Legacy Contact: Designing and Implementing Post-mortem Stewardship at Facebook

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ABSTRACT

Post-mortem profiles on social network sites serve as both an archive of the deceased person's life and a gathering place for friends and loved ones. Many existing systems utilize inheritance as a model for post-mortem data management. However, the social and networked nature of personal data on social media, as well as the memorializing practices in which friends engage, indicate that other approaches are necessary. In this paper, we articulate the design choices made throughout the development of Legacy Contact, a post-mortem data management solution designed and deployed at Facebook. Building on the duties and responsibilities identified by Brubaker *et al.* [3], we describe how Legacy Contact was designed to honor last requests, provide information surrounding death, preserve the memory of the deceased, and facilitate memorializing practices. We provide details around the design of the Legacy Contact selection process, the functionality provided to legacy contacts after accounts have been memorialized, and changes made to post-mortem profiles.

Author Keywords

Legacy Contact; stewardship; death; memorialization; social network sites; Facebook; post-mortem data

ACM Classification Keywords

H.5.3. [Information Interfaces and Presentation]: Group and Organization Interfaces; K.4.2 Computers and Society: Social Issues

INTRODUCTION

Facebook is a place to connect with friends and family, and for many it is also a place to remember and honor people who have passed away. Friends commonly visit post-mortem profiles to share memories, post updates, and maintain connections [4,5,14], supporting each other as they remember the deceased. Post-mortem profiles, however, are not only memorials. Post-mortem accounts and profiles serve a variety of purposes, from digital artifacts [31,36] to personal archives [1], as well as online memorials [5,14,29,30] and gathering places for online communities [5,30]. Accordingly, the design, management, and maintenance of these spaces has been of concern to HCI scholars for a number of years.

Facebook has offered the ability to "memorialize" an account since 2007. When Facebook is notified that someone has passed away, the profile remains viewable under the same privacy settings as before, but the account cannot be accessed or changed in any way. While memorialization is designed to protect the memory of loved ones, the unique circumstances around death understandably generate a variety of questions and requests.

A Facebook Community Operations team responds to every request about memorialization. Often those requests are straightforward. However, many are surprisingly complex, highlighting significant tensions between the management of a person's account and caring for bereaved communities. Take one father, who created a Facebook account after he heard that people were sharing memories about his deceased son on his son's Facebook profile. He wanted to connect and participate, but was not "friends" with his son. In another scenario, a friend trying to share details about a funeral asked if some privacy settings could be changed so that everyone could see a message he posted to his deceased friend's Wall. Likewise, one mother asked if there was any way she could change her daughter's profile picture from an illustration of a cute fish to something more appropriate.

While it might intuitively seem like Facebook should fulfill these kinds of requests, Facebook has no way of knowing what a deceased person would have wanted. Did that son want to be friends with his father on Facebook? And who gets to decide if a profile photo is or is not "appropriate?" These are choices that are made by account holders while they are alive, and Facebook respects those choices. In the absence of the deceased account holder, and given the changing needs around profiles post-mortem, we looked for ways to improve how Facebook supports grieving communities.

In this paper we describe Legacy Contact, a new product that better supports communities on Facebook who are coping with the death of a loved one while giving people more control over what happens to their Facebook account after they pass away. Building on theoretical, empirical, and

design research, we share design decisions behind the implementation of a concrete post-mortem solution on a large-scale system and describe how adopting stewardship as a framework enabled us to strike a balance between the needs of the account holder and the bereaved community.

We start by reviewing the existing literature on death in HCI with specific attention to memorials and social media as memorial sites. We then discuss post-mortem data management, defining three approaches – configuration, inheritance, and stewardship – articulating the strengths and weaknesses of each. We then describe our design efforts, starting with a description of the existing system and infrastructure, goals for the new design, and a description of Legacy Contact and the research that guided our design choices. We end with initial feedback from users, open questions, and recommendations for future work.

RELATED WORK

A variety of efforts within HCI have specifically addressed design in relationship to issues of grief and memorialization. Theoretical contributions have argued for the adoption of "thanatosensitive" [23] and "life-span oriented" design [25]. Design and user research has been conducted focusing on the construction of memorials [12,13,17], online bereavement support [26], digital heirlooms [19,31], personal and family archives [18,20,32], and hospice [11].

While much of this work considers how to support the bereaved through the design of memorials, post-mortem profiles present an additional challenge given that they serve as more than memorials. They are digital identities [4,6], digital artifacts [32], personal archives [1], online memorials [5,6,14,29], and gathering places for online communities [5,30]. Accordingly, scholarship on post-mortem profiles has produced a growing number of design considerations. Collectively, the considerations offered by these scholars fall into five areas: changes to the design of the profile to facilitate memorial practices [4,14,21,22,30]; management of the profile as a gathering space for diverse audiences with competing needs [3,4,14,15,30,35]; support of communication practices between visitors [3,14], to visitors [21,30], to the bereaved [14,30], and with the deceased [5,14]; preservation (or not) of the deceased's digital identity and data [21,22,30,32,35]; and enabling existing and new practices over time [21,30,35].

