Summer 2012

The Use of Web 2.0 Technologies in Archives: Developing exemplary practice for use by archival practitioners

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THE USE OF WEB 2.0 TECHNOLOGIES IN ARCHIVES: DEVELOPING EXEMPLARY PRACTICE FOR USE BY ARCHIVAL PRACTITIONERS

A Thesis

Presented to

The Faculty of the School of Library and Information Science

San José State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Library and Information Science

by

Collin Thorman

August 2012

The Designated Thesis Committee Approves the Thesis Titled

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APPROVED FOR THE SCHOOL OF LIBRARY AND INFORMATION SCIENCE

SAN JOSÉ STATE UNIVERSITY

August 2012

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ABSTRACT

THE USE OF WEB 2.0 TECHNOLOGIES IN ARCHIVES: DEVELOPING EXEMPLARY PRACTICE FOR USE BY ARCHIVAL PRACTITIONERS

by Collin Thorman

Web 2.0 technologies have fundamentally changed the way in which people interact and find information online. Archives are attempting to utilize Web 2.0 technologies to reach new users and promote their collections, but many have implemented these technologies without a full understanding of how to use them appropriately. Research has been conducted concerning libraries implementing Web 2.0 technologies, but much of the research involving archives has consisted of anecdotal evidence and is limited in scope. This research fills that gap by gathering data on the use of many different technologies by different kinds of archives around the globe.

Using surveys and semi-structured interviews, the researcher gathered information on what technologies archives are using as well as how and why they are used. He then discusses the various problems that confront archivists of all types seeking to implement Web 2.0 technologies. Finally, the study concludes with a discussion of the implications of these problems and offering a set of exemplary practices that can be utilized by archives seeking to implement Web 2.0 technologies successfully.

ACKNOWLEDGEMENTS

There are many people whom I would like to thank for their assistance through the ordeal of writing this thesis. Firstly, Dr. Geoffrey Liu, without whom this well-groomed thesis would be a thorny bramble of passive writing. The rest of my Thesis Committee, Dr. Michael Stephens and Ms. Beth Wrenn-Estes, I thank for agreeing to be a part of the committee before even reading my proposal, as well as their extremely helpful feedback.

I would also like to thank Julia Marks Young, Sue Bigelow, Tanya Zanish-Belcher, Jolene Russell, and Fiona Bourne. You are goddesses, all.

I would like to thank the friends I have made in the profession who have inspired me during the course of my research: JN, AG, RL, AC, and HC. Without you all, I would never have had the continued interest in my field to see this through. I would also like to thank my family for their support.

Lastly I want to thank my partner, without whom I would never have pursued, let alone finished, this piece of research. She has helped me in ways uncounted since this research began, and without her guidance and support, I never would have finished.

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Introduction

On April 13, 2012 the Archivist of the United States David S. Ferriero posted an entry on his blog, arguing that the utilization of social media is “mission-critical” to the National Archives and, more broadly speaking, to all archival agencies:

> This is not a passing fad or a frivolous use of technology. It is the future. It will change even more rapidly than the traditional technologies we have been using. Therefore, we all need to be experimenting and keeping an eye on the new and emerging social media platforms because that is where our user communities expect to be meeting us. We have a big opportunity through social media to change the way people think about archives. (Ferriero, 2012)

When David Ferriero became the 10th Archivist of the United States in late 2009, he brought with him an interest in Web 2.0 technologies that had been unheard of among many archivists. By embracing these technologies as the Archivist of the United States, he set a standard for other archivists to participate and interact with their users in social media. As he points out, "using social media channels in our own work, we can work more collaboratively, provide greater transparency for each other and the public, and invite the public to participate in our efforts” (Ferriero, 2012).

As the use of Web 2.0 technologies has increased in the general population, it has become an important way for archives to interact with their user communities and increase access to their collections. As discovered in a Pew Internet study, 66% of adults use Web 2.0 technologies (Smith, 2011). This figure comes at the head of a trend of increased use in all age groups, and Web 2.0 technologies have come to the forefront of many marketing strategies. Thus, it makes sense that archives in search of users make a presence in Web 2.0 online communities.

Archives, many supported by public funds, have been suffering budget cutbacks and staffing shortages. This leads to an increase in the number of responsibilities per person, and time becomes a very valuable resource. It behooves archives to find the best possible manner by which to implement a Web 2.0 technology, which saves time and is sustainable. It is this issue that this thesis attempts to address.

Defining Web 2.0 Technologies

The term *Web 2.0 technology*, also known as social media, is used to describe the various websites, services, and platforms that archives use to promote their collections and facilitate interaction with their users. Defining what makes something a Web 2.0 technology has been notoriously difficult. Even the founder of the Web 2.0 Conference, Tim O'Reilly, in an attempt to define Web 2.0, admits that "Web 2.0 doesn't have a hard boundary, but rather, a gravitational core" (O'Reilly, 2005). In his blog post, he outlines several core concepts which make Web 2.0 different from Web 1.0: the web as a platform, harnessing collective intelligence, lightweight programming models, software above the level of a single device, and rich user experiences. Although some of these concepts are more focused on the back end that users rarely see, many of them shape the Internet as it is currently known. But that initial definition is slightly dated.

In a blog post for the Web 2.0 Summit in San Francisco, O'Reilly and Battelle (2009) updated their definition to include more recent developments: cooperating data subsystems, the Internet of things, infinite high-resolution images, and the rise of real-time. With the increasing ubiquity of smartphones, the whole shape of the Internet has changed yet again. However, these concepts merely give a vague definition to Web 2.0.

More specifically, a Web 2.0 technology facilitates these concepts and has earned the more contemporary title *social media* because of its high level of interactivity and connectedness among users. As mentioned above, they are usually platforms where users gather and share content among members of the community. Though the term "social media" is commonly used in conversation to describe Web 2.0 technologies, the term "Web 2.0," while antiquated, is likely to be better known across wide generational and geographic borders.

Much research on the use of Web 2.0 technologies has been conducted in the context of libraries. However, little research has been done to address the use of Web 2.0 technologies in archives. This leaves archivists trying to discover how best to utilize Web 2.0 technologies by trial and error. This research attempts to fill that gap and provide insight about archives and Web 2.0 technologies.

The Research

This thesis research attempted to answer these questions: (1) How are archives using Web 2.0 technologies? (2) Why are they using those particular technologies? (3) What are the exemplary practices to implement these technologies successfully? In order to fulfill the objective of developing exemplary practices, it is important to discover which Web 2.0 technologies are currently being used. To this end, an online survey was conducted of 245 archivists around the globe, supplemented by semi-structured interviews of five archivists in different countries and different types of archives, to identify current trends and issues.

Thesis Content

The thesis is organized into six chapters. After the Introduction, Chapter 2 reviews the current literature on the subject of Web 2.0 and archives. Since the use of Web 2.0 technologies in archives are comparatively new, it is supplemented by related research on libraries and Web 2.0. The literature review reveals that although many examples of successful Web 2.0 implementations in both libraries and archives exist and some research has been done to develop exemplary practices for libraries, there is no research to identify exemplary practices for using Web 2.0 technologies in archives.

Chapter 3 introduces the methodology of this thesis research. The pragmatic epistemology is briefly explained, highlighting how it allows the necessary combination of both quantitative and qualitative methods. An explanation of archival custody theory follows, elaborating on cultural differences and their underpinning of this study. Finally, the process and methodological specifics of the study are documented, with data gathering instruments described and data processing/analysis explained.

Chapter 4 presents quantitative results from the survey and central themes identified from qualitative analysis of transcripts of semi-structured interviews. In Chapter 5, research findings from the qualitative and quantitative data analyses (as reported in the previous chapter) are discussed at length. The survey results are triangulated with the results of semi-structured interviews to identify and develop ideas for exemplary practices. Finally, Chapter 6 concludes this thesis by briefly summarizing the exemplary practices explained in the previous chapter and discussing potential directions for future research.

Literature Review

This chapter first introduces Web 2.0 technologies, why they are important to archives, and examples of successful Web 2.0 implementations in archives. It then discusses studies on library use of Web 2.0 technologies before reviewing the sparse research on the use of Web 2.0 technologies in archives.

Web 2.0 and Archives

Web 2.0 has become an integral part of the Web, connecting millions of people every day through a variety of different tools. Facebook® alone boasts approximately 750 million active users with half of those active on any given day (Facebook, 2011). The world of Web 2.0 technologies gives anyone who utilizes them access to millions of new people with whom they might never have interacted otherwise. Therefore, it is no surprise that archives have, if only relatively recently, begun taking up Web 2.0 technologies to make their resources accessible to the vast population of potential users.

The earliest archival forays into using Web 2.0 technologies in earnest occurred between 2006 and 2007, utilizing both self-hosted and proprietary technologies (Krause & Yakel, 2007; Peccatte, 2011; Ridolfo, Hart-Davidson, & McLeod, 2010). Since that time, the participation of archivists in various Web 2.0 technologies has increased due to the low barrier to entry and potential for massive increase in visibility of the archives and their collections (Crymble, 2010; Sommer, 2009). By taking to the Internet and utilizing Web 2.0 technologies, archives become more discoverable online, since the World Wide Web has become the first place information seekers turn to for readily accessible information (Pearce-Moses, 2007).

Broadly speaking, Web 2.0 technologies can be classified into two distinct categories: accessibility-increasing and value-adding. The ubiquity of Web 2.0 technologies makes them ideal for increasing access to archival collections (Pymm, 2010). Ribbot and Peluso (2003) describe access as "the ability to benefit from things—including material objects, persons, institutions, and symbols" (p. 1). In order to serve the public interest, users need to be able to access archives and their collections (Menne-Haritz, 2001). Access to physical collections in brick-and-mortar buildings is limited due to physical restrictions such as location and the need of staff assistance. However, digitization projects — in combination with Web 2.0-based promotion and distribution efforts — can dramatically lower the barriers to access and make archival collections accessible to those who would never be able to visit the archives in person (Clark, 2008).

Once access has been increased, Web 2.0 technologies also give the archives a chance to involve the community and add value to their collections through community interaction (Yakel, 2011). Through the use of comments, community tagging, bookmarking, and automatically generated suggestions, archives can increase researcher and user engagement with archival collections and give them the opportunity to contribute value-adding content. Such user-generated content could be of great use to future researchers (Krause & Yakel, 2008; Yakel, 2011). Admittedly, there are issues surrounding the idea of users adding permanent value to collections, such as the loss of archival authority, in addition to the more practical concern that "comments have no place in our current descriptive metadata for images and records" (Yakel, 2011, p.94).

