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by

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Digital Demise: Preservation of Facebook Legacies Post Mortem

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Dedication

For Gary, Maddie, Sofia, and Esther whose unconditional love and support carried me past my own doubts and across the finish line.

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Abstract

Digital Demise: Preservation of Facebook Legacies Post Mortem

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Personal Information Management includes the practice of creating, maintaining, retrieving, and sharing information. In this report, I will evaluate personal information management in the context of the social media service Facebook to illustrate the importance of managing our digital identities. Most research on our growing dependence on digital institutions to preserve our digital assets focuses on how an individual can manage their digital assets to prevent fraud, create filing systems, and secure a legacy. This body of literature can help an individual curate, archive, and secure their information in life, but little research explores managing and preserving digital assets after an individual passes away. In this report, I will explore the role of Facebook in Personal Information Management, managing digital legacies post mortem, and the impact of our Facebook assets on death and grieving.

More than a quarter of the world's population uses Facebook to make connections, stay in touch with friends and relatives, and to create timelines of their digital histories

(Facebook, 2017) User content on Facebook includes photos, the written word, and videos, and builds on a user's individual human experience. It has changed the way we interact both online and offline. Social media and changes in technology contribute to what some claim is a seismic shift in our culture and has significantly increased the content we produce and maintain. As information management processes shift from physical to digital, demanding different tools, it may be difficult for individuals and their loved ones to navigate new requirements to protect and access their information in life and post mortem.

The ubiquitous presence of smartphones and connected devices makes people feel connected wherever they go. It enables us to create and publish content anytime, and anywhere, often faster than traditional journalists. To consider the question of how we might think about our digital legacies post mortem looking at Facebook in particular, this report first considers challenges to such legacies, potential solutions offered by Facebook, and the importance of addressing these challenges and questions. The report concludes with a look at how a Facebook user's enduring presence online affects the grief process. The entwining of our online and offline experiences highlights the importance of thinking about our post mortem digital assets and the artifacts we leave behind after death. This report will address these issues and offer solutions and challenges to securing our post mortem digital legacies on Facebook.

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INTRODUCTION

Over the last 200 years, our medical, legal, and genealogical files have primarily existed in paper form. We are now, however rapidly replacing meaningful physical objects with digital counterparts. Photos, home movies, love letters, and family histories are shifting to digital forms and becoming part of our personal information collections (PICs). As we create and consume more digital data, our need to develop and improve the systems to find, access, and archive our personal information files increases. These files hold more than data. These pieces of our identity are what make us unique. As we add identifiers such as date of birth, location histories and social connections, we begin to paint a much richer story and develop a unique picture of an individual.

An individual's digital identity may have several subsets of personal information collections. These personal information collections are a self-contained set of objects, typically in the same form, ranging from digital photo albums from a particular year, and music libraries of the same genre, to Pinterest Pins about backyard weddings. A personal information collection includes both the information or file, and the organization structure of the digital collection.

The shift from physical to digital files changes the way individuals interact with the information they create. While physical files are easier to track, access and preserve, personal digital files are more difficult to control and manage. This difference has led to a new field of personal digital archiving to help individuals preserve their files and prevent

accidental loss and theft, and to manage the limited life of hardware and inaccessibility of systems that house digital data over time.

Personal information management (PIM) was introduced in the 1980's along with the personal computer to help users manage their schedules and process the growing amounts of digital data they create (Jones, 2006) Since then, PIM has grown to include the study and practice of the activities a person performs to acquire, create, maintain, retrieve, and share information for personal use. As individuals gain greater access to information, plentiful and inexpensive digital storage, and a wider range of technologies to manage and collect personal information collections, it can be challenging for users to organize and manage the growing volumes of accounts and personal data saved in multiple locations, in different formats, and within various organizational schemes. (Jones, 2006) One question individuals may encounter is determining the future use of the data they retain. Often this information may serve a purpose in a current state, but may quickly become obsolete with the introduction of new data, software, or systems.

Digital documents contain personal information that validates individual identities and histories, and facilitates daily activities. As Romano & Carroll noted in *Your Digital Afterlife* (2011, p. 3):

All of this content reflects who you are and what you think. Whether you realize it or not that makes it quite valuable. When others respond with a comment or a retweet, they're adding value to your collection. As more family photos, home movies, and email messages are created, the entire collection becomes a fuller

reflection of you and thus more valuable, both to you and the people you share it with.

Adaptation of personal information management systems and the miniaturization of personal computing devices allow users to amass, transport and access a lifetime of memories and personal experiences in digital form. While PIM tools provide convenience, they may also complicate an individual's digital repositories by creating duplicate copies stored on commercial systems, which may limit a user's ability to remove, control, or access their personal files.

The term "personal space of information" encompasses: information saved for personal use, information others control and keep about an individual, such as a medical history, and encountered information that becomes part of an individual's personal experience, including Internet page views. (Jones, 2007) Social media websites such as Facebook and Twitter primarily fall under the first sense of personal information, as this type of personal information encompasses what the user chooses to save that is under their individual control. Facebook users may see a recipe or news story they want to save and retrieve for future use. A unique quality of a personal space of information is that it is under an individual's control, but not always. Terms of service can prevent access to data, and make it non-transferable, or may make it difficult to permanently delete items to prevent future access. Failed companies, changing file formats, ransomware, and changes in storage limits can also hinder the management of digital assets.

Technology, social media, and the Internet use have caused exponential growth to personal spaces of information and personal information collections as users archive their data, create new content and store their identity information. As the amount of information in PICs dramatically increases, the time available to consume this information remains constant and finite resulting in “content shock.” The premise of content shock, coined by Mark Schaefer, is “The amount of available content is exploding, our human capacity to absorb content is limited, which at some point creates an ‘economic’ pressure on the system that will require adaptation and shifts from current marketing strategies” (2016) To continue to feel connected to their social groups, many online users may overshare personal information, location histories, and elements of their daily lives. This disclosure can result in identity theft, financial scams, or physical harm and is commoditized by marketers and criminals looking to profit from data disclosure.

An example of a PIM system that contains a treasure trove of personal information is Facebook. Facebook is more than just an interface to organize personal information, it also allows users to search their digital histories for memories, boosts their confidence through affirmation of ideas, and serves as a medium to share personal and communal histories. Facebook is the world’s largest social media application. More than two billion active users, a quarter of the world’s population, uses Facebook monthly, more than 1.3 billion use it daily, and more than 21,000 new users join the service every hour. (Allen, 2017) Founded in 2004, Facebook’s mission is “to give people the power to build community and bring the world closer together. People use Facebook to stay connected with friends and family, to discover what’s going on in the world, and to share and express

what matters to them.” (Facebook, 2017) Every hour Facebook users post over 18 million status updates, send 9 million private messages, upload 8 million photos, and send more than 6 million friend requests. (Allen, 2017) Facebook allows users to connect and share memories and information through a mobile device or personal computer. Most of these users post three or more photos and videos daily. (Evans, 2015) Facebook’s other products include: Instagram, WhatsApp, Oculus, and Facebook Messenger (Facebook, 2016, p. 5).

While the size and longevity of Facebook may suggest it will continue to operate indefinitely, other one-time media giants, including Myspace, Napster, and Friendster, proved the popularity and long-term viability of a website is tumultuous and uncertain. A 2016 Pew Research Study indicated young adults aged 18-29 report using Facebook more often than older age groups; 62% of online adults age 65 and older also use Facebook, up from 48% who reported doing so in 2015. (Greenwood, Perrin, & Duggan, 2016).

According to the National Center for Health Statistics, the average life expectancy in the United States in 2015 was 78.8 years. (Xu, Murphy, Kochanek, & Arias, 2016) As Facebook’s users age and the number of older users continues to grow, many of these users will die. Facebook may not only curate and manage the digital assets of the living, it may also become a virtual cemetery. Former NASA scientist, Randall Munroe calculates, if Facebook continues its current trajectory and continues to flourish, the number of dead users will outnumber the living around 2130. If Facebook loses popularity, or does not add young users, that crossover point may happen closer to 2065. (McMullan, 2017) While it is difficult to determine when the dead will outnumber the living on Facebook, it may be insignificant if Facebook ceases to exist. Physical memorials risk decay, but digital

memorials face more uncertainty. If the Facebook profiles of the deceased cease to exist, what happens to the history and artifacts of its users?

In 1999, Jeff Rothenberg warned about the historical impact of digitizing and preserving information in *Scientific American* article, citing (p. 43):

We are in imminent danger of losing [digital information and documents] even as we create them. We must invest careful thought and significant effort if we are to preserve these documents for the future. If we are unwilling to make this investment, we risk substantial practical loss, as well as the condemnation of our progeny for thoughtlessly consigning to oblivion a unique historical legacy.