Moncur and Kirk's design framework for interactive digital memorials, for example, applies to social media spaces [29]. Related to our current work, they argue that Web 2.0 services have strongly impacted the audience of online expressions of grief and they stress considerations of audience in the design of digital memorials. A broad expectation of their work, however, is that interactive memorials will be proactively designed as such, which is largely not the case with social media. Facebook profiles are not designed as memorials, but through their

affordances are reappropriated for memorialization practices.

Given the role of profiles pre-mortem, others have stressed the importance of maintaining the integrity of the user's digital identity. For example, based on a study of the affordances of three platforms (MySpace, YouTube, and an online book of condolence), Mori *et al.* [30] recommend that personalization of the profiles should remain and that account holders be able to specify what parts of their data are accessible post-mortem. In addition to the recommendation to preserve the deceased's digital identity, they also recommended design changes that would facilitate memorializing practices – both in how memorials are displayed and navigated, with how community members communicate with each other.

The diverse design implications in the existing literature speak to the complexity of design work that seeks to facilitate memorial practices within a pre-existing digital space, like a profile. The focus on both the needs of the deceased and those memorializing the deceased demonstrate that changes to the design of post-mortem profiles must strike a balance between the profile as constructed by the deceased and as a memorial, an active consideration throughout the work we present here.

THREE APPROACHES TO POST-MORTEM DATA

Post-mortem profiles serve as memorials, but they were created by the deceased account holder. As such, considering how the literature and existing systems approach accounts and data post-mortem is necessary for situating our design choices. In this section we define three approaches to post-mortem data management discussed in the literature or implemented in existing systems: *configuration*, *inheritance*, and *stewardship*. While most implementations make use of some combination of the three, we present them separately for the sake of clarity.

Configuration-Based Approaches

Configuration focuses on enabling account holders to make decisions pre-mortem about what the system should do following their deaths. IfIDie [37], for example, allows one to pre-author a final message to be posted to their Facebook Wall following their death. Perpetu [38], meanwhile, allows people to connect to a variety of online services and enumerate "wishes", essentially tasks or functions that will be automatically performed following their death. Perpetu is well-aligned with Zhang *et al.* [36] who found that people variously wanted to delete, leave, forward, or archive their data, but that their preferences varied from platform to platform.

Configuration-based approaches involve allowing the account holder to specify preferences or settings, which will then be carried out by the system. Configuration excels at giving account holders specific control but cannot accommodate changes in circumstances or unexpected needs – both social and technological. Additionally, it can

be difficult to anticipate the needs of bereaved loved ones [3,34]. Likewise, little research has been done in HCI on interactions that span long periods of time [33], and changes to platforms and services over years or even decades can shift the effect of configuration-based choices.

In the absence of post-mortem options, pre-mortem configurations are often carried forward post-mortem. However, the lack of flexibility around configuration-based approaches may negatively impact the bereaved, as was the case in each of the scenarios at the beginning of this paper.

Inheritance-Based Approaches

Inheritance involves transferring ownership and control of a digital artifact from the deceased to an heir. Archive of Our Own [39], for example, is a fan fiction platform that allows users to set up a "fannish next-of-kin" who will be able to control their account and content post-mortem [2].

Inheritance has received attention in both HCI scholarship and legal practice. In the context of HCI, scholarship has focused on how end-of-life choices should extend to technology [24], as well as design work considering how digital artifacts might be bequeathed or sit with a family archive among other heirlooms [32]. As noted by Massimi & Baecker [22], inheritance is often not designed into technology, while technology is often not considered desirable enough to bequeath. Meanwhile, legal efforts have worked to define digital artifacts as property that can bequeathed to an heir. Most notable, the Uniform Law Commission has proposed legislation to provide heirs with access to and or control of online accounts [27].

Inheritance of accounts may be appropriate in some cases, but heirs are often not specified [22] and general forms of inheritance (*e.g.*, from a will) may not account for the particularities of ICTs. Currently, inheritance of social media accounts is achieved by making login credentials available to an heir, but this is accomplished outside of system design and policy. For online service providers, inheritance presents at least four challenges: First, the heir may be able to access private information that the account holder never intended to be seen (*e.g.*, email on Gmail, private messages on Facebook). Second, particularly on social media profiles, account access enables the heir to change information about the deceased person [30]. Third, heirs can act as the deceased. On Facebook this can result in profile changes, photos, and status updates that appear as though they were posted by the deceased. Finally, when credentials are inherited outside the design of the system, the system is unaware of and unable to properly account for the account holder's death.

It is for reasons such as these that some systems implement inheritance of data but not the account. Google's Inactive Account Manager, for example, allows an account holder to specify who will gain access to their data, but not the account itself [28,34]. In this way, Google enables the account holder to bequeath content (e.g., Google Photos,

Gmail), but does not enable the heir to login and act as the deceased. In contrast to Gmail, shared photos and content on Facebook are already available for friends to access. As such, the utility of inheritance would primarily facilitate the ability to access private content or to modify content that the deceased person has shared with their online networks.

Stewardship-Based Approaches

Finally, in contrast to configuration and inheritance, stewardship focus on caring for the accounts and data within the context of social relationships. As described in [3], stewardship focuses on the responsibilities and duties one has to care for the deceased loved one and the grieving community. Stewardship involves designating a person (not a system) to care for the needs of the deceased and community (not own the account or data).

