Personal Digital Archiving in Public Libraries: A Critical Realist Approach

By

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Abstract:

The purpose of this research is two-fold: to challenge the assumption that personal digital archiving only occurs when individuals use personally owned devices and to fill a gap in current personal digital archiving research by including public library users who use public access computers. Very little current research exists using qualitative approaches to studying public libraries and almost no research studies examine how the environment of the public library shapes internet access or personal digital archiving.

The research contributes to theory through the introduction of the concept of migratory archiving. I will define and provide suggestions to resolve the privacy paradox in libraries. Another theoretical contribution of this dissertation is the application of critical realist theory to public libraries and the extension of the Transformational Model of Social Activity (TMSA) as envisioned by Bhaskar (1978, 1979, 1986, 1993, 2010) to include objects, specifically public access computers.

Through investigation of two case study locations in New York State, the research describes the current status of Internet Use and Acceptable Use Policies across the state and the status of personal digital archiving by public access computer users in libraries. This dissertation also defines and analyzes structures—including library policies and procedures—shaping technology access and personal digital archiving in public libraries.

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“We wanted to keep a record. We imagined there were truths waiting for us—about ourselves, and those we loved, about the times we lived in—within our reach, if only we had the eyes to see them.”

--Madeleine Thien, *Do Not Say We Have Nothing*

Chapter 1: Introduction

It is becoming difficult to imagine living in a world without access to technology and the internet[1]. Researchers have noted "that technology has become an irreducible component of modern life, and its presence and use has significant impact on an individual's ability to fully engage in society, specifically in areas such as education, employment, government, civic participation, and socialization" (Jaeger et al., 2012). Limited access to technology restricts an individual's ability to engage in and to document the digital reality of modern life.

Libraries—school and public libraries in particular—are often the only places individuals can access technology and the internet. Lack of access to technology, often termed the *digital divide,* has prompted policy initiatives intended to close the divide that are described in aggregate as *digital inclusion*. "For individuals without access, digital inclusion is a means of gaining access to digital resources" (Jaeger et al., 2012). Digital inclusion and governmental policy initiatives for broadband access, discounted internet service rates, and technology grants help to alleviate the digital divide by increasing opportunities for access. But these components only speak to the larger environment of internet access; actual internet access implementation can be complicated.

Libraries today have moved from "houses of information" to "houses of access" to computers as described by the Pew Internet and American Life project (Zickuhr, Rainier, Purcel, and Duggan, 2014). Unlike in years past, computers are present in today's public libraries almost

[1] Throughout this dissertation, I purposefully diverge from APA style guide requirement to capitalize "Internet" and use the form "internet." I made this choice to demonstrate the prevalence and ubiquity of the internet in daily lives akin to other communication technologies such as using the mail, the phone, or texting. The embeddedness of internet access in the conduct of daily affairs is central to the arguments of this dissertation. Already supportive of the use of lowercase "internet" is the 2016 edition of the Associated Press Stylebook noting the technology is ingrained in daily lives no longer requires treatment as a personal noun.

as often as books. Another recent Pew survey shows 77% of Americans now think its "very important" for libraries to offer access to computers and the internet. In comparison, 80% of the same group think it's "very important" for libraries to offer *books* to the community for borrowing (Zickuhr, 2014), revealing that computers and books are both perceived as crucial components of public libraries. In 2011, almost all public libraries provided free access to the internet (99.3%), with 90.5% providing free Wi-Fi for the public (Bertot et al. 2011). But with the discussion of free access, two questions emerge—do libraries freely provide free access? And how does the policy and usage environment in libraries, especially public libraries, affect how patrons create and use personal digital materials?

A deeper investigation into how individuals actually use computers and the internet in libraries reveals restrictions on free access offered to library patrons. Restrictions include: requiring individuals to have a library card (or an active library card with fines below a particular threshold), requiring payment for a visitor pass to use library computers, and enforcing time limits of fifteen minutes to a few hours. An iPAC (2012) article on the 2011-2012 Public Library Funding and Technology Access Survey describes limitations on how access is controlled, offering statistics such as "almost all (93.2%) of public libraries allow the use of portable drives or other storage devices, and two-thirds (64.4%) support the use of digital cameras and other content manipulation options." The converse of those figures would show 7% of libraries do not allow portable storage devices, and 35% do not allow the use of digital cameras for transferring images from camera to another storage medium. These are just a few of the overt access restrictions placed on individuals. This is especially troubling when considering lower income individuals depend on free computing resources through public libraries more frequently than high income earning households (Zickuhr, 2014).

These questions point to a larger concern related to access and the digital lives of library patrons. Computer access is a prerequisite to personal digital archiving. In a public library with restrictive policies and procedures for access to computers, how does the context of creation, use, preservation, and maintenance of digital materials in the public library engage with personal digital archiving practices of patrons?

Significance of the Study

Personal digital archiving is important for recording personal and broader aggregate social experiences. Personal digital archives document everyday life and experiences for current and future use. Without accurate documents of human activities, future generations are beholden to the popular belief rather than fortified by records of prior experience. This research is significant because little current research exists based on qualitative investigations of personal archiving, especially personal digital archiving, in public libraries. Researchers have studied how individuals manage and archive their personal records (Japzon, 2009; Marshall, 2008a, 2008b; Lee, 2011). Other researchers consider services public libraries can offer for personal digital archiving and cultural heritage activities (Lenstra, 2014; Ashenfelder, 2013a, 2014). Yet no current research examines how the environment of public libraries shapes internet and technology access or personal digital archiving for library users. This research investigates the context of public libraries in shaping personal digital archiving.

Some, but not many, personal digital archiving studies consider the variety of devices used by individuals at home, at work, during school, or in a library including research described in Syn and Sinn (2014), Copeland (2011), Marshall (2008a, 2008b) and the British Library's Digital Lives project (John, et al., 2010). But none of those studies specifically investigated the population of public access computer users at public libraries who may or may not have access to

personally owed devices. Research often considers the plethora of digital objects created through various websites and stored on computers which are eventually replaced by newer models owned by an individual. Missing from the conversation of personal digital archiving is the frequent use of different computing devices not owned by an individual. Without including the perspective of individuals who use personally owned devices and shared devices in personal digital archiving research, a true understanding of personal digital archiving cannot be achieved. Additionally, libraries would benefit from analysis of how individuals use and access internet computers for archivally-focused personal information management for developing policies, procedures, software configuration, and staff training.

This research is also significant because it introduces the concept of *migratory digital archiving*, specifically among public library users, with application to all users as they continue to use a variety of devices across time. Migratory digital archiving recognizes that 1) preservation of personal digital archives is still important for individuals who use a variety of personally owned and borrowed devices and 2) permanent retention of digital archives requires frequent use of a variety of devices throughout a user's life. As the technological landscape changes and people use more devices over a longer period of time, migratory digital archiving across many devices will be prevalent. In the archival context, migration has always referred to digital objects that are migrated across formats and media for preservation. In this research, migratory activities relate to the creators of digital objects as they move between devices.

Problem Statement

Failure to include public library users as representatives of individuals who perform personal digital archiving functions on publicly shared computers marginalizes their

representation in the discussion of personal digital archiving, cultural documentation, and digital inclusion.

This research investigates the relationships between structures, agents, and technological objects in public libraries involved in technology access and personal digital archiving. Through the research, I describe the relationships between structures (social rules, social positions, and social relations), agents (the people working in and using libraries), and technical objects (personal computers and software at the library) involved in personal digital archiving at public libraries.

Research Questions

To develop and present a deeper understanding about how individuals practice—or do not practice—personal digital archiving in public library environments, this research answers the following questions:

RQ0: What is the status of personal digital archiving in public libraries by public access computer users?

RQ1: What structures shape how individuals access technology and the internet at public libraries?

RQ2: What structures in public libraries shape how individuals create, use, manage, and keep personal digital archives?

RQ3: Do personal computers in public libraries fill unique technical identities in relation to the Transformational Model of Social Activity (TMSA) specifically in the context of personal digital archiving?

Through the research, I provide experiences of individuals in two case study locations to describe the current status of personal digital archiving in public libraries. The activities I observed of individuals on public access computers captured in this research demonstrate a lack of awareness of real experience in the creation of library policies, procedures, and software

configuration. Library users' actions differ greatly from how they expect and are expected to act. I also evaluate social structures of technology access and use that play a role in shaping the current status of archiving as described in RQ0. I use empirical data gathered from policy analysis, interviews, and focus groups to describe and extend the TMSA through the social theory of critical realism.

In answering these questions, the research will inform public library policy, address personal digital archiving by a previously uninvestigated population of users, and provide a deeper understanding of the interactions between objects, structures, and agents, specifically in libraries.

Definitions

Before proceeding with discussion of the research, a definition of *personal digital archiving* should be established. Research on personal digital archiving in public libraries is underdeveloped, but growing. Although "personal digital archiving as a field still demands clear definition and delineation" (Lynch, 2013) one working concept of personal digital archiving includes individuals and their records created in daily life. The Personal Digital Archiving 2014 (PDA2014) conference defines the purpose of the conference as to "[explore] the intersection between individuals, public institutions, and private companies engaged in the creation, preservation, and ongoing use of the digital records of our daily lives." PDA2014 framed personal digital archiving as a field of study emerging between a variety of agents and records of daily life. Personal digital archiving in the digital era includes an individual creating and capturing electronic records documenting a person's life, but not a mere aggregation of documents created by others and collected by a particular individual. As described by the Digital Lives project, "the precise boundaries and definitions of a personal digital archive and indeed

personal archive are subject to opinion" (John, J. L. et al., 2010). As an extension, a personal digital archive(s) is as nebulous as the personal digital archiving activities creating the archive(s). Gabriella Redwine describes personal digital archiving in the DPC Technology Watch Report 15-01 *Personal Digital Archiving*, writing "the term 'personal digital archiving' refers to how individuals manage or keep track of their digital files, where they store them, and how these files are described and organized" (2015).

The following parameters define the personal digital archive(s) and personal digital archiving.

1) Personal digital archiving results in a personal archive(s) created by an individual, not merely collected by that individual.
2) In this research, the personal digital archiving process is envisioned as part of the records keeping continuum with a focus on documentable acts, not the documents themselves. The records continuum process sees all records activities as part of "recordkeeping" rather than distinguishing between archival and records management practices as is common in the document or record lifecycle approach.
3) Personal digital archiving in this research is a type of archivally-oriented personal information management (with a focus on the records continuum and the active nature of personal digital archiving, as opposed to management alone). Again, the Digital Lives project notes the "specific need to promote an archivally-oriented form of PIM that embraces the entire information life cycle and is directed at securing authentic personal digital objects and making them readily available for use and reuse by individual creators and owners beyond the immediate future" (John, J. L. et al., 2010). Personal digital archiving is not only the retention of "archival" records after a document passes an

archival threshold, but instead includes acts of creation, maintenance, use, and storage with an awareness of future potential use.

Examples of documentable acts of personal digital archiving could include:

- Creating a resume and saving it using a file name indicating it is important to keep, such as “smith_resume_2015_final_keep.doc,”
- Creating a file and saving it to removable media or a hard drive for future access,
- Uploading photos to a photo sharing site like flickr.com or facebook.com,
- Saving a copy of a financial agreement that the user signed using digital methods,
- Tweeting, sharing, friending, or other act using social media;
- Emailing a document to yourself for a work or school project;
- Exporting an archival file of email messages as an .mbox, or
- Editing a video and saving it to external media, a computer hard drive, or uploading to a web storage service.

The focus of personal digital archiving in this research is some purposeful management of records for future access.

Chapter 2: Literature Review

A review of existing literature emphasizes the value of archives and personal archiving in all forms. Madeleine Thien writes of the motivation for keeping records in her novel *Do Not Say We Have Nothing*, "We wanted to keep a record. We imagined there were truths waiting for us—about ourselves, and those we loved, about the times we lived in—within our reach, if only we had the eyes to see them." Records can hold potential truths creators and others might discover or rediscover. Sue McKemmish describes those who accumulate "personal records over time are engaged in the process of forming a personal archive" with its functionality in "its capacity to witness to a life" (1996). As extensions of human memory serving as reminders of previous acts, archives are, as John Fleckner puts it, a "bastion of a just society…where the historical record will speak for [the] past in a full and truthful voice. And, as a society, we will be wiser for understanding who and where we have been" (1991). Archives, maintained by archivists or created and maintained by individuals, connect people across time and place through these recorded memories.

As technology becomes a part of our experiences across time and place, complicating factors of recordkeeping arise. Issues arising in the preservation of digital files, such as technological obsolescence, hardware and software dependence, lack of human readability, loss of significant properties when converted to other formats, loss of encoding, compression, and complex structures are well documented in archival literature (Rothenburg, 1999; Lynch, 2013; Lee, 2011). In addition to the technological issues of digital preservation, social issues of documentation of the overall human experience and experiences of all types of individuals arise. Ubiquitous access to technology in the course of daily life is all but assumed in the digital era, but not all individuals have stable access to devices. Without stable access to technology

individuals cannot take part in the same educational, governmental, civic, social, and business activities—let alone contribute to a personal digital archive other social documentation efforts. This is where the public library fills the need for many Americans as a place for technology and internet access—a place where everyone can participate in the realities of living in a world requiring digital participation. Investigation of the current status of research in public libraries, personal digital archiving and the connection between them both shows a lack of representation of a significant population of computer users—public access computer users.

Who Uses Public Libraries?