Since Rothenberg raised this warning in 1999, the danger of losing personal information and digital legacies has grown at an accelerating rate. Google's Vice President, Vint Cerf, warned a generation or perhaps a century of digitized data may be lost because the programs needed to run them no longer exist due to "bit rot" (Sample, 2015):

We are nonchalantly throwing all of our data into what could become an information black hole without realizing it. We digitize things because we think we will preserve them, but what we don't understand is that unless we take other steps, those digital versions may not be any better, and may even be worse, than the artefacts that we digitized.

As Facebook grows, and its users make the platform the primary means of archiving their social identities, it becomes increasingly important to plan for the impact of this digitalization of personal histories and determine methods to manage these identity assets to ensure they are available for future use.

According to a 2010 Pew Research Center project, Gen X (born 1965-1979) will be the last generation to remember life without computers and mobile phones. As Millennials and Gen Xers age, people with a lifetime of digital assets will plan for their deaths. This post mortem planning may focus on physical assets but may not consider the value of digital assets. People born after 2000, sometimes known as Digital Natives, have always lived digitally connected lives, immersed in technology. These users are more likely to create and consume digital assets, store their information online, and are dependent on technology companies to provide the platform and access needed to manage their content. As Digital Natives age, planning for post mortem digital asset preservation may become as important as planning for physical assets. (Pew Research Center, 2010)

While it is important to preserve the digital legacies of Facebook users, it is also critical to consider the information shared on the social site, and the ramifications of leaving this personal information on the Internet after a user's death. Typically, Facebook users share information on their profiles to include their address, date of birth, pictures of and names of their relatives, and milestones including their children's first day of school, first date, or first car. Sharing information with other users builds trust, and allows individuals to connect with "friends." After these users pass, the same information that helped them make connections can help fraudsters assume their identities. By preparing

for, and securing their digital legacies, users can evaluate and redact personal information that may make them vulnerable to fraud or identity theft post mortem. While identity theft of the deceased may seem like a victimless crime, it can result in serious issues with the deceased's estate, reputational issues, or financial losses to lenders.

The death of every Facebook user is inevitable. An estimated 972,000 Facebook users died in 2016 alone. (Carroll, 2016) As these users die, it can be an arduous process for their digital heirs to close their accounts, continue their digital legacies, and honor their memories. Managing and ownership of digital assets including Facebook post mortem are relatively unaddressed. In this report, I will look to identify and consider the identity information in Facebook accounts, and offer suggestions and tools to organize, manage, and secure these personal information collections; and address the impact that our eternal Facebook presence online has on our identities.

FACEBOOK LEGACIES: CHALLENGES

CURRENT CHALLENGES

How can users protect their digital identities on Facebook post mortem? Managing digital identity assets can be challenging due to restrictions imposed by the proprietary programs on post mortem ownership, use, or access. While Facebook changed its policies to allow the friends and family of a deceased user to exercise greater control over their profiles, it is difficult to know what the deceased may have wanted to do with their intimate digital artifacts, who should dictate the fate of an account, and how long a memorialized account should persist.

Legal impediments compound the technical difficulties to managing digital property. Unlike tangible assets, such as a residence or vehicle, which typically pass on to a surviving next of kin, digital assets are not automatically inheritable. Limited legislation governs these assets, and existing federal and state laws may impede access and management to the decedent's digital estate. Facebook services are offered under two policies, the Statement of Rights and Responsibilities and the Data Use Policy. These terms of service and policy documents govern an individual user's rights to their use of Facebook, and clearly state the agreement between Facebook and the user "does not confer any third-party beneficiary rights" (McCallig, 2014) Users cannot transfer their Facebook accounts or any pages they administer without acquiring prior written consent from Facebook and are prohibited from sharing their passwords or allowing others to use their accounts. These

provisions make it difficult to manage a deceased user's account without prior consent, and several other circumstances may make access difficult.

There are clearly defined rules to determine the inheritance or management of a decedent's social media account. Typically, family members need to submit an obituary, news article, or death certificate to verify a user's death. If no one submits a request to manage the account to include documented instructions, the profile remains unchanged online, and cannot be managed or changed by anyone other than the account holder. As Kristina Sherry points out in, "What Happens to Our Facebook Accounts When We Die? Probate versus Policy and the Fate of Social-Media Assets Postmortem" (2013, pp. 186,187):

Without third-party intervention, a dead Facebooker's 'profile' page will be frozen in time like a pixilated Dorian Gray, colored by iPhone photos, 'pokes,' and 'LOL!'s—possibly for an eternity. [These deaths will raise] numerous legal questions as to the disposition of their Facebook pages and similar 'digital assets' left in a state of legal limbo. While access to and ownership of decedents' email accounts has been philosophized for nearly a decade, this Comment focuses on the additional legal uncertainties posed by 'digital death' in the more amorphous realm of 'social media.' For some, a dead friend's or family member's abandoned profile might serve as a beautiful and appropriate reminder of its creator. But for others it might trend closer to a macabre eyesore in need of termination.

While Facebook and other social media sites benefit from knowing how many users join their social networks, it can be difficult to determine when these users die, which makes it difficult to provide the governance or controls necessary to monitor and protect users' privacy and identity assets post mortem. Many of these accounts will exist in perpetuity, while a much smaller portion will be shut down at the request of a digital executor.

DEFINING DIGITAL ASSETS

The first challenge in managing digital assets on Facebook post mortem is defining the asset itself. Virginia's Privacy Expectation Afterlife and Choices Act (PEAC) relates digital assets to "content" including oral, written, and electronic communication, but stops short of including a definition of digital assets primarily because including a definition may create a new class of property rights. (VA Code, 2015) Many Internet providers also use the "content" nomenclature. The Uniform Commission in the Revised Uniform Fiduciary Access to Digital Assets Act of 2015 (RUFADAA) defines a digital asset as an "electronic record in which an individual has a right or interest." (H.R. Res., 2015) A 2012 proposed Oregon statute defines a digital asset as (Digital Assets Legislative Proposal, Oregon State Bar, 2012):

Text, images, multimedia information, or personal property stored in a digital format, whether stored on a server, computer, or other electronic device which currently exists or may exist as technology develops, and regardless of the ownership of the physical device upon which the digital asset is stored.

Digital assets include, without limitation, any words, characters, codes, or contractual rights necessary to access the digital assets.

There is no legally accepted definition of digital asset, but John Romano offers the following definition to encompass all the digital elements of an estate that have value, “a digital asset is digitally stored content or an online account owned by an individual” (Romano & Carroll, 2011) Digital assets include devices and data owned by an individual locally and in the cloud including: cameras, smartphones, computers, photos, videos, voicemail accounts, electronic mail, email accounts; financial accounts: including airline and hotel reward points, online purchasing and bill pay and bitcoin; online accounts: including access to social media sites; and business accounts: including Dropbox or document storage accounts. (Romano, 2011) Service providers govern the terms of service contracts on many of the email, financial, social media, and online accounts, which can make access to digital assets difficult to acquire and manage after a user’s death.

What types of digital assets does a user leave behind on Facebook post mortem? Assets can include: messages, status updates, check ins and location information, a timeline of their personal histories, photos, and videos. These digital assets may have research, historical, cultural, or personal value that necessitates management. Facebook’s data policy describes the information collected, used, and shared from or about its users, more on each subcategory included in Appendix B (Facebook, 2016).

1. Things you do and information you provide
2. Things others do and information they provide

3. Your networks and connections
4. Information about payments
5. Device information
6. Information from websites and apps that use our Services
7. Information from third-party partners
8. Facebook companies

With the introduction of smart phones and social media, users shifted from taking and developing printed photos to creating, storing, and sharing digital copies on Facebook, Flickr, or Instagram. The lack of a printed backup copy of the digital artifact introduces new challenges for post mortem legacies including curation, storage, safety, and longevity of the online memories. Users who do not plan for their digital estates may consign their Facebook assets to limbo or make them inaccessible to their families and friends.

In addition to personal information collections, Facebook users also leave behind “friend” connections formed through their social groups. Time or space does not bind these connections, and they may not exist without the social platform. Unfortunately, fraudsters exploit these online friendships and use them as an inroad to unknown groups through friend connections. Users assume that, if they trust the deceased, then any connections that person has are also trustworthy.

Intentional trust may also cause Facebook users to believe that fraudsters posing as a shared connection, have good intentions for initiating an online connection. Woolthuis, Hildebrand and Noteboom talk about intentional trust which is rooted in the relationship

between the parties. This type of trust is based on the belief that the other party has positive intentions and will refrain from utilizing the other party's trust for self-gain without concern for harming them. (2005, p. 814) As the fraudster creates connections with the deceased's Facebook "friends," they build on those connections to create additional trust networks.