However, there are archivists who are using Web 2.0 technologies to explore these avenues (Peccatte, 2011).

It must be noted, however, that the use of Web 2.0 technologies is not without costs. The cost of upgrading the technology in an archive can be prohibitively expensive to both the archives and the potential user (Dugan, 2002). What has come to be known as the Digital Divide between those with access to technology and those without can make the implementation of Web 2.0 technologies less effective if the archivist's target community is largely a part of the have-nots (Jimerson, 2011). The cost of keeping up with changing technologies in the long term can be high as well, which can be an insurmountable obstacle, especially in the current economic climate.

Another potential barrier to Web 2.0 technology implementation is the shortage of staff time. Many archives, especially community archives, are run with minimal staffing. Although many Web 2.0 technologies have a low start-up cost and can make these small archives accessible to audiences on a scale which they could never before have imagined, the cost of maintaining a social media presence is primarily measured in time (Brown, 2011; Sherratt, 2011). Any Web 2.0 technology needs maintenance to prevent stagnation, and this could be beyond the means of some archives (Brown, 2011; Theimer, 2010).

The final and perhaps most difficult obstacle to overcome is the shift in archival paradigm that is necessary in order to fully embrace the functionality of Web 2.0 technologies (Jimerson, 2011). Having served traditionally as a gatekeeper between researchers and archives, archivists will have to explore a slightly different role -- as

facilitator or moderator between researcher and archives -- due to the participatory nature of Web 2.0 technologies (Yakel, 2011). At the moment, although some archivists are exploring the potential of Web 2.0 technologies to increase access and researcher engagement, they seek to keep the line between researcher contributions and archival objects distinct, or at the least heavily moderated (Grannum, 2011; Peccatte, 2011; Sherratt, 2011).

Examples of Archivists Using Web 2.0

That being said, the enthusiasm with which many archivists have embraced Web 2.0 technologies is impressive. Case studies from across the globe have shown the benefits and difficulties of implementing Web 2.0 technologies in archives. In France, the PhotosNormandie project uses the Flickr® commons as a means to foster access to, and discussion about, photographs from the Battle of Normandy. Although the PhotosNormandie team is not officially associated with any archive, they are drawing upon the resources of the National Archives of the United States and the Library and Archives Canada (Peccatte, 2011). Though the PhotosNormandie project was started by persons outside the archival profession, the passion of the users involved and the knowledge of the project leaders has helped to provide hundreds of users who are intensely interested in World War II photographs with large-scale access to the holdings of two national collections.

The PhotosNormandie project did suffer from some difficulties, however. Though the project team implemented a way of embedding user-generated metadata in the images themselves, they did not have as many first-hand accounts of the events in the

photographs as they would have liked, due to the dwindling number of World War II veterans still alive (Peccatte, 2011). The embedded metadata also proved labor-intensive to update as new comments and corrections were submitted. As a result, though the embedded metadata gave them autonomy beyond the Web 2.0 platform of Flickr, it made their task much more difficult (Peccatte, 2011).

Another example is the scrapbook project in Australia. The National Archives of Australia created a tribute and scrapbook website that fosters comments and anecdotes from individuals for Anzac Day (Sherratt, 2011). The use of the "scrapbook" label was intended to help informalize the WWI experience for users of the Mapping Our Anzacs project. The scrapbook used Tumblr® and was distinct from the records themselves, thereby keeping user-generated comments divorced from the official archival records. Despite this, within six months of implementing the Tumblr® site, the Mapping Our Anzacs project received 94,000 visits and had over 1,000 scrapbook posts contributed to it (Sherratt, 2011).

Though the project had created much valuable contextual data for the items in the collection and aided discovery for users, all of the data were heavily moderated, which took a considerable amount of the staff's time, despite the fact that abuse had been an almost nonexistent problem (Sherratt, 2011). The user-generated data were also kept strictly to the Tumblr® blog with no direct influence on the archival record, continuing the trend of keeping the archival record separate from the Web 2.0 materials.

In the United Kingdom, the National Archives staff created a wiki where researchers could comment and provide useful historical context about archival

collections for use by others (Grannum, 2011). Utilizing the platform called MediaWiki (the de-facto standard wiki platform due to its use by Wikipedia), the National Archives staff created its own wiki platform (called "Your Archives") wherein the archivists could directly moderate the content. However, they decided to moderate after (instead of prior to) the posts becoming publicly visible, in an effort to maintain the spontaneity and interactivity that encourages users to participate in the project (Grannum, 2011).

Though the "Your Archives" wiki was hugely successful (with 4 million visits and over 20,000 pages created in three years), there had been complaints as to the reliability of the information in the wiki (though the group voicing these concerns was not specified) and about the fact that the information added to the wiki was not covered by Creative Commons Copyright. The "Your Archives" wiki's Terms of Service document stated that the National Archives had nonexclusive rights over all contributions (Grannum, 2011). These issues were directly related to the perceived need for the archives and archivists to maintain control over all aspects of the records and maintain an intellectual (if not physical) difference between user-generated contributions and the archival records. The success of Web 2.0 technologies depends upon dialog between the user and the archivist as well as on open access to archival materials and user contributions. The former was fulfilled through the wiki's existence, but the latter was hindered by the National Archives' maintaining rights over user-submitted content.

The above examples are primarily initiatives of large government archives that have access to staff and technology which are beyond the reach of smaller archives. Nevertheless, even the staffs of smaller archives have attempted to adopt Web 2.0

technology. University archives such as the Historical Collections and Archives at Oregon Health and Science University (OHSU), the University of North Carolina at Chapel Hill, and the W. E. B. Du Bois Library at the University of Massachusetts-Amherst have embraced blogging as an effective means of connecting with their communities (Theimer, 2010; 2011). The archivists at OHSU began blogging as a way to inform the rest of the library staff about what was happening in the archives. They blogged about whatever happened to be of interest on any given day, and through the use of the free blogger software provided by Google®, they increased the discoverability of the archive by having regularly updated content. By increasing access to their collection through Web 2.0 technologies, they expanded their reach to communities far beyond their normal grasp and received donations from a more diverse geographic area than without it (Theimer, 2010).

The North Carolina Collection Photographic Archives staff at the University of North Carolina at Chapel Hill utilized blogging software to keep their users informed about archival collections being processed. By posting on average 5.5 updates per month, the Photographic Archives had attracted tens of thousands of visits over two years (Fletcher, 2011). Though they did not have any concrete evidence to prove that they had increased the use of their collection, Fletcher noted that they had yet to receive any complaints about taking too long to process the collection. The success of the blog itself probably meant an increase in the visibility of, and access to, the University Archives, though it seemed that Fletcher did not have access to collection use statistics.

The W. E. B. Du Bois Library at the University of Massachusetts-Amherst created a catalog blog ("catablog") in an effort to bring its catalog of records to a minimum level of description (Cox & Kovacs, 2011). By utilizing the free Wordpress® software, the Department of Special Collections and University Archives staff created collection descriptions in the form of posts as well as a hierarchical subject index that corresponded to areas within their collection policy. The index was automatically displayed on a sidebar for easy access anywhere on the website. The archivists also utilized EAD finding aid information to fill the post. New collections were added to the catablog within a few days of accessioning, which made them immediately accessible to researchers. Through the utilization of the catablog, the user was allowed access to the finding aids of the materials before they were even processed, which could have dramatically increased the demand and use of the materials.

The staff of smaller community archives such as the Jewish Women's Archive, Seattle Municipal Archives, and the Los Alamos Historical Society have taken it upon themselves to utilize Web 2.0 technologies as well (Medina-Smith, 2011; Theimer, 2010). The Jewish Women's Archive is a non-profit community archive in Massachusetts. Its staff has used Web 2.0 technologies to strengthen their community involvement among Jewish women for several years. They had already established a blog and Facebook presence before attempting to utilize Twitter®. From November 2008 to December 2010, they posted more than 1,700 tweets, and their Twitter feed attracted 2,400 followers, which led to a slight increase in readership of their blog. They admitted that this increase might not be entirely attributable to Twitter; nevertheless, that

was the only change they made in their outreach and promotional efforts (Medina-Smith, 2011). Though there was no quantifiable benefit from the Twitter implementation, by creating connections between themselves and their user community, the Jewish Women's Archive staff established a direct and instantaneous line of communication with their community, which could become an asset for many different reasons in the future.

The Los Alamos Historical Society created a podcast to showcase its oral history collection in 2006. Heather McClenahan selected 5- or 6-minute sections of oral histories which she felt were interesting and distributed them via iTunes. Though the process of converting from tape to podcast took roughly 2 hours, podcasts were distributed once every two weeks, and the podcasting appeared to be a popular way for patrons to engage with the collections. With hundreds of downloads each month via iTunes and thousands of users downloading via RSS, the oral histories were distributed far more widely than they would have been otherwise, especially for a local historical society (Theimer, 2010). The podcasts packaged the collections of the Los Alamos Historical Society into manageable pieces, which lowered the entry barrier to almost nothing for the users. Lower entry barriers led to increased use.

The Seattle Municipal Archives staff utilizes Flickr to display its collections online in order to reach previously unreached users. The archives staff organizes the images in broad categories with an emphasis on interesting content that even a casual observer may enjoy. The additional exposure has led to others using the images for newsletters, blogs, t-shirts, e-books, and motivational wallpaper. Users have also requested reproductions, although it is not noted what their policy on reproductions

entails. It takes approximately 10 minutes of staff time to post a new image set on Flickr, and the additional exposure has drawn much traffic to the institutional website and online exhibits (Theimer, 2010). By utilizing the Flickr platform and leveraging its built-in tools, the Seattle Municipal Archives staff has made their collection visible to users anywhere. Although the descriptions may not be as rich or as detailed as hoped, the Flickr presence acts as a springboard to lead users back to the archives' website where they can discover more of the Seattle Municipal Archives' holdings.