A majority of Americans use public libraries. A recent 2016 poll by the Pew Research center reports "overall, 53% of Americans age sixteen or older have had some interaction with a public library in the past year – either through an in-person visit, using a library website, or via a mobile app." Only 19% of Americans have never visited a public library or bookmobile in their entire life. A portion of library-using Americans (29%) sixteen and older said they had gone to libraries to use computers, the internet, or a public Wi-Fi network. In specific populations of users, numbers of individuals using computers and the internet increase: 42% of black library users used library computers and internet connections, 35% of those whose annual household incomes are $30,000 or less used these resources, and 33% of women used computers and accessed the internet at a library (Horrigan, 2016). This research focuses on a population of computer users—those who use public access computers—previously unstudied, or at least not specifically investigated, in regard to their personal digital archiving.

Personal Digital Archiving Requires a Device: But Who's Device?

Current research on personal digital archiving focuses on users who own their own computer equipment (Marshall, Bly, and Brun-Cottan, 2009; Japzon, 2009; Marshall, 2008a,

2008b). Of the six strategies for personal digital archiving that Marshall describes (2008a) three require ownership of personal computers, including: thinking of system backups as the same thing as a long term archive; using a succession of My Documents folders as an archival collection that is stored on the owner's current PC; and saving the entire platform – the computer, its peripherals, and all the installed software – to be rebooted and accessed when files are needed.

However, a portion of computer users may engage in personal digital archiving activities without owning a home computer, without having sufficient internet access, or through the use of a variety of devices, personally owned or borrowed. Public library users represent a portion of the population that engage in *migratory digital archiving*, or archiving across distributed computing platforms and devices. One could argue *all* digital archiving is migratory and distributed, as users increasingly create personal archival records across a network of social media accounts and cloud-based storage solutions. Users participating in migratory digital archiving could include students, library public access computer users, internet café users, or individuals using work computers for personal activities. As digital records creators use computers throughout their life, they employ a variety of devices in their daily life as they purchase new technology, change relationships, start new jobs, and move residences. This practice is becoming more common as users participate in and create records using online tools and cloud-based services as well as public computing devices in school or public libraries. Distributed assets and distributed storage cause complications for personal digital archiving (Marshall 2008a, 2008b).

Public Libraries: Access and Personal Digital Archiving

Current research on public access computing in libraries is mostly quantitative, focusing on characteristics that one can count: the number of computers in a library, the number of library patrons using computers, percentage of libraries offering Wi-Fi, and categorizing the nature of use (for work, school, entertainment, etc.) of library computers (Bertot et al., 2011; Becker et al., 2010). Qualitative research on the deeper relationships of technology in public libraries and individual patrons is limited to a few examples (Japzon, 2009; Lenstra, 2014). The qualitative research at the heart of this dissertation attempts to look beyond the quantifiable aspects of public access computing and personal digital archiving into the "how" and "why" of personal digital archiving in public libraries. Qualitative studies also help describe the role of policies in how users and staff engage with internet access and personal digital archives in public libraries.

Some promising signs of public libraries as archival education and collecting institutions include (as noted by Lenstra, 2014) the formation in 2010 of the Public Library Archives/Special Collections Forum within the Society of American Archivists (PLASC, 2013); the Digital Public Library of America viewing public libraries as key local partners (Fenlon and Varvel, 2013); the Library of Congress's Personal Archiving initiative, which seeks to partner with American public libraries to expand literacy in this area (Library of Congress, 2013); annual conferences such as Personal Digital Archiving, which started in 2010; and individual institutional workshops and seminars at public libraries such as the Kansas City Public Library, Denver Public Library, Westchester (Indiana) Public Library (Library of Congress, 2013) and public libraries in Illinois.

Although educational programs on personal digital archiving are becoming more common, research in the area of public libraries and personal digital archiving is still limited. Marshall, Bly, and Brun-Cottan's (2009) research in personal digital archiving specifically

excludes individuals without personal computers from their sample. Japzon's dissertation research (2009) limits her sample to public library users in her investigation of information seeking in everyday life, but her focus excludes respondents who do not own personal computers. This research extends Japzon's efforts and includes the experiences of library patrons who use public access computers who may not own home computers. This dissertation research also considers the effects of the structural environment of public libraries and how those structures might engage library users in their personal digital archiving.

Other researchers specifically interested in public libraries focus on cultural heritage and the role of public libraries in actively recording local history. Noah Lenstra (2014) conducted workshops in Illinois to discover how four Midwestern public libraries are performing local heritage services for their diverse communities and how cyberorganizing could contribute more to public libraries as heritage service providers.

Still other research into personal digital archiving and personal information management investigates institutional practices for educating users on personal digital archiving. Lynch writes "an additional research agenda deals with pragmatic advice and best practices that can be offered to the broad public for dealing with life in the digital world, for ensuring the long-term survival and usability of the electronic records that they create, and the cultural materials that they acquire. … Libraries, in particular, are increasingly being called upon for advice in this area" (2013). One library providing pragmatic advice and equipment for personal digital archiving is the Memory Lab in Washington, D.C. As a participant in the National Digital Stewardship Residency program, residents have established a lab to provide education through classes and tools for reformatting home movies or capturing other personal digital assets.

But is All Access to Technology and the Internet in Public Libraries Equal?

Before investigating relationships between internet access and personal digital archiving in public libraries, it is important discuss some potentially limiting factors to access including privacy concerns, formal policies, informal rules, and organizational attitudes. Libraries have a long history of promoting access to information—regardless of format—and supporting intellectual freedom. Support has largely been through the work of the American Library Association (ALA). The ALA has supported intellectual freedom since 1939 when the ALA Council first wrote the Library Bill of Rights guaranteeing free access to library resources for all users. In 1967 the American Library Association created the Office for Intellectual Freedom, which is charged with educating the public and librarians on the importance of intellectual freedom in libraries and supporting individuals undergoing a challenge to or request to ban material in their libraries (ALA, 2016b). The Intellectual Freedom Round Table of ALA exists today to support intellectual freedom and other efforts such as Banned Books Week and Choose Privacy Week which are celebrated each year in school, public, and academic libraries (Magi and Garnar, 2015).

Individual privacy has also been an essential right of all library users and strongly supported by the ALA. An interpretation of "Privacy in the Library Bill of Rights" by the ALA (2016a) confirms protecting privacy and confidentiality of user records has always been an integral part of the mission of libraries. Libraries focus their privacy protection efforts on limiting collection of circulation and library patron data, limiting tracking of library user activities, and allowing anonymous browsing and anonymous in-library use of materials (Zimmer, 2014). User circulation records are considered transitory data in records retentions schedules often stored for the shortest period of time deemed necessary and frequently purged

(Loter, 2016). Records of filled hold requests and logs of computer use are not kept by some libraries. Privacy concerns extend to electronic data sharing and use by vendor supported software in public libraries related to automation tools (Breeding, 2016) and eBook devices and in vendor provided systems (Henslee, 2015). Libraries have protections in place preventing sharing of patron data with family members. The ALA provides ethical guidelines on patron privacy and freedom of information to support library users seeking information. Most librarians continue to express a high level of concern for protecting patron privacy and to exercise control over patron library records (Zimmer, 2014). Specifically, recent adoption of the "Library Privacy Guidelines for Public Access Computers and Networks" in June of 2016 by the Intellectual Freedom Committee of the American Library Association supports many practices in privacy protections for public access computers.

Libraries not only create policy to protect user rights, but libraries also try to inform users of their rights to privacy and digital inclusivity through workshops, training, or one-on-one consultation. In terms of digital privacy, libraries often teach digital literacy skills classes to their users with a focus of safeguarding digital information. Public library users often need digital literacy training.

The ALA created "Choose Privacy Week" (2017) as a marketing tool to focus civic engagement and public training efforts on the protection of individual privacy. One training handout for library users is titled "Protect Your Privacy While Using Public Computers & Wi-Fi" (ALA, 2013). The handout includes tips on deleting your browser history, logging out of web-based applications, not allowing a website to remember your personal information, and looking for "https" to support safer browsing. The last bullet on the handout reminds users not to conduct personal transactions on public Wi-Fi hotspots and to "wait to conduct these transactions

on a private home computer." Yet on the side of the document, a pop-out text box reads, "62.1% of library branches report they are the only free public computer and internet access in their communities." For free access to the internet and free access to computers, people who do not have suitable access at home are taught go to the library. This begs multiple questions. What about users without home computers? Or users who do not have suitable internet access at home or elsewhere? Most public libraries offer free Wi-Fi and public access computers. Although connection to public Wi-Fi enables other users to scan data transmitted wirelessly on the network, use of public access computers with appropriate safeguards (deletion of cookies and browser history upon end of user session) could be as safe as or safer than use of home computers.

Acceptable Use Policies in Public Libraries

In addition to privacy concerns with access to information and the internet in public libraries, other structures exist in libraries that can limit internet and technology access. Studies of Acceptable Use Policies (AUPs), sometimes referred to as Internet Policies or Internet Use Policies, show codified organizational principles and institutional perspectives on access to information and technology. Policies preexist human engagement at a public library and at the same time are created and enforced by individuals. AUPs define what library users can do using public access computers in a library and what they cannot do. In public libraries, AUPs can also emphasize an organizational perspective of a library—as facilitator, teacher, enforcer, or more. AUPs of the New York Public Library and the Buffalo and Erie County Library include statements that access to computers and the internet is part of the mission of the library; counter to this organizational perspective, the Dallas (Texas) Public Library created an AUP that requires the library user to support the library mission by using public access computers in ways that

"must be compatible" with the mission of the library. AUPs and Internet Use policies provide a glimpse of organizational structures that frame how individuals work and engage with patrons in the library.

Although AUPs can provide a written glimpse into the administration of public libraries, library users often click through the policy, unread, and accept it to gain access to the internet on library computers. Some Integrated Library Systems (ILS) allow organizations to capture the record of a patron's acceptance of the AUP. If a patron does not follow the guidelines established in the AUP, library staff members can ban a person from public access computers for a period of time, or even permanently.

According to Laughton (2008), AUPs are created with three main goals:

1. Educating users about activities that may be harmful to the organization;
2. Providing legal notice of unacceptable [behavior] and the penalties for such [behavior]; and
3. Protecting an organization from liabilities it may incur from misuse of the internet and other computer facilities.

Libraries in New York State also often include the organizational mission in AUPs. A number of other authors provide guidelines for what should be captured in AUPs (Kelehear, 2005) and specifically AUPs in libraries (Sturges, 2002; McMenemy, 2014; Gallagher, McMenemy, and Poulter, 2015).

Computer Use Procedures in Public Libraries

Another less formal, but equally important structure in public libraries are computer use procedures. Computer use guidelines are sometimes written and sometimes simply part of local practice enforced by library staff and other patrons. Computer use procedures determine who can access computers in the library, what the cost for computer users without library cards might be, how long patrons can use the computer each day, and other organizational rules concerning the

procedures for physically sitting at a workstation, how files can be saved, and how a user can log onto public access computers. Computer use procedures are often less formal than AUPs and patrons may not even be aware that a computer use procedure exists until they discover, or are told by a library staff member, what the rules of use are.

Staff members enforce computer use practices that can lead to non-standardized implementation. One staff member might allow a library patron to extend his/her allotted time on the computer if there is no one waiting to use the computer, while other staff members may never "bend the rules." Computer use procedures are formally proposed and provide a structural rule for library staff to enforce. The potential for non-standard application of the structure by staff members, Bhaskar (1979) argues, does not change the existence of the structure, but it could allow organizational momentum to build towards eventual formal change of the structure.

These two guidelines, AUPs and computer use procedures, are two structures to consider when assessing the role of public libraries in personal digital archiving. Underlying constraints of computer capacity, needs of the population served, fine payments, freedom of access to information, and other factors guide the development and enforcement of AUP and computer use procedures.

A connection between users of public libraries and personal digital archiving by those users at public libraries has not been investigated, until now. The research presented here questions how restrictive policies and procedures for access to computers in public libraries shape the context of creation, use, preservation, and maintenance of digital materials by library users. What truths of our lives remain unsaved and unseen because of structures existing in public libraries?

Chapter 3: Theoretical Framework for Research

At the heart of this research including documentation of lives unseen and unsaved is a critical view of social experience. The theoretical foundation for this research is Bhaskar's (1979, 1986, 1993, 2010) critical realism and his Transformation Model of Social Activity (TMSA). An understanding of the ontological and theoretical perspectives of the theory positions it among other social theories and justifies its use in this research. Critical realism assumes an objectivist (realist) ontology of a world that exists independent of our knowledge with a subjectivist epistemology: in other words, how we learn about an independently existing world depends on interpretation of experiences by a human agent.

Critical Realism and Information Systems Research

Critical realism has strengths in information systems and library research because of its basis in real world concerns and practical problems. It is positioned between the positivists (with an objectivist ontology and objectivist epistemology) and the interpretivists (who share a subjectivist ontology and subjectivist epistemology). Critical realism critiques a positivist view of the world that distils what exists into phenomena that can be observed, measured, and captured through experiments or observation. Critical realists study the objective world (existing separate from human cognition) to discover causal effects of phenomena without physical perception. Bhaskar's critical realism provides for investigation using "social science … driven by the existence of an intransitive domain of generative mechanisms; a recognition of the epistemic (but not judgmental) relativity of knowledge; and a retroductive methodology that explains events by hypothesizing causal mechanisms" (Mingers et al., 2003). In other words, critical realism is well-suited to practical research in social sciences and public libraries because it starts with an assumption that what exists in the world will not change when studied (objective

epistemology), and causes of events and experiences (as underlying mechanisms) can be investigated, outlined, analyzed, and described.

Similar to other critical approaches, critical realism is useful for challenging assumptions in literature and in practice. One perpetuated assumption of personal digital archiving is that it depends on owning a personal computer or internet enabled device. A second assumption relates to the intention of long-term preservation as part of personal digital archiving. Three approaches can exist when considering archiving personal records: 1) users seek out and preserve records, 2) users engage in benign neglect or keeping without intent, 3) users actively choose to not create records, and 4) users purposely delete records. When choosing to not create personal digital records, the real mechanism of personal digital activity leaves no empirical evidence.