ACCESS, LOCATION, AND CONTROL

After a user identifies their digital assets on Facebook, the next consideration is to determine which assets she wants to protect, and what policies govern data and account access post mortem. There is a growing movement toward setting up a digital estate plan to help account holders distribute their digital assets upon death through passing on a list of accounts and passwords to predesignated executors. The legality of sharing account passwords with a trusted executor, however is unclear. Facebook Terms of Service include restrictions for sharing passwords with other users to gain access to an account. In the event Facebook is installed as an application on a mobile device, accessibility and control can also affect transferability post mortem.

There is a functional interconnectivity between Facebook accounts and other digital assets. Increasingly, websites are allowing users single sign-on authentication through Facebook to another application or online portal. As such, Facebook credentials can unlock access to other systems, and users should give careful thought to the interconnectivity of their social accounts. Providing a digital heir with the password to email or social media accounts can also be problematic as email account credentials often serve as the "master

key” to access other online or social accounts or reset passwords. Devices including computers and cell phones can also serve as master keys to unlock other accounts. Access to a device can also mean access to a deceased user’s financial accounts.

There are other concerns about the location, access, and control of Facebook accounts. If the digital heir receives access to the deceased’s account but does not know the login credentials, it may be necessary to access the user’s email account to verify identity and recover the password. If the digital asset resides on a cloud service or cellphone that is password protected, the fiduciary may have access to the asset but not the password needed to unlock the device.

Digital assets are frequently governed by a license granted through a website’s contractual terms of service agreement (ToSA). These user agreements may prevent digital accounts from passing to heirs as tangible properties or can limit access and transferability post-mortem. Any rights to the content of an account, may die with the account holder and may result in the deletion the asset.

It can be difficult to determine which laws govern inherited digital assets including non-transferability and termination provisions. Probate of assets in different states can produce different outcomes. Overwhelmingly, California law governs online service contract disputes, as it is the principal place of business for most major U.S. technology information companies. Sherry notes, “because not all users are situated in California, it’s questionable whether the estate laws of a decedent’s resident state would supersede the contractual agreements with the various online services,” irrespective of legislation specifically addressing social media assets. “ (Sherry, 2013, p. 205)

IDENTITY THEFT CHALLENGES

Identity thieves not only target the living, they also target the recently deceased. The family of the deceased is often vulnerable and may overlook abnormal patterns in their loved one's finances or digital accounts. While many users choose to memorialize their Facebook accounts to help people gather and remember the deceased, leaving the profile online may put their loved one's identity at risk. Identity thieves exploit this vulnerability and may take on the identity of the deceased, in a method known as "ghosting." Ghosting targets the dead of all ages, and occurs when an imposter manipulates or uses the personally identifiable information of a deceased individual for monetary gain. Ghosting modus operandi include: credit card, loan, or employment fraud, taking over accounts, taxpayer ID or refund fraud, medical ID theft. According to the Identity Theft Resource Center, thieves steal the identity of nearly 2.5 million deceased Americans every year. (Identity Theft Resource Center, 2017) While fraudsters may believe ghosting is a victimless crime, it can result in serious issues with the deceased's estate, or financial losses to lenders.

Another form of theft that can occur using the information found on a memorialized Facebook profile is synthetic ID theft. This type of ID theft uses the information on the deceased's profile in combination with other information such as a Social Security Number to fraudulently complete loan applications or open accounts. The photos and information of the deceased can also be used in sweetheart scams for financial gain. Assuming the identity of the deceased can be a profitable venture which often goes unnoticed. While the Social Security Administration maintains a Death Master File, and most financial institutions and credit bureaus receive monthly updates, it can take 60 days or more for a

name to appear on the list. While memorializing accounts may provide comfort to the grieving, they may also be a signal of vulnerability to fraudsters.

Signals that a deceased user's personal information is compromised include: collection notices, bills from unknown companies, credit card bills with new monthly balances, or privacy disclosures for new accounts. Ideally, the Social Security Administration receives a timely notification of the deceased's passing and marks the number as inactive, preventing future use, but such protection is not guaranteed. To proactively manage a user's account, and prevent misuse, one should avoid sharing personally identifiable information on social media timelines such as names of schools, addresses, birth dates, or parents' names. Additionally, the Internal Revenue Service recommends the following steps to reduce the risk of identity theft to the deceased (Internal Revenue Service, 2017):

- Send the IRS a copy of the death certificate, this is used to flag the account to reflect that the person is deceased. The death certificate may be sent to the Campus where the decedent would normally file their tax return. A copy of the death certificate may also be sent with the decedent's final tax return.
- Send copies of the death certificate to each credit reporting bureau asking them to put a "deceased alert" on the deceased's credit report
- Review the deceased's credit report for questionable credit card activity

Facebook is built on sharing personal experiences, this may make users vulnerable to identity theft. Deceased or incapacitated users cannot monitor their online presence or report misuse, making them particularly susceptible. While it may be difficult to keep users from oversharing information that may make them vulnerable to identity theft, users can take precautions to reduce their risk of ID theft post mortem by reviewing and monitoring any activity which may seem questionable.

FACEBOOK LEGACIES: SOLUTIONS

FACEBOOK OPTIONS POST MORTEM

The options available for personal digital archiving on Facebook include:

1. taking no action and allowing Facebook to act as a trusted digital repository
2. memorialization
3. deletion of a deceased users account
4. archiving the profile through appointing a legacy contact
5. digital executor

These options may help users manage or delete their accounts, personal information, and assets, but may also lead to a false sense of security. Managing the account does not guarantee that the photos and memories on the social platform will continue to exist in perpetuity. If the only copy of a photo exists on Facebook, this digital asset may be vulnerable to loss.

Facebook addressed the motivations behind their post mortem account management solutions to include memorialization and legacy contacts in their “Hard Questions” series. In a post titled: “Hard Questions: What Should Happen to People’s Online Identity When They Die?” Monika Bickert, Director of Global Policy Management for Facebook shared her experience with the loss of her husband Phil. She talked about the need to connect with deceased loved ones and said, “With an ease that wasn’t possible 20 years ago, we can now hear and see our loved ones after they are gone, and we can share those memories with others who are grieving.” (Bickert, 2017) Connecting with Phil on

Facebook provided her with a medium to feel connected to her husband, while at the same time serving as painful, perpetually renewed reminder of his death.

After suffering a loss, particularly through murder or suicide, online reminders of the deceased may be especially painful. Facebook took such experiences into account when creating their legacy solutions for post mortem account management. Some standard Facebook features, such as birthday reminders cease when a user dies, and Facebook tries to make it easy for surviving family members to continue to interact with and access their “friends” online profiles, or make a death notification.

Facebook acknowledges the difficulty in knowing what actions to take after a user dies noting (cited in Bickert, 2017):

These questions — how to weigh survivors’ competing interests, determine the wishes of the deceased, and protect the privacy of third parties – have been some of the toughest we’ve confronted, and we still don’t have all the answers. Laws may provide clarity, but often they do not. In many countries, the legal framework for transferring assets to surviving family members does not account for digital assets like social media or email accounts. We are, however, doing our part to try and make these situations easier for everyone.

Facebook is a place to connect with others, and is also a venue for remembering the deceased. Post mortem profiles serve as digital artifacts, and personal archives, as well as a venue for friends and family to gather and share memories and grieve. Designing an interface to accomplish these goals can be difficult. It may be difficult to know what a

deceased user would have wanted, while supporting both the privacy of the deceased user and the grieving online community.

RESPECT THE WISHES OF THE DECEASED

When permitted by law, Facebook attempts to respect the wishes of the deceased. Doing this is challenging when the deceased has not made their wishes known. In May 2014, Facebook introduced a new feature allowing other users to request a user's relationship status. This feature highlighted the fact that many married couples are not "friends" on Facebook. (Warzel, 2014). If a bereaved spouse asks to view and archive a late partners profile, how does Facebook know that granting access was what the deceased would have wanted? In these circumstances, and others where the deceased's wishes are not explicitly defined prior to their death, Facebook will try to leave the account the way the user left it. Nothing is removed or changed, the only notable difference is that the words "remembering" are added to the top of the user's page the profile. For security purposes, Facebook denies any attempts to login to a memorialized account. Memorialization is Facebook's default action after a user's death, but users can also opt to have their accounts permanently deleted when they die, or can set up legacy contacts to manage their post mortem profiles.

