current discussions about that topic, by presenting a brief overview of what has been produced by the HCI community on death and digital legacy and some of the solutions created to address those phenomena. Such solutions include adaptations to already-existing tools, such as Facebook and its memorial profiles, as well as the creation of new tools for the domain of death, such as social networks for dead people's profiles. However, the implementation of those technologies demand further studies on the differences between law systems and belief systems regarding death and what can be considered either universal or particular in the understanding of death. Therefore, there is an urge for more interdisciplinary studies on this topic, so as to bring to HCI discussions different perspectives, theories and methods that can be used in the study of death.

Keywords: Post-mortem digital legacy · Posthumous interaction · Death

1 Introduction

The birth and death of an individual within computational environments, such as the web, are not in line with those phenomena in the real world, where different devices and strategies are created to identify an individual throughout life in order to safeguard his rights and legacy. So far, there are no legal means to certify the digital "birth" or "death" of a person.

Many profiles, accounts, files etc. are daily created with technological devices, thus requiring data management not only for lifelong purposes, but also for posthumous use. With little legislation regarding post-mortem data, a challenge rises: the different loci, formats and devices for storing such information [8].

In this context, a series of issues come up and point towards different researches in the field, among which we highlight: How do users re-signify a death experience in the digital environment, taking into account all the different stakeholders of this event (who dies, who stays, who leaves a legacy and who inherits it)? Besides, how can designers produce mechanisms for the user to determine his volition regarding the destination of his digital data? However, such problems do come across human values, especially

M. Kurosu (Ed.): Human-Computer Interaction, Part III, HCII 2015, LNCS 9171, pp. 339–349, 2015.
DOI: 10.1007/978-3-319-21006-3_33

ethical ones, which greatly influence how researchers, designers, users and research subjects think and approach issues related to death.

Besides, developing applications with that purpose poses not only challenges to modeling death and managing data left by the deceased person, but also for designers and software engineers to deal with taboos and beliefs on death [7], which define how far they can go when designing solutions. Furthermore, in applications like digital memorials, which pay homage to the deceased, there are other concerns regarding updating and maintaining those memorials, especially when that is done by means of social networks, where different users can be connected to a memorial [21].

Designers and stakeholders, looking out for aspects of human-computer interaction (HCI), need to understand how issues about post-mortem digital legacy affect system development. We believe this is a discussion of facts and possibilities for HCI professionals and the scientific community, due to the need to design complex systems for interaction beyond the user's lifespan.

2 The Theme in Some HCI Communities

In 2012, in an initiative associated with the Special Commission of Human-Computer Interaction (SCHCI) of the Brazilian Computation Society (BCS), an open call was made to the scientific community and the country's professionals from the field, for the "GranDIHC-BR: Big HCI research challenges in Brazil", within HCI'12. At the time, researchers identified the main challenges, as presented in [1], among which we can highlight the ones related to human values, such as *Privacy in a connected world* and *Posthumous interaction and post-mortem digital legacy*. The aspects aforementioned also affect another challenge: *HCI Formation and Job Market*, once many applications regarding death and related phenomena have been developed.

Themes that associate technologies with death have called the scientific community's attention, which has been discussing them in scientific events and publications. In the 2011 and 2012 editions of ACM SIGCHI Conference on Human Factors in Computing Systems (CHI), workshops related to the theme were held. In 2010, [10] promoted at CHI the workshop "HCI at the end of life: Understanding death, dying, and the digital", so as to foster the investigation regarding the intersection of subjects related to the finitude of life (mortality, dying and death) in the scope of thanatosensitivity. For the authors, mortality is an intrinsic and permanent state throughout people's lives. Death, however, is a singular and temporally limited event. For them, the process of dying is an intermediate term, in which the individual is in a state of physiological decline (for example in case of morbid diseases and advanced age) that is imminently turned towards death, but not necessarily immediate to it. In the same year, Massimi and Baecker published paper on related themes, focusing on bereavement [13]. Those discussions stem from a previous exploratory research [11], published in the same conference.