In many cases, inheritance might enable individuals to steward data by granting control of an account, however, Brubaker *et al.* [3] found numerous features that would benefit stewardship that account access alone does not provide. Additionally, making changes to an account with the deceased's account can result in content and notifications unintentionally, and often disturbingly, attributed to the dead [4].

Because stewardship involves appointing a person to make judgment calls, it excels at balancing the needs of both the deceased and a community, particularly in the face of changing social and technical circumstances. When designers adopt a stewardship-based approach, their focus is on enabling the steward to act *for* the deceased, rather than *as* the deceased. Additionally, stewardship encourages designers to think about the roles a steward will play, rather than just the configurable functions to be performed or who will own the account or data.

We adopted a stewardship-based approach for Legacy Contact because it encouraged us to think about the interpersonal responsibilities that exist around post-mortem profiles and provided the most social approach to caring for the needs of the bereaved community. Both configuration and inheritance rely on the account holder to anticipate the needs of loved ones after they die, which can be difficult in new media contexts [3,4]. In contrast, a steward can attend to and care for the needs of those who are grieving, and account for changes in social and technical circumstances.

While configuration, inheritance, and stewardship have been presented separately, some combination of the three is typically used. Stewardship was the guiding approach used in the design of Legacy Contact, however, a configuration-based approach was used to enable the account holder to make choices about their account. Additionally, some functionality was designed to enable forms of inheritance, albeit in ways that occur outside the system.

PRE-EXISTING SYSTEM

Legacy Contact was built on top of existing systems and policy. When Facebook is informed about the death of a

person who has a Facebook account, the account is "memorialized." Facebook has memorialized profiles since as early as 2007 [7]. Accounts are reviewed for possible memorialization when someone informs Facebook about the death of a friend through a "memorialization request" [8]. The account is then reviewed by Facebook's Community Operations team, and once the death is confirmed, the account is set into a memorialized state [9]. Functionally, while the profile remains visible, logging into the account is no longer possible. Additionally, memorialized profiles display no advertising, and can be excluded from Facebook features such as People You May Know and birthday reminders [10].

Memorialization was underutilized for three reasons. First, lack of general awareness about memorialization may have prevented use. Second, there was little incentive to memorialize an account. Memorialization protects the profile while also excluding it from other Facebook features, but the design of memorialized profiles provided little additional support for the needs of bereaved friends and family. As such, there was little benefit to memorializing profiles. Additionally, in scenarios where login credentials are known and the deceased person's account can be accessed, memorialization eliminates the ability to manage and use the account as the deceased. Finally, even when people were aware of memorialization, we heard questions about who has the right or responsibility to submit a request to memorialize an account. A common sentiment shared with us was that it may be inappropriate for a casual friend, for example, to submit such a request, and that this responsibility best sat with close family members. The system we describe here specifically focuses on improving the design of memorialized accounts and profiles, and also helps reduce ambiguities around the responsibilities for memorializing an account.

DESIGN OBJECTIVES

Two primary objectives informed our orientation during the design and implementation of Legacy Contact:

- care for the needs of the community
- enable people to make end-of-life choices about their profile and data

These objectives required that we provide options to account holders, while also introducing functionality that would address community needs in the absence of the deceased. As we moved through the design process, a number of additional objectives were defined:

Balance needs of the account holder and community
Caring for the community even as they repurpose the profile into a memorial presents challenges when also trying to maintain the integrity of the account holder's profile. The account holder's needs are often unstated and it is unclear how stated preferences would have changed were the deceased confronted with the variety of post-mortem circumstances. Striking the right balance between the needs of the account holder and the community was at the forefront throughout all the design decisions.

Privilege human interaction over automation
Earlier research found that automated content and notifications can result in confusion and concern for the well-being of the account holder [4]. Moreover, end-of-life preferences are often nuanced and contextual. As such, we sought to reduce automation where possible and encourage interpersonal communication rather than rely on Facebook notifications and configuration.

Reduce ambiguity about the account holder's mortal status
It is common for people to visit a post-mortem profile and be unclear about the mortal status of the account holder [4]. Following a death, post-mortem profiles are flooded with messages. While these messages frequently suggest a problem, details about or confirming the death are often absent. The profile's ambiguity is heightened by the organization of Wall posts that can result in details that are buried in the steam of other messages expressing remorse. We have heard distressing stories of people searching through Wall posts for some confirmation of their suspicions. Accordingly, one objective in the design of Legacy Contact was to address this experience by more clearly indicating that the person has died.

Delegation over configuration
Rather than focusing on a large configurable set of post-mortem settings for unforeseeable circumstances, we adopted stewardship as a model [3] to enable account

Stakeholder	Need
Account Holder	The ability to make choices about their account post-mortem
	Preserve profile, content, and privacy choices made pre-mortem
Community	Memorialize their friend in an inclusive community
	Gather and support each other
	Reduce ambiguity about the mortal status of the deceased
	Access to old content, to reflect on their friend
	Ability to repurpose content for services and their own memorializing practices
Steward	Understand the needs and wishes of the account holder
	Communication with the account holder prior to death
	Perform duties in support of the account holder and the bereaved community

Table 1. Stakeholder needs listed by type of person and their relationship to the post-mortem account and profile.

holders to delegate responsibilities to a trusted friend. Stewardship required a system composed of two distinct components: A request and configuration component, to be used by account holders while they are still alive, and legacy contact functionality, to be used by the selected friend to manage the deceased's profile.