PROTECT THE PRIVACY OF SURVIVORS AND THE DECEASED

Respecting the wishes of the deceased is not the only consideration taken when a user dies. Facebook also considers the privacy interests of surviving third parties. In

September, 2012, the executor of Sahar Daftary's estate obtained a subpoena to compel Facebook to release the contents of the decedent's account to determine her cause of death. Court records indicated the cause of death was in dispute, previously determined to be suicide, Daftary's survivors believed, "her Facebook account contains critical evidence showing her actual state of mind in the days leading up to her death." Citing the Stored Communications Act to protect account contents and privacy rights, the courts ruled that Facebook did not have to turn over the account in a civil action. (Lamm, 2012) While the deceased's family may want to understand the circumstances leading up to their loved one's death, Facebook is not only responsible for protecting the privacy of the user, it is also responsible for protecting the privacy of the other people the decedent may have exchanged messages with. Facebook notes (Bickert, 2017):

Although cases like this are heartbreaking, we generally can't turn over private messages on Facebook without affecting other people's privacy. In a private conversation between two people, we assume that both people intended the messages to remain private. And even where it feels right to turn over private messages to family members, laws may prevent us from doing so. The Electronic Communications Privacy Act and Stored Communications Act, for instance, prevent us from relying upon family consent to disclose the contents of a person's communications.

Messages shared between Facebook users are intended to be private communication.

While sharing the contents may seem innocuous, to a grieving user's family, it can

violate the privacy of the third party who interacted with the user with a presumed expectation of privacy.

MEMORIALIZATION

Facebook began memorializing pages of deceased users in 2007. Memorializing an account allows a legacy contact to share information about memorial services, memories about the deceased, and support for grieving family members. Figure 1 below, shows a memorialized profile which pays tribute to the deceased including “remembering” above their name. (Facebook, 2015) Once an account is memorialized, the account is only visible to the deceased’s existing “friends,” any users who were not friends with the deceased prior to their passing, will not be able to access the profile or leave posts on the timeline. The profile of a deceased user will not appear in search function, and memorialized accounts will not appear in “people you may know” or “tag a friend” suggestions. For sensitivity reasons, memorialized pages do not contain advertising.

Figure 1. Image of memorialized legacy contact timeline

The image shows a screenshot of a Facebook profile for April Myers, which has been memorialized. The browser address bar at the top shows the URL: <https://www.facebook.com/april.e.meyers>. The profile header features a large cover photo of a sunset over a valley, with a smaller profile picture of April Myers on the left. The text "Remembering April Myers" is displayed on the cover photo. Navigation tabs include "Timeline", "About", "Friends 21 Mutual", "Photos", and "More".

On the left side, there is a summary box with the following information:

- 21 mutual friends including James R. Hairston and Shoeb Omar
- Lived in San Francisco, California
- Your friend since October 2014

Below the summary box is a "FRIENDS · 21 Mutual" section displaying a grid of nine friends' profile pictures:

- Jodi Seth
- Ramya Sethuraman
- Jo Price
- Arvi Raquel-Santos
- Valerie Chao
- James R. Hairston
- Anna Peralino
- Mike Finch
- Shoeb Omar

At the bottom left, there is a "PHOTOS · 24" section.

The main timeline area on the right contains a post from William Myers, dated 9 minutes ago, titled "April Myers". The post text reads: "Celebrating the Life of April Myers. In April's memory, we will be holding a memorial service on February 14, 2015 at 11 am at the Memorial Garden in Spring Valley. Please join us to share your stories about April. Anyone who knew April knew how much she loved children. In place of flowers, please consider a donation to the Children's Foundation of Spring Valley." The post has been liked by "You, Valerie Chao and Devanshi Mehta Bhandari".

Below this is a comment from Valerie Chao, dated 5 minutes ago, which says: "I miss you, April. William, thinking of you and sending my love." This comment has been liked by William Myers.

CHALLENGES TO MEMORIALIZATION

According to Brubaker and Callison-Burch, memorialization is underutilized for three reasons: lack of awareness, limited incentive to memorializing a profile, and ambiguities around the responsibilities for memorializing an account. (cite) Memorialization offers little support for the needs or desires of the family and friends of the deceased. It does not allow next of kin to access or manage the account. In fact, even if the next of kin has the password, memorializing the account prevents all logins.

There are no restrictions on who can memorialize an account. Any friend or family member of the deceased can initiate the request by filling out the form in Figure 2. As illustrated, the person requesting memorialization does not need to be a close friend or family member, and as such Facebook suggests, but does require that the person reaches out to the deceased's immediate family before proceeding. Facebook includes an additional reminder that accounts without a legacy contact will not be "cared for by anyone." A name, and approximate date of passing, are the only items required to memorialize an account. Proof of death through a death certificate or online obituary can help expedite the process, but is not a requirement for memorialization.

It seems there is some ambiguity about when and by whom memorialization should be initiated on an account post mortem. Even when other users are aware of the memorialization option, many of them expressed uncertainty about when it is appropriate to step in and submit a memorialization request. Most shared that it was inappropriate for anyone outside of immediate family members to make this intimate decision. (Brubaker & Callison-Burch, 2016, p. 2915)

Figure 2. Request for post mortem memorialization of user profile

Memorialization Request

After someone has passed away, we'll memorialize their account if a family member or friend submits a request. Keep in mind that memorialization is a big decision. If you're not a family member or close friend of the person who passed away, we recommend reaching out to the person's family before requesting memorialization.

Memorializing an account will do things like keep the account secure by preventing anyone from logging into it. The only person who can manage a memorialized account is a legacy contact who must be selected by the account holder. A legacy contact can do things like:

- Pin a post on the person's profile
- Respond to new friend requests
- Update the profile picture and cover photo

If the account holder hasn't selected a legacy contact, the account won't be actively cared for by anyone after memorialization has been requested.

If you'd like to request that an account be memorialized, please use this form to let us know.

Who passed away?

If you can't find who you're looking for, try our special request form.

When did they pass away?

If you don't know the exact date, please approximate.

Optional: Proof of death

If you can, please provide a link to an obituary or other documentation about the death. This is very helpful to the team that reviews memorialization requests.

If you don't have a link to provide, you can upload your documentation instead.

 No file chosen

Facebook's memorializing feature allows friends and family members to request that the decedent's account be frozen; unless a user leaves explicit written directions with a legal will, however, it may be difficult to make decisions about the management of the account until control of the digital asset is determined. According to Sherry, "the definition of digital assets, which is already vague, is continuously broadening to incorporate once-tangible assets now undergoing complete digitization, as well as previously unforeseen cyber innovations." In almost all instances, state laws govern these digital assets, and there is little uniformity. (Sherry, 2013, p. 192)

Facebook is largely hands off with dead user's accounts. Facebook representative, Fred Wolens notes (Kaleem, 2012):

We believe we have put in effective policies that address the accounts that are left behind by the deceased. When we receive a report that a person on Facebook is deceased, we put the account in a special memorialized state. Certain more sensitive information is removed, and privacy is restricted to friends only. The profile and Wall are left up so that friends and loved ones can make posts in remembrance. If we're contacted by a close family member with a request to remove the profile entirely, we will honor that request.

While memorialization features may address privacy and security concerns by restricting access to a deceased user's profile, finding the options needed to manage the account is difficult, and many users may not realize that these options exist.

Once an account is memorialized, a legacy contact is the only person with limited access to the contents of the deceased's page. This makes it difficult to remove unwarranted posts or photos by "friends" who may have had a falling out with the deceased, or "trolls" who purposefully post offensive messages or photos. These unkind words or pictures of the deceased remain on the profile indefinitely.

There are several unfortunate cases of living users discovering their accounts were mistakenly memorialized. On November 11, 2016, a message reading "we hope people who love [username] will find comfort in the things others share to remember and celebrate his/her life" appeared on the top of multiple profiles including Facebook founder, Mark Zuckerberg. *Washington Post* journalist, Abby Ohlheiser reported (Ohlheiser, 2016)

Earlier this afternoon, my Facebook account displayed a beautiful message to my friends, asking them to 'remember' me and 'find comfort in the things others share' about me. It was really touching; there was a little drawing of a flower. The thing is, I'm not dead. Many other people were reporting on Friday afternoon that the same thing happened to them."

Loose controls on who can memorialize a profile, and the documentation required, make it easier for the true next of kin to notify Facebook about a death. Unfortunately, loose memorialization controls may also facilitate cyberbullying or pranks through erroneous death notifications, thereby preventing access for the true user.