In 2012's CHI, held in Austin/TX, the workshop *"Memento Mori: Technology Design for the End of Life"* [12] occurred, thus allowing the sharing of researches and inquiries regarding the theme among researchers from several countries. The Latin phrase *memento mori*, translated into English as "remember that you will die", gains

new meanings with the development of new technologies for people who prepare for death and reflect on the destination of their legacy, including data that will be left behind for posthumous interaction. We must also mention end-of-life technologies, whose purpose is to give support to people that are getting closer to death, in order to mitigate pain and allow a positive reframing for those going through such event. In contact with researchers during that conference, a book was written and published on HCI and death [7].

In Brazil, "interaction with posthumous or post-mortem data" is among the topics of interest in CEIHC's annual event: Brazilian Symposium on Human Factors in Computing Systems (IHC). Such topic was included among the hot ones in 2012, with the arising of papers from researches regarding this content. In 2014, at IHC'14, the trail "*GranDICH-BR position papers*" has amplified the opportunity to discuss the theme, as there was a call for papers on research challenges for that community.

Notice that, although the book written by Carroll and Romano in 2011 [2] does not focus on HCI, it brings important reflections on the value of digital legacy and the relevance of discussing it in terms of computers and devices, e-mail, social websites and finance and commerce, including topics like awareness, access and wishes.

3 Some Researches in the Field

Even though there are already applications dealing with issues related to the end of life, this still remains an intimidating area, especially if we consider the taboos involving the theme [7]. As we can see, the end of life is an attractive dominion for research due to several reasons – multidisciplinary, social and cultural ones, but particularly due to the technological challenges in dealing with it.

The immortality of the individual and his information divides opinions [14]. The so-called "preservationists" defend that legacy must be left to a person's descendants; whereas "deletionists" say that internet still needs to learn how to forget. The inventory of data produced by physical and digital objects proposed by [2] is intended to emphasize that the responsibility for such data needs to be discussed in light of digital legacy and its "heirs". In simpler terms, [2] defines that a digital legacy is the sum of digital possession that you have left for others. Since the digital change continues to go on, digital possession left will become the majority of your legacy. Anyway, enthusiasts are already trying to guarantee that digital legacy is maintained alive on the internet, as can be seen from the birth of software and services industries [2] which help the user manage his "posthumous" information. Even if only briefly, the authors analyze user terms from Facebook, Gmail, Twitter, Yahoo and YouTube, regarding the treatment of post-mortem legacy. For those who use systems that do not hold responsibility for user's digital legacy, [2] suggest the adoption of a regular spreadsheet for the record of one's digital assets and its respective authentication methods, such as logins and passwords.

In 2009, [11] introduced the term "thanatosensitivity" to describe an approach that actively integrates facts about human mortality, dying and death in HCI researches and design. In that paper, initial issues are approached and they make it evident that the research and development potential of such area is big. In another study, [9]

investigated grief in digital environments. In that study, we can highlight the fact that the logistics of distribution of digital assets after death is a non-considered or neglected problem among the majority of the people interviewed (79 %). The authors indicate two main reasons why the interviewees did not consider this possibility: (a) they were simply not ready to think about a will because they were too young; and (b) they see their personal computer as a functional electronic device (just like a TV) and not as a data storage device. Based on the field research results, the authors raise two ethical questions related to digital legacy: (a) the inheritance of another person's data implies a set of social commitments and ethics regarding the digital legacy; and (b) the records of technological life can be used and revisited, with new meanings, by family members of the deceased person.

Regarding virtual property in digital worlds, [6] defends that it should be treated by law as material property. In this sense, users must think in advance and state their will regarding their digital assets. Concerning the planning of design solutions for post-humous legacy in social networks, the research made with software engineers by [8] investigates the following possibilities: (a) to attribute password power to third parties, in life or in will, thus declaring the desire for posthumous interaction; (b) to have a record of one's digital legacy in other equipment or in the web, so that no login is required for access; (c) to maintain a bond with real-world institutions and documents to check whether the user really died; and (d) to provide social web applications with resources for the user to state his volition. Such possibilities allow an investigation of the needs of products (applications) and users from the point of view of developers, so as to bring more subsides to the discussion of the theme in the HCI community.

In addition, that same research with software engineers evidenced their taboos and beliefs when it comes to death [8]. Seven categories were generated contemplating implicit or explicit taboos and beliefs concerning death in the software developers' suggestions, as follows: non-profanable legacy, funeral rites, the immaterial beyond death, death as an end, death as an adversity, death as an interdiction and the space required by death.