Critical realism is particularly supportive in hypothesis building because it offers clear principles on how to theorize phenomena (Aaltonen and Tempini, 2014). Critical realism defines an understanding of domains of knowledge in the world. Bhaskar describes the world in three domains: the real, actual, and empirical (Mingers, 2004). Researchers are limited by these domains in the research process because the real domain (the sum total of all mechanisms, events, and experiences) is only expressed by events that occur in the actual domain, which are only *observable* in the empirical domain. Mechanisms are underlying causes or structures that shape observable events which provide experiences for individuals. These stratified and nested arrangements of domains show that observable events do not always represent the entire domain of the real.

Table 1: Domains of Knowledge (based on Bhaskar, 2008)

Domains	Real (what exists)	Actual (what occurs)	Empirical (what can be observed)
Mechanisms	X		
Events	X	X	
Experience	X	X	X

Much research in public libraries relating to public access computing is focused on the observable, empirical domain of knowledge, which fails to address the underlying cause of what is observed. Mingers (2004) suggests the use of a type of reasoning which "starts from an observed event and moves to theorizing the 'hypothetical mechanisms that, if they existed, would generate or cause that which is to be explained.'" This methodology (which Aaltonen and Tempini reference as retroductive) requires a researcher to study experience, recognize events, and finally hypothesize underlying mechanisms activated by the events. Researchers can observe the "what" of a phenomenon and hypothesize (in an effort to more fully discover the real cause of an event) the "why" of the phenomenon (Aaltonen and Tempini, 2014). Not all hypothesized mechanisms are equal; rather, hypothesized mechanisms should be compared and subject to critique from alternate philosophical principles and empirical evidence. Research in all domains of knowledge helps to theorize the underlying mechanisms and structure to explain why what was observed occurred.

In this research I use document analysis of policies, observations and interviews with users, and focus groups with library staff to triangulate investigation of events and the mechanisms activated by them. I look at user actions from the perspective of the organization, the user, and staff interacting with the user and the organizational rules. With this empirically

derived data and the use an additional guideline to focus my analysis (Aaltonen and Tempini, 2014; Flick, 2004; Wynn and Williams, 2011), I can build confidence in the identification of important events in the personal digital archiving process. The process starts with the identification of events which would contribute to answering the research question, then move to describing the mechanisms and structures that are expected to underpin those events. I chose two limiting guidelines, based on methodology used by Aaltonen and Tempini, to steer reasoning throughout this case. The first guideline is focusing on events of personal digital archiving. Types of events and how they relate to research methods are outlined in Table 2. The second guideline focuses on activities of access to public computers in libraries. This guideline helps to center my analysis on tasks, operations, practices, and policy relevant to the research questions while ignoring other interesting but unrelated events.

Table 2: Research Methods and Relation to Domains of Knowledge and Limiting Events

Research Method	Perspective	Experience	PDA Events	Access Events
Document Analysis	Organization, Library board, Administration	Acceptable Use Policies and Computer use procedures	Personal digital archiving in context of policies or organizational rules *i.e. software configuration; filters*	Access to public computers in context of policies or organizational rules *i.e. limits of access through fines, time limits, viewing appropriate vs. inappropriate content*
Observations	User/Library patron	Users performing tasks	Personal digital archiving by users *i.e. checking email, creating Word files or editing Excel files on public computers*	Access to public computers by users *i.e. confusion of using sign-on stations, use of PIN numbers, purchase of visitor passes*
Interviews	User/Library patron	Users describing beliefs and experience of tasks	Personal digital archiving as described by individuals *i.e. user experiences and opinions completing tasks on public computers*	Access to public computers described by users *i.e. complaints regarding sign-on stations, PCReservation software, Express computers*
Focus Groups	Staff	Staff describing their interactions and observations of users	Interactions with patrons regarding personal digital archiving activities *i.e. Perception of staff and enforcement of rules; Varying enforcement by different staff in different locations*	Interactions with patrons regarding public access computers *i.e. Perception of staff and enforcement of rules; Varying enforcement by different staff in different locations*

Transformational Model of Social Activity (TMSA)

A central component of critical realism and this dissertation is the Transformational Model of Social Activity (TMSA), which is a generalized view of "how society is organized, reproduced, and transformed" (Faulkner and Runde, 2013). At the heart of the model is the recursive relationship between social structure and human agency. Bhaskar concedes the existence of structure as a precursor to agency. Human agents engage with structures causing a recursive spiral of action and reaction defining a continual feedback loop between structure and agency. Human agents transform, potentially unconsciously, social structure, which presupposes and conditions human activities. Action draws upon, reproduces, and changes structures in sequential order (Runde et al., 2009; Faulkner and Runde, 2013). Bhaskar (1989) defines the duality of praxis, noting actions by human agents both produce new structures and reproduce the conditions of production, which he calls society. Critical realism is suitable as the theoretical basis of this research because the epistemic framework of critical realism assumes many realities exist and they can be observed through empirical analysis—in this research, specifically through document analysis, interviews, observations, and focus groups. Critical realism also best describes the pre-existing structural environment of a tax-funded public library in New York with numerous complex social, governmental, professional, and cultural restrictions on human agents of library users, staff, and administrative officials. Underlying structures can be difficult to discover. A focused review of relevant organizational structures codified as policies is one method to uncover organizational structures. In public libraries, Acceptable Use and Internet Use Policies are social rule structures that preexist human action. Since individuals enter a preexisting social context, there exists a duality of practice in which individuals both reproduce (usually unconsciously) and transform (usually consciously) society (Bhaskar, 1978), rather than creating it. Consciously, humans change structures, for example through policy creation and

evaluation, and humans can choose to follow or not follow structure, but the structure continues to exist.

Additionally, as Leonardi explains "when sociomateriality is footed on critical realism, researchers can ask the questions about how sociomaterial practices emerge because the theoretical foundation posits that the social and materials are separate and they become entangled in a way that produces sociomaterial practices as people imbricate their agencies" (2013, p.71). Focusing on the separation of the social and material and their eventual entanglement helps to consider how the practices emerge. This research takes advantage of the theoretical assumptions of critical realism as a basis for analysis.

This theory differs from Anthony Giddens' Structuration Theory, which is also interested in structure and agency entanglements, in two ways: 1) Giddens claims human agents consciously affect structure, whereas critical realists assert *a choice does not imply a conscious effort* to affirm or degrade existing structure and more importantly, 2) critical realists presuppose structures exist. For critical realists, humans experience structures as pre-existing.

Extending TMSA to Include Objects

Specifically, this research investigates the addition of material and non-material technical objects in the TMSA as theorized by Faulkner and Runde (2013). Faulkner and Runde define three components in the definition of Bhaskar's TMSA: the emergent realm of social rules, social positions, and social relations that condition and provide order to human affairs. The first structure, social rules, are standard ways of operating that can have normative force. Social positions are roles individuals occupy within communities. Social relations are the other relationships within the TMSA related to agents and their activities, or closeness in time, place, age, or space, for example.

Faulkner and Runde base their theory of objects in the TMSA on non-living items having a mutable technical identity based on duality of nature of form *and* function (Kroes & Meijers, 2000; 2006), specifically how groups assign function for objects (Faulkner and Runde, 2013). Assignment of function by a social group with social rules and routines positions objects in the agency-structure relationship of TMSA. Faulkner and Runde note technical objects can be material (with physical dimensions that occupy space) and immaterial (digital files stored to a medium, but without vast physical space associated with the object or value from how the data is stored on the storage medium). The case they use to illuminate their theory of technical objects shaped by structure and agents is the progression of change of the gramophone turntable to a musical instrument used by DJs, hip hop artists, and eventually "turntablists."

Technical objects have a place in the TMSA along with structures and agents and this research will investigate the inclusion of personal digital archiving objects in public libraries in the TMSA. In libraries with public access computers there are a number of technical objects that users might assign unique functions to, including, but not limited to, personal computers, internet browsers, and computer reservation software. In this research, the implications for technical objects in public libraries are investigated as part of the TMSA.

Chapter 4: Research Methodology

The research described here fills a gap in the previously unexplored area of personal digital archiving by library patrons using public access computers. Through the use of a collective case study, I demonstrate how the theory of critical realism can help build a theoretical explanation of how structures in public libraries and patrons interact in the creation of personal digital archives. The research will also extend one of the core concepts of Bhaskar's critical realism, the Transformational Model of Social Activity (TMSA), to include technological objects in the structure/agency paradigm.

The research takes a qualitative approach using a collective case study (informed by Stake, 1994) of two public libraries in upstate New York. The research methodology is described below using the structure enumerated in *Research Design: Qualitative and Quantitative Approaches* by John W. Creswell, 1994.

This research seeks to answer questions about personal digital archiving and public library computer use through qualitative methods, which is uncommon for public library research but a more common approach for personal digital archiving studies. Most public library studies represent a positivist view of library experiences and report statistical facts about public access computer users. Statistics can be helpful to provide benchmarks and comparisons across cases, but they often do not answer questions of "why" and "how". Few public library research studies consider qualitative approaches to data, with exceptions including Gomez (2012) and Cavanagh (2013, 2015). Instead, public library studies "have been researched and prescribed professionally from an objectivist and ontologically narrow perspective" (Cavanagh, 2013). An overwhelming focus on numbers instead of experience in public library research has diluted the depth of research and understanding of public library users and their practices. As noted by

Rubin and Rubin in the *Qualitative Interviewing: The Art of Hearing Data*, "The language of positivism is a numeric one…because positivists seek rules that apply uniformly, they extract simple relationships from a complex real world and examine them as if context did not matter and as if social life were stable rather than constantly changing." Qualitative approaches towards personal digital archiving research are more common, represented by studies from Kim (2013) and Marshall, (2008, 2008b) with some quantitative approaches in the research literature providing useful and broad explanations of personal digital archiving trends (Sinn and Syn, 2014; Syn and Sinn, 2015). The research presented here intends to take a "deeper dive" into the phenomenon of personal digital archiving in the context of public libraries.

Collective Case Studies

This subject is ripe for qualitative inquiry, as research on personal digital archiving in public libraries is immature. Very little research has been conducted with people who engage in personal digital archiving in public libraries. Most importantly, little research exists on the interactions of structures in the public library and library patrons using public computing on creating personal digital records. Data will be collected from each case study from document analysis, interviews, observations and focus groups.

Research Boundaries

Geographically, the research will focus on public library patrons and public libraries in New York State. There are 756 public libraries in New York State, all of which provide public access computers for public use. I investigated a sample of one AUP from each of the twenty-three library systems in New York State. I selected two cases from the 756 public libraries for further in-depth investigation of how rules surrounding resources provided to patrons by public libraries shape public computer access and personal digital archiving practices.

Sites chosen for the study

Pseudonyms will be used to describe case study locations in this research. Fort Orange Public Library and Beverwyck Public Library are the collective cases in this research study. Fort Orange Public Library is an urban library serving a population of 97,856 citizens, according to the 2010 census. Fort Orange Public Library has seven branch libraries, one of which also houses the majority of administrative offices. The patron base consists of 57% white, 30.8% Black, 8% Hispanic and 5% Asian residents. It is a school district public library with a voter approved 2016 operating budget of $9.3 million.

Beverwyck Public Library represents a different user population. Beverwyck Public Library is a school district library in a suburban community serving a population of about 27,878 (according to 2010 census) made up of 90% white, 3.1% Asian, 2.7% Hispanic and 2.7% Black individuals. Beverwyck Public Library has a voter approved July 2016-June 2017 fiscal year operating budget of $4 million.

At Fort Orange Public Library, the Main Avenue branch was selected as a case study site. The Main Avenue branch has the largest circulation of all branches in Fort Orange Public Library. It also has the most public access computers (fourteen) and a separate computer lab with eight machines for public use. These libraries were chosen as case study sites because they are only a few miles apart from each other but serve urban and suburban populations with public access computers. The libraries also have different policies and procedures.

These libraries each provide a specific case in which to investigate the impact of the technology environment of public libraries on personal digital archiving. Each library has a different organizational structure— Beverwyck Public Library has one building housing the library and administrative staff and Fort Orange Public Library has seven individual

neighborhood branches with one branch in a downtown location housing most administrative staff. They also represent two different approaches to providing public access computing and two very different sets of computer use procedures.

Both libraries provide similar but different software configurations for their machines. Both libraries control their public access computers using specialized library reservation software: Envisionware's PCReservation at Beverwyck and Comprise's Smart Access Manager (SAM). Fort Orange Public Library integrates a point-of-sale system into their software environment from Comprise that integrates payments with the ILS and requires users to add money to their library card to print using print release stations. The suite of software on the most commonly used public access computers at both case study locations includes: Microsoft Word, Microsoft Excel, Microsoft Publisher, Internet Explorer, and Google Chrome. The Office Suite is Microsoft 2016 for Fort Orange Public Library and Microsoft 2010 for Beverwyck Public Library. Fort Orange Public library also offers Letter Chase Typing Tutor. Beverwyck Public Library offers Mozilla Firefox in addition. Both libraries offer public access to makerspace areas complete with 3-D printers, video and photo editing software, digital cameras, sewing machines, and other tools.

The two case study locations, although geographically close, differ in circulation patterns and computer and internet use. The data also leave open-ended questions about how library users learned about accessing computers, how they interact with the hardware and software, and the effect of policies on computer users' internet access and action—questions asked and answered through this research study.

Role of Researcher and Limitations

As a researcher conducting qualitative research, I am the primary instrument for data collection and analysis whereby "data are mediated through this human instrument, rather than through inventories, questionnaires, or machines" (Merriam (1998) in Creswell). As such, it is necessary to determine what strengths and biases I might bring to my research.