The lesbian, gay, bisexual, transgender, and queer (LGBTQ) community has started collecting its history through a wiki at OutHistory.org, hosted by the Graduate Center of the City University of New York. Utilizing the free MediaWiki software, OutHistory.org is a publicly accessible website featuring a fully community-created encyclopedia, museum, and archive that document LGBTQ history (Gutterman, 2010). By opening the wiki to the LGBTQ community, OutHistory.org fills a gap left by institutional archives and gives the community a means of preserving its own history. Being fully community-constructed, it requires no institutional involvement or maintenance beyond keeping the servers up and giving interested users a place to read stories and view media to which they may not otherwise have access (Gutterman, 2010). By utilizing the MediaWiki software familiar to anyone who has used Wikipedia before, it does not require users to learn a new set of tools in order to contribute. Though to a lesser degree than if they had utilized Wikipedia explicitly, OutHistory.org creates a familiar experience for the users with a low entry barrier.

As demonstrated by the examples above, archives are using Web 2.0 technologies to increase access to their collections and to increase user engagement. However, based on anecdotal evidence alone, it is difficult to discern whether or not the success stories are representative of the archival field across the globe. Many of the activities of the example archives could easily be replicated at any other archive, but perhaps success with Web 2.0 technologies in archives requires more than a formulaic adherence to a few of examples. In view of the lack of research on Web 2.0 in archives, it is worthwhile to look at studies of Web 2.0 in library settings of all kinds.

Studies of Web 2.0 in Libraries

Though the field of archives has some success stories, looking at libraries' efforts of implementing Web 2.0 and related studies may provide additional insights. The Vancouver Public Library has implemented a very successful Web 2.0 outreach plan for their library system. The library has fully embraced the spirit of Web 2.0 technologies by putting much of their efforts into creating a personable presence in social media. For example, their Twitter presence has become one of the most-followed library accounts on Twitter, and they achieved this by learning from mistakes and requiring that the administrator update the account daily, keep an informal tone, post timely and pertinent content, and respond to user feedback and questions (Cahill, 2011).

Yet the Vancouver Public Library has not been without problems. In 2008, their heavy integration with Delicious®, a social bookmark management service, caused their entire website to degenerate when the application programming interface (API) changed without notice (Cahill, 2011). They made a temporary recovery, but Delicious (and their

parent company Yahoo!®) had no financial investment in the library, and thus made no effort to rectify the problem. The heavy integration made their implementation inflexible to the changing technological landscape. The Vancouver Public Library also attempted to utilize Foursquare® -- a popular location-based service -- that gives an honorary title ("Mayor" of the library) to the person with the most check-ins at a single location. The library offered the "Mayor" of the library an opportunity to write three book reviews and have them featured on the website as a contest. However, when the time came for the contest to end, there was no "Mayor" of the library to win the contest. Though this plan failed to attract check-ins via Foursquare, it succeeded in generating public interest in the library. They received positive reviews and many words of encouragement from users through their Twitter presence (Cahill, 2011).

The Multnomah County Library created a successful outreach program through the utilization of Facebook. In her presentation at Internet Librarian (a conference held annually in Monterey, CA to discuss technology in libraries), Keller (2011) offered several key strategies to maintain an engaging presence on Facebook. Many of the strategies important to any big project can be applied to establishing a Facebook presence, including having a clearly defined set of goals and strategies. One of the difficulties, especially for archives operating on minimal staff, is to dedicate staff time to updating the page and engaging with the community of fans (Keller, 2011). This observation confirms Samoulean's (2009) results, suggesting that Facebook, at the least, requires adequate staff time to cultivate and maintain properly. However, the payoff for such investment can be enormous. When the Multnomah County Library hosted a virtual

custom recommendation event on Facebook, it received approximately 100 inquiries from patrons within 6 hours (Keller, 2011). Though this is a small number relative to the counts of followers, having 100 users actively engaging with an institution on a level comparable to a brief reference interview would be a very busy day for all but the largest libraries.

The Vancouver Public Library and the Multnomah County Library are very good examples of how Web 2.0 technologies can be utilized when properly implemented. Public libraries certainly have the most to gain from Web 2.0 technologies with the least amount of work, because they tend to have strong ties to communities already. Anttiroiko and Savolainen (2011) note that having the staffing means to assemble an online presence and a currently active community is essential to getting users to generate content and maintain interest. Samoulean (2009) suggests that the primary reason for not implementing Web 2.0 technologies, according to the interviewed archivists, is the time investment necessary to maintain them.

Academic libraries have a user base much more in line with traditional archives. Dickson and Holley (2010) found that in an academic setting, Web 2.0 technologies were viewed negatively by many users and were not heavily utilized by students. In a presentation, Brown (2011) commented that academic libraries would likely have difficulty maintaining a successful Facebook presence, because “nobody wants to be friends with the library” and many students want to keep their academic lives separate from their social lives (Sekyere, 2009).

Academic libraries may also have difficulty increasing interactivity with their students because they are utilizing the tools improperly. Gerolimos and Konsta (2011) disseminated a survey to academic libraries across the globe and found that although the most widely utilized Web 2.0 tool was RSS feeds, the libraries tended to utilize the blog as a news platform without attempting to interact with users socially. Therefore, the problem is not with the tool or even its acceptance by students, and it falls on the shoulders of the library staff to utilize the Web 2.0 technology properly in order to reap the full benefits of its implementation. Of the academic libraries surveyed, 38% had some form of Facebook presence, with the average "like" count being only 750, though the difference between the highest and lowest counts (7,864 and 34 respectively) was enormous. This finding supports the idea that the acceptance depends heavily on understanding user interaction and utilizing the technology properly (Brown, 2011; Cahill, 2011; Gerolimos & Konsta, 2011).

Techniques working well for public libraries may not be applicable to academic libraries because their user base is entirely different. The Vancouver Public Library was successful because it took the time to gather feedback -- through both informal methods (such as Twitter responses) and formal methods (such as patron surveys, focus groups, and one-on-one interviews) -- and modify its web presence to meet users' expectation (Cahill, 2011). The survey conducted by Gerolimos and Konsta (2011), covering 12 different tools utilized in academic libraries, revealed a popular misconception. That is, to be successful a library needs to implement every different kind of Web 2.0 technologies to cast the net as widely as possible. This misconception can lead to

spreading the limited resources of any library far too thinly. As shown by Brown's (2011) and other studies of successful cases, it is important to begin with one tool which will work for the institution's unique situation and make that a success before attempting to implement another. In this way, librarians and archivists can take a targeted approach to marketing and focus on quality over quantity.

Studies of Web 2.0 in Archives

There are numerous blogs, articles, and even a book on Web 2.0 in archives, but the literature on Web 2.0 adoption is largely anecdotal (Theimer, 2010), and only a few empirical studies can be found. Crymble's (2010) study of Facebook and Twitter usage provides a general idea about archives' adoption of those tools, but is limited to two services primarily utilized for promotional purposes. The study found that what drove people to follow an archive on Facebook or Twitter was mostly its reputation and consequent popularity, as opposed to posting activity. Larger institutions such as the Library of Congress and the Smithsonian have utilized services like Flickr to great effect, but smaller archives could have different results from these high-profile institutions (Clark, 2008; Kalfatovic, Kapsalis, Spiess, Van Camp, & Edson, 2008). Facebook pages associated with important causes or representing a strong community were also the most popular, regardless of the content disseminated (Crymble, 2010). The Facebook pages in Crymble's survey were seldom updated, and therefore user engagement was likely low regardless of the quantity of followers. Keller (2011) suggests that regular updates on Facebook and maintaining an informal tone can increase engagement. Though Keller's

observation is of public libraries, the basic means of driving interaction should still be applicable for archives.

Samoulean's (2009) study surveying the implementation of Web 2.0 technologies in archives covered five broad social media categories (including blogs, wikis and social networking sites, ratings and reviews, podcasting, and bookmarking) as implemented on the archive's website. The study was also limited to archives websites with digital collections, with digital collection defined as "digital resources organized into collections spanning a range of subjects that support the research needs of its community" (p. 22). The survey results showed that of 213 archival repositories evaluated, 85 (40%) hosted a digital collection, and of those, 38 (45%) used some Web 2.0 technology. The survey results also suggested that the content management system (e.g. CONTENTdm) played a large role in determining which Web 2.0 technology was to be locally implemented by the archival repository (third-party Web 2.0 technologies were outside the scope of the study). The choice of using third-party versus homegrown content management systems appeared to affect the number and diversity of Web 2.0 features made available to the user community, with third-party technologies being much more limited in scope than their locally hosted counterparts. However, the interviews suggested that though the locally hosted technologies allowed more versatility, they were more difficult to implement and maintain. With the limitations in staff and budget, commercial systems are likely becoming an increasingly attractive option to archives, given their readily available communities, ease of setup, and the fact that they are free (Crymble, 2010; Theimer, 2010).

Samoulean's (2009) interviews showed that 57% of the respondents' impetus for implementing Web 2.0 technologies was promotion of collections. Also, 71% considered patron or user service to be the driving force behind the technologies. One respondent noted feedback from users who wanted to do more with the digital objects such as commenting and sharing information. The interviews revealed that the biggest detriment to Web 2.0 technologies was the investment of time in maintaining the technology while still having to perform traditional duties. The interviews also revealed that feedback regarding the Web 2.0 technologies was purely anecdotal and that none of the surveyed archives tracked use with a formal feedback mechanism. However, interviewees did note increases in requests for scans, donations, and requests to see original materials.

However, Samoulean's (2009) study is unnecessarily narrow in scope. In the age of Internet, it is important to remember that there are other nations (most notably Australia, Canada, and the United Kingdom) from which American archivists can learn and borrow techniques and strategies. Samoulean's study was limited to American archives affiliated with a college or university, with words such as "archives" or "special collections" being part of their names. This leaves out international archives as well as community archives or any archive which did not explicitly name itself as such. Institutional repositories or archives with clever names might have been excluded from the study.

Samoulean's (2009) study also limited itself to archives with a large digitized collection. Archives without funding for large digitization projects would have been excluded even though Web 2.0 technologies were utilized to increase access to physical

collections, as noted anecdotally by the interviewees. Furthermore, it is possible that archivists may be utilizing third-party websites (e.g., Facebook pages and Twitter accounts) for promotion and increasing access instead of implementing Web 2.0 technologies on their own websites. Such cases seem to be excluded from Samoulean's study as well.

Summary

Though much research has been done on Web 2.0 technologies in libraries, little has been done concerning Web 2.0 in archives. The few studies found for this research appear to be narrow in scope, either focusing on a specific technology, a specific archive, or a specific country. Nevertheless, these studies suggest that Web 2.0 technologies in archives are an important topic of research and deserve further investigation.