LEGACY CONTACTS

In February 2015, Facebook added the option to select a legacy contact to manage an account after death. Initially only for U.S. users, legacy contacts options are now available to all Facebook users. Facebook initially set up the legacy contact policy in response to users concerns about Facebook management post mortem. Users expressed their concern with access to and management of the profiles of friends and loved ones who have passed on. As noted above, a deceased family member could not change or update the profile of a deceased user with a memorialized account. This prevented preservation of photos or posts, and did not allow for an online memorial. Even when a user knew their death was imminent, there was nothing they could do to preplan for their Facebook assets. To combat this, Facebook implemented the legacy contact option citing, “By talking to people who have experienced loss, we realized there is more we can do to support those who are grieving and those who want a say in what happens to their account after death,” (Facebook, 2015) Facebook legacy contacts were designed to help users plan for their last requests while facilitating memorializing practices.

Brubaker and Callison-Burch defined the design choices Facebook considered when implementing the legacy contact system and approaches to post mortem data management. Facebook’s legacy contacts are based on stewardship. Stewardship of accounts and data post mortem focuses on the responsibilities and duties to care for needs of the deceased 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).” (Brubaker & Callison-Burch, 2016, p. 2910) While inheritance may grant control

of an account, it does not take into consideration the ramifications of making changes to the content of the account. Stewardship focuses on allowing the legacy contact to act for the deceased user rather than as the deceased user and allows them to care for the needs of the grieving as circumstances demand.

Setting up a legacy contact is fairly easy, but, as discussed above, many users are not aware of this functionality. Users can add, change, or remove a legacy contact in the accounts settings at any time. To add a legacy contact, one can navigate to settings, click “manage account,” type in a Facebook friend’s name, and click “add,” then determine when the legacy contact receives the notification. This option is also available under “security.” Once a user designates a legacy contact there are two notification options: notify the legacy contacts immediately using a pre-written, but customizable, standard message, or set up the legacy contact function but notify them after memorialization. Both options provide the legacy contact with specific instructions about requirements, and next steps, on acting as a legacy contact. (Facebook, 2015)

Legacy contacts act as digital executors of a Facebook account. As shown in Figure 3, a legacy contact can pin posts to the timeline, update the user’s profile or cover photo, accept new friend requests, and archive the data on the account. The contact cannot access private messages or login, post as the deceased user or delete friends or posts. The original account user is also able to select other options for post mortem management including deletion and deactivation.

Figure 3. Screenshot from Facebook explaining options for legacy contacts

The screenshot shows the Facebook Security Settings page. On the left is a navigation menu with categories: General, Security (highlighted), Privacy, Timeline and Tagging, Blocking, Language, Notifications, Mobile, Public Posts, Apps, Ads, Payments, Support Inbox, and Videos. The main content area is titled "Security Settings" and lists several options: Login Alerts, Two-Factor Authentication, Public Key, and Recognized Devices, each with a brief description and an "Edit" link. Below these is a section for "Legacy Contact" with the sub-heading "Your Legacy Contact". This section explains that a legacy contact can manage the account after the user passes away, including pinning posts, responding to friend requests, and updating the profile picture. It includes a "Learn more" link and two buttons: "Choose a friend" and "Add". Below this, it states that the legacy contact won't be notified until the account is memorialized, but they can send a message right away. A second section explains that if the user doesn't want a legacy contact, they can request account deletion, with a "Request account deletion" link. At the bottom of this section is a "Close" button. At the very bottom of the page, there is a "Deactivate Your Account" section with a description and an "Edit" link.

A chosen legacy contact receives notification about being a user's appointed Facebook steward through the messages interface. This notification enables the friends to discuss the

process and any concerns about it privately. Once the legacy contact accepts the invitation, and Facebook receives confirmation of the user's death, the legacy contact can download a copy of photos, posts, and assets the deceased shared on Facebook. Legacy contacts cannot, however, access items posted or shared by other users on the deceased's timeline or private messages saved in the platform. (Facebook, 2015)

LEGACY CONTACT CHALLENGES

There is a misconception that designating a legacy contact can help piece together the circumstances behind a user's passing through access to their Facebook messages. Unfortunately, even when a user designates a legacy contact, the private messages a user sends remain private. Additionally, while Facebook tries to minimize the impact of losing a loved one by giving the legacy contact options for managing the account and removing interfaces such as birthday reminders for the deceased, a new "On This Day" feature may evince old content and memories.

Users expressed concern about the informality of the language used in legacy contact notifications. Facebook tested and revised the language in legacy notifications to consider the concern a legacy contact may experience when notified about the user's digital afterlife planning. Prior research indicated that automated communications were not ideal for addressing conversations related to end of life account management. (Brubaker, Hayes, & Dourish, 2013, p. 156)

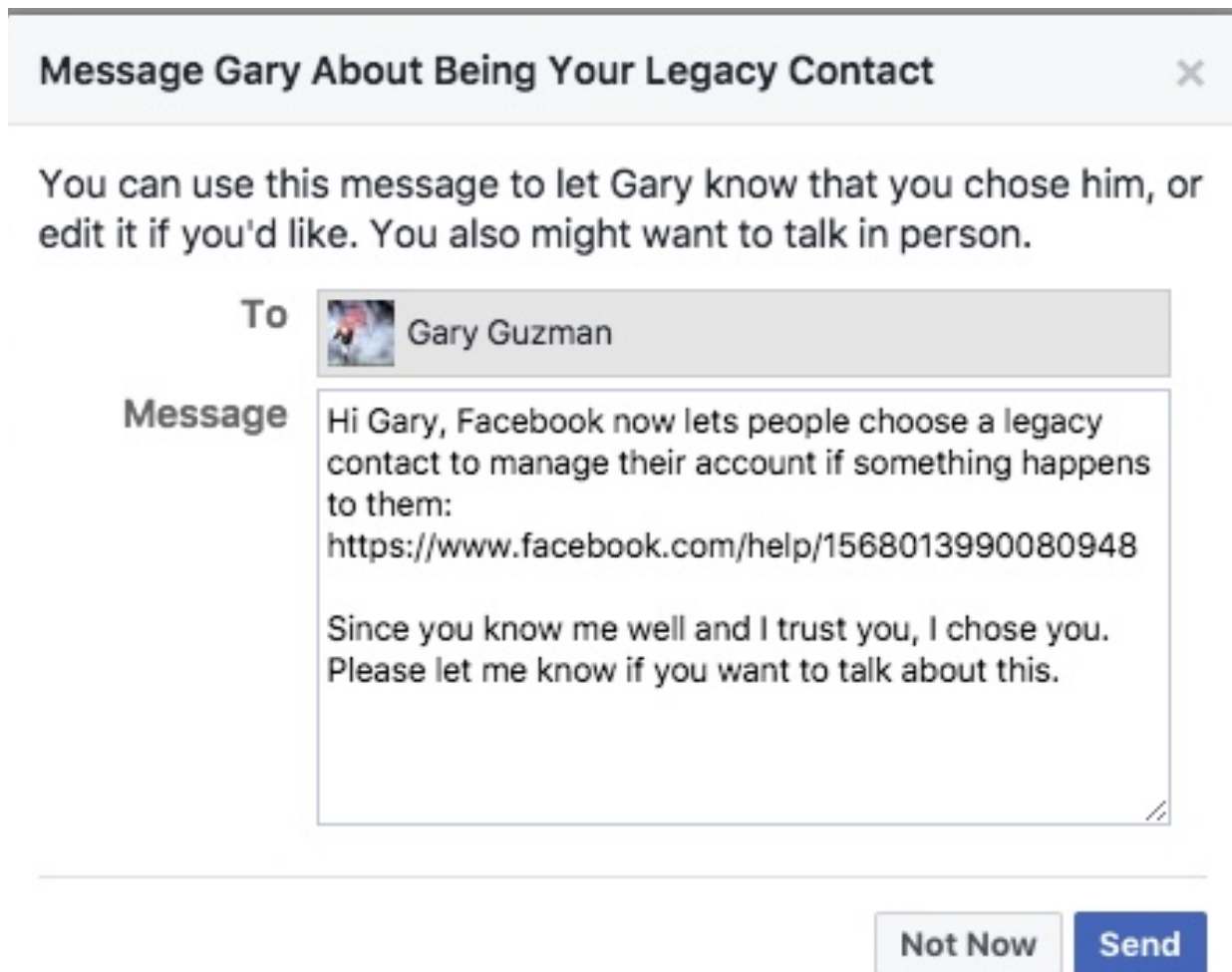
Legacy contacts may question the timing and circumstances causing the user to set up a plan for their Facebook account after death. Questions may arise including: Did the

user plan to harm themselves? Do they have an undisclosed dire illness? The following are Facebook's messaging objectives for the legacy contact messaging (Brubaker & Callison-Burch, 2016, p. 2913) :

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

The University of California at Berkeley assisted with the tone, language, and emotion of the resulting language, included in Figure 4 which reads: "Since you know me well and I trust you, I chose you. Please let me know if you want to talk about this." This is the standard option. This option eases the burden of writing an end of life message, but seems quite impersonal. Users can accept the prewritten option or opt for a more personalized message to ease the legacy contact's fear about the abrupt notification. Assisting the user with creating a message is critical in supporting the user and the legacy contact in engaging in a conversation about the user's post mortem wishes.