I am an archivist and librarian by training. As an information professional, I have an understanding of the organizational environments of both case studies. I also understand the "language of libraries" and the occupational jargon used within the libraries. Professional involvement in the libraries I studied also provides access to organizations and familiarity with the subject matter. I am well positioned to conduct research as a participant observer in both case study locations analyzed in this study.

Additionally, I have worked as an archivist and a librarian, a fact which has research strengths and limitations. Since August 2013, I have served in management positions at public libraries. In these positions I have observed users interacting with technology in the library. I have an idea of potential structures in place related to the social, organizational, political, and technological environments of the public library. I am using a critical realist lens for this analysis because it encourages exploration of perception and observations resulting in a more accurate understanding of the studied phenomenon. Professional experiences in public libraries and archives position me to understand the phenomenon of personal digital archiving in public libraries in greater detail.

Working in libraries and archives has research limitations, too. In addition to my worldview as an information professional, which favors particular professional biases, the job title of library administrator also puts me in a position of power in relation to library users. If

users agree to work with me on my research, they might have done so with a sense of coercion. Patrons who know I am employed by a public library in a position of authority might provide skewed responses to my questions out of a conscious or unconscious understanding of my official role in the library or to win favor with a library administrator who could waive fines and lost material fees, or provide other perks. To counter this stigma, except for one interview participant, I recruited library users previously unknown to me as part of my interview sampling strategy. Most interviewees perceived me foremost as a researcher and librarian in general, not an employee of any of the case study locations. I also recruited individuals without wearing my library name tag. I identified myself as a Ph.D. candidate affiliated with the University at Albany instead of as a library employee. I also identified myself as a librarian studying information science for an advanced degree. I identified myself as a librarian for several reasons:

1. To provide real world understanding of my field of study that neither the terms "information science" or "informatics" could convey;
2. To provide background for the research without mentioning personal digital archiving and the jargon accompanying the term;
3. To elicit trust from my interviewees so they would not think I was investigating the content of their computer use;
4. To explain relationships that the user may have seen prior to our interview, including talking with librarians before interview, or explain why I had a key to the study room where our interview took place; and
5. To build a relationship with interviewees when they mentioned a library staff member whom I also knew.

Some interviewees were told I worked for the Beverwyck Public Library but was currently on leave from my position. This allowed me to emphasize my role as an academic researcher in our interview. Only two interviewees knew I worked at both case study locations. Interestingly, presenting myself as a librarian brought out many comments from interviewees about how much they loved libraries and librarians in general. I will discuss this in more detail in Chapter 9.

Focus group participants, however, were colleagues of mine and knew my work history either having worked with me in their institution or working with me through the shared library system. No focus group participant was a direct report of mine at any time in the present or the past. Additionally, some librarians invited to participate in the focus group at Fort Orange or at Beverwyck did not participate. Although both focus groups were supported and attended by the director of each library, staff members felt comfortable enough *to not* participate in the focus groups held at their library, as shown by their lack of attendance.

Research Process

The following sections describe my research process and procedures.

Research Questions

The research questions, as mentioned before, answered in this study are:

RQ0: What is the status of personal digital archiving in public libraries by public access computer users?

RQ1: What structures shape how individuals access technology and the internet at public libraries?

RQ2: What structures in public libraries shape how individuals create, use, manage, and keep personal digital archives?

RQ3: Do personal computers in public libraries fill unique technical identities in relation to the Transformational Model of Social Activity (TMSA) specifically in the context of personal digital archiving?

In answering these questions, the research will inform public library policy, address personal digital archiving by a previously uninvestigated population of users, and provide a deeper understanding of the interactions between objects, structures, and agents, specifically in libraries.

Data Collection Procedures

Data for the project came from the existing public library policies and procedures (26) I gathered as well as from interviews (17), observations (12), and focus groups (2) that I conducted. I chose to collect data from multiple perspectives of the phenomena of access and personal digital archiving. I chose data from the organizational perspective (policies), from the verbalized perspective of individuals (interviews), from the observed perspective of individuals (observations), and from the staff perspective (focus groups). The data captured helped to tease out information relating to the mechanisms, experiences, and events to describe social relationships and actions within Bhaskar's construct of the TMSA. Data collected around the events of personal digital archiving and access to public computers was used to analyze the research questions asked in this dissertation.

Table 3: Table of Data Collection Methods Used in the Research

Method	Number	Number per case study	Research question
Document Analysis	26	At least 1 per system in NYS and policies for each case study site	RQ2 & RQ3
Interviews	17	8 at Fort Orange, Main Ave. 9 at Beverwyck	RQ0, RQ1, RQ2, & RQ3
Observations	13	7 at Fort Orange, Main Ave. 6 at Beverwyck	RQ0, RQ1, RQ2, & RQ3
Focus groups	2	1 per case study site	RQ1, RQ2, & RQ3

The four research parameters suggested by Miles and Huberman (1984) for this project are outlined below:

- **the setting**—Fort Orange Main Avenue Branch Public Library and Beverwyck Public Library;
- **actors**—public library patrons and library staff; computer equipment;
- **events**—access to computers and internet; creation, use, management, and storage of personal information, documents and records; and
- **process**—document analysis, interviews, observation, and focus groups.

Document analysis

I will address RQ2 and RQ3 through document analysis of formalized structures in public libraries. I captured and analyzed a range of AUPs, also called Internet Policies or Internet Use Policies, for public libraries across New York State using stratified purposeful sampling. I chose at least one policy (and for one system, two policies: a randomly selected policy and a policy by the largest library in the system) posted online from one or more libraries in each of the twenty-

three public library systems across the state as a representative sample of public libraries in New York State. Review of the AUPs outlines the environment of internet use in public libraries in New York State, the nature and tone of policies, and underlying organizational structure. AUPs often outline formal rules for appropriate use of the internet through library computers, both for staff and the public, as well as Wi-Fi users. Computer use rules and procedures outlined specifics for using library public access computers, printers, and scanners.

Acceptable Use Policies were analyzed using inductive category development for code creation (Mayring, 2000). Relevant words and phrases were highlighted on printed copies of the policies. Themes emerged in the text and were coded and grouped to discover emergent categories using Microsoft Excel. Patterns related to demographics of public libraries were extracted from Bibliostat Connect—an online database of aggregated Annual Report data from each public library in New York State. These categories helped define structures (refining the concept of "structures" in the critical realism approach to this research) in public libraries relating to public access computing (Hsieh and Shannon, 2005).

Interviews

To address RQ0, RQ1, RQ2, and RQ3 on access of public computers and individual archiving of digital materials, I conducted sixteen interviews with public library users at the case study sites, and one interview over the phone. Interviewees were recruited passively through flyers and large posters posted inside and outside the library at the case study sites. I also recruited research participants through presentations to the Friends groups at both Fort Orange Public Library and the Beverwyck Public Library. I presented the research study to the Board of Trustees of the Beverwyck Public Library to inform them of the research, solicit potential interviewees, and gauge their concern for my role as a library employee conducting research

(while on unpaid leave) at the library. Some participants were directed to the research by librarians at case study sites who had previous relationships with interview participants and knew they might be interested in sharing feedback about using computers. Two interview participants per case study (for a total of four) were given flyers about the research by library staff. I independently contacted two potential interview participants: one in person and one via email.

The interviews were semi-structured following a narrative pattern. This allows the interview to naturally flow with respondent answers but allows the researcher to guide the interview to appropriate topics by starting with the same questions for each interview. Narrative approaches to gathering data for this project allowed informants to "tell a story" about their experiences with their digital records. The research will attempt to capture what Giddens (1991) speaks of as the "narrative of self." Audio from the interviews was recorded and transcribed for open coding and emergent analysis. Interview texts were transcribed from audio files captured using the Voice Memo app on an iPhone 6 and an HD Zoom Audio recorder. Audio files were directly transcribed omitting some political musings or irrelevant conversation into Microsoft Word 2013 documents. The audio transcripts were imported into NVivo Pro 11 qualitative research software for coding and analysis using guidelines from Bazeley & Jackson (2013).

Demographic information was not captured from library patrons because interview numbers for the cases were too small for statistically significant demographics based research. Self-identified characteristics of interview participants included men and women; African American (black), white, and Native American individuals; members of religious groups including Catholic and Protestant; retired workers and employed workers; current students; and individuals with education levels ranging from high school all the way up to two Ph.D. holders.

Observations

The second to last question I asked in interviews was "Can I observe you work on a task while you are here?" For four interviewees, I did not observe them work. One interviewee lived out of town and wanted to participate by a phone interview so I did not observe her work. For others, the interview portion lasted longer than one hour and I didn't want to go over the time of completion I listed in the Institutional Review Board Consent letter (which was one hour) or overly tax the research participants.

Observations followed an open format with a prompt from me to perform a typical task. I incorporated observation notes recorded from audio into interview transcripts. I also recorded notes using a pen and paper that were transcribed into transcripts as well. Observation allowed me to investigate how similar users' descriptions of actions and actual actions were. I considered documentable acts individuals were performing during the interviews including: grading responses for an online course, sending messages of condolence, recording current events, playing video games, researching their genealogy, editing photos for an online business, and more. I asked individuals during observation, "Show me what you would usually do using library computers" instead of "Show me what files you create using library computers" to capture actions performed instead of documents created.

Focus groups

Two focus groups at each library were conducted with library staff. The focus groups for each case study included library directors, library administrators, department heads, assistant directors, branch managers, information technology administrators, librarians, and staff working on the reference desk at their library. I investigated RQ1, RQ2 and RQ3 by interviewing staff members in focus groups on how they perceive and enforce library structures. Audio was

captured from the focus groups using the HD Zoom audio recorder and transcribed following practices as suggested by Flick (2008). Open coding was used to analyze emergent themes that come from these focus groups. Following coding guidelines established by Dey (1999) and Rubin and Rubin (2005), I used open coding to surmise hypotheses developed from observation of empirical events to explain the real mechanisms observed.

Reliability

Reliability of coding from emergent themes discovered in AUP analysis was measured at 84% and 86% accuracy compared to coding results from other professionals, one Ph.D. researcher in Information Science and one researcher with extensive experience in Library and Information Science. Additionally, the research conducted member checking with some interview and focus group participants to continually confirm the analysis and understanding of transcripts and researcher analysis.

External Validity

The purpose of this case study research is not to offer new grand generalizations (Stake, 1995) of user experiences across all public libraries, but to provide theories of structures specifically in Fort Orange Public Library and Beverwyck Public Library which may also exists in other libraries. Developing a better understanding of structures that exist in each library will help to define future library practices and policies that will directly impact library patrons' use of public access computers. The research does modify existing grand generalizations of how libraries can serve the digital inclusion needs of individuals while also balancing library and user expectations of privacy. The research also provides a deep look at experiences of a population of individuals previously unmentioned in personal digital archiving research—those who actively use public access computers for creating, managing, and using their personal digital archives.

This research will also provide two cases of personal digital archiving at public libraries for use in future research on the topic. Describing how public library structures imprint on personal digital archiving practices and objects brings to light issues in policy and administration of public libraries in New York State.

Chapter 5: Findings from Document Analysis of Acceptable Use Policies and Library Demographic Data

Examination of Acceptable Use Policies from public libraries across New York State provides an overall understanding of how users and staff are expected to engage with internet access computers, and each other, from the perspective of public library administrators and policy makers. Acceptable Use policies outline the environment of computing within public libraries as codified by library rules.

Based on Acceptable Use Policy discourse analysis of twenty polices by libraries in the United Kingdom by McMenemy (2014) and work by Gallagher, McMenemy, and Poulter (2015) investigating thirty-two Scottish AUPs, I investigated twenty-six AUPs from public libraries across all twenty-three public library systems in New York State and the AUPs from both case study sites. I limited analysis to New York State public libraries because they fall under the same legal and governmental requirements. Also, the two case study locations are within New York State and could be most like the libraries within the same geographical location. Acceptable Use Policies were chosen for analysis because they are "quasi-legal documents" (McMenemy, 2014) that indicate the official policy for interacting with computers and the internet at public libraries. Content analysis of Acceptable Use Policies allowed discovery of formalized structures within the library environment. The formalized structures help create the social rules which form a component of the TMSA as described by Fulkner and Runde (2013). Analysis of the social rules of AUPs also allowed me to determine how library staff engage with formal structures, and presented an understanding of tone and library culture as codified in policy. Acceptable Use Polices can highlight the inequitable power dynamics between public libraries, staff, and users and the "the subjective nature of the concept of appropriate and inappropriate behaviours and also the potential for bias that can be found through the use of language and discourse"

(Gallagher, McMenemy, and Poulter, 2015). An additional structure regulating library use are computer use rules. Like Acceptable Use Policies, computer use rules regulate behavior but are quicker to change, more flexible, and are not established using the formal mechanisms creating library policy—such as library board approval. Computer use rules are established by library administration and local practice. Computer use rules or procedures are often not written, not approved by elected officials of the library, and mutate according to staff-mediated interaction.

History and Purpose of Acceptable Use Policies

Acceptable Use Policies started emerging as policy documents in the 1990s and 2000s as a response to the growth of the number of public access computers and internet use at public libraries. Acceptable Use Policies could be found under various names in public libraries, such as Technology Use Policies, Internet Safety and Acceptable Use Policies, Acceptable Computer Use Policy, Internet Policy, Internet Access Policy/disclaimer, and Policy on Public Use of the Internet. These policies are guides for users on how to interact with computers and the internet as well as protection for libraries if users engaged in activities deemed harmful or unsuitable to the public library. Additionally, one of the main factors in the rise of Acceptable Use Policy creation in the United States was the Children's Internet Protection Act enacted by Congress in 2001, which denied federal funds, specifically from the Universal Service discount program known as the E-rate (Public Law 106-554) if the library did not install internet filters on library computers (American Library Association, 2015). New York State chapter 357 of the Laws of 2000 require an Internet Use Policy approved by the Board of Trustees for public, free association, or Indian libraries if the libraries have computers provided for internet access. Many of the policies reviewed in this research have not been substantially updated since their initial creation around 2000.