Research Design

With more archives utilizing Web 2.0 technologies to promote and increase access to collections, it is important to ensure that the rewards are worth the effort. The thesis research aimed to survey current practices of making use of Web 2.0 technologies in archives, reveal related issues, and identify exemplary practices of successful implementation. Investigating the research problem and answering related research questions necessitated the gathering of both qualitative and quantitative data, suggesting a mix-methods approach. Pragmatic epistemology in conjunction with the theory of access and, more specifically, archival custody, directed the methodological design of this study – a combination of online questionnaire survey and semi-structured interviews. The following sections cover the design philosophy (including the epistemology and theory), methodology and analysis, and ethical issues taken into consideration when conducting this research.

Epistemology

The epistemological framework underlying this study is pragmatism, a wholly American epistemology that flourished in qualitative research primarily due to John Dewey in the early 20th Century (Maxcy, 2003). He was very much influenced by the events and thoughts of his time, including British empiricism, evolutionary theory, new realism, and the work of Hegel (Maxcy, 2003). Dewey and the pragmatists adapted these influences in various ways to suit their needs. Although pragmatic inquiry was empirical, it focused on the consequent phenomena, or practical results of the research, as opposed

to being retrospective, which was a primary focus of British Empiricism. From Charles Darwin's evolutionary theory, the pragmatists took the idea that cultures and peoples interact with and adapt to each other, fitting within a dynamic and ever-changing universe. From new realism they adopted a focus on the realities of current social conditions and, in some adherents, a passion for finding ways to improve them. And from Hegel, the pragmatists were able to abandon determinism and develop an epistemology which allowed humans to exercise control over the inevitable changes of the future (Maxcy, 2003).

Pragmatism was also created in reaction to several other prevalent epistemological ideas of the time. In that vein, Dewey rejected the objectivist idea that entirely non-subjective data could be collected with total impartiality. By the same token, he also rejected the polar-opposite, radical, and relativistic view that all observations and findings of social inquiry were relative to the extent of being impossible for any outside observer to understand (Maxcy, 2003). Dewey instead took a middle ground between the two and declared that the methods of social and hard sciences are fluid and exist on a spectrum. This declaration laid the groundwork for the validation of mixed-methods research.

After Dewey, it was not until much later in the 1980s and 1990s that pragmatism was used to make the mixed-methods approach a viable option in the field of social science. It had been denied due to the incompatibility thesis, which believes that qualitative and quantitative methods cannot be utilized in tandem due to epistemological incompatibilities so severe that the use of one method precludes the use of the other

(Howe, 1988). However, after a very convincing argument that qualitative and quantitative data are inextricably intertwined, Howe (1988) then used the pragmatic epistemology to resolve any incompatibility which may have existed.

The fundamental argument for pragmatism, and therefore mixed-methods research, lies in throwing away the dichotomy of scientific truth in hard science and multiple realities in social science. Instead, it offers a "uniformity of scientific reasoning" which allows qualitative and quantitative methods to exist side by side (Howe, 1998, p.14). It leaves much up to the researcher to decide how the combination of quantitative and qualitative elements is to be applied to research, theory, and method, and it allows for the co-existence of both methods in a single study which will hopefully provide a clearer answer than the exclusive use of either.

The pragmatic epistemology has been utilized in several recent studies, including doctoral work in the field of library science, because it allows for generalizable results from the quantitative data, while still allowing for more in-depth findings from the qualitative data (Inzerilla, 2012; Romaniuk, 2012). While using the pragmatic epistemology, it is necessary to conduct research that is practically applicable and that will positively influence society. As Romaniuk (2012) points out, the pragmatic epistemology focuses heavily on real-world applicable results, which is the primary objective of this thesis research -- to discover exemplary practices of implementing Web 2.0 technologies in archives.

Archival Custody Theory

Archival custody theory influences how archivists and researchers deal with archival records and, as Web 2.0 technologies have facilitated access between individuals, it is the ideal theory for framing the research question. This section gives a brief review of the theory of archival custody, and the way it informs the methodological design of this study is explained.

One of the consistencies in archival practice in the last 250 years has been the interaction between archivists and researchers (Bastian, 2002). In the traditional paradigm, the archivist acts as a gatekeeper, facilitating interactions between the researcher and the archival collections. As Bastian (2002) points out, control over records has historically been restricted to "keepers", and that the early custodial role was often one of power. In such a role, the archivist or records keeper has direct control over access to historical documentation, which can shape the very history of a person or people. Yet, archival custody has many different meanings, depending on when and where it is mentioned.

Archival thought concerning custody in the United States focuses around appraisal strategies in an effort to grapple with the tide of records being created while still preserving history as it happens (Bastian, 2002). However, this can lead to a bias in records retention. If the decision of what to preserve is left with the appraiser, it could be so far removed from the origin of the records that he/she believes the records are unimportant (Wakimoto, 2012). For example, the National Archives of the United States staff supports centralized custody in an effort to protect and ensure evidential value.

In Canada, Duranti (1996) introduced the idea of the archival threshold, which emphasizes continuous custody and physical security. In such a model of custody, the archives are seen as a place of inviolable security and authority, and "any document that has passed the archival threshold, for as long as it exists, is truly a monument to its creator's actions" (p. 247). This theory of custody attempts to maintain authenticity of documents by treating the archives as a fortress against outside influence, and as such it likely increases barriers to access as a trade-off for increased authority of the records. If too many persons were allowed to tamper with the archival records, their authoritative value would be diminished.

In contrast, Australian thought is generally aligned with the theory of the archival continuum, within which access and custody are points, and records can move along the continuum depending upon the situation. The ultimate goal of the archival continuum model is for the archivist to take an active role in the formation of archival records. By integrating recordkeeping and archival practices, the continuum approach hopes to be able to cope with the near-infinite expansion of records, and although it has its roots in Australian practice, it has adherents in the United States and Canada (Upward, McKemmish, & Reed, 2011).

These models of custody fail to take into account the idea that records are only valuable so long as there are people to use them. Some, including Bearman (1991), rally in support of distributed physical custody with centralized legal/intellectual custody in view of technological developments in recent years. Since today's technology allows for multiple identical copies of documents to be created with minimal effort, maintaining

intellectual or legal custody of records allows the authoritative copy to remain in the archives while allowing nearly unlimited access to it.

Bearman's (1991) idea of maintaining a user-focused approach to archival custody is echoed by researchers who actually utilize the archival collections. In more recent years, researchers increasingly desire more immediate access to collections without the archivist acting as an intermediary (Duff, Craig, & Cherry, 2004). In the contemporary era, instantaneous access is becoming an expectation due to the ubiquity of access to other forms of information. Though limited in scope to Canadian researchers, the idea that "[researchers] clearly would like to have the archives' finding aids accessible at their computers or work stations and would benefit also by direct access to digitized historical documents" (p. 71) could likely be applied universally. This is not to say that the archivists' expertise is no longer required, but merely that in the contemporary world of heightened global connectivity, online access to archival finding aids and archival collections are desired by researchers, and the practice of archival custody should evolve to suit those needs.

Since custody theory has largely to do with accessing collections, it is important to understand which Web 2.0 technologies are best used for promoting collections. Many Web 2.0 technologies have the potential of allowing researchers to influence the creation of a collection. With this taken into consideration, the idea of archivists being the sole custodian of records becomes difficult to defend. In order to implement Web 2.0 technologies in archives successfully, the role of the archivist must shift from being a gatekeeper to being a collaborator. The user community becomes integral to the

generation and maintenance of the archival collections. And it is this newer interpretation of archival custody that informs this thesis research.

Methodology: A Mixed-Methods Approach

The thesis research is a mixed-methods study, combining an online questionnaire survey and semi-structured interviews, implemented in two phases. Mixed-methods studies are characterized by combined use of both quantitative and qualitative techniques of data gathering and data analysis. The first phase of this study involved distributing a questionnaire on the Internet, which reached the broadest population possible, allowing for increased generalizability. The quantitative data from the online survey allowed the researcher to assess the ubiquity of Web 2.0 implementation and to discover what archives were using Web 2.0 technologies as well as which technologies were most heavily utilized. The qualitative materials from the interviews then allowed for more in-depth exploration and additional understanding of findings from the survey.

The Online Survey

Research Population and Survey Distribution. The targeted research population of this study was archivists. To increase the scope of coverage and responses of the survey, no random sampling of the research population was attempted. The survey – implemented as a Google Form -- was distributed by posting messages (including a clickable link to the survey site) to the following listservs for archivists: NZ Records (Australia/New Zealand), Archives NRA (United Kingdom), Arcan (Canada), Archives and Archivists (United States), Archivists Toolkit User Group (run through the Society of

American Archivists, but no specific geographic affiliation), and the Archives Management Roundtable (United States). An attempt was made to distribute the survey to the Association of Moving Image Archivists listserv as well, but it was unsuccessful due to issues with subscription. In addition to distribution through the listservs, the survey was also posted on Twitter and retweeted by Kate Theimer, a prominent connector among archivists on Twitter, for increased exposure.

This multi-point distribution approach was used for two reasons. First, it was believed that approaching archivists through digital means would reach the greatest number of people across the most geographically diverse areas possible. Secondly, due to lack of financial support, a free distribution method was preferable. It was understood at the beginning that this could skew results toward archivists who were more technologically inclined, but this was viewed as a minimal risk in the face of the above considerations. On the other hand, distributing the survey on a global scale helped to reduce cultural biases in management style and technological ubiquity. By distributing the survey through listservs as well as social media outlets, it was hoped that the data would not be biased toward respondents with preference one way or the other in regard to use of Web 2.0 technologies, as listservs predate the popularity of most Web 2.0 technologies.

A URL shortener (goo.gl) was used to track how many link clicks the survey site received. The clicks were primarily from the United States, Canada, the United Kingdom, and New Zealand. The actual responses originated from nearly every state in the continental United States (except Montana, the Dakotas, and New Mexico), six out of

the ten Canadian Provinces, Wales, England and Scotland in the United Kingdom, both islands of New Zealand, and two Australian Territories. In September 2011, when the link was initially released, it received approximately 1,000 clicks from at least 10 different countries, with the majority coming from the United States, Canada, the United Kingdom, and New Zealand. The other countries (Ireland, Australia, Trinidad and Tobago, Brazil, Switzerland, and Germany) each produced less than 10 clicks. When asked how they heard about the survey, an overwhelming majority (84%) of respondents indicated that they had received the survey through a listserv. Only 10% clicked the link through Twitter. Presumably, many respondents probably had already acted upon the listserv post by the time they received the link from Twitter.