Figure 4. Facebook's legacy contact standard messaging



Finally, users only select one Facebook friend as their legacy contact. Facebook does not provide for a successor legacy contact in the event the legacy contact dies before or is no longer in contact with the user. This limitation can make selecting a legacy contact difficult or may result in a situation where the user's wishes are not carried out.

DELETE

A more permanent option for managing Facebook accounts after death is to choose to delete post mortem accounts. Users can designate this option in the legacy contacts setting. If a user requests to have an account deleted post mortem, and Facebook receives a death notification, the account is permanently deleted from the site. This option is irreversible.

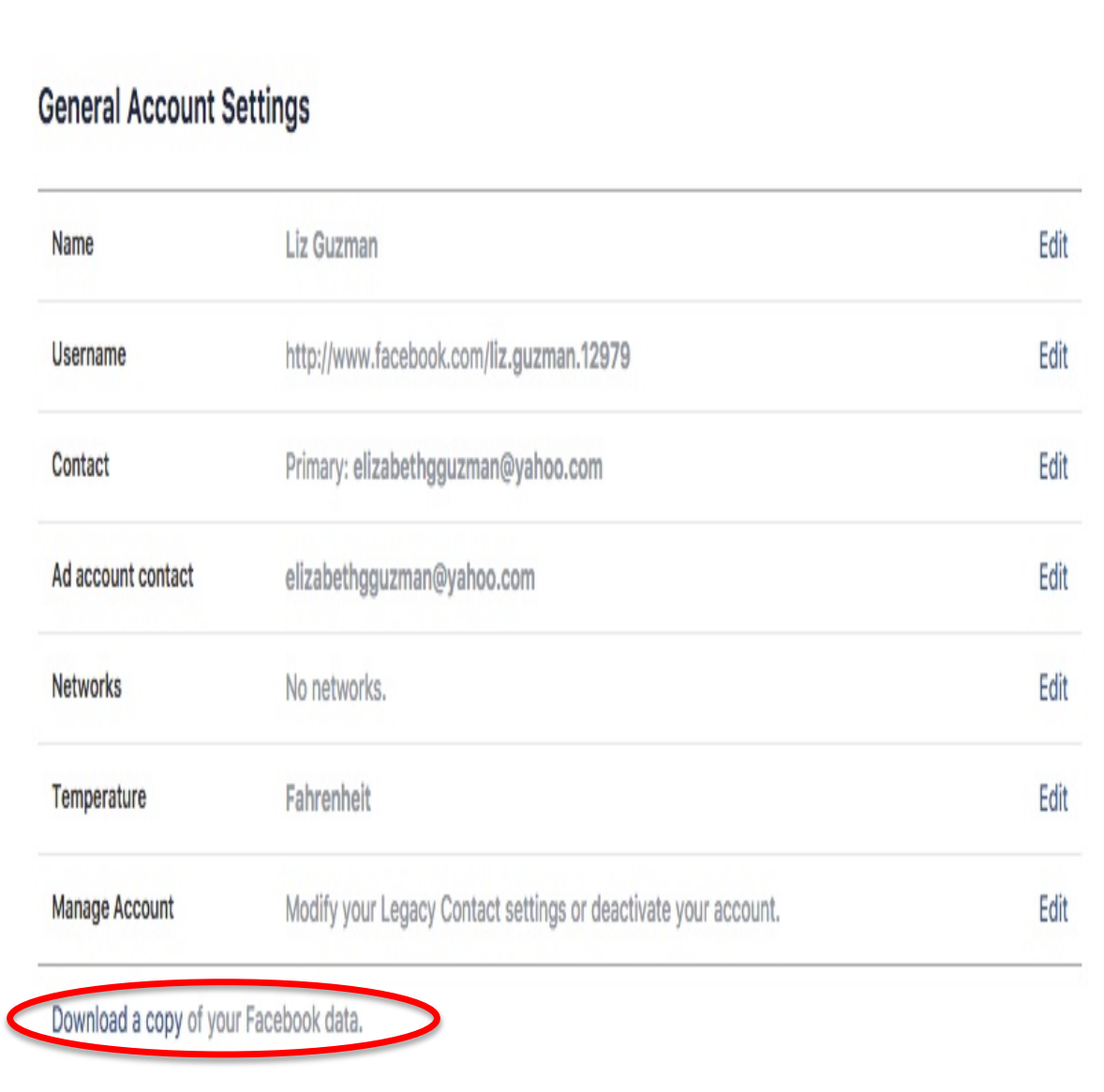
ARCHIVE

The lifespan of Facebook may exceed that of its users, but like a once popular predecessor, Myspace, there is no guarantee that the Facebook platform will be around forever. To prevent data loss, users can set up an archive of pictures or posts they may want to save using Facebook's built-in archive tool. Since it is difficult for users to anticipate when their data may be at risk, this process may need to occur frequently.

Figure 5 shows how a user can download a Facebook archive (Facebook, 2017):

1. Click the down arrow at the top right of any Facebook page and select "settings"
2. Click "download a copy of your Facebook data" at the bottom of "general account settings" as noted in figure 5 below
3. Click "start my archive"

Figure 5. Download a copy of Facebook data at the bottom of General Account Settings



Facebook archives contain profile information; therefore, security measures are in place to help users protect their data. Unfortunately, there is no way to individually select pieces of data that users wish to archive. The file will download in its entirety; thus, users

must ensure they have the storage space for a file of this size. According to Facebook's Help Center, the downloaded copy of a Facebook profile includes (Facebook, 2017):

[A] lot of the same information available to you in your account and activity log, including your Timeline info, posts you have shared, messages, photos and more. Additionally, it includes information that is not available simply by logging into your account, like the ads you have clicked on, data like the IP addresses that are logged when you log into or out of Facebook, and more.

A full list of the categories of Facebook data available as of October 2017 are in Appendix A including an explanation of each category and its location. The privacy settings on social networks are constantly in flux. Facebook archive settings may be added or for multiple reasons. In 2012, Facebook added facial recognition data and posts from others to the downloadable archive data (Condrón, 2017, p. 114)

To ensure any digital download is secure and downloaded exclusively by the user, Facebook requires that users confirm their identities by providing download access through the user's profiles. Once the digital download is available, Facebook sends an email message to the address listed on the account which includes a link to the download. For security purposes, the link expires in a few days, and if the user has not accessed it the user needs to reinstate the download process. Before the user can download files containing the archived data, they will need to enter their passwords from recognized computers. A Facebook account holder using a public computer or unrecognized device will have the option to identify a photo of a friend on their profile, solve a captcha or receive a Short

Message Service (SMS) one-time code to their mobile phone. Facebook provides the following warning to users, “This file may contain private information. You should keep it secure and take precautions when storing or sending it, or uploading it to another service.” (Facebook, 2017, pp. 113-114)

Once a user authenticates their identity, they receive the download archive in a zip file which contains folders viewable with any web browser, as well as digital copies of photos and videos, archived posts, and comments. In past archives, users could view the pictures, but were unable to view the included comments and context. Photographs in the photos file may be difficult to manage, because they are all JPEG files with randomly assigned numbers and names. Additionally, the photos are 72 dots per inch (DPI) and lack location or keyword metadata. (Condron, 2017)

While other social media sites offer means for managing accounts after death, Facebook is the only site to offer legacy controls. Such control allows users to keep their pages as memorials, give facilitators the ability to download Facebook digital archives, or choose deletion.

DIGITAL ESTATE PLANNING

Facebook users curate their pages, build relationships, and exchange information and content with others across the globe. While users’ motives for managing their digital estates to include their social media accounts may vary, common themes may include: to avoid loss of the data and memories shared online, to help family and friends manage and share information about memorial services, or to make it easier for family members to

access and manage accounts. Digital estate plans allow users to plan for their digital legacies and allow executors to carry out the plans to preserve, protect, or delete Facebook assets.