Empower legacy contacts to understand their role and perform stewardship duties
Allowing people to select a steward resulted in three additional goals for the system (see Table 1). Derived from [3], we sought to encourage communication between the account holder and the steward prior to death. This contrasts with many existing systems that rely on automated notifications delivered post-mortem (*e.g.*, IfIDie [37], Google's Inactive Account Manager [16]). Additionally, stewards have duties to both the account holder and bereaved community that could not be performed without additional tools and functionality. For example, depending on privacy settings, the steward's ability to provide information to the deceased's network of friends about the death is limited.

Preserve what works
The use of Facebook profiles to commemorate loved ones evidences the powerful ways the community can use existing features. The existing functionality includes features for sharing memories and communal support, many of which reflect those seen in other systems designed for bereaved communities [*e.g.*, 7]. As a result, we erred on the

Figure 1. Legacy Contact Settings screenshot. The interface summarizes permissions given to a chosen legacy contact. Alternatively, people can elect to have their account and data deleted post-mortem.

side of caution when considering potential changes to memorialized profiles.

Design constraints
Finally, with these goals in mind, Facebook as a context presented a few design constraints. Namely, the Legacy Contact had to be built on top of systems, policy, and infrastructure that were already present. For example, we made use of existing processes around the memorialization of accounts. Likewise, decisions we made about access to accounts or data were held to the same standards Facebook holds for how data is treated with pre-mortem accounts. As a result, rather than focus on technological solutions, such as providing a family member with login credentials, we focused on identifying ways to address and meet their underlying needs within the existing context of Facebook.

Based on these outlined objectives and constraints, stakeholder needs were identified (see Table 1), and Legacy Contact was designed and developed over the course of one year at Facebook. The design effort was conceptually divided into three components: Legacy Contact Settings, with which an account holder can make choices about their account and select a legacy contact; the Memorialized Profile, a lightly improved version of a standard Facebook profile where the community can access information about the deceased and share messages in a communal space; and the Legacy Contact Tools, accessible only by the legacy contact after the profile has been memorialized, provides functionality for managing the deceased's profile. In this section, we describe the design and functionality of each component, highlighting how existing research and our design objectives informed the choices made.

Legacy Contact Settings
The Legacy Contact settings are accessible within the Security section of account settings. Using these settings, the account holder can make multiple end-of-life choices regarding their account and data, select a legacy contact and inform them of their decision, and optionally elect to provide the legacy contact the ability to download an archive of their Facebook data. When a user accesses the Legacy Contact Settings, an informational screen describes what permissions and functionality are granted to a Legacy Contact, and then allows the account holder to select a friend as their Legacy Contact (see Figure 1). Clearly outlining this functionality was important to differentiate Legacy Contact from account access, as well as explaining what permissions a legacy contact will and will not have. For example, the legacy contact is not able to log in as account holder or see content they didn't have access to previously, such as the person's private message history.

Multiple End of Life Choices
Alternately, people can elect to have their account and data deleted after Facebook is notified of their death. We strove to empower people with the options to make the choice they thought best, including removing their data from Facebook. However, previous work has demonstrated the ambiguities
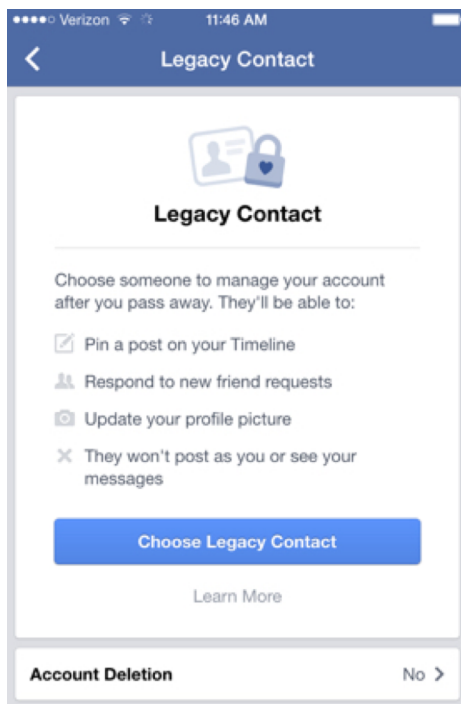
that account holders might have around their post-mortem data. When asked about end-of-life preferences, account holders are often concerned about the needs of friends and family members, but unclear about what their needs might be [4]. Account holders often under-estimate the value their loved one may find in their Facebook profile and data.

Legacy Contact Settings may impact the account holder's community more than the account holder themself. Given the nature of these settings, the account holder will never experience the result of their choices or be able to adjust settings accordingly. For these reasons, in the confirmation interface, we included a light-weight message to remind people about the value that others may find in their memorialized profile so as to encourage them to consider both the community's preferences as well as their own.

Selecting and Notifying a Legacy Contact
An account holder can select one Facebook friend as their legacy contact. The selection process is straightforward, however, the design choices around notifying the selected friend are significant.