Survey Questionnaire. The survey questionnaire (see Appendix A) was developed in-house, consisting of 14 questions organized into five parts (with Part 5 being optional). The first part focused on gathering information about the archivist and their institution, the second part on Web 2.0 technologies for promotional use, and the third part on Web 2.0 technologies for researcher engagement. The fourth part was of open-ended questions for gathering additional information, and the fifth (optional) part concerned recruiting interviewees for the second phase of the study.

Once implemented as a web site, three experts in the field of archives and Web 2.0 were asked to review it for validation and improvements. These three experts are Mary Samouelian (Duke University Archives), Kate Theimer (Freelancer), and Dr. Elizabeth Yakel (School of Information, University of Michigan). Changes to the survey were informed by feedback from these experts, which included decreasing the number of

pages, increasing the size of the text boxes, leaving room for write-ins, adding the open-ended question concerning exemplary practices (Question #9), and expanding the list of specific technologies included in the multiple-choice sections (Questions #6 & #8). Dr. Yakel's feedback was particularly influential of the revision of the survey, as most of the major changes came at her suggestion. Her opinions were held in high regard for her extensive experience of conducting research in the fields of archives and Web 2.0 technologies.

The survey questions were primarily about whether archivists used Web 2.0 technologies and what technologies they used. The technologies were grouped into two broad categories: for promotion, and for engagement. Web 2.0 technologies used for promotion included Twitter, Facebook, and YouTube, as they served primarily to bring archival collections to those who might otherwise not be aware of them and to increase their user bases. Web 2.0 technologies used to increase researcher engagement included wikis, tagging, and recommendations, as these allowed researchers to add content to the archival collections which could prove a valuable resource to archival institutions (Krause & Yakel, 2007; Peccatte, 2011; Sherratt, 2011; Yakel, 2011; Zinkham & Springer, 2011).

Survey Responses. The online survey started on August 6, 2011 and remained open until August 31, 2011. A total of 245 archivists responded to the survey from approximately seven countries over the 25-day period, yielding about 9.8 responses per day on average. However, it should be noted that the vast majority (88.2%) of responses were collected in the first week. Given the approaches taken to distribute the online

survey, it is impossible to determine the exact scope of sampling in quantitative terms. Therefore, it is infeasible to determine the survey's response rate exactly. However, if using the total number (1000) of tracked clicks as reference, the response rate would be 24.5%.

The Semi-Structured Interview

Participants for the second phase of the study, the semi-structured interview, were selected from a group of 66 survey respondents who offered their contact information and expressed willingness to be interviewed. Initially, six survey respondents were selected, and an email was sent to these six individuals on November 11, 2011 to initiate contact. However, only three responded. As a result, three more respondents had to be included to fill the vacant spots, and they were contacted via email on December 9, 2011. In the end, six survey respondents from four different countries and three different types of archives were confirmed for the interview, which ensured cultural and institutional representativeness to a reasonable extent.

Interview Guide. An interview guide was developed to ensure consistency of coverage, consisting of nine questions (see Appendix B). These questions were intended to discover how and why the archivists used the Web 2.0 technologies. By finding the rationale behind their choices, the interview would reveal their needs and problems. Taken in aggregation, identified common interests and issues may be incorporated into developing exemplary practices universally relevant to archivists.

Interviewing Process. The semi-structured interviews were conducted during January 3-17, 2012 over the telephone. Although six participants were confirmed for the

interview, one person was not able to complete the process due to miscommunication and technical issues. After interviewing the remaining five participants, it was decided that enough data had been gathered to complete this part of the study, and no remedial effort was made to achieve the total number of interviewees as planned. The interviews were between 15 and 30 minutes in length and recorded with the interviewees' verbal consent. Interviewees were asked the questions from the interview guide (Appendix B) in a semi-structured format, and after completion they were given the opportunity to edit their transcripts to remove anything they felt inappropriate to include in the analysis.

Data Analysis

The quantitative survey data were analyzed using descriptive statistics in an effort to assess what Web 2.0 technologies were being implemented by archivists across the globe. The data from the "choose all that apply" questions were divided into individual Yes/No questions, and the entire data set was subjected to chi-square analysis to test for statistical significance. Where chi-square test was inappropriate due to expected cell count falling below 5, Kendall's tau-b analysis was used instead.

The qualitative data from interviews and the open-ended survey questions were analyzed with holistic coding, which is an attempt to aggregate themes or issues in the data as a whole. Holistic coding is particularly useful in studies which handle data in various forms (Saldaña, 2009). Though considered a preparatory approach by some, it proved sufficiently detailed and particularly useful for this study. The short answer questions needed to undergo multiple rounds of holistic coding in order to extract the most applicable terms possible. The interview data were coded first using structural

coding in order to put similar data together before holistic coding was attempted. This allowed for codes to be grouped together more effectively and helped improve analysis.

Ethics

Exemption from IRB approval was granted by the San José State University on July 22, 2011, based on the consideration that the information collected was not about individuals and that interview participants were not asked to provide personal information. To ensure security, data from the online survey were stored on a password protected database. The majority of survey takers opted not to give any personal information and so remained completely anonymous. Those agreeing to be interviewed were required to provide an email address and name, which was deemed to be the minimum amount of information needed for initial contact.

The interviewees signed a consent form which included a disclaiming clause stating that the small staff of most archives would make it exceedingly difficult to maintain anonymity. Therefore, in order to mitigate the possibility that anything said during the interview may be potentially damaging, interviewees were encouraged to review the transcript and make necessary editing.

Summary

In order to fully answer the question of whether or not archives are effectively implementing Web 2.0 technologies, it was important to approach the problem from a pragmatic standpoint. This pragmatic epistemology also allowed for a circumnavigation of either completely interpretivistic or positivistic world views to find answers that are,

ideally, applicable to the archives profession as a whole. The research question needs to be addressed through the custody theory in archives in an attempt to change old ideas and practices for the more contemporary era. And the mixed-methods approach was considered the most suitable to fully address the research question from as many angles as possible. These research design choices allowed for the successful implementation of the study.

Findings

The following chapter reports and discusses findings of the online survey and the semi-structured interviews. The online survey was primarily centered around what Web 2.0 technologies were used, with minor emphasis on how and why they were used. The semi-structured interviews were focused on detailed accounts of how these technologies were implemented and the difficulties surrounding the process.

Survey Results

As shown in Figure 1 (screen capture of annotated Google map), survey responses originated from nearly every state in the continental United States (except Montana, the Dakotas, and New Mexico), six out of the ten Canadian Provinces, Wales, England and Scotland in the United Kingdom, both islands of New Zealand, and two Australian Territories.

Figure1: Map of the distribution of survey responses

Of the 250 participants who responded to the survey, 50% (122) identified themselves as being a part of some kind of academic institution, 23% (57) as associated with a government archive, and 21% (51) selected the "Other" category. Only 8% (20) identified themselves as being part of a community archive, and 1% (3) as part of a corporate archive.

For the purposes of statistical analysis, survey responses were grouped into four archival categories: Academic, Government, Community, and Other. Where respondents selected more than one category, their responses were grouped into the "Other" category to ease statistical analysis. When asked whether or not their institution used Web 2.0 technologies, 84.1% of the respondents indicated that their institution used them in some way. Table 1 shows the usage types of Web 2.0 technologies by institutional categories of archives. Though a majority of archives use Web 2.0 technologies of some kind, they tend to be used primarily for promotional purposes as opposed to increasing researcher engagement. Based on short answers from respondents who indicated that they did not use Web 2.0 technologies to increase researcher engagement, a lack of understanding of the nature of such Web 2.0 technologies seems to be a barrier to implementation.

Table 1 Archival Use of Web 2.0 Technologies in General (*f*/%)

Use	Academic	Government	Community	Other	*n*
General use	106	46	18	39	206
	85.5	80.7	94.7	81.2	84.1
For promotion	95	41	18	33	184
	76.6	79.1	94.7	68.6	75.1
To increase	56	24	10	15	104
engagement	45.2	42.1	52.6	31.2	42.4

As shown in Table 1, nearly all archives which did use Web 2.0 technologies used them for promotional purposes, and 75.1% (184) responded that their institution uses the Web 2.0 technologies to promote the collections. It is likely that this is the primary way in which archives are currently utilizing Web 2.0 technologies. Community archives appear to be more likely than others to implement these technologies; however, due to too small a sample size, the statistical significance of difference in percentages cannot be determined.

Of the 19 respondents (8%) who indicated that their institution did use Web 2.0 technologies but not for promotional purposes, the most oft-cited reason was a lack of time or resources to utilize these technologies, but they also indicated that they planned to implement Web 2.0 technologies to promote collections in the future. Other barriers to implementing Web 2.0 technologies included a lack of understanding about both their function and purpose, that promotion was already being conducted through a parent agency, and that they were not allowed to promote collections due to either being an internal archive or resistance from the communication department.

Table 2 displays the frequency distribution of Web 2.0 technologies being used for promotional purposes. There is a statistically significant difference between archival types in regard to Facebook, Flickr, and blogging. Government archives were more likely to use Flickr, academic archives are more likely to use blogs, and community archives are more likely to use Facebook. Community archives also seem more likely to have Twitter accounts than other types of archives, though the difference in percentages is not statistically significant.

Table 2 Web 2.0 Technologies Used in Archives for Promotional Purposes (*f*/%)

Web 2.0 Technology	Academic	Government	Community	Other	*N*
Twitter	53	28	11	20	112
	43.8	49.1	57.9	41.7	45.7
Facebook*	74	29	18	28	149
	61.2	50.9	94.7	58.3	60.8
Flickr**	41	23	4	6	74
	33.9	40.4	21.1	12.5	30.2
blogging***	76	25	10	19	130
	62.8	43.9	52.6	39.6	53.1
YouTube	27	18	4	10	59
	22.3	31.6	21.1	20.8	24.1
Yelp	1	1	1	1	4
	0.8	1.8	5.3	2.1	1.6
Foursquare	5	3	0	1	9
	4.1	5.3	0	2.1	3.7
Historypin	6	5	0	1	12
	5.0	8.8	0	2.1	4.9
SecondLife	2	0	0	0	2
	1.7	0	0	0	0.8
Podcasting	9	3	1	4	17
	7.4	5.3	5.3	8.3	6.9
Don't know what is used	2	1	0	0	3
	1.7	1.8	0	0	1.2
Don't know if any is used	1	0	0	0	1
	0.8	0	0	0	0.4

Notes: The asterisked entries have statistically significant differences in percentages between archival types; * X^2=11.667, p = .009; ** X^2=11.453, p = .01; *** X^2=10.057, p = .018.