A 2015 Harris Poll of over 2,000 respondents revealed 64% of Americans do not have a will, and, while 86% of those who have wills indicate they have digital assets, less than 13% of those with digital assets have appointed digital executors. Thirty-nine percent of those surveyed who had a will had not appointed a digital executor because they assumed their family and loved ones would be able to access, manage, or delete their digital assets, which is often not the case. (Rocket Lawyer, 2015) Rocket Lawyer CEO, Charley Moore, said:

People don't think twice about uploading sentimental, valuable, and confidential information online, yet their Wills often only cover their tangible possessions, Modern estate planning needs to consider all of the legal ramifications, from protecting loved ones and children, to preserving Facebook timelines, allocating iTunes libraries, and protecting bank accounts.

Of those surveyed, 30% reported that they dislike new “legacy executor” policies incorporated by social media sites, 38% like them, and 32% are undecided. The findings uncovered differences in how users would choose to protect their social media assets: 51% would want their accounts deleted by their “legacy contacts,” 31% would want their accounts to be memorialized, and 29% would prefer to archive their accounts, meaning the

executor would be able to download photos, posts, and profile information. (Rocket Lawyer, 2015)

As people spend more time online, and create more digital assets, it is increasingly important to plan for access to our accounts post mortem. An estate plan for digital assets should consider the location of the digital asset, who controls it, and future access. A helpful tool in digital estate planning is a catalogue of digital assets to include personal electronic devices, letters, social media, financial accounts, emails, and written communication. A digital estate plan should also include the name and description of the assets, the credentials used, as well as any special instructions, privacy concerns, scope of access, and a recipient. If the account is password protected, good practice includes detailed instructions that include permission to perform a credential reset if the inheritor is unable to access the account. When possible, it is best to designate the beneficiary of the digital assets in a will or trust.

A McAfee report of 3,000 consumers in 10 countries revealed that consumers place an average value of \$37,438 on the “digital assets” they own across multiple digital devices. Digital assets may represent a sizable portion of an estate, as well as a high emotional value, showing the importance of a solution for protecting digital assets and assigning a legacy contact or digital executor to manage the accounts. (McAfee, 2011)

FACEBOOK LEGACIES: IMPACTS

DIGITAL IMMORTALITY: HOW IS FACEBOOK CHANGING THE WAY WE DIE?

Facebook accounts stay active until notification of death. Without notification, a deceased user's Facebook account stays active indefinitely. The user's account continues to receive notifications when other users tag them in posts. The deceased user will also appear in the list of suggested connections or "someone you may know," and other users will continue to receive reminders for the deceased's birthday or other significant dates which may surface emotions and prolong the grieving process.

Facebook memories and the continued presence of the deceased online may prolong and amplify the grief process. Online mourners often continue to interact with the user as though the offline death did not affect the online user. While Facebook's primary use is to connect with the living, it often serves as a means to connect with the dead. Further research into managing digital assets post mortem may examine how Facebook has changed our lives and the way we die. This research might include study of which online interactions create opportunities for connection to the deceased. Interviews with users could determine a range of time periods when loved ones are ready to stop seeing the profile on Facebook and accept the deceased's passing, or if users want to see accounts last in perpetuity. I hypothesize that establishing a social norm and rules for online mourning may make it easier for users to plan for their online "death."

DIGITAL GRAVEYARDS AND ONLINE AFTERLIFE

In the past, mourners connected to and remembered the departed through obituaries in newspapers and visits to cemeteries. For older generations, this may still be the case, but increasingly connected individuals are announcing death and mourning on social media sites. Part of what makes contemporary mourning unique is the ability to hear or see the deceased's last words, or the last event they attended for as long as their online accounts exist. Loved ones do not need to visit a cemetery to feel connected to the deceased. They are always a mouse click away. This online connection may make it difficult for a family member to make the decision to delete an account post mortem. Facebook has become the world's largest site for memorials of the dead. In fact, there are an estimated 31 million people whose virtual profiles on Facebook have outlived them. (Kaleem, 2012)

There are several sites that maintain message boards about memorialized pages including mydeathspace.com which includes over 33,076 threads and more than 2 million posts about deceased Facebook users. (MyDeathSpace.com, 2017). Founder Michael Patterson says:

Looking at the MySpace and Facebook profiles of the deceased that haven't been altered by family members is like looking at a snapshot of a person's life the moment before they passed away, you can see what the person was into, what music they enjoyed and so many interesting things that were important before their passing.

Other sites including MyWonderfulLife offer digital estate planning, opportunities to plan one's own memorial services, and options for delivery of posthumous emails and notes. Once registered, a user can designate "angels" to carry out one's wishes. (MyWonderfulLife.com, 2017) Norms concerning death on social media are largely unwritten, and the entwining of our online and offline experiences highlight the importance of thinking about our post mortem digital assets and the memories users leave behind after death.

Similarly, SafeBeyond offers users a way to communicate with friends and family posthumously, and ensure access to digital assets. Touted as "emotional life insurance," SafeBeyond is an app that allows users to record video and audio messages that will be stored in an encrypted digital vault for up to 25 years. Users of the service can schedule to have these video or audio messages released on birthdays, or the anniversary of their death. Like Facebook's legacy contacts option, SafeBeyond allows the departed create preplanned messages for heirs to view on predetermined dates and appoint a trustee to notify the service when significant life events, including graduation dates or weddings occur. The service also offers an option to release messages for heirs when they physically reach a specified location. It also offers an interface with Facebook which allows users to leave a final farewell message on the social site. After the user dies, recipients are sent an email notifying them to download the app to receive messages from the deceased. (SafeBeyond, 2017)

Post mortem digital communication websites including SafeBeyond and MyWonderfulLife often charge a fee for their services and allow users to continue to stay

active online, manage their digital assets, and communicate with loved ones after death. These companies are based on the idea that receiving digital messages from the dead will someday be as normal as replying to an email, or liking a social media “friends” selfie. Services like these allow users to control their digital assets and legacies, but can also interrupt the grieving process or can allow users to send hurtful messages or reveal secrets post mortem as there are no rules surrounding the types of content that can be sent through these digital asset services.

CONCLUSION

More than a quarter of the world's population uses Facebook as a Personal Information Management system, giving them a way to maintain, retrieve and share information. As our medical, legal, and genealogical files shift from physical to digital objects, there is a need to address how individuals can manage their personal information files for future use. While the death of every Facebook user is inevitable, the social media site, and other digital systems have yet to address the complex issues that arise when managing an account after a person dies.

Social media, mobile phones, and other technology shifts have made it easier for users to share their individual human experiences through video, photos, and digital documents. Much like a Spirograph toy, an individual's digital identity has distinctive gears that create overlapping patterns as additional elements and layers of identifiers are added. Every interaction with technology, and every post, like and connection on Facebook, adds new lines of content that reflect an individual's perceptions about politics, race, gender, religion, culture, and family roles. As time passes, the gears continue to spin as more information is collected to create a representation of our digital identity. This personal information collection is a reflection of the user and as such the content may hold sentimental and monetary value to the user, their online and offline connections marketers, and identity thieves.

While the size and of Facebook suggests it will continue to operate indefinitely, the long-term viability of the social network is uncertain, putting the digital legacies and

artifacts of billions of users at risk for loss. If the social media site and its artifacts continue to exist in perpetuity, Facebook will play a role in connecting users and managing practices related to user death, legacy making, bereavement and remembrance. Based on the unique needs of navigating death online and post mortem digital asset management, Facebook offers its users the ability to make decisions about what happens to their information after they die and tries to weight the competing interests of survivors, the deceased and third parties when creating legacy solutions for post mortem account management.

Unfortunately, there is no legal framework for transferring digital assets such as social media accounts to surviving family members. Additionally, legacy solutions for Facebook post mortem account management including memorialization, archive, deletion and designating a legacy contact to manage the account are not widely known to or used. If Facebook wants users to proactively make decisions to manage their accounts, thereby relieving other users of the burden of doing so, they need to communicate the options that are available and remind users of the monetary and sentimental value of the data they share online.

In this report, I outlined the available solutions and challenges that accompany Facebook's post mortem account management. Enumerating specific design recommendations is beyond the scope of this study, however future research on the needs of Facebook legacy contacts and the design of the systems to incorporate support for these stewardship duties should be considered. Most importantly providing the structure and support to assist the legacy contact with the potentially emotionally taxing demands they may face, These legacy contacts may be placed in positions where both their

judgement and their relationship with the deceased may be called into question which may impact the steward's continuing bond with the deceased, In some scenarios they may be left with weighing the needs of the deceased with the survivors, creating an additional emotional burden.

There are a number of discrete, complex, and sensitive tasks involved with managing a Facebook users profile post mortem. This report addressed some of the currently available solutions and the impact those solutions have on personal information management, a user's enduring legacy, and the ability for these solutions to both protect and threaten a user's life story.