Methodology

I analyzed the content of AUPs following the open coding until the themes of filters, tone, language used, acceptable behaviors, unacceptable behaviors, and library structures emerged. I also investigated if statistical similarities of demographic characteristics of libraries related to the finding of the document analysis of AUPs. These nodes I used were based off a general evaluation of important components of AUPs by Sturges (2002). In future research, pre-existing theme nodes as outlined by Gallagher, McMenemy, and Poulter (2015) may also provide a valuable approach to analyzing AUPs using and existing frameworks from other studies including the following nodes/themes: access management, acceptable behavior, unacceptable behavior, copyright or license compliance, user commitments, service commitments, user monitoring, presence of filtering software, sanctions for policy violations, and policy management.

Overall, my analysis combines document analysis, versioning, and investigation of demographic similarities of public libraries to review codified library attitudes to computer use and internet access, precursor events to personal digital archiving in public libraries. The analysis shows organizational perspectives of how users should access technology and the internet using public access computers owned by libraries and the structures of social rules, social positions, and social relations that shape users' personal digital archiving practices.

I used stratified random sampling to choose one library per library system in New York State. There are twenty-three library systems in New York State, and I included the two case study libraries in the sample. Large and small libraries were included in the analysis group since three of the largest libraries in New York State, New York Public Library, Queens Public Library, and Brooklyn Public Library are also one-library library systems. Small libraries in

terms of population served, budget, circulation, number of computers available for internet use, and the number of computer use sessions were also included. Additionally, New York State divides libraries into four different groups by the types of charter granted: Association, Municipal, School District, and Special District. Representatives of each type of public library are included in the sample set.

Findings

Of the policies reviewed, eleven policies mentioned the use of filters applied to public access computers for either adults or teens and children. Of those eleven, four policies mentioned the option for adults to remove blocking filters: two policies allowed patrons to remove filters by themselves and two other policies said patrons needed to request removal of filters by staff or library director. One rather specific policy mentioned that filters could be removed to permit access to Government Printing Office documents erroneously blocked, but the nature of other requests to remove blocks was unclear for that policy. The CIPA statute specifically enables "an administrator, supervisor, or other person authorized by the certifying authority [to] disable the technology protection measure concerned, during use by an adult, to enable access for bona fide research or other lawful purpose." The language of "bona fide research" implies a value judgment for library staff to determine what is considered truly research or other lawful purpose versus what is not. One policy from Southeast Steuben County, New York specifies patrons have time limits on computers, but "persons doing research may request an extension of time at the discretion of library staff." This is in contradiction to the American Library Association's Code of Ethics statement originally adopted in 1939 and updated in 1981, 1995, and 2008 which does not favor staff discretion for determining "bona fide research":

> I. We provide the highest level of service to all library users through appropriate and usefully organized resources; equitable service policies; equitable access; and accurate, unbiased, and courteous responses *to all requests*…[italics added]
>
> VII. We distinguish between our personal convictions and professional duties and do not allow our personal beliefs to interfere with fair representation of the aims of our institutions or the provision of access to their information resources.

The American Library Association Council released a statement in 2015 on Internet Filtering: An Interpretation of the *Library Bill of Rights*. The statement notes three results of the CIPA in 2015, over a decade after its passage.

> First, it has widened the divide between those who can afford to pay for personal access and those who must depend on publicly funded (and filtered) access. Second, when content filtering is deployed to limit access to what some may consider objectionable or offensive, often minority viewpoints, religions, or controversial topics are included in the categories of what is considered objectionable or offensive. Filters thus become the tool of bias and discrimination and marginalize users by denying or abridging their access to these materials. Finally, when over-blocking occurs in public libraries and schools, library users, educators, and students who lack other means of access to the internet are limited to the content allowed by unpredictable and unreliable filters.

Notably, the ALA shows a direct negative consequence for users based on library policy that changes the way they interact and access the internet through the use of software filters.

In the policy review, I noticed the same exact terms and phrases throughout various policies. The definition of the internet came up frequently in eleven policies reviewed. Of the eleven policies, five defined the internet exactly the same: "The internet is a series of communication linkages leading to a highly diverse array of information content." Another four defined the internet as a "vast array" or "vast network." The repeated language suggests a versioning of policy. One organization wrote a policy that was replicated and adopted in derivative versions in other libraries.

Additionally, the phrase "to fulfill its mission of providing access to information of all types in a wide range of formats" was repeated almost verbatim in six policies out of twenty-six

suggesting the policies were derivatives of each other, or one main work. I used the Google search engine to search both phrases to begin discovery of this language in various library Acceptable Use Policies. The New York Public Library also provides the same definition of the internet, "The internet is a series of communication linkages leading to a highly diverse array of information content," from their May 5, 2004 adoption of their Policy on Public Use of the Internet.

I discovered many more libraries across the United States used the same phrases. I also found a sample "Library PC and Internet Use Policy" from 2015 written by the CybraryN (later known as the Cybrarian) company. The earliest reference to this sample policy I could find was a 2003 version provided by CybraryN software with a copyright held by Computers By Design, Inc. The PDF and HTML page were linked from a September 7, 2004 capture of this website on the Wayback Machine http://www.cybrarian.com/pages/2/index.htm. This demonstrates versioning of language of Acceptable Use, Internet Use, or Computer Use policies emerging from legislation passed by Congress in 2001. It also demonstrates the role of a company in influencing policy written at public institutions that still plays out today though the experience of thousands of public library computer users. In the thirteen years after the 2003 CybraryN policy and fifteen years after the passage of CIPA in 2001, some Acceptable Use Policies have changed, and some have stayed the same.

Statistical Groupings

I analyzed twenty-six New York State AUPs including the two AUPs from case study sties and (one from the largest library in the system to the north of the Upper Hudson Library system Crandall Public Library) to discover trends in perspectives of computer use codified through structures for using public access computers. I compared the demographic context of the libraries to determine if issues such as circulation, funding (or lack thereof) for libraries,

availability of computer stations, and overall use of computers reveal any relationship between library demographics and AUPs.

Demographic data about the libraries selected from 2014 New York State Annual Report data—the most recent data available in Bibliostat Connect in November 2016—are listed in Table 3. Case study library pseudonyms are used for actual data gathered from each library.

Table 4: 2014 Statistics about New York State Libraries in AUP and Computer Use Analysis Set

Library	Budget	Public Computers	Population	Total Circulation	Internet Sessions	Circulation per Capita	Group I-IV
Brooklyn Public Library	$108,482,675	1,149	2,504,700	13,406,771	2,144,852	5.35	I
New York Public Library – Branches	$263,373,958	4,643	3,439,711	24,101,745	5,237,363	7.01	I
Queens Borough Public Library	$111,854,517	1,650	2,230,722	14,570,348	3,172,495	6.53	I
Buffalo and Erie County Public Library	$26,824,767	369	919,040	3,205,369	446,392	3.49	II
Rochester Public Library	$15,784,214	547	210,565	1,491,953	355,593	7.09	II
Baldwin Public Library	$3,716,260	84	32,837	248,752	28,821	7.58	III
Beverwyck Public Library	$3,689,592	46	27,878	713,998	37,623	25.61	III
Copiague Memorial Public Library	$3,343,219	56	30,505	186,250	20,255	6.11	III
Crandall Public Library	$3,459,356	92	57,329	699,431	75,539	12.2	III
Fort Orange Public Library	$7,033,324	140	97,839	1,119,705	185,109	11.44	III
Mamaroneck Public Library District	$1,783,273	20	18,929	183,024	7,796	9.67	III
Niagara Falls Public Library	$2,190,616	78	50,193	237,204	40,963	4.73	III

Northern Onondaga Public Library	$2,230,897	75	56,167	609,572	44,393	10.85	III
Schenectady County Public Library	$5,151,831	82	154,727	1,152,913	100,732	7.45	III
Southeast Steuben County Library	$1,083,280	26	34,748	233,902	26,490	6.73	III
Adams Free Library	$41,982	6	1,775	10,483	1,868	5.91	IV
Amsterdam Free Library	$311,217	18	24,186	51,231	19,255	2.12	IV
Argyle Free Library	$54,820	3	3,782	15,235	1,371	4.03	IV
Canastota Public Library	$322,651	11	9,917	61,641	9,108	6.22	IV
Dunkirk Free Library	$217,830	26	13,881	41,190	17,381	2.97	IV
Heermance Memorial Library	$227,699	6	8,918	50,085	4,634	5.62	IV
Kinney Memorial Library	$61,850	8	2,110	9,841	2,366	4.66	IV
Liberty Public Library	$256,734	6	10,650	52,497	6,317	4.93	IV
Plattsburgh Public Library	$869,406	16	19,989	136,113	25,462	6.81	IV
Seymour Library	$578,416	26	20,911	158,809	21,082	7.59	IV
Williamson Free Public Library	$476,262	10	6,984	99,055	6,627	14.18	IV

The libraries in this set can be grouped by characteristics (annual circulation, annual expenditures, population served, total circulation, internet use). Group 1, made up of The New York Public Library, Brooklyn Public Library, Queens Public Library, has very large total circulation, annual expenditures, and size of populations served. Group II includes Buffalo and

Erie County Public Library and Rochester Public Library, which have similar total circulation, annual expenditures, and size of populations served. The rest of the libraries in this set can be loosely grouped together in two groups with Group III having annual expenditures over $1 million dollars and Group IV under $1 million dollars.

Longitudinal data show relationships between the libraries in the sample show the libraries fall into one of four groups based on annual expenditure. Although the data for expenditures changes (usually increases) from year to year, the relative expenditures from library to library do not change. The same is true for population served (based on census numbers from 2000 or 2010), circulation, budget, public computers, total circulation, or internet use.

One interesting data point that does not follow the trends of total circulation, annual expenditures, and size of populations served is circulation per capita (Table 4). The same libraries in our set sorted by circulation per capita show the mid-sized libraries of Group III with the highest circulation per capita. This indicator can approximate percentage of use of the library by individuals in the district—because the state data is aggregated and not captured at the individual level.

Table 5: 2014 Statistics about New York State Libraries in AUP and Computer Use Analysis Set (Sorted by Circulation per Capita)

Library	Budget	Public Computers	Population	Total Circulation	Internet Sessions	Circulation per Capita	Group I-IV
Beverwyck Public Library	$3,689,592	46	27,878	713,998	37,623	25.61	III
Williamson Free Public Library	$476,262	10	6,984	99,055	6,627	14.18	IV
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Dunkirk Free Library	$217,830	26	13,881	41,190	17,381	2.97	IV
Amsterdam Free Library	$311,217	18	24,186	51,231	19,255	2.12	IV

Filters

According to analysis of the Acceptable Use Policies for the libraries in this dataset, eleven libraries total and all libraries in Group I and II use filters provided by the library or the related school district, or reserve the rights to use filters, for the internet. Eleven libraries do not mention filters and four libraries specifically mention no filters are used. Since library filters are tied to federal library funding due to CIPA, it is possible to consider the largest libraries (in Groups I and II), which serve large populations and have the largest budgets are also the libraries in need of federal funding to operate.

Tone

The tone of Internet Acceptable Use Policies at the libraries studied varies across Groups I though IV and within groups. Some Acceptable Use Policies contained very positive language, expressing an optimistic attitude toward providing free access to the internet as a way of increasing library collection and resources. Many Acceptable Use Policies studied reflected the sample policy from CybraryN in describing internet access as an extension of the library's mission to "provide information of all types in a wide range of formats" or "free access to a variety of informational materials." The internet is seen as a way of providing information that

extends “beyond the confines of the existing local collections.” This positive representation of the internet as a tool for exploring and discovering knowledge shows an optimistic attitude.

Beyond the initial introductory paragraph containing optimistic expressions of opportunity and access, caveats are often introduced and the tone of policies becomes more negative and filled with concerns. These findings matched the findings of an investigation of thirty-two AUPs from Scotland by Gallagher, McMenemy, and Poulter (2015), who noted a negative tone in twenty-six of the thirty-two policies reviewed in their sample. The validity of information found on the internet is questioned. The lack of regulation and control over quality and accuracy of newly accessible information appears in many Acceptable Use Polices. Two policies written by the Crandall Public Library and Fort Orange Public Library specifically *warn* library users about conducting specific activities on the internet on public computers. One warns that “engaging in personal business of a confidential nature is not advised” and the other advises users that “use of the internet is at their own discretion.” Most Acceptable Use Policies were written when perceived dangers of the internet led congress to pass CIPA and many Acceptable Use Policies have sections about the library being unable to vet the information seen by minors. Often, Acceptable Use Policies included guidelines for guardians on keeping their children safe when using the internet. Other libraries require written permission for children under the age of fifteen to use internet enabled computers. These patterns emerge across Groups I through Groups IV.

Acceptable/Unacceptable Behavior

Prohibition of illegal activities is outlined in most Accessible Use Policies. Pornography, hacking, misrepresenting yourself, harassment, deliberately propagating computer worms or viruses, and copyright infringement are not allowed on library computers according to most

Acceptable Use Policies in the sample. Prohibited behaviors include those performed by staff and by library users.