Many more technologies were also included in the survey. Their frequencies of indicated use for promotional purpose were extremely low, making it meaningless to test for statistical significance. Besides those listed in Table 2 without a chi-square and p value, others with even lower frequencies (less than 5 in total for each) include: self-hosted wiki, adding to Wikipedia, Tumblr, LinkedIn, LibGuides, Vimeo, other photo hosting sites, and Slideshare. When asked to list any tools not suggested in the multiple-

choice section, many respondents listed resources that were not Web 2.0 technologies at all, which suggests a lack of understanding about what constitutes a Web 2.0 technology.

Table 3 Web 2.0 Technologies Used in Archives to Increase Engagement (*f*/%)

Web 2.0 Technology	Academic	Government	Community	Other	*n*
Tagging*	23	16	4	4	47
	19.0	28.1	21.1	8.3	19.2
Wiki	13	5	0	2	20
	10.7	8.8	0	4.2	8.2
Rating System	6	4	3	4	17
	5.0	7.0	15.8	8.3	6.9
Bookmarking	9	6	3	2	13
	7.4	10.5	15.8	4.2	5.3
Auto-Recommendation	8	3	1	1	13
	6.6	5.3	5.3	2.1	5.3
Don't know what is used	13	7	1	3	24
	10.7	12.3	5.3	6.2	9.8
Don't know if any is used**	12	3	6	7	28
	9.9	5.3	31.6	14.6	11.4

Notes: The asterisked entries have statistically significant difference in percentages between archival types, though at different confidence levels; * X^2=6.594, p= .086; ** X^2=10.507, p= .015.

The survey asked participants to indicate what specific Web 2.0 technologies were utilized to increase researcher engagement, and the frequency distribution is presented in Table 3. It appears that user-generated tagging was most widely implemented and more likely to be used by government archives, with the difference being statistically significant at a confidence level of 90%. Unfortunately, many respondents did not know if any or what technology were utilized in their archival institutions for increasing researcher engagement. The data suggested that this lack of awareness was significantly more likely in community archivists. But earlier results showed that community archives had the highest percentage of using Web 2.0 technologies for increasing researcher engagement. This apparent contradiction may be

due to either lack of understanding of related terminologies or misinterpretation of the survey question.

When prompted to list any additional tools and features not included in the survey question, 39% (13) of participants indicated their belief that third party comments, such as those on a Facebook page, increased researcher engagement. In the same vein, 36% (12) felt similarly about in-house commenting, such as on their blogs. Only one respondent indicated that users could upload their own content to the archivists, but five respondents indicated that they had future plans to implement Web 2.0 technologies to increase researcher engagement.

Of the 68 participants who responded to the open-ended question of "why Web 2.0 technologies haven't been implemented to increase researcher engagement," 32% (22) indicated a lack of resources, 13% (9) indicated a worry about loss of control or authority, 9% (6) had concerns about the return on investment, and 4% (3) had administrative issues keeping them from implementation. However, 22% (15) indicated they had plans to implement Web 2.0 technologies to increase researcher engagement in the future. The implementation rate for Web 2.0 technologies to increase researcher engagement was very low in comparison to their use for promotional purposes. Many responses to the open-ended questions indicated confusion concerning what constituted such technology. Therefore, further research in this area could prove fruitful.

The final question on the survey asked respondents what advice they would give to other archivists who are looking to implement Web 2.0 technologies at their institution. Out of 86 total responses, 17% (15) placed importance on planning before

implementation, 15% (13) warned about the time commitment necessary, and an equal number mentioned interaction with a community. Also, 13% (11) of respondents suggested looking to other successful programs as examples, and an equal number suggested some form of evidence-based practice as defined by Booth and Brice (2004). Only 10% (9) emphasized engagement with the target audience as a way of creating a successful Web 2.0 program. Although 8% (7) expressed concern or warned about the difficulty to quantify return on investment, an equal number were adamant that implementing Web 2.0 technologies was important. Finally, 7% (6) emphasized partnerships of one kind or another, and 6% (5) indicated that updating frequently was important.

Interview Results

For ease of discussion, the interviewees will be referred to as five different Greek goddesses: Demeter, from an American academic archive; Iris, from an American government archive; Nike, from a Canadian city archive; Artemis, from a New Zealand community archive; and Selene, from an English corporate archive. During the course of the interviews, five main themes arose which were common with all of the interviewees: (a) The archives chose their particular Web 2.0 technologies based primarily on the perceived time it would take to use (i.e. the less time needed, the better); (b) Upper administration offered little more than verbal support to the archives; (c) The idea to use Web 2.0 technologies was first embraced primarily by those at the bottom of the management hierarchy; (d) Partnerships were very beneficial, if not necessary, for their successful implementation of Web 2.0 technologies in archives; And (e) community

interaction was essential. These different themes are further explored in the following sections.

Choosing Technologies. One of the primary reasons that Web 2.0 technologies are adopted by archives, or anyone, is their belief that it takes very little effort to use and maintain. When asked why particular technologies were chosen, it was almost always because it was something that could be done with minimal effort. Demeter explained,

> "We definitely chose Flickr just because of its ease of use. And certainly Facebook and Twitter probably go along with that…a lot of times it's the ease of use that we kind of based our decision on."

With most archives' staff numbering well under ten, everyone's time is valuable. This closely correlates with the results of the survey, showing that respondents were primarily concerned with the time cost of using Web 2.0 technologies.

What really drives the choice is the perceived ease of use. For example, Iris mentioned that "what the archives did not want to get into was dedicating much of a staff person's time to doing frequent tweets and short bursts." Twitter was perceived as being labor intensive due to the need for constant attention. Their alternative plan was pre-planning a blog which they decided to do in January but "[didn't] actually go live until July so we tried to compile enough content to have content for the first three months before we ever went live so that we—that was one of our main concerns: that we didn't want to start something that we couldn't sustain and maintain well." Because Twitter was perceived as having a high maintenance cost, they instead opted for a long-form technology which needed a different kind of operation cost in the form of gathering and preparing content.

In contradiction to the perceptions of Iris, Nike maintained that Twitter was easy enough to use if implemented properly. By encouraging staff to monitor the archives' Twitter account on their personal devices, responses to questions can be given quickly, which encourages more questions in a snowball effect of sorts. She stressed that Twitter is "the one sort of not-quite-real-time but conversational one, and the rest of them we can put up as we want-- and time permits." The city archive with which Nike is affiliated appeared to use Twitter primarily to promote conversation and interaction with minimal time cost, presumably also in support of any reference services required.

These apparent contradictions are actually the difference between the ease of use versus the effort of maintenance. Blogging is a straightforward Web 2.0 technology to use; it requires no additional knowledge beyond the ability to compose a brief report or narrative. In this regard, blogging has a relatively shallow learning curve; however, it requires much more effort to maintain. Twitter, on the other hand, is a different form of communication from standard writing. The character limitations and platform specific mores involve a steeper learning curve and take time to fully understand and utilize to one's advantage. Twitter is easier to maintain in many ways because the effort required to post a 140 character message is minimal in comparison to 500-word-long blog posts. Some archives have opted to take the short-term gain of a shallow learning curve over the long term gain of easy maintenance, and as a result, one is equally likely to be chosen as the other.

Administrative Support. A commonality between the interviewees was the inevitable disconnection between the archives and the administration. The idea that it is

better to ask for forgiveness than permission was shared by nearly all of the interviewees. When confronted with the idea of Web 2.0 technologies, upper administration was either completely unaware of how to handle it, or so afraid of anything happening that it was over-planned to oblivion. Middle-management usually offered verbal support, but never financial. As Nike noted,

> "Our direct administration, the manager and our director: very supportive. Higher up in the city, they still didn't have a policy, didn't know how to deal with social media, so they didn't want us to do any of it."

From an administrator's viewpoint, Iris noted, "We're always supportive of people's ideas as long as we don't have to, you know, give up doing anything else." This sort of benign neglect appeared to be the norm in academia as well: "I kept my Associate Dean informed and I think he was okay with it. They didn't give us any support, they—pretty much we do it on our own. They didn't really give us any support" (Demeter). But when stepping into the semi-private sector of the archive with which Selene is associated, the gap became even greater with increased hierarchy:

> "This is coming from some of the staff that manage—at the managerial level, and it's actually being put into operation by their assistants, so it's not actually managerial staff or upper managers who are actually putting it into practice. All of these wikis are controlled by somebody's PA." (Selene)

By having an increased disconnect between the archivists and the administration, it became difficult to ensure that good policies are enacted. This is especially true concerning Web 2.0 technologies, with many administrators appearing to know little about them, if anything, and sometimes perceive their implementation as too much trouble to allow.

In smaller archives, such as the archive with which Artemis is associated, where the disconnection between middle and upper administration is even greater, archivists were allowed more flexibility in day-to-day activity and policy making. "Our bigger boss is the council and they don't really interfere…as long as we're keeping within the guidelines of the overall charter of the council, then it's all good" (Artemis). In this situation, the library management was allowed to act of its own accord, probably because the projects were too small to be noticed by the counsel.

Grassroots Implementation. Because the upper management often had little or no knowledge of Web 2.0 technologies or the possibility of using them within the archives, implementation was almost always suggested by members of the rank-and-file staff. At the archive with which Demeter is associated, "Our collections archivist, [name redacted], came up with the initial idea. And she is interested in technology and the uses of technology, so she's kind of trained herself to do them" (Demeter). A technologically-inclined staff member is almost universally the kind of person to implement Web 2.0 technologies in an archival institution.

As mentioned previously, the idea to implement Web 2.0 technologies almost never came from the administration: "Well, as you can tell, it certainly wasn't a top-down thing… Well, I mean it was staff—mainly me, going 'Oh, we should put something up on YouTube' and then going 'I think we can handle Twitter'" (Nike). Though rather cavalier about which technologies to implement and how, it inevitably fell to the Digital Conservator to actually plan and then make that plan a reality.