APPENDIX

Appendix A: Information included in archive download

What info is available?	What is it?	Where can I find it?
About Me	Information you added to the About section of your Timeline like relationships, work, education, where you live and more. It includes any updates or changes you made in the past and what is currently in the About section of your Timeline.	Activity Log Downloaded Info
Account Status History	The dates when your account was reactivated, deactivated, disabled or deleted.	Downloaded Info
Active Sessions	All stored active sessions, including date, time, device, IP address, machine cookie and browser information.	Downloaded Info
Ads Clicked	Dates, times and titles of ads clicked (limited retention period).	Downloaded Info
Address	Your current address or any past addresses you had on your account.	Downloaded Info
Ad Topics	A list of topics that you may be targeted against based on your stated likes, interests and other data you put in your Timeline.	Downloaded Info
Alternate Name	Any alternate names you have on your account (ex: a maiden name or a nickname).	Downloaded Info
Apps	All of the apps you have added.	Downloaded Info
Birthday Visibility	How your birthday appears on your Timeline.	Downloaded Info
Chat	A history of the conversations you've had on Facebook Chat (a complete history is available directly from your messages inbox).	Downloaded Info
Check-ins	The places you've checked into.	Activity Log Downloaded Info

Connections	The people who have liked your Page or Place, RSVPed to your event, installed your app or checked in to your advertised place within 24 hours of viewing or clicking on an ad or Sponsored Story.	Activity Log
Credit Cards	If you make purchases on Facebook (ex: in apps) and have given Facebook your credit card number.	Account Settings
Currency	Your preferred currency on Facebook. If you use Facebook Payments, this will be used to display prices and charge your credit cards.	Downloaded Info
Current City	The city you added to the About section of your Timeline.	Downloaded Info
Date of Birth	The date you added to Birthday in the About section of your Timeline.	Downloaded Info
Deleted Friends	People you've removed as friends.	Downloaded Info
Education	Any information you added to Education field in the About section of your Timeline.	Downloaded Info
Emails	Email addresses added to your account (even those you may have removed).	Downloaded Info
Events	Events you've joined or been invited to.	Activity Log Downloaded Info
Facial Recognition Data	A unique number based on a comparison of the photos you're tagged in. We use this data to help others tag you in photos.	Downloaded Info
Family	Friends you've indicated are family members.	Downloaded Info
Favorite Quotes	Information you've added to the Favorite Quotes section of the About section of your Timeline.	Downloaded Info

Followers	A list of people who follow you.	Downloaded Info
Following	A list of people you follow.	Activity Log
Friend Requests	Pending sent and received friend requests.	Downloaded Info
Friends	A list of your friends.	Downloaded Info
Gender	The gender you added to the About section of your Timeline.	Downloaded Info
Groups	A list of groups you belong to on Facebook.	Downloaded Info
Hidden from News Feed	Any friends, apps or pages you've hidden from your News Feed.	Downloaded Info
Hometown	The place you added to hometown in the About section of your Timeline.	Downloaded Info
IP Addresses	A list of IP addresses where you've logged into your Facebook account (won't include all historical IP addresses as they are deleted according to a retention schedule).	Downloaded Info
Last Location	The last location associated with an update.	Activity Log
Likes on Others' Posts	Posts, photos or other content you've liked.	Activity Log
Likes on Your Posts from others	Likes on your own posts, photos or other content.	Activity Log
Likes on Other Sites	Likes you've made on sites off of Facebook.	Activity Log
Linked Accounts	A list of the accounts you've linked to your Facebook account	Account Settings
Locale	The language you've selected to use Facebook in.	Downloaded Info
Logins	IP address, date and time associated with logins to your Facebook account.	Downloaded Info

Logouts	IP address, date and time associated with logouts from your Facebook account.	Downloaded Info
Messages	Messages you've sent and received on Facebook. Note, if you've deleted a message it won't be included in your download as it has been deleted from your account.	Downloaded Info
Name	The name on your Facebook account.	Downloaded Info
Name Changes	Any changes you've made to the original name you used when you signed up for Facebook.	Downloaded Info
Networks	Networks (affiliations with schools or workplaces) that you belong to on Facebook.	Downloaded Info
Notes	Any notes you've written and published to your account.	Activity Log
Notification Settings	A list of all your notification preferences and whether you have email and text enabled or disabled for each.	Downloaded Info
Pages You Admin	A list of pages you admin.	Downloaded Info
Pending Friend Requests	Pending sent and received friend requests.	Downloaded Info
Phone Numbers	Mobile phone numbers you've added to your account, including verified mobile numbers you've added for security purposes.	Downloaded Info
Photos	Photos you've uploaded to your account.	Downloaded Info
Photos Metadata	Any metadata that is transmitted with your uploaded photos.	Downloaded Info
Physical Tokens	Badges you've added to your account.	Downloaded Info
Pokes	A list of who's poked you and who you've poked. Poke content from our mobile poke app is not included because it's only available for a brief period of time. After the recipient has viewed the content it's permanently deleted from our systems.	Downloaded Info

Political Views	Any information you added to Political Views in the About section of Timeline.	Downloaded Info
Posts by You	Anything you posted to your own Timeline, like photos, videos and status updates.	Activity Log
Posts by Others	Anything posted to your Timeline by someone else, like wall posts or links shared on your Timeline by friends.	Activity Log Downloaded Info
Posts to Others	Anything you posted to someone else's Timeline, like photos, videos and status updates.	Activity Log
Privacy Settings	Your privacy settings.	Privacy Settings Downloaded Info
Recent Activities	Actions you've taken and interactions you've recently had.	Activity Log Downloaded Info
Registration Date	The date you joined Facebook.	Activity Log Downloaded Info
Religious Views	The current information you added to Religious Views in the About section of your Timeline.	Downloaded Info
Removed Friends	People you've removed as friends.	Activity Log Downloaded Info
Screen Names	The screen names you've added to your account, and the service they're associated with. You can also see if they're hidden or visible on your account.	Downloaded Info
Searches	Searches you've made on Facebook.	Activity Log
Shares	Content (ex: a news article) you've shared with others on Facebook using the Share button or link.	Activity Log

Spoken Languages	The languages you added to Spoken Languages in the About section of your Timeline.	Downloaded Info
Status Updates	Any status updates you've posted.	Activity Log Downloaded Info
Work	Any current information you've added to Work in the About section of your Timeline.	Downloaded Info
Vanity URL	Your Facebook URL (ex: username or vanity for your account).	Visible in your Timeline URL
Videos	Videos you've posted to your Timeline.	Activity Log Downloaded Info

Appendix B: Information collected by Facebook

What kinds of information do we collect?

Depending on which Services you use, we collect different kinds of information from or about you.

Things you do and information you provide.

We collect the content and other information you provide when you use our Services, including when you sign up for an account, create or share, and message or communicate with others. This can include information in or about the content you provide, such as the location of a photo or the date a file was created. We also collect information about how you use our Services, such as the types of content you view or engage with or the frequency and duration of your activities.

Things others do and information they provide.

We also collect content and information that other people provide when they use our Services, including information about you, such as when they share a photo of you, send a message to you, or upload, sync or import your contact information.

Your networks and connections.

We collect information about the people and groups you are connected to and how you interact with them, such as the people you communicate with the most or the groups you like to share with. We also collect contact information you provide if you upload, sync or import this information (such as an address book) from a device.

Information about payments.

If you use our Services for purchases or financial transactions (like when you buy something on Facebook, make a purchase in a game, or make a donation), we collect information about the purchase or transaction. This includes your payment information, such as your credit or debit card number and other card information, and other account and authentication information, as well as billing, shipping and contact details.

Device information.

We collect information from or about the computers, phones, or other devices where you install or access our Services, depending on the permissions you've granted. We may associate the information we collect from your different devices, which helps us provide consistent Services across your devices. Here are some examples of the device information we collect:

- Attributes such as the operating system, hardware version, device settings, file and software names and types, battery and signal strength, and device identifiers.
- Device locations, including specific geographic locations, such as through GPS, Bluetooth, or WiFi signals.
- Connection information such as the name of your mobile operator or ISP, browser type, language and time zone, mobile phone number and IP address.

Information from websites and apps that use our Services.

We collect information when you visit or use third-party websites and apps that use our Services (like when they offer our Like button or Facebook Log In or use our measurement and advertising services). This includes information about the websites and apps you visit, your use of our Services on those websites and apps, as well as information the developer or publisher of the app or website provides to you or us.

Information from third-party partners.

We receive information about you and your activities on and off Facebook from third-party partners, such as information from a partner when we jointly offer services or from an advertiser about your experiences or interactions with them.

Facebook companies.

We receive information about you from companies that are owned or operated by Facebook, in accordance with their terms and policies. [Learn more](#) about these companies and their privacy policies.

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