Activities do not have to be illegal to be outlawed by some libraries, however. Sitting more than one or two people to a desk is not allowed according to some libraries. Privacy is encouraged, and "hovering" over individuals while they use the terminals is not allowed. Damage to software or hardware or disruption of the network is prevented. One library links instant messaging and chat rooms with obscene behavior, declaring, "Use of Instant Messaging, chat rooms, or other inappropriate or obscene sites is not permitted on library computers." Others do not allow users to attach hardware and peripherals to the computer. Some specifically ban the use of USB, or thumb drives.

As demonstrated by Figure 1, the number of computers available to the public for use is increasing there is still a demand for public access computers. Unfortunately, the state report numbers include all computers for use by library patrons, internet-based OPAC (online public access computer) library catalog stations as well as public access computers for internet use. For example, Beverwyck Public Library accurately lists forty-six computers in the state report for computers available for public use, a figure which includes the eight adult public access computers, two teen laptops, eight children's computers, computers available for training labs, and internet OPACs—but not all of those computers provide public internet access. Fort Orange Public Library's computers available for public use include OPACs and computer access stations for adults, teens, and children across all seven branches. Six libraries in my sample, including Amsterdam Free Library, Buffalo and Erie County Public Library, Dunkirk Free Library, Kinney Memorial Library, New York Public Library Branches, and Queens Borough Public Library, reported a ratio of computer use sessions over library visits of over 25%. This means a quarter of

the people that enter the library also use a public access computer. The nature of computers as limited resources may have led to the implementation of time limits on computer use. Of all the policies reviewed, nineteen mentioned time limits for using library computer.

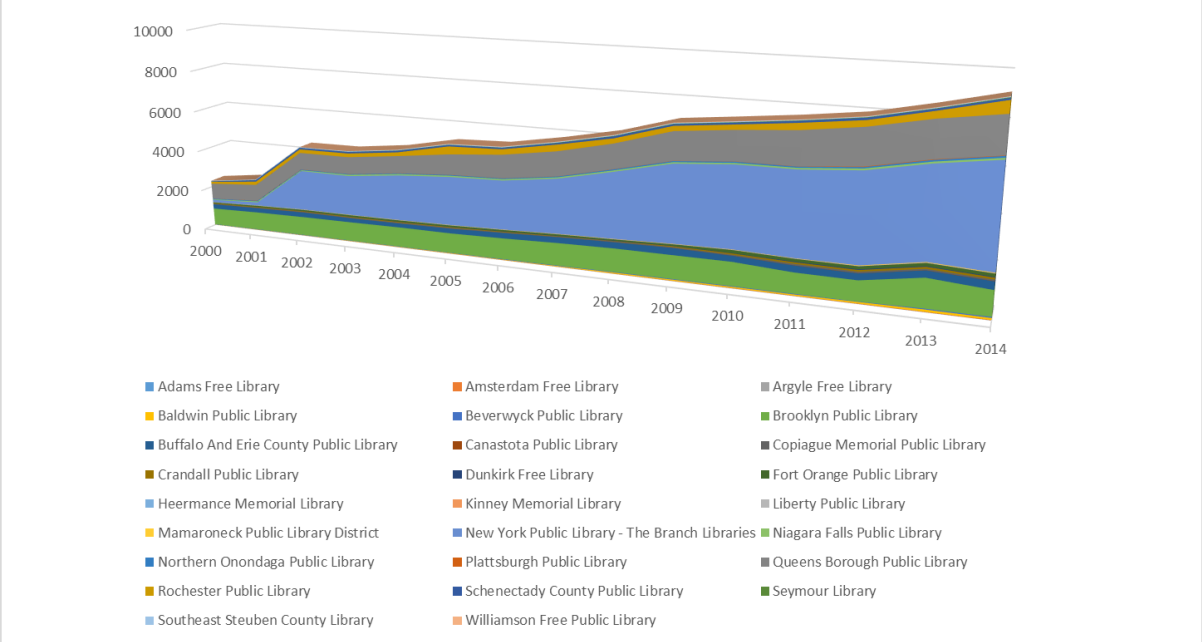

Figure 1: Number of Available Computers from 2000-2014 at Libraries in Analysis Set

One might expect to find similar AUP requirements for libraries within each demographic group. Upon further examination, this was found to be partially true. All of Groups I and II and some other libraries in Group III and IV used filters. This was the only characteristic that was standard within library groups (for Groups I and II). Other characteristics of tone, use rules, and others did not appear as similar within demographic groupings. Library structures exemplified by AUPs do not correlate to the demographic characteristics of public libraries.

Library Structures

Review of Acceptable Use Policies also clearly showed implications for library structures affecting internet access and personal digital archiving.

Preventing use of public access computers due to fines is potentially a discriminatory practice against those who cannot afford to pay library charges but need to access library computers. Limitations on accessing personal information through library software protect information security needs of patrons, but at what cost? Individuals who do not have access to the internet in other locations cannot participate in the marketplace of online commerce, job applications, medical records, social media, communication or any other personally identifying internet application.

Time limits of between thirty minutes to three hours alter the way users engage with online applications, which will be demonstrated in Chapter 8. Filtering applications, which cannot guarantee to block all obscene material and, worse, may block benign information a patron might need about health and wellness or other topics require library users to ask for a particular site to be unblocked by a library staff member or director. Specific browsers, Internet Explorer at Baldwin Public Library for instance, are designated as the only internet browsing software allowed. For some libraries, providing only one browser is the same as designating a single browser for use. Many libraries prevent saving data on library computers, even temporarily, until a session ends or the computer is restarted. The New York Public Library, Queens Public Library, and Niagara Falls Public Library specifically limit the download of large files, including still or moving images. The Williamson Free Public Library allows the use of web-based email but specifically prevents "opening attachments on email." Many policies specifically prevent staff instruction beyond basic logging in. This is counter to the main reason some interviewees in Chapter 7 come to the library to use public access computers.

Another structural rule altering internet access is the use of visitor passes. Some libraries will not provide visitor passes without identification. For others, there is a charge to access the

library computers for an hour. Dunkirk Free Library will not issue a visitor pass for library patrons with blocked library accounts or who already have a blocked library card. The library additionally limits how long a newly arrived guest can use a visitor pass (five days) before requiring the patron provide proof of address to receive a new card.

Overall, the implications of Acceptable Use Policies suggest an overall wariness about what the internet is and what patrons might do while using it. Through analyzing filters, tone, language, acceptable and unacceptable behaviors, library structures for the computer user are revealed. Similar language shared within the policies shows a broader social structure for library policy makers' understanding of the internet. Similar acceptable and unacceptable behaviors between case study sites as well as all libraries in the sample show a broader social structure for library user actions. Rules for using library public access computers clearly provide structural inequalities for internet access and personal digital archiving today. For some libraries, the institution lauded as the solution for enabling digital inclusion is not really so inclusive for all users and their activities online.

Chapter 6: Initial Findings and Implications of Interviews and Observations

I started my investigation by considering statistical data about both case study sites. Both case study sites showed declining usage of public access computer use sessions and circulation, but increasing Wi-Fi usage. Since 2012, the number of internet use sessions at Fort Orange Public Library Main Avenue Branch has decreased. Figures 2 and 3 show declining individual use sessions on public access computers and a recent downward trend in circulation at both case study libraries.

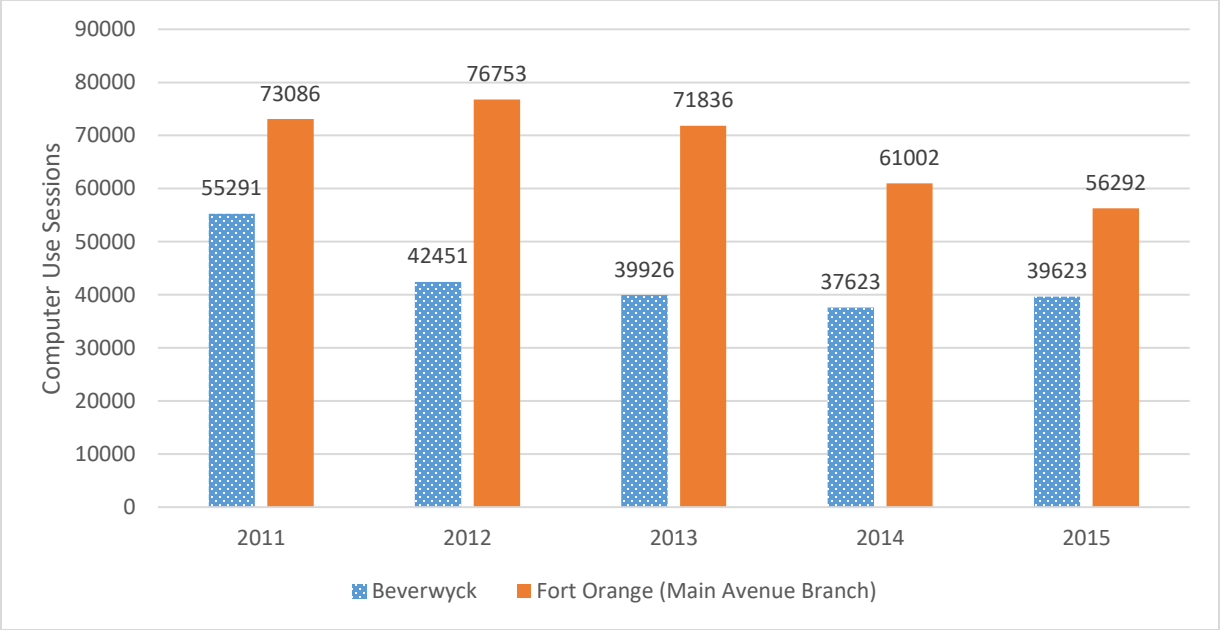

Figure 2: Computer Usage by Individal Internet Use Sessions at Case Study Sites 2011-2015

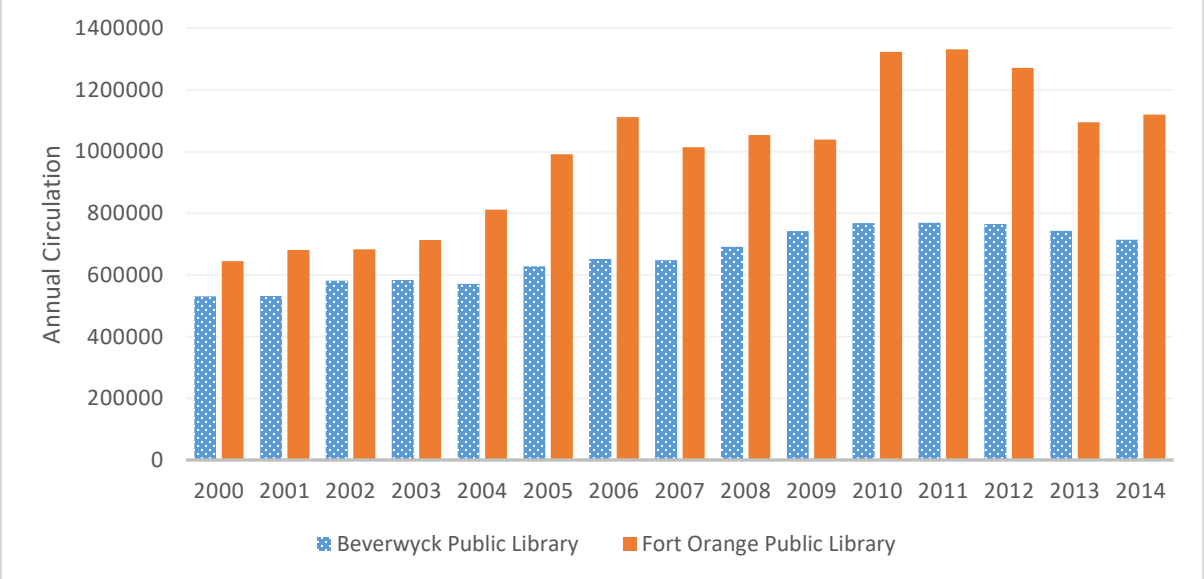

Figure 3: Total Circulation Statistics at Case Study Sites 2000-2014

One statistic which is not decreasing is Wi-Fi usage. Both locations show an increase from 2014 to 2015. The Main Avenue branch of Fort Orange Public library began capturing Wi-Fi

stats in 2014. The data from 2016 is still being reported, thus leaving two years for comparison between both libraries. The percent change from 2014 to 2015 at Fort Orange is 1.09% compared to the percent change at Beverwyck 31.94%,

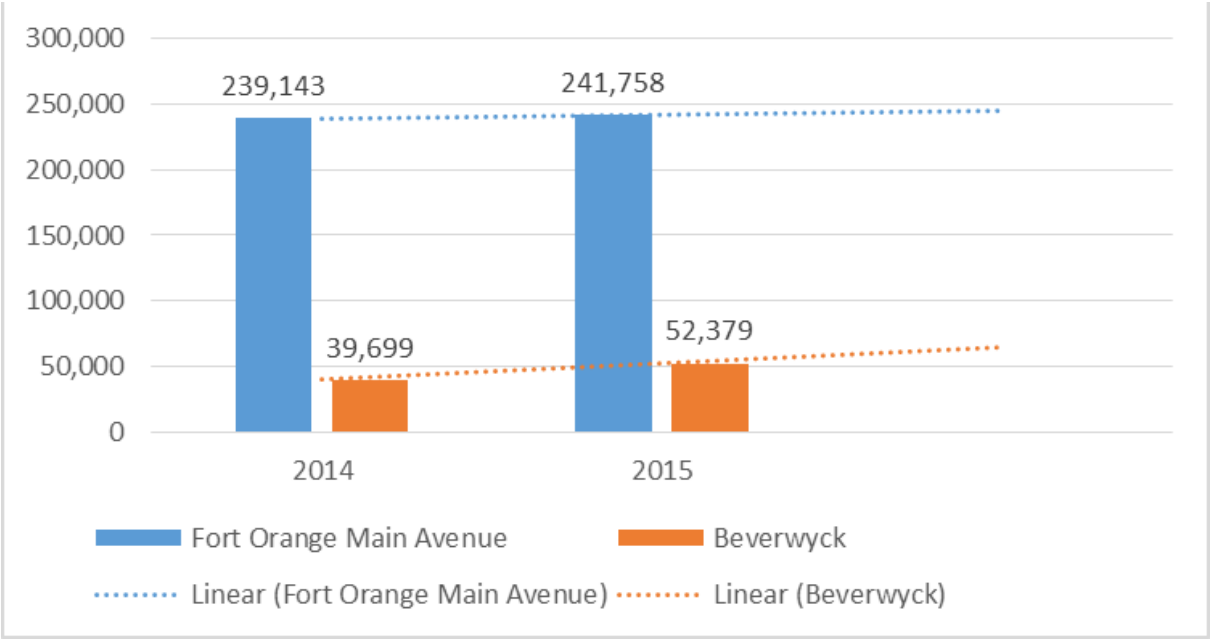

Figure 4: Wi-Fi Sessions at Case Study Locations 2014-2015

Missing from these numbers are unique individuals using public access computers. The statistics capture how many times users logged in to a public access station but not unique users of library computers. Knowing unique users would help answer the question, "How much of our computer use is attributed to the same individuals?" But investigating unique users would require a deeper look into who is using library computers and potentially what they are using them for, which has ethical considerations for privacy. Additionally, the statistics do not show time spent on the computers during each session or the amount of librarian interaction and type of interaction (informational, digital literacy help) offered during each session.