In another research about social networks, the authors [20] carried out a series of in-depth qualitative interviews to explore issues around inheritance and post-mortem data management of Facebook accounts. They concluded "participants focused less on ownership of the data, and instead on the duties and potential conflicts associated with maintaining an account post-mortem". As a solution, the authors proposed "stewardship as an alternative to inheritance for framing post-mortem data management practices", discussing a model with interpersonal responsibilities that accompany digital assets.

For [13], HCI studies must frame death in a lifespan-oriented approach. According to different authors, there are four concepts relevant for the work in this area: life, death, the dead and mourning; and there are so far four themed areas of interest for research on the end of life: materiality, identity, temporality and ethics/methods. It is also worth mentioning that, among the design directions proposed by the authors, the "interactive technologies and systems could be designed that empower all of us, as mortals, to engage in end of life planning more readily, or to make arrangements more easily. And finally, we can consider how systems might empower people who have died to maintain a digital identity that preserves their integrity and desires in this life; or, to deliver messages for loved ones into the future."

Furthermore, it is necessary to study the most tangible aspect of post-death digital legacy: the posthumous interaction relations [7] represented by the manifestations of grief left on the internet, such as the creation of groups specifically for one person, the insertion of the word "grief" in a profile (as Brazilians often do), or even visits to posthumous profiles on the social web. In those visits, one may, for example, leave messages that express the feeling of missing the dead person as well as talk about death itself. The study proposed by Maciel and Pereira [7] seeks to understand how the internet generation deals with these interactions on social networks, in order to guide projects concerning the specificities of this type of social relation. In that study, the research was conducted with 78 adolescents of the internet generation. The interaction between systems and data from dead people or between users and dead people via system is what authors call posthumous interaction. Surprisingly, 59 % of those who are on social networks have already interacted in their network with the profile of a dead person. As the notion of death within these young users it is still being built, this issue deserves to be further investigated in light of posthumous interaction. Additionally, the possibility of interacting like that through digital memorials is another area that requires more research [21].

On the other hand, [23] affirm that, although older people should be more prone to cope with a digital inheritance, they are poorly equipped to do so. Their research aimed to understand older adults' preferences regarding digital legacy. Sourced films and artifacts were used as envisionment prompts to elicit values in a series of focus groups, with older people and in intergerational workshops, including digital natives. As to the theoretical framework, value-sensitive design (VSD) was the main influence. The authors highlight that "older adults constitute a genuine and important 'public' and should certainly have a voice in digital legacy design. They are a group likely to be more familiar with bereavement than their younger counterparts".

By amplifying the concept of Extended Episodic Experience, [5] refers to it as the long term experience that combines multiple individual events in different spaces and times, for the understanding of digital legacy and how interaction is affected by the outlook of death. Other than pictures and messages, we have what authors consider to be an intangible legacy, such as feelings and emotions, which emerge from the interaction with other users. With the purpose of investigating Facebook users regarding their plans for the posthumous management of personal data, the authors have conducted an on-line survey and a focus group, in which the user's emotions regarding these themes could also be observed. As a result, the conclusion was that users expect that the design of applications created towards digital legacy must be based on virtues, and not only on issues such as usability and effectiveness. As virtues, the authors list moral and social impacts, which require the understanding of what it means to be a human being.

The paper by [17] aimed to answer the following question: "What should be the fate of digital footprints after our death?" The authors carried out a crowdsourced online survey with 400 participants from United States, India, Great Britain and Asia. They investigated how users want their digital footprint handled after their death, how they would like to communicate these preferences, and whom they would entrust with carrying out this part of their will. The research investigated project decisions for a digital stewardship to be offered as an online service and it was found out the

participants wanted a nonprofit service. According to the authors [17], "Interestingly, responses across countries and religions were similar". As it has been stated by other researchers, people do not often think about the fate of their digital legacy. Additionally, this paper shows people want to have their accounts deleted in case a death certificate is provided.

As it can be seen, there are researches in several fields, regarding technical, legal, cultural and affective aspects related to death digital legacy and posthumous interaction, which are worth investigating. In the market, some systems and/or functionalities have been created to deal with users' death and its unfolding, as discussed in the next section.

3.1 Solutions Implemented

In order to improve the strategies that have been used in the area of post-mortem digital legacy and posthumous interaction, we must constantly analyze and question the applications available in the market.