Prior research has noted that automated communication and notifications can be distressing when related to end-of-life issues [4]. Likewise, design explorations have found that communicating with the account holder about their wishes is important for stewards [3]. As a result, we elected to not use Facebook's notification system. Instead, the resulting design makes use of Facebook Messenger. Prior to selecting a legacy contact, the interface lets users know that Facebook will not automatically notify the person, but that users will have the option to send a message. After selecting a friend, the account holder is provided the opportunity to send a message, informing their friend of the choice. The message is prepopulated, but fully customizable. Additionally, the account holder may elect to skip sending the message. The selected legacy contact receives the message as they would any other private message on Facebook, enabling the friend to easily reply and have a conversation with the account holder.

Assisting the account holder in creating a message was critical both in supporting the account holder and legacy contact, as well as feature adoption. Many existing systems allow you to author a message to the recipient or inheritor of your account. For example, Google's Inactive Account Manager, which allows users to select a person who will be granted access to their data should they pass away and their account becomes inactive, asks users to author a letter to the recipient of these data. When talking about the design of Inactive Account Manager and similar systems in previous research, we had heard about the daunting challenge of writing an end-of-life message, a concern that was reflected in our own experiences as well. As a result, we provided a default message that users could accept, or that would inform the writing of their own message.
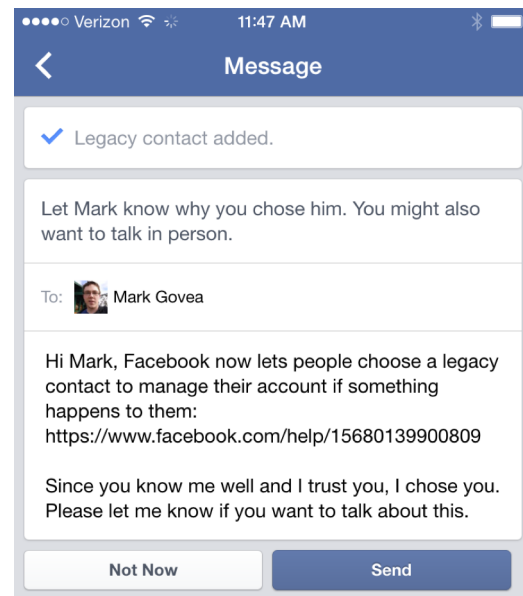
Figure 2. Default message informing the legacy contact of the account holder's selection.

From the perspective of the recipient of this message, prior research has noted the unease that automated communication can produce with end-of-life issues on Facebook [4]. Moreover, ambiguities around the account holder's intentions have been noted [32], as well as possible concerns about the account holder's well-being [3]. If people received an automatic notification that they had been picked as a legacy contact, they might worry about the person who chose them, wondering if they had an illness or might thinking about harming themselves. As a result, we had the following objectives for the message:

- Present their choice as lightweight and routine
- Encourage additional communication between the account holder and legacy contact about the account holder's post-mortem wishes
- Explain why they had been chosen as Legacy Contact
- Alleviate possible concerns that the account holder is distressed or even suicidal
- Provide details about the Legacy Contact feature so they could understand their role

While short, the message (see Figure 2) was carefully designed to:

- Provide an explanation for why people are using the feature ("Facebook now lets people choose a legacy contact…") and reduce possible concerns about about the well-being of the account holder
- Explain the legacy contact feature and their role (Accomplished by providing a link to an explanation of the Legacy Contact product)
- Explaining why the account holder selected them as a legacy contact ("Since you know me well and I trust you…").

- Encourage more conversation ("Please let me know if you want to talk about this…")

When refining the language, we relied on the assistance of members of the Greater Good Science Center at UC Berkeley and their expertise in language and emotion to ensure the default message had the correct tone and achieved our stated objectives.

Legacy Contact Tools

There are three primary and one optional feature made available to legacy contacts after the account has been memorialized. The focus of these features is largely on allowing the legacy contact to help support and meet the needs of the bereaved community. The balance between the needs of the account holder and the community was struck through carefully selecting the limited functionality provided to the legacy contact. We describe the functionality in detail, followed by some functionality not included at the end of this section to illustrate the design and system choices made during implementation.

Pinned Post

Legacy contacts can pin any post they authored on the deceased's Wall, allowing them to anchor information to the top of profile about the deceased's passing, memorial services, or even final words the deceased may have asked the legacy contact to share on their behalf.

In the absence of this functionality, memorialized profiles can be ambiguous and confusing spaces. Brubaker *et al.* [3], for example, has documented the distress that visitors to memorialized profiles can experience as they search through a chronologically ordered Wall looking for an explanation, confirmation of the death, and details about the circumstances. Additionally, addressing the scenario of the friend organizing the memorial service, the pinned post enables the legacy contact to post a message that is visible to all of the deceased's community, regardless of friendship status with the legacy contact. This decision addresses an issue first noted by Mori *et al.* [30].

Profile and Cover Photo

Visually significant, the profile and cover photo on a memorialized profile can be changed by the legacy contact. As demonstrated by the scenario involving the mother, changing a profile and cover photo can be important given that users may use photos that are whimsical, or intended for a temporary period of time but not intended to persist overtime (*e.g.,* modified profile photos in support of a political or social movements). The profile photo, in particular, is important as it is used to identify the deceased across the Facebook platform.