After investigating general trends of the case study sites and software configuration of computers in both libraries, I began interviewing selected users. Through interviews and

observations I determined initial findings about personal digital archiving in public libraries. Analysis of Acceptable Use Policies in the previous chapter provided organizational perspectives on how library users would access the internet and use public computers. This chapter provides details on specific behaviors and beliefs on access and personal digital archiving by public library computer users.

Definition of Personal Digital Archiving

Before discussing the status of personal digital archiving practices in public libraries, it is helpful to remember the framework of personal digital archiving presented in this research. The definition of archivally-oriented personal information management includes creation, maintenance, use, and storage of digital files with an awareness of potential future use. It focuses on documentable acts more than documents. When library staff were asked "Do you think library patrons use library public access computing for personal digital archiving," staff in both focus groups discussed the definition of personal digital archiving.

> [2]FOFG1: It's really how you define it. I think they don't realize they are doing it. … there is a strong argument to be made that if you are emailing yourself photos from a flash drive, or downloading photos from an email account or Facebook account onto your flash drive or just printing them, then you are doing some type of archiving.
>
> BFG1: My definition, it's all about content creation. They are creating, even if it's not what in our heads we consider archives. They are still saving that somehow. They are using our devices to do that.

These statements from library staff members match the definition presented in this research for personal digital archiving. Library users were never asked about personal digital archiving

[2] A note on focus group notation: FOFG is the notation for Fort Orange Public and BFG is the notation for Beverwyck Public Library. Staff members from each location are numbered to distinguish speakers.

specifically during interviews. Rather, they were asked about how they create files, if they save them, and if they had intentions for using the files again in the future.

Why Use Public Access Computers?

The Opportunity for All IMAPCT survey (Becker et al., 2010) asked respondents why they used public access computers. Nearly all of the reasons mentioned in survey were also cited as reasons to use library computers by interviewees in my research. According to the survey in 2010, most (78%) of public access technology users had access to the internet at home or school—not only at the public library. Only two interviewees (B1[3], B5) had no other access to computers or the internet than the public library. B6 did not have internet access at home, but he had a laptop and an internet-enabled tablet. Two other interviewees mentioned the slowness of their home internet (A1, A4). The reasons for using the public access computers in the IMPACT survey and my research were as follows:

- Limited/poor equipment, software, connectivity (A1, A2, A3, A4, A5, A6, A7, B1, B4, B5, B6, B9)
- Reduce isolation/increase productivity (particularly for home workers) (A4, B2, B3, B8)
- Away from home or traveling (B6, B9, A6)
- To look up book reviews and access library resources (A6, A8, B3, B7, B8)

No one I interviewed mentioned "Household competition for access" as a need to visit the library, which was listed as a reason in the Opportunity for All survey. Additionally, my research

[3] Interviewees are referenced using a letter and number. The letter corresponds to where the interviewees were interviewed: A for Fort Orange Public Library Main Avenue branch and B for Beverwyck Public Library. The number corresponds to the order in which the interview was conducted during the research.

showed many users came to the library to seek help from librarians to complete digital tasks (A3, B1, B5, B6).

Interview Questions for Public Access Computer Users

In interviews, I asked the following questions to develop a better understanding of public access computer user behavior.

Table 6: Interview Questions and Relation to Research Questions

Questions	RQ0	RQ1	RQ2	RQ3
What brings you to the library today?		X		
Do you own any other devices connected to the internet?	X	X	X	X
What applications/software do you use on library computers?		X	X	X
Do you ever save any files you create on public library computers?	X		X	
How do you access those files again?	X	X	X	
Do you think you will use those files in 1 year? 5 years? 10 years?	X		X	
Do you have digital files (documents, digital photographs) that you created before today?	X		X	
Do you use other computers besides these at the public library?		X	X	
Can you describe how you learned the rules for using the libraries computers?		X	X	X
Would you change any rules for using the computers?		X	X	X
Can I observe you work on a task while you are here?		X	X	X

Results of Interviews

I discovered most users in my sample—who were specifically selected because they were public access computer users—came to the library for a variety of other activities: to check out books and other materials (A4, A6, A8, B1, B2, B3, B4, B7, B8, B9), attend programs (A4, A5,

A6, A8, B2), or read the newspaper or other materials in the library (A2, A4, A5, A6, B2, B5). Almost all individuals interviewed owned a tablet, laptop, or smart phone that connected to the internet except for B1 and B5. Most users in the interview sample owned devices that could connect to the internet—which matches previous figures (78%) presented by the 2010 Opportunity for all IMPACT study. One person took a unique approach to digital archiving: A2 archives using her gaming console at home in addition to her smart phone.

All interviewees created or used files on public library computers that they planned to access again. For users who did not engage in personal digital archiving the value of those files was limited to a short-term. Users I interviewed stored files they wanted to use in the future on removable media and online. They used hard drives, a gaming console, flash drives, SD cards, floppy disks, and CDs. They also use online services such as internet-based file storage (Microsoft OneDrive, Google Drive, Dropbox), web-based email (Yahoo!, Gmail, Microsoft, Earthlink), social media (Facebook, tumblr, MySpace), web browsers (Chrome), blogs (Blogger, Wordpress), and teaching software (Blackboard) for storing and accessing files for reuse.

Some users accessed the internet and used public access computers at other locations including home, work, school, or other libraries. One user experienced loss of his digital materials because of his frequent use of multiple public library computers and the NYS Department of Labor's One Stop Shop computing lab. His dependence on cloud-based storage platforms, a variety of user names based on pseudonyms, forgetting his email address and password, and the changing alternative contact information by the use of pre-paid mobile devices resulted in a permanent locking of an account with his resume and other important files.

All users discovered the rules for using public access computers and printers through some interaction with reference or information desk staff at the library. Each library had a

specific set of rules and procedures for public access computers which forced library users to interface with library staff to learn how the computers worked. This interaction reinforces library staff roles as experts and leads to inequalities of social positions in public access computing that will be discussed in later chapters.

Many interviewees provided suggestions to improve using public access computers. Most suggestions were related to software configuration (e.g., remove pop-up inactivity warnings), hardware (e.g., reduce steps to print), or other patrons (either interviewees complained about other obnoxious users (B7, B4) or interviewees mentioned other users had complained about them (A7).) Suggestions for improvements to public access computing revealed agent-agent relationships between users and structures of space, privacy, and public conduct or civility.

Through asking the questions above and observing library patrons using computers I was able to develop a deeper understanding of real experiences. I also discovered a flaw in my interview questions after a few initial conversations.

Interviews vs. Observation and Situated Action

In my first two interviews (A1, A2) with users at Fort Orange Public Library, I asked users "Can you walk me through a typical visit to the library to use the computer?" I quickly realized that the experiences users described were not detailed or specific. A1 said he walked in, purchased a visitor pass, and started using a computer. This interaction shows he usually visits the library to use the public access computer and always buys a visitor pass. A2 described her typical visit as always grabbing a book before and after using the library computers, although she later mentioned she could not use her library card because of lost material. After those two initial interviews, I removed the question of describing a typical visit because the data reported was not as rich as actually observing users on public access computers.

As I completed more interviews it became clear that users expect themselves or are expected to engage with computers in one way, and in reality, their actual behavior is completely different. Users do not engage computer use in a linear fashion going from one task to the next. They often run into difficulties and through methods of trial and error find alternative paths to achieving their intended purpose. Focus on the outcomes is more instrumental in completing their tasks than completion of tasks in a step-by-step, well intended manner. Suchman describes this phenomenon as "situated action" in 1987 seminal work *Plans and Situated Actions* writing

> While the course of action can always be projected or reconstructed in terms of prior intentions and typical situations, the prescriptive significance of intentions for situated action is inherently vague. The coherence of situated action is tied in essential ways not to individual predispositions or conventional rules but to local interactions contingent on the actor's particular circumstances.

Library policies, Acceptable Use Policies, Computer Use procedures, preconceived intentions, and typical situations were not adequate for understanding library users' personal digital archiving actions. Rather, observing and asking about specific tasks enabled a deeper look at how users actually engage in personal digital archiving on library computers.

Particular Circumstances of Institutional Procedure

Purchase of visitor passes at Fort Orange Public Library is one example of actual behavior running counter to expected behavior. The *Use a Computer* page of Fort Orange Public Library website says, "Visitors without a library card from any public library in the Albany or Rensselaer Counties may purchase a visitor pass." The passes are intended for occasional use by non-cardholders residing outside the library service area, but three regular users (A1, A2, A5) interviewed needed to purchase $1.00 visitor passes at Fort Orange Public Library Main Avenue Branch. The particular circumstances of the interviewees who purchased visitor passes were such that spending a $1.00 per hour to use the computer was preferable to clearing the block(s) on

their library cards. A1 and A2 were young users who had previously lost materials checked out on their individual library cards. The lost items on their card blocked them from free access to the internet on library computers. A5 uses his library card at other public libraries in the system, but at Fort Orange Public Library, he receives a message that his account has expired and chooses to purchase a visitor pass for $1.00 to use the computer instead of discussing how to update his library card with library staff. A5 is a patron who has two different experiences using the same card number at two different library locations. Losing items, accruing fines above minimum thresholds, and expired addresses on library card accounts prevented these three users from accessing the internet without purchasing a visitor pass. Not all libraries in the Upper Hudson Library System follow these parameters; fines, fees, and expired cards do not prevent access to services, including public access computers. Additionally, other libraries do not charge for visitor passes.

Another example of situated actions that were counter to how a user would be expected to engage with library computers is library computer software configuration. Many users (B1, A3, A4, B4, B5, B6, and B7) ran into difficulties using library software. During my observation, B7 used the sign-up station to reserve a computer instead of sitting down at an available computer to log in. The sign-up station was previously a mandatory step for using library computers at both Beverwyck and Fort Orange Public Libraries. However, in recent years both libraries have changed their computer use rules to allow users to sit down at a computer to log in using a library card bypassing the reservation station if a computer is available. B7's understanding of computer use practices still allows him to complete his task—to use a public access computer—but his action do not match expected behaviors for computer use and current procedures.

Particular Circumstances of Library Software and Hardware Configuration

Another user at Fort Orange Public Library (A4) demonstrated an example of a situated action model when he developed a complicated method for creating Microsoft Word documents that could be read on his home and library computers running different versions of the software. The observation with A4 showed a potentially common occurrence as people engage in migratory archiving across many computer platforms and the backwards compatibility of software—what Rothenberg calls the "false promise of migration" (1999). A4 uses library computers with Microsoft Word 2016 installed. At home, he said his laptop has Microsoft Word 2010 installed. A4 found saving the files he creates in Word 2016 as Word Document (.docx) are not readable in Word 2010. He needed a format that was backward compatible to Word 2010 that could be created in Word 2016. He found a workable solution for creating documents in Word 2016 as Word 97-2003 (.doc) files. But .doc files take a very long time to load on library computers because Word 2016 needs to run in a Word 97-2003 compatibility mode. A4 has run into this issue before and found a workable solution that is not ideal, but still allows him to create a digital archives of Word documents.

This is the text from the interview highlighting the issue:

[A4 plugs in thumb drive]

> A4: It will take a few minutes to come up. This is the problem, this one take a while getting on to. There it goes. Flash drive. This is going to come right up. Something I don't understand is it has to copy the Word .exe files, it doesn't make sense to me, nobody here has been able to explain it to me…
>
> A4: It's ..See this is what I mean.
>
> Interviewer: Microsoft Professional Plus. This shows up on every… You're saving this as a Microsoft Word 97-2003 document.
>
> A4: Yeah, I have an older version of Word, I have 2010 on my PC.
>
> Interviewer: 2010 or 2000?

A4: 2010. The only way it's compatible here is to save it as an older document. You can always bring it, you see a 2003 document, you can always bring it up, but if you save it as a 2016, you cannot open it in 2010.

Interviewer: There should be another document format between 97-2003 and then…there should be a 2007.

A4: I think so, I have 2010 at home. You have to save it as a much older file.

Interviewer: But if you have 2010, you should be able to save it as a 2007 file too.

A4: Oh yeah, I didn't open up a much older document here, but if I save it as 2016 I can't open it at home…

Interviewer: Right, but there should be [another format to use].