And even in the rare situations where it was the administration's idea to implement Web 2.0 technologies, it often fell to the technologically savvy archives staff to implement. "[Name redacted] is the one who really just kinda picked it up and ran with it and has just taken it way beyond anything we ever imagined" (Iris). And when it came to adding a new technology to the plan, a staff member took personal initiative to get it started: "I've been trying to start up a Flickr interest group around here and maybe a pilot project or something like that" (Iris's Coworker).

Interdepartmental Partnerships. Since the main problem facing archives is having limited budgets and therefore limited staff time, some of the archives have begun forming partnerships with other departments in order to share resources and increase visibility. The archive with which Iris is associated includes a museum as well as an archive and their archives attempted to incorporate the museum collections in its blog:

> "On the blog I do try to include all the other divisions of the agency so I work featuring not only archives collections like photographs or documents but also museum artifacts; and I'm trying to work with our archaeologist because we have a pretty large—from what I hear—archaeology collection." (Iris's Other Coworker)

Interdepartmental partnerships like this have the potential to mutually benefit both parties by offering more blogging material to the archives, as more posts yield more visibility and the museum department benefits from Web 2.0 technologies without having to implement any on its own.

In an academic setting, the archive with which Demeter is associated had been approached for a partnership with University Relations:

> "They want there to be more of a presence from our department on there so what I've done is, I'm connecting her with [Name Redacted], our blogger, and what we will do is…come up with some kind of schedule" (Demeter).

By working with a promotional department such as University Relations or the equivalent, an archivist would be able to push their content to a more visible location. This may slightly increase the workload of the archivist, but "it's actually really nice for us that we will be included in there and it will probably bump up our numbers, too" (Demeter). Increased attention from other departments could lead to more partnerships or possibly connections with potential donors. This could explain why partnerships were noted as being important by 7% of the respondents who offered advice to other archives concerning Web 2.0 technology.

In other situations, interdepartmental communication and cooperation may be necessary in order to implement any Web 2.0 technologies at all.

> "If you try from another directorate from another part of the organization to break into that sort of marketing to the public, you cannot use that so staff who are in web development, who are in information/knowledge management cannot use that. That's a commercial outlet. So it's a bit tricky, really. So within my own directorate, we've kind of used things very internally, so there's no public blogs about the library or the archives within the RCN." (Selene)

In more tightly-organized and hierarchical settings, such as the private sector, archivists could be reprimanded for overstepping their boundary if they attempt to implement a Web 2.0 technology without authorization. "The communications staff that I deal with on a regular basis…are very positive and they want the archives to be shown off…however, it's a lot harder to convince the people who are holding the purse strings

above them" (Selene). In cases such as this, forging connections with administrators would likely be necessary before forging any mutually-beneficial partnerships such as those detailed above.

Community Interaction. Archives are a service industry, in much the same way as libraries are. Whether serving the public at large or members of a small community, working with the target community is important to the successful use of any Web 2.0 technology. Demeter suggested that archivists "[do] some research a priori and think about your audience and develop policies, definitely." By discovering what sorts of technologies are most oft-used by the target community, archives can select the appropriate tool for the task.

What tool is appropriate in this regard varies from archive to archive. "Some people live on Twitter and kind of expect you to be there, too. But I'm hoping there won't be a whole lot of people who live on a million different platforms because we can't be everywhere" (Nike). Twitter was chosen by the staff of the archive with which Nike is associated because it offers interaction with the community which fits into their workflow. Questions are answered on the go via mobile device and "I can carry that with me on my smartphone and tweet on behalf of the archives from wherever" (Nike). This can be a boon to archivists which are still seen by many as a restricted resource.

When communities are not appropriately served, they can take actions into their own hands, as was the case with the archive with which Artemis is associated: "There's actually a separate Facebook page that someone started and it's sort of stories of our city and that's something we would really love to make sure is saved" (Artemis). Although

the archives had its own Facebook page in this instance, a separate community member started collecting stories of the city, and it would behoove the staff of the archive with which Artemis is associated to work with this community in an effort to collect what has already been given and collect more, ideally on a volunteer basis. Engaging with the target audience was one of the more prominent suggestions from the survey participants as well. In this regard, working directly with the community in an engaging fashion can allow archivists to operate on a lower budget without sacrificing service or collections (Wakimoto, 2012).

On the opposite end of the spectrum, working with a target community may not be enough due to lack of understanding within the organization:

> We're attending a genealogy event in London and it's a three day event and our senior manager's first reaction was to run it past the marketing department who said no. And we said "What's that about? What's the problem?" and they said… "Why don't you wait"… And we went "…you have no idea that we're actually already running a service for, you know, researching people's genealogies, increasing nursing access services. You don't even know that?" (Selene)

In the case of the archive with which Selene is associated, the archivists were very active with the community, but were hindered due to a lack of communication between the archivists and the marketing department. In cases such as this, interdepartmental communication could go a long way to alleviate problems such as this.

Summary

The results of survey and interviews highlight many trends and problems facing archives who are implementing Web 2.0 technologies. It was found that no particular

type of archives was more likely to choose a Web 2.0 technology, since the observed differences turned out to be statistically insignificant. The only exception is Flickr, which appears to be favored by government archives more than by other types of archives. Qualitative analysis of interview transcripts identified five themes. Specifically, archives chose their Web 2.0 technologies based primarily on the perceived time it would take to use; upper administration offered little more than verbal support to the archivists; the idea to use Web 2.0 technologies primarily occurred from the bottom of the hierarchy; partnerships were beneficial, if not necessary, for successful implementation of Web 2.0 technologies; and that community interaction was important for a success.

Conclusion: Discussion and Future Directions

This thesis attempts to answer the following questions: (a) How are archives using Web 2.0 technologies? (b) Why are they using those particular technologies? and (c) What are the exemplary practices to successfully implement these technologies? An online survey was distributed to find out what Web 2.0 technologies were implemented in archives, and semi-structured interviews were conducted to gain insights about how and why these technologies were implemented. Below is a discussion of the implications of the research findings, including a highlight of exemplary practices that archives may follow to improve their implementation of Web 2.0 technologies for collection promotion and engagement of researchers.

The Current Implementation Landscape

The research discovered that Web 2.0 technologies are currently being implemented by over 80% of archives. Within that subset, certain types of archives appear more likely to use certain types of Web 2.0 technologies. Academic archives are more likely to utilize blogs, community archives are more likely to use Facebook, and government archives are more likely to use Flickr.

The reasons behind these trends are unclear, but possible explanations can be speculated. In academic archives, change can be difficult to implement, and long-form blogs more closely resemble respectable resources that researchers desire. Facebook posts and Tweets would be less likely utilized by professional and academic researchers. Community archives, on the other hand, rely heavily on community involvement and

action. Many members of the archive's user community are likely already registered for Facebook, which makes it a perfect platform to interact with them. Government archives are likely using Flickr because of the precedent set by the Library of Congress' creation of the Flickr Commons. When the top government archives in the nation have chosen to use a certain platform, it seems likely that others would follow.

What the above difference between various types of archives highlights is the fact that each different type of archives has different needs and different user communities. It becomes important then that each archive assesses its own needs and that of its users and chooses Web 2.0 technologies accordingly. However, many of the archivists responsible for implementing Web 2.0 technologies are not doing it effectively. There are three primary reasons for this: (a) there are so many choices of which technology to implement that archivists are attempting to do too much at once, (b) administrations do not provide material support of the implementation and sometimes even actively prohibit it, and (c) a general lack of knowledge concerning these technologies on the part of archivists and administrators alike.

Too Many Choices. With dozens of different Web 2.0 technologies available for archives to leverage, and new ones being released every month, it can be difficult for archivists to decide which technology is the right choice for them. Instead of making a risky choice of one, they seem to be playing "safe" by trying to implement as many different Web 2.0 technologies as they can. The study found that on average each of the surveyed archivists had implemented three different Web 2.0 technologies. While already limited in resources, most notably staff time, trying to implement multiple Web

2.0 technologies at the same time makes their situation even more difficult. Because they have spread themselves too thinly, many of these technologies are either abandoned without notice or utilized so ineffectively that they may as well be abandoned.

The Administration. Administrators control the budget of archives and have the ultimate power of decision making. Unfortunately, many administrators are also out of touch with the day-to-day needs of archivists, even if they were once a part of the archives. Evidence from this research indicate that the administrators of archives can prevent successful implementation of Web 2.0 technologies by either not funding the effort or being afraid of the technologies to the point of prohibition. By not funding the effort, administrators are forcing an already time-constrained staff to expend time maintaining the technology at the cost of other duties.

Lack of Knowledge. As many archivists, and even more administrators, don't understand Web 2.0 technologies and how they work, they are often implemented ineffectively and without proper preparation. Though some research has been conducted on implementing Web 2.0 technologies in libraries, archivists may not be thinking of the similarities between archives and libraries, and as result failing to utilize these resources. Instead, archivists are implementing Web 2.0 technologies because they know it is important, without fully understanding how they work and how they should be properly integrated into the archive.

Implications

As a result of ineffective use of Web 2.0 technologies, the archivists are being overworked and their Web 2.0 presences are not giving the Return on Investment (ROI)

necessary to warrant their continued use. With budgets dwindling, archivists are being forced to choose between Web 2.0 technologies and their standard archival duties. However, as many archives have valuable collections often unknown to the researchers who need them, these technologies are necessary to generate usage statistics for justifying their continued existence. To this end, exemplary practices may be proposed based on the research findings. These exemplary practices will allow archivists to properly implement Web 2.0 technologies at their archives with minimal expenditure of staff time, potentially increase the use of their collections, and make the archives an important part of the greater institution with which they are affiliated.

Ideas for Exemplary practices

From studying different kinds of archives in five different countries, several trends in archival use of Web 2.0 technologies were identified, and based on observation of these trends, some ideas of exemplary practices emerged. These ideas centered around three concepts -- starting small, engaging with the community, and collaborating -- which are elaborated upon below.

Start Small. If this is an archive's first attempt at implementing a Web 2.0 technology, it is important to begin small, as there will be plenty of time for expansion later. "Start small" means: (a) to start with a single Web 2.0 technology, (b) to gain familiarity with using the technology before implementation, and (c) to track statistics for later assessment.