While we typically decided against allowing legacy contacts to modify content posted by the deceased, we diverted from that norm with these photos for two reasons: First, unlike a time stamped status update, these photos appear as static parts of Facebook profiles, much like a person's name. However, people often use these photos for time-specific purpose. Second, a thumbnail of the profile photo appears across the social network site platform and is a strong representation of the deceased. However, adding content to a profile can present challenges given how notifications can percolate through the News Feed. As such, we were careful to prevent changes to the profile photo from triggering notifications in the News Feed.

Adding Friends

In line with "facilitate memorializing practices", legacy contacts are able to accept or deny friend requests made post-mortem. As exemplified by the story of the father at the beginning of this paper, we commonly heard about people who would want to participate in the grieving community, but had yet to friend the deceased. This problem extends to those who may have changed accounts or accidentally unfriended the deceased. However, in the name of preserving the profile as created by the deceased, legacy contacts can only remove friends that they added.

Data Archive

Finally, we included the Data Archive, an optional permission that account holders can grant that allows a legacy contact to download an archive of the account holder's data. The requests we had received from people about memorialized profiles and the research showed us that people would benefit from a way to download photos and posts. They want to be able to preserve those memories, both on Facebook and independent of Facebook. For example, in previous research participants had described slowly working through a loved one's Timeline and photo albums, downloading, taking screenshots, or printing photos one by one.

The Data Archive includes the profile, wall posts, friends list, photos and videos uploaded, and events. Other information is excluded, notably private messages. A Data Archive not only enables the legacy contact to preserve the deceased's archive outside of Facebook [35], it also enables Facebook data to be repurposed and provides flexibility around how these data can be used in the future.

The optional Data Archive also provides some flexibility in how the choosen legacy contact can serve the bereaved community. [3] notes how strategies around preserving the memory of the deceased may vary in relationship to the needs of community members. As an example, a close family member may not want to be part of the memorializing community on Facebook, but would cherish an archive of their loved one's online life. The Data Archive enables the legacy contact to provide such an archive and attend to the needs of the deceased's community, online and off.

Excluded Functionality

Many of our design choices were exercises in restraint. We opted for a unified experience with few optional features that would address clearly identified needs. Our strategy was to launch a system that could start meeting those needs

while also providing a way to identify opportunities for future improvement.

Several motivations supported our approach. First, we wanted to reduce the workload on legacy contacts, who are grieving themselves. The potential challenges of performing the duties of caring for a memorial has been noted by [3,30], and so a limited set of valuable functionality was preferable to large set of configurations, features, and responsibilities. Second, we sought to keep the profile intact, while still facilitating the community practices happening on the profile Wall. By limiting the legacy contact functionality, we preserve data created by the account holder [3,35] and, with the exception of the profile and cover photo, retain the personalization of the profile made by the account holder [30]. Finally, some of our most involved efforts involved removing functionality that already existed in the platform. As mentioned previously, we decided against automated notifications when designing the legacy contact selection. We also prevented actions performed by the legacy contact from propagating into the News Feed.

The Memorialized Profile

The features included in Legacy Contact are aimed at improving the experience for a community grieving within the context of the profile. Significant changes were made to enable the Legacy Contact Tools to function. In conjunction with the roll-out of Legacy Contact, we also made small

improvements to all memorialized profiles, regardless of whether the account owner had specified a Legacy Contact.

In addition to the changes associated with the Legacy Contact Tools, the most significant was the addition of the word "Remembering" next to the person's name on memorialized profiles. We knew from the research and from people's feedback that it was important to reduce ambiguity around whether or not a person had passed away. While a variety of other options were considered (*e.g.*, "In memory of"), "Remembering" respectfully acknowledges that the person has passed away and sets a more active tone for the space.

Overall, we limited changes to the profile. Both [5] and [30] speak to how profiles serve to embody their owners. Our subtle changes here sought to preserve that embodiment, while orienting visitors to the profile owner's mortal status, and thus the types of content they are seeing on the Wall.

RECEPTION AND FEEDBACK

Since Legacy Contact was launched on February 12th, 2015, we have predominantly received positive feedback. We have seen steady adoption, as well as an increased rate of people requesting that Facebook memorialize profiles (presumably due to the media attention).