In Brazil, Google has released "Google Inactive Accounts", which allows data management of users' accounts [7]. This functionality is available in the settings tab (www.google.com/settings) at "Account Management". This way, the user can set a digital will, by defining the destiny of his post-mortem legacy (pictures, e-mails and files associated to the user's Google account). This system offers the following management options: Supplying an alternative cellphone number and e-mail for alert; defining a deadline for the account to remain inactive; notifying contacts and sharing data; deleting the account after certain actions defined by the user have been performed.

There is a form that can be filled in on Facebook (www.facebook.com/help/contact) where one can request the deletion of a deceased person's account or its transforming into a memorial. In case of requiring the removal of a profile removal from the web, it is necessary to fill in the form and send the profile owner's death certificate. According to that form, Facebook does not forward to a third party any login information, so as to preserve its users' privacy.

Facebook has recently launched a tool that will enable the user to name someone to be contacted in case of his death, so as to take control of his account. This inheritance system will initially be used in the USA, but it is intended to be expanded to other countries. [22]. The heir will be able to: (1) accept new friend requests; (2) accept to be tagged in photos; (3) pin a post on the top of the timeline; (4) change profile photo and cover photo; and (5) download files from the account, such as photos. However, inbox messages will remain inaccessible. The inherited account will be like an additional account for the heir, but he will get no notifications from the additional one, so as not to be bothered.

Such a solution is an important advance, but there are implications that must be carefully considered, such as the peculiarities of each country's legal system and the details of the heir's responsibilities (and if they meet his desires).

In addition to that, technologies have been used in funerary rites, such as TV broadcasting of wakes and burials, as well as posts on social networks about funerary ceremonies, often posted by the deceased person's relatives. Likewise, it is worth

mentioning the virtualization of memorials, through digital memorial software programs, which allow posting tributes for the dead ones, such as iHeaven (http://www.iheaven.me/) and Digital Memorial (http://www.digital-memorial.com/). As for the last one, notice that it provides QR Codes and NFC for inscriptions on gravestones, thus connecting a physical memorial to its digital counterpart.

The use of digital technologies in cemeteries is increasingly common. Cann (2013) examines QR codes and the impact of smartphone technology on tombstones and columbaria [16]. The author briefly surveys Human-Computer Interaction related to smart chip technology in the funeral industry in Japan, Korea, China, the United Kingdom and the United States, and how tombstone technology impacts the way people think about death and remember the dead, particularly in terms of religious expression.

In Brazil, such use of QR codes can be used in Consolação Cemetery, in Sao Paulo. There are totems spread throughout the graveyard, which permit the access to each grave positioning, by means of QR code. Similar tags can be found in some of the graves, especially those of famous people, which are linked to virtual memorials of the deceased. The virtual memorials are provided by MemoriAll (www.memoriall.com.br) and they present information about bios, genealogical tree, photos, videos, obituary and messages. Although this is an interesting strategy that helps finding a grave and learning about the deceased, there is a need for more interactive features in the memorials, which could allow the insertion of online contents about the honored person. Some recommendations for the development of digital memorials can be found at [21].

Furthermore, different software programs help in the managing of accounts, by sending users posthumous messages and/or passwords. In the "If I die" app (https://www.ifidie.org/), users can write a note, which is stored and sent to the destiny user in case of death. The page suggests that the note should contain passwords and instructions of what to do with the dead user's data. As to http://LegacyLocker.com, it is an example of a software program that works as a repository for accounts data, which are forwarded to the named heirs after the user's death. There are also software programs that can prolong "digital life", such as Liveson (http://liveson.org), which continues to tweet even after the user's death, based on an analysis of the user's previous tweets, so as to follow text and informational patterns used in life.

4 Research Possibilities in HCI Field

The study of after-death digital legacy brings many possibilities for investigation in HCI. Based on what has been showed, it is recommended for interested parties to take into account:

1. Pertinent issues related to research on death in digital environments
    - Fomenting methodological and epistemological interdisciplinarity with the fields of Law, Letters, Psychology, Sociology, History, Anthropology, Archeology and Librarianship, for example, so that systemic and computational issues can be discussed;

- Questioning the researchers' and designers' conceptions of mortality, to investigate how the proposition of research methods and computational solutions for the end of life may be influenced by taboos regarding death;
- Conducting studies in light of human values models, especially Value-Sensitive Design (VSD), pertinent to studies in HCI [4, 18];