Though there are many Web 2.0 technologies to choose from, it is important to choose a single one at a time. When choosing a technology, look for one which fits the

needs of the archive and the type of collection promotion the technology is best suited for, or which collection is bested suited for promotion with the technology under consideration.

A technology which could suit archives well but has not been widely implemented is Tumblr. Tumblr has a very active community and combines many of the appealing qualities of Twitter with the appealing qualities of blogging. Tumblr posts are often shorter than most long-form blog posts (sometimes comprising nothing more than a photograph), and can be reblogged by members of the community. A single post is pushed to the archive's immediate followers, which can then be reblogged and pushed to their followers and so on. Because Tumblr posts are often comprised of a picture and a brief commentary, posts can be created with minimal effort if digitized images are readily available.

Regardless of what technology is chosen, it is important to familiarize oneself with it before implementing it at the archive. Archivists are encouraged to create a personal account on whatever service they choose in order to familiarize themselves with the interface, expected content, and expected community responses. Once the lead person has become familiar with the technology, studied the community, and determined that it is a proper fit for an archive presence, he or she can start to introduce the technology to others who are going to be using it on the archive's behalf. Make sure to explain the type of content and tone expected by a professional presence on that platform, and perhaps outline a brief policy.

Once the Web 2.0 technology has been implemented, it is important to then track statistics in order to determine the ROI. Since many Web 2.0 technologies generate usage statistics automatically, the archivists need do little to assess whether or not the technology is being used. It is necessary, however, to track the amount of time spent by the archivists maintaining the technology and compare it with both the quantitative (followers, likes, reblogs, page views, etc.) and qualitative (comments, feedback, etc.) values of success. In this way, if a significant portion of time is spent on generating content for the technology that appears to be having no impact, it can be abandoned in favor of something with a better ROI.

Engage with the Community. In order to succeed in implementing a Web 2.0 technology and increase its impacts on the archive's user community, it is important to engage with potential archive users in the Web 2.0 user groups. Each user group of a different Web 2.0 technology has its own social mores, expectations, and slang. By familiarizing oneself with these aspects of the user group, an archive can better draw the attention of potential archive users. One of the primary ways to engage a user group is to participate in it. Since every action comes tagged with a user's name, if an archive becomes active in the community of a Web 2.0 technology (signaled by actions such as "like", re-blogging, retweeting, and commenting etc.), then its name is spread through interaction, and people will be more inclined to respond in kind.

In a similar vein as responding to members of a user group, it is also important to solicit feedback from time to time to ensure that the archive is meeting the expectation of its supporters. Soliciting feedback from the archive's Web 2.0 users can inform decisions

outside of the Web 2.0 technology itself. Since archives, much like libraries, are inherently a service industry, near-instantaneous feedback directly from users of the archive can be very useful in developing and revising related policies.

Collaborate. Because Web 2.0 technologies are inherently about communication, when the barrier of communication is brought down, partnerships inevitably develop. It is important for archivists to actively foster these partnerships and collaborate with others in ways that are mutually beneficial. There are three broad groups with which an archive can collaborate and the benefits vary slightly from group to group: the community, other departments, and other archival institutions.

As mentioned above, developing and interacting with communities within Web 2.0 technology ecosystems is integral to the success of their implementation. However, archives can benefit from drawing upon the community for assistance in various ways. If members of a community are sufficiently engaged, they often prove eager to contribute back in some way if asked. Whether the task is to create logos, discover the identities of unknown persons, or translate texts, engaged community members are often surprisingly helpful. It is important that this kind of behavior be fostered and recognized.

If a Web 2.0 technology has been successfully implemented, word often gets out to other departments. It could be beneficial to form partnerships throughout the organization (government, university, etc) whenever possible. Many archives suffer from a lack of visibility. By partnering with other more visible departments, the archive can benefit from increased use. As with having successful partnerships with the community,

it makes the archive more visible and valuable to administrators who can then be more easily persuaded to allocate funds to the archive.

Finally, taking the same principle a step further, partnering with other archival institutions could prove mutually beneficial. By pooling and sharing resources -- whether collections, technologies, or communities -- the two archives can create an impact greater than possible if acting alone. Since research has shown that archives using Web 2.0 technologies tend to follow/"friend" other archival institutions, it could only prove helpful to exchange information and work together (Crymble, 2010). By working together, archives benefit from each other's expertise and both programs will likely grow because of it.

Limitations and Future Research Direction

Though this study was designed to be as comprehensive as possible, it was limited by a variety of factors. Archivists that were not on the listservs utilized for survey distribution or did not use Twitter were excluded from this study. This potentially skewed the results toward archives which were more likely to use Web 2.0 technologies. In order to avoid this bias in future studies, the researcher may consider distributing print copies of the survey to archivists around the globe, if fund is available for covering the printing and postal costs.

The survey also excluded non-English speaking archivists, as the survey was not made available in other languages. Without ready access to human translators, Google Translate could be a possible remedy for circumventing the problem. However, the translations by Google Translate are often too inaccurate to be helpful. Another issue is

that the survey questionnaire did not yield data readily feasible for statistical analysis. It was designed to assess trends in the implementation landscape and at the same time gather materials to inform the formulation of questions for the semi-structured interview. Probably due to the mixed nature of dual-purpose design, much of the survey data defied statistical analysis. It is possible that a single-purpose questionnaire design and a larger sample of the research population would have yielded more statistically significant results. Also, the idea of researcher engagement with archival collections appeared to be a difficult idea to express in survey questions. If a clear definition of this concept had been included in the relevant section of the survey, subjects would have had easier time interpreting these questions, leading to better quality of data and probably even more responses.

The semi-structured interviews involved only archivists which had already implemented Web 2.0 technologies. Though this assisted greatly in developing exemplary practices, it could prove an interesting avenue of future research to discover why other archivists had not implemented Web 2.0 technologies in their archives. Pursuing this particular area of research would illuminate the barriers to implementation which could then be addressed, potentially prompting more archives to implement Web 2.0 technologies. Furthermore, tastes and technologies are constantly in flux. Future research into the most effective use of Web 2.0, or other unforeseen future technologies, will ensure that the limited time of archivists is not unduly wasted.

How to increase researcher engagement with collections is an important topic for future research, as the idea of participatory archives becomes increasingly popular. In

addition, methods or issues surrounding the preservation of content created with Web 2.0 technologies need to be investigated in future research, as the transient messages generated by archival use of Web 2.0 technologies may prove invaluable to researchers in the field of archives and beyond.

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Appendix A: Survey Questionnaire

The original survey was distributed as a Google Form online. The contents of the form have been copied here. The numbers (1 of 10) indicate the current page of the form.

(1 of 10) Information About Your Institution

1. What type of archival institution do you represent? *Please check all that apply

- Academic
- Corporate
- Government
- Community
- Other:

2. In what state/province/territory/municipality and country is your institution located? *Please use the following format: California, United States

3. How did you hear about or arrive at this questionnaire? *Please check all that apply

- Twitter
- Listserv
- Word-of-mouth
- Other:

(2 of 10)

4. Does your institution use Web 2.0 technologies? *Web applications that facilitate participatory information sharing, interoperability, user-centered design, and collaboration on the World Wide Web.

- Yes
- No
- I don't know

(3 of 10) Technologies Used Primarily for Promotional Purposes

5. Does your institution use Web 2.0 technologies to promote use of the collections? *

- Yes
- No
- I don't know

5b. If no, briefly explain why.

(4 of 10)
6. What technologies are utilized by your institution for promotional purposes? *Please check all that apply

- Twitter
- Facebook
- Flickr
- Yelp
- Foursquare
- YouTube
- Historypin
- SecondLife
- Podcasting
- Blogging
- I don't know what technologies are utilized
- I don't know if ANY technologies are utilized

6b. If a service(s) your institution utilizes was not listed above, please list it/them here.

(5 of 10) Technologies Used Primarily for Increasing Researcher Engagement
7. Does your institution use Web 2.0 to increase researcher engagement with the collections? *For example: crowd sourced tagging

- Yes
- No
- I don't know

7b. If no, briefly explain why

(6 of 10)
8. What technologies are utilized to increase researcher engagement? *Please check all that apply

- Hosted "wiki" for use by researchers
- User-generated tagging
- Rating system
- Bookmarking
- Automated recommendation system
- I don't know what technologies are utilized
- I don't know if ANY technologies are utilized

8b. If a service(s) your institution utilizes was not listed above, please list it/them here.

(7 of 10) Best Practices
9. What advice would you give to a fellow archivist looking to implement Web 2.0 technologies at his/her archive?

(8 of 10)
10. Would you be willing to be interviewed further concerning your institution's implementation of Web 2.0 technologies? *If you have questions about the interviews, please contact me (collin.thorman@gmail.com)

- Yes
- No

(9 of 10) Contact Information
Thank you for agreeing to be interviewed further.

The interviews will be scheduled to maximize convenience for both the interviewer and interviewee. In-person interviews are preferred, but due to the intended international scope of this questionnaire may be conducted via Skype as well.

For further questions, please contact me via email (collin.thorman@gmail.com)

Please enter your contact information below and you will be contacted after the questionnaire is closed (December 5, 2011).

11. Name *

12. Phone Number 1-555-123-4567

13. Email Address * archivist@domain.com

14. Preferred Method of Contact If any

(10 of 10) Questionnaire Complete
Thank you for taking the time to complete this questionnaire. Your answers will be very helpful for my research.

Please remember to click the SUBMIT button.

Please feel free to share this survey with anyone whom you think might be interested, using the following url: http://goo.gl/dgMD6. If you have any questions, feel free to contact me via email (collin.thorman@gmail.com).

Appendix B: Interview Questions

Below are the questions asked of each participant during the semi-structured interview.

1. What Web 2.0 technologies has your institution implemented?
2. Why did your institution choose those particular technologies?
3. How was the technology implemented? (OR What was the plan?) [Make sure it's detailed]
4. How supportive was the administration?
5. Who implemented the Web 2.0 technologies/whose idea was it?
6. What system (if any) does your institution use to track use statistics?
7. Has your institution ever done an evaluation of the success of the technologies? If so, how did you evaluate the success of the implementation/use? What were your findings?
8. Do you have any suggestions for other archives/archivists who want to implement Web 2.0 technologies?
9. Do you know of any other archives or archivists who have implemented Web 2.0 technologies?