In conjunction with launch, we deployed a short feedback survey to a small subset of people who interacted with the Legacy Contact settings. The survey was comprised of two
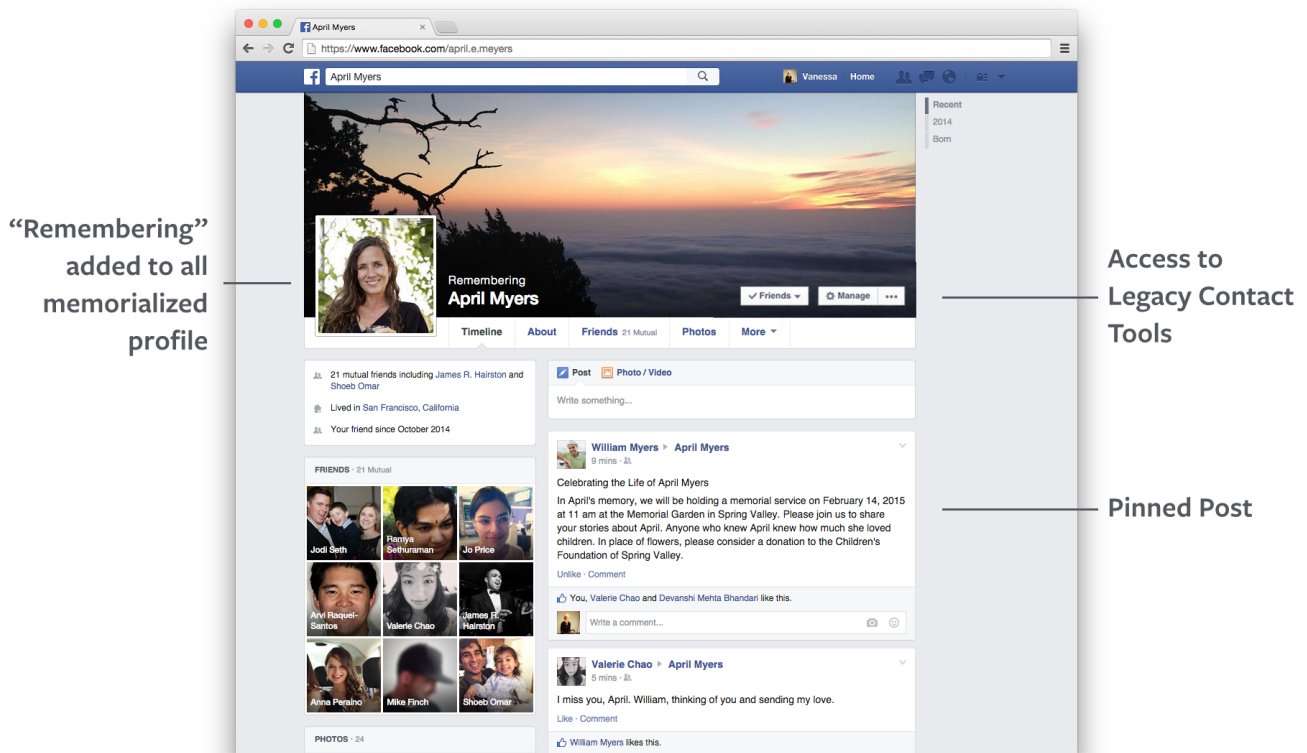
Figure 4. The redesigned memorialized profile. All memorialized profiles now include the word "Remembering" next to the account holder's name. The chosen legacy contact can pin a message to the top of the timeline, accept friend request, change the profile and cover photo, and (if enabled by the account holder) download a data archive. (Photo courtesy of Facebook.)

questions: A sentiment question with a Likert scale asking "How do you feel about Facebook adding the ability to select a legacy contact?", and an open ended question asking the respondent to elaborate on why they felt negative or positive. Responses were analyzed in a de-identified form and were not connected to any Facebook data.

Our respondents (n=180) were strongly in support of the feature (m=4.19; SD=1.09; see Figure 4). While these responses should only be considered as initial feedback, open-ended comments provided some insight into the benefits, problems, and confusion, as well as enumerating some potential ways Legacy Contact could be improved.

Positive responses varyingly focused on the needs of account holders and those impacted by the death, affirming our choice to attend to both the needs of the account holder and the community. As one respondent summarized, "[T]his is a move in the right direction."

Some spoke of the ability to allow people to make choices about who should be able to handle their account, and for some, allowing them to specify that they would like their account deleted:

this way my account can be dealt with according to my wishes.

I think that giving it [the account] to someone you trust… is a great idea.

These positive responses spoke of a desire to not leave things "undone", as well as how Legacy Contact gave them "peace of mind."

Others valued the ability to ensure that friends and family would be able to visit their profile and connect with each other:

My grandson recently died... It gave a great number of people a place to express their love of him and has helped all of us with healing and missing him… I am choosing to be pro-active for myself - and my family - knowing I have this option.

there is a lot of info posted on my Facebook page… It might be of special interest to my young grandsons who really don't know me yet.

Those who viewed Legacy Contact negatively often did not elaborate on the reason, but those who did suggested that the feature was "disturbing", "morbid", and "unnecessary." Others questioned the value of Facebook as a site of support around death. This feedback serves as a reminder about the complexity of designing tools that address death, as well as the diversity of ways in which individuals may approach topics like death and mourning.

Beyond these short explanations, one respondent provided an insightful comment about the potential burden associated with Legacy Contact:

I doubt the person who is given the "privilege" of being someone's "Legacy" contact… need[s] a constant reminder from Facebook that someone who was really close to them is dead and now they are, in essence, responsible for the degree of public remembrance via social media…

As mentioned, the potential burdens associated with the stewardship duties have been noted in previous work [3] and an issue we considered carefully. Addressing these burdens is a priority for our work moving forward.

Survey responses also captured some confusion about Legacy Contact that we had hoped to avoid. The biggest source of confusion was around distinctions between managing an account via the Legacy Contact Tools and providing complete access to the deceased person's account. The semantics here are confusing, but given the significance of the expectations around Legacy Contact and the long timeframes involved, this is an issue that should be further addressed.

Finally, a small set of respondents asked for two additional types of functionality: the ability for the legacy contact to delete the account and the ability to select more than one legacy contact. Serendipitously, we had considered both of these options during the design process but decided against them for an initial release based on the level of confusion we feared they might add to the feature and related policies.

The requests for multiple legacy contacts typically spoke of multiple family members or friends who might share this role. As one respondant wrote, "I wish I could choose more than one person. I have two sisters and I wish I could designate them both."