2. Issues related to data management

- Questioning the persistency of users' online memory, by means of data that can't be managed in systems or under the responsibility of a third party;
- Discussing the setting of users' volition, via system, in regards to the destination of their after-death data [5, 8]. There are many ways to set users' whishes and every one of them affects posthumous interaction, thus causing reactions on users;
- Designing more "visible" terms of use and privacy, so as to allow a greater interaction between the user and his rights and obligations towards the application regarding after-death matters;
- Considering how digital footprints should be handled after death., along with issues as security and privacy of a deceased user's data [18, 19];
- Investigating the impact of digital wills automatically created by the system or manually written by the user [2], especially when it comes to succession responsibilities (rights and obligations of virtual heirs on the digital assets of the dead person, under a legal perspective);
- Considering data management in systems within each user's life cycle, from the creation of the account to the possibility of its exclusion or maintenance, i.e., designing the change of a user's status as dead or alive. Digital life lasts longer than corporeal life, and software limitations make it difficult to model such aspects on the internet;
- Observing that design strategies for digital after-death legacy differ as to the type of data (text, picture, video, audio and geolocation data…), spread in different devices and application domains;

3. Diversity of users and their views regarding death

- Ensuring the respect to cultural diversity in systems development, especially when it comes to religion matters [17, 18], especially when it comes to eschatology;
- Observing the difference between users from different digital generations [7] during design stage, by investigating how such generations react facing themes related to death in the digital environment;

4. New communication and interaction practices related to death

- Analyzing posthumous interaction and the supposed communication with the deceased via system;
- Discussing how mourners and their groups (including family, friends…) communicate about the dead person [9];
- Investigating and proposing solutions for the digital communicational practices that are disrespectful towards death;

- Studying and designing Technologies for the end of one's life, which may be used by patients at their final years;
- Studying new possibilities of interaction with dead people's data, such as the use of QR codes integrated to graves [7], digital memorials [14, 21] etc.

5 Conclusion

Even though the themes related to after-life digital legacy are a part of humans' lives, when conducting researches in this field it is necessary to have an adequate epistemological and methodological posture to approach such matter. Contrary to many HCI research fields, death and mortality are rarely likely to be studied in a laboratory [11]. Therefore, HCI researchers, through theoretical and practical studies, which are in general interdisciplinary, must feel encouraged to perform researches that include users in the design process and in the use of technologies made for this purpose, by using methods, techniques and proper instruments. Needless to say, theories from the humanities and from hard sciences must be brought together in these studies, so as to approach death and its complexities.

It is also noteworthy that different technologies have been developed to address the phenomenon of death, ranging from the adaptation of social networks to the death of its users to social networks especially developed for memorials. This is a sign that new interactive patterns are coming up, which require novel understandings of what it means to interact, either with an alive or with a dead person. Besides, technologies such as QR codes on graves establish an unprecedented bond between death representations in the physical world and in the virtual one, and that unfolds into funeral rites, bereavement expressions and mourning that blend both worlds.

Finally, one cannot disregard that discussing death and legacy entails a constant need to balance universals and local particularities, both in terms of belief systems and in terms of law. Each religion defines certain rules, prohibitions or uses that are to be adopted upon preparing to die or reacting to someone's death. Likewise, legal systems vary considerably when it comes to heritage, property and even regarding the possibility of a dead person having rights. That poses a challenge to researching and designing for death, to the extent that ethical, technical, cultural and legal issues must be considered when addressing such a complex phenomenon – the only one every single person is to experience someday.

References

1. Baranauskas, C., de Souza, C.S., Pereira, R.: I GranDIHC-BR - Grandes Desafios de Pesquisa em Interação Humano-Computador no Brasil. Relatório Técnico. Comissão Especial de Interação Humano-Computador (CEIHC) da Sociedade Brasileira de Computação (SBC), pp. 27–30 (2014)
2. Carrol, E., Romano, J.: Your Digital Afterlife: When Facebook, Flickr and Twitter are your estate, What's Your Legacy?, p. 216. New Riders Pub., Berkeley (2010)