A4: Yeah, but I don't know. Believe me, I've asked.

…

A4: I don't really have time right now.

A4: I've asked and nobody's come up with an answer.

Through the discussion it is apparent A4 has encountered this many times. He has asked multiple librarians, and either they gave a partially understandable answer or he remembered only part of their answer. Word 2007 or Word 2010 on his home computer should be able to read .docx files created in Word 2016. But A4 has experienced issues with .docx files and found a workable solution saving .doc files. Either someone from the library, or A4's usual tech help providers, his niece and her fiancée as mentioned in the interview, should be able to load the converter software to his home copy of Word 2010. At the time of the interview, no one had resolved A4's issue of installing a converter on his home software.

As apparent from the interview, this format issue baffled me. Again, I played the role of an expert when I should have focused on observing A4's tasks. His problems should be addressed using a newer format than Word 97-2003. It also highlights a major problem for saving Word files and migrating data to newer technology: backwards compatibility between

software. The problems experienced by A4 also raise questions as to when libraries should upgrade software. In focus group responses, the IT director of the library felt that keeping up to date with current technology is a duty of the library. But how up-to-date is good, especially for patrons that use aging technology elsewhere?

The user has come to an ad hoc solution for his problems and does not want to investigate a better solution. In this example, the plans and expectations for library staff and technology staff do not mesh with the user experience in their library. Additionally, the problems experienced are at the intersection of what works on a user's personally owned devices and the library owned devices. If A4 brought his laptop to the library, would the staff help investigate the use of .docx formats on his machine? Would librarians be able to solve the configuration of his home laptop to work with files created from library software?

The use of privately owned devices which were not brought to the library in order for staff to provide technical help and library-provided devices with different operating environments created confusion, misunderstanding, and conflict. On the positive side, A4 has found a workable solution—maybe that is the best result. In the future, the problem of needing to save content in an older format for use at home may disappear, as A4 has plans to buy a new laptop. He also has plans to allow Best Buy to migrate his old data from his laptop to the new machine. As for migrating data formats from the 97-2003 Microsoft Word .doc files that already exist in his archives of news stories, A4 did not mention an alternate plan.

Another user's experience with library computers demonstrates how the method used to complete a task was completely different than the most straightforward route. B4 came to the Beverwyck library because her Excel subscription had lapsed and she had to do some work for the Parent Teacher Organization (PTO) of which she is a member. She accessed email "kind of

sideways" to get Google Docs spreadsheet to convert to Excel to be exported as a .csv file for import into the email blast system the PTO uses.

> Interviewer: So if the PTO stuff were in the Google Numbers, or Google Docs, could you have used the Google interface through an internet connection at home?
>
> B4: Uh hum.
>
> Interviewer: But you wanted to do it in Excel here on the library computers?
>
> B4: Yes, in order for me to get the information that we had compiled in our Google Doc into our Email Blast system so that I could email for volunteers or email for hospitality people or send out our PTO newsletter, that program requires it to be in a specific format.
>
> Interviewer: The CSV.
>
> B4: CSV and that program I can only get to through Windows, I mean Microsoft.
>
> Interviewer: I wonder if Google Docs has, you can save it as an .xslx file. And you can download it as, is it a .txt file?
>
> B4: I don't know, I'm so new to Google Docs in playing around and trying to figure it out and trying to get things to work I am learning a whole lot more. This is the one thing I wasn't able to figure out how to do. In order to save time, I knew I could come here and do it.

The comma separated value file format required for importing a file into the email blast system would be logical for system programmers. The comma separated value format is an open, non-proprietary format compared to Excel's proprietary .xslx file format. Many programs B4 had access to at home could open an .xslx and convert it to a .csv upon saving, including Google spreadsheet software or Microsoft Excel online. But B4 was working under an assumption that .csv was something only creatable by the desktop version of Microsoft Excel. So she came to the library because she "knew [she] could come here and do it." Her problems may have extended from a misunderstanding of the .csv files format as well as working on unfamiliar library computers.

When I observed her on the computer she ran into a number of issues trying to access her data on the library computer's desktop version of Excel. She successfully opened the program using Excel online, something she could also have done from home since her laptop computer had Wi-Fi and the online version of Excel does not require a subscription to use. She could have also downloaded the file in Excel online into a .csv file, or she could have opened the file in Google's online spreadsheet editing software and saved the file as a .csv. Instead this is the narrative of about ten minutes of her work on library computers:

> B4: This worked yesterday… [tries something different.] Come on…[tries again] I swear this worked yesterday. I'm sorry.
>
> [trying to access file using OneDrive as a file drive in Windows Explorer after logging into OneDrive]
>
> B4: Really. [asking her to log in with OneDrive credentials] This is not my morning.
>
> Interviewer: It worked!!
>
> B4: Yeah.
>
> Interviewer: I just want to ask one question and then I will let you work. You went on Outlook 36[5] OneDrive and you couldn't connect the software on the hard drive to your OneDrive to open the file. Then you tried to copy and paste it. And you copied in the web interface and it wouldn't paste in Excel. Then you were able to go into the file in OneDrive, right click, and choose Open in Excel. Then you had to enter in your OneDrive credentials, your username and password for OneDrive. Then you had to approve you were going to open it up in Microsoft Office 2013 and then it took a long time, but it opened up.

Many of B4's problems arose from completing an unfamiliar task on an unfamiliar machine. B4 was trying to accomplish difficult tasks with cloud-based software, data reformatting, file format, software licenses, and public access computing rules and software restrictions. In the interview, I tried to help her think of how she could have converted the .xlsx file into .csv in Google Drive and Google Docs, but I specifically remained silent during the observation period when she accessed her desired file in Excel Online and then worked to bring it to Excel 2013 on the library

computers. She found a solution to her problem and experienced a positive result: converting her file to .csv for upload to the email blast software, but the path she took was circuitous. On her home computer, she would have been able to download the .xslx file from Microsoft Online directly to her computer's hard drive which would already be connected to her Windows Explorer quick access menu. She would not have to validate her credentials again to download the file as she need to during this example. When asked about requesting help from librarians in this interview, which in this instance would have made things much easier, she said "if I don't know how to do something, if it should be going one way, and it's not working for me then I will ask for help." But two days in a row she attempted tasks on the library computers and successfully completed them. She did not ask for help on either day and seemed satisfied with the outcome.

Particular Circumstances of Digital Literacy Skills and Librarian Staff as Experts

All interviewees engaged with library staff at some point in their past to learn about using public access computers, scanners, printers, external media, external drives, headphone, library software, and other library services. All interviewees also interacted with library staff to receive library cards—a requirement to use many library services. Many users interviewed visited the library because librarians offer even more help explaining general technology functions of software and hardware. Library patrons who depended on the expert help provided by library staff include B1, A3, B5, and B6. These individuals expressed limited digital literacy skills due to limited experience with technology, little technology education, age, or familiarity with digital devices. Suchman noted the organization of situated action is an emergent property of moment-by-moment interactions between actors, and between actors and the environments of their action" (1987). Interactions between library staff and individual users as well as how users engaged with

library computers resulted in a variety of behaviors. The social position of "librarian as expert" is a structure in the Transformational Model of Social activity and has additional implications for personal digital archiving that will be discussed in future chapters.

Some actions I observed were different than were planned by system designers because of the digital literacy skills of users. A3 described how she would use library computers to print documents emailed to her (at a cost of $0.10 per page) and scan the documents to email them to another party to complete real estate transactions. She describes how one day she went home and realized if she received a document in electronic form, she could also email the same document to another individual.

> A3: A good thing they taught me how to do. I could take this and I could print/scan. You know, at the library. So I would scan it in any everything to everybody's email. And then one night I was in bed and I said. Damn, all this computer, why I got to print and scan? And I just wrote this stuff to them in an email. So I came in and they said, oh you could do that and I said, why you didn't tell me I could do that? I got to go home and think about stuff. So now I know how to do that.

A3 encountered many issues using general tools such as email and other internet applications as well as, library-specific printing software and hardware. She specifically mentioned many library staff members by name that aided her in completing professional and personal tasks that she called "my team."

A3 does not purposefully engage in personal digital archiving on library computers or on her own laptop (A3). She prints materials or shares electronic documents sent to her via email. Using the library computers for printing shapes how she engages in paper recordkeeping. Her digital literacy skills and use of library computers prevent her from active engagement in digital archiving. The user, A3, is a real estate professional who came to the library for our research interview and with a task to find an email with an attached mold inspection report she was

expecting, print it, and forward the document to two people. She had looked at home for the email using her home laptop computer and Wi-Fi and did not find it.

During our interview and observation, she then asked for guidance from me to "make a copy" of the document and email it. I understood "make a copy" as her desire to download the digital version of the file and keep a copy for herself as well as attach it to another email to the other realtor and attorney. She meant she wanted a printed copy, and decided she actually wanted two, one for herself and one for her client.

Printing became an even bigger struggle for her as the system for printing had recently changed. The library recently added a print release station to all locations as a second step in confirming document printing. Before the addition of the print release station, users would select a file to print, submit a print command in the software, confirm printing using the SAM system to remove money from the user's library account, and then physically print the file. Now a step is inserted to confirm which jobs to print at the printer station (in addition to the confirmation on the computer). When selecting two pages to print, A3 walked back and forth between the circulation desk (to add money to her library card), the print release station attached to the printer, her public access computer, and the printer multiple times. She finally enlisted the help of the library employee staffing the information desk. The library employee directed her to "ignore that" referring to part of the printing instructions on the print release station. Finally, she printed two copies of the document, for a total cost of $0.40.

When asked about her experience with the printer and the change in technology and asked if she would change any of those things she said:

> A3: The system that we had before when you just type in and print it, as long as you have money on your card. This here thing, I don't like this. You gotta scan

> the card, and you gotta, the money problem I don't have a situation with that, but you know, sometimes I'm in a hurry and if the money's there I just want to go in, type this stuff and print it. Then I go to the machine. Now I got to put my library card in all over again. If I want to add money, I have to put the library card. They've made four or five steps when it was simple… They done took simplicity and made it complicated--for seniors.

Printing is an example where the software and hardware configuration at the library is completely different than how printing occurs on home computers. Additionally, the process at Fort Orange Public Library increased in complexity providing even more confusion for some library patrons.

Completing the tasks A3 planned—find an email, print an attachment, and email that attachment to two others—should have been a linear process taking no more than five minutes. But in practice, A3 followed a circuitous, winding, haphazard method to achieve the same end result.

B6 depended on library staff to help him recover his email password that he changed at a different library and did not record earlier in the week. B1 requested frequent help from library staff members—librarians and technology specialists—to reformat audio and video files for preservation and reuse. I observed and B1 repeatedly described asking for guidance from library staff. During our interview B1 tried to open his video recorder files using Microsoft Access and Microsoft Word.

Through interviews and observations, I was able to discover what brings users to the public library if they owned devices that connect to the internet, how they use public access computers, if they save files on library computers for future reuse, how they learned how to use library computers, and if they would change anything about library procedures. I discovered

quickly that library users respond to particular circumstances of the public library environment, in haphazard and circuitous ways. I also revealed structural relationships between staff-user as well as user-user relationships that shape how individuals carry out personal digital archiving in public libraries.

The experiences of library users presented in this chapter show clear limitations to personal digital archiving or an increase in effort to complete archiving tasks because of the technological and social structures of using shared computers. From the user's perspective, the constraints—library policy, software features, technical configuration, digital literacy—of using library computers merge together and there is no clear delineation between what structural constraints are library created and what exist outside the control of the organization. Disentangling constraints would require extensive organizational and technical knowledge that the users do not have. Therefore, users experience the variety of structures at once within the TMSA of the public library.

Chapter 7: What is the Status of Personal Digital Archiving in Public Libraries?

In this chapter, I investigate personal digital archiving from the users' perspective to discover if users are practicing archivally-focused personal information management at libraries. I investigate agent-object interactions and agent-agent interactions to further describe personal digital archiving in public libraries and I answer the questions: Are people using public access computers in libraries to create, manage, and access in the future personal records? Or are individuals simply using library computers to perform transitory tasks rarely resulting in personal archives? After interviewing seventeen library users and conducting focus groups at two case study locations, it is clear that the majority of library users in each case study use public access computers for personal digital archiving. Use of public access computers is not preventing library users from engaging in personal digital archiving, but the process and outcomes are changed. Most users approach their digital records with a future focused archivally-oriented mindset. Some individuals, however, do not archive digital materials at the library. Most library users conducting personal digital archiving activities at the library kept their files using a combination of cloud-based software and removable media, but rarely invested time and effort in managing them. Users visited the library because library staff provided expert help in conducting tasks. Additionally, their interactions with library computers demonstrated a situated action model of completing tasks. Most users accomplished tasks by trial and error until the task was complete instead of following intended plans, expectations, or institutional design.

User Activities for Personal Digital Archiving

During interviews, I discovered that at least some users are engaging in archivally-oriented personal information management using library computers. Most users were engaging in personal digital archiving at some point in their previous visits to the library and conducting

personal digital archiving on devices they owned as well. Other users engaged in personal archiving of paper-based materials, but not personal digital archiving, and some users engaged in personal digital archiving using their own devices at home but not using library devices.

Table 7: Status of Personal Digital Archiving Among Interviewees

Where do interviewees conduct PDA?	Library Interviewee*
At home only (2)	B6, B7
At library only (1)	B1
Both (11)	A1, A2, A4, A6, A7, A8, B2, B3, B4, B8, B9
Neither (3)	A3, A5, B5
Note: *A=Fort Orange Public Library Main Avenue Branch; B=Beverwyck Public Library	

In both case studies, most of the users interviewed conduct some type