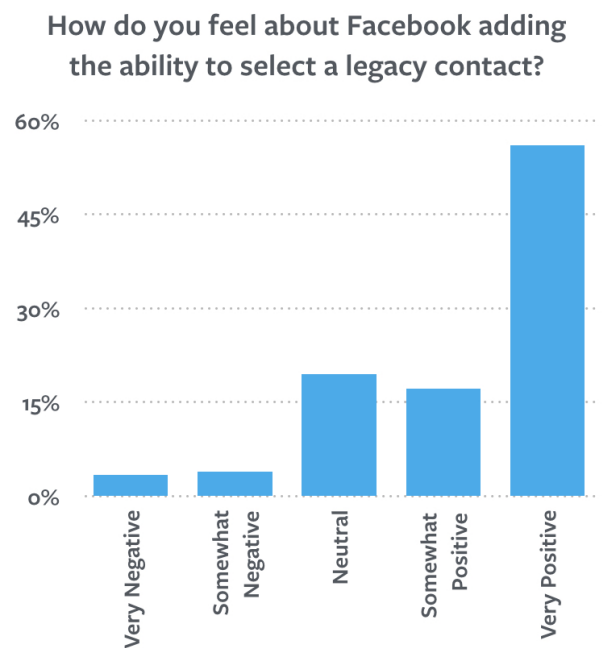**How do you feel about Facebook adding the ability to select a legacy contact?**

Figure 4. Likert scale responses evaluating Legacy Contact.

During the design process we envisioned a number of other scenarios that might merit the selection of additional legacy contacts (*e.g.,* temporary assistance, an accident that results in the death of both the account holder and the legacy contact, etc.), however, the variety of circumstances were significantly different as to merit more in-depth investigation and design work to best meet the needs of people. Finally, given that respondents were not prompted about functionality, additional needs certainly exist.

FUTURE WORK

In this paper we sought to share our design process within a sensitive and nuanced space and demonstrate to others how we moved from existing theoretical and empirical work to concrete design choices. While initial indicators are positive, more in-depth study of Legacy Contact is important. While a thorough evaluation is beyond the scope of this work, moving forward we intend to evaluate the individual design choices in relationship to our objectives and report on the adoption of Legacy Contact in order to make iterative improvements.

There are a number of challenges to evaluating a system like Legacy Contact. A robust evaluation requires studying various interactions including selection of a steward, receiving a stewardship request, notifying Facebook of the death, stewardship activities, and their impact on the memorialized profile itself. Accordingly, evaluation requires engaging multiple types of people including the account holder, steward, and friends pre, peri and post-mortem. Accordingly, evaluation of stewardship requires that people die. Death also raises ethical concerns around research with the bereaved. Individuals taking on the stewardship role will most likely be under some degree of distress. Our previous work suggests that we wait 6-12 months post-mortem before carefully engaging stewards in interview-based evaluations.

The specific functionality enabled by Legacy Contact is fairly limited by design. Knowing that the social ramifications of this new functionality could be extensive, our objective was to introduce a well scoped and coherent feature to both meet immediate need and provide a baseline from which to expand and better meet people's needs.

A future area for research involves studying the experience of legacy contacts as they steward these profiles. In particular, because the Legacy Contact Tools only become active after someone's death, evaluating their use will need to be conducted over time. Understandably, these are also evaluations that require a high level of care and sensitivity. We intend to further explore the effectiveness of Legacy Contact and unmet needs through a set of formal evaluation studies in the future.

An inherent challenge to any post-mortem system involves weighing improvements and changes against people's established expectations of the feature, especially given that those who have died cannot update their settings or declare their preferences about an expanded set of functionality. How the privileges granted to legacy contacts should change over time and independent of the deceased is an open research question.

CONCLUSION

In this paper, we have detailed the design of Legacy Contact, a Facebook product that addresses death within the context of social network sites. Building on theoretical, empirical, and design research conducted within HCI, Legacy Contact is a concrete system that addresses the needs of both the account holder making end-of-life plans and the community that will mourn their death and memorialize their life.

Our paper makes four primary contributions: First, we defined three approaches to post-mortem data management from existing literature and systems. Second, we identified design objectives for a stewardship-based post-mortem data management tool for a large scale social network site that balances the needs of the community and account holders. Third, we detailed how those objectives were operationalized into a pre-existing platform. Finally, we articulated the reception and feedback to our design.ever

Preliminary feedback to Legacy Contact has been positive but reveals subtle challenges in the implementation of stewardship on a large scale social media platform. More in-depth evaluations of Legacy Contact will be necessary, particularly to identify unmet needs and to understand the needs of legacy contacts who maintain memorialized profiles overtime.

Legacy Contact represents only one approach to post-mortem management. Within the context of Facebook, stewardship proved an effective frame for determining how to balance the needs of the account holder and the community. It is our hope that by detailing the rationale behind our design decisions that others will benefit from seeing how an implementation of stewardship unfolded within the context of Facebook. In building the Legacy Contact feature, we have tried to give people options that do more than just let them control what happens to their data after they die. We made a specific decision to focus on the needs of friends and family who are mourning and celebrating the life of a loved one. The dynamics of other sites will certainly require different design choices, however, most social media systems should consider the balance between the needs of account holders and community members.

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