3. Paul-Chouddhury, S.: Qual será o destino da sua alma digital? InfoExame, Ed.Abril, pp. 84–87. SP (2011)
4. Le Dantec, C.A., Poole, E.S., Wyche, S.P.: Values as lived experience: envolving value sensitive design in support of value discovery. In: CHI 2009 (2009)
5. Khalid, H., Dix, A.: Extended episodic experience in social mediating technology: our legacy. In: Meiselwitz, G. (ed.) SCSM 2014. LNCS, vol. 8531, pp. 452–461. Springer, Heidelberg (2014)
6. Lastowka, G.: Virtual Justice: The New Laws of Online Worlds. Yale University Press, London (2010)
7. Maciel, C., Pereira, V.C.: Digital Legacy and Interaction: Post-Mortem Issues. Human–Computer Interaction Series, p. 144. Springer, Switzerland (2013)
8. Maciel, C.: Issues of the social web interaction project faced with afterlife digital legacy. In: Proceedings of IHC+CLIHC 2011, pp. 3–12. ACM Press (2011)
9. Massimi, M., Baecker, R.M.: A death in the family: opportunities for designing technologies for the bereaved. In: Proceedings of CHI 2010, pp. 1821–1830. ACM Press (2010)
10. Massimi, M., Odom, W., Kirk, D., Banks, R.: HCI at the end of life: understanding death, dying, and the digital. In: Proceedings of CHI 2010 Extended Abstracts, pp. 4477–4480 (2010)
11. Massimi, M., Charise, A.: Dying, death, and mortality: towards thanatosensitivity in HCI. In: Proceedings of CHI 2009 Extended Abstracts, pp. 2459–2468 (2009)
12. Massimi, M., Moncur, W., Odom, W., Banks, R., Kirk, D.: Memento mori: technology design for the end of life. In: Proceedings of CHI 2012 Extended Abstracts, pp. 2759–2762 (2012)
13. Massimi, M., Odom, W., Banks, R., Kirk, D.. Matters of life and death: locating the end of life in lifespan-oriented HCI research. In: Proceedings of CHI 2011, pp. 987–996. ACM Press (2011)
14. Lopes, A.D., Maciel, C., Pereira, C.V.: Recomendações para o design de memórias digitais na web social. In: Proceedings of the 13th Brazilian Symposium on Human Factors in Computing Systems (IHC 2014), pp. 275–284. Sociedade Brasileira de Computação, Porto Alegre, Brazil (2014)
15. CNN: Facebook now lets you post when you're dead. CNNMoney, New York, 12 February 2015. http://money.cnn.com/2015/02/12/technology/facebook-legacy-contact/
16. Cann, C.: Tombostone technology deathscapes in Asia, the U.K. and the U.S. In: Maciel, C., Pereira, V.C. (eds.) Digital Legacy and Interaction: Post-Mortem Issues. Human–Computer Interaction Series, pp. 101–113. Springer, Switzerland (2013)
17. Grimm, C., Chiasson, S.: Survey on the fate of digital footprints after death. In: Workshop on Usable Security (USEC). Internet Society (2014)
18. Maciel, C., Pereira, V.C.: Social network users' religiosity and the design of post mortem aspects. In: Kotzé, P., Marsden, G., Lindgaard, G., Wesson, J., Winckler, M. (eds.) INTERACT 2013, Part III. LNCS, vol. 8119, pp. 640–657. Springer, Heidelberg (2013)
19. Locasto, M.E., Massimi, M., De Pasquale, P.J.: Security and privacy considerations in digital death. In: Proceedings of the 2011 Workshop on New Security Paradigms, pp. 1–10 (2011)
20. Brubaker, J.R., Dombrowski, L., Gilbert, A., Kusumakaulika, N., Hayes, G.R.: Stewarding a legacy: responsibilities and relationships in the management of post-mortem data. In: Proceedings of CHI 2014, April 26–May 1. Toronto, Canada (2014)
21. Lopes, A.D., Maciel, C., Pereira, V.C.: Virtual homage to the dead: an analysis of digital memorials in the social web. In: Proceedings of HCI International 2014, pp. 67–78. Heraklion, Crete, Greece (2014)

22. Facebook Memoralization Request. https://www.facebook.com/help/contact/305593649477238
23. Thomas, L., Briggs, P.: An older adult perspective on digital legacy. In: Proceedings of the 8th Nordic Conference on Human-Computer Interaction: Fun, Fast, Foundational (NordiCHI 2014), pp. 237–246. ACM, New York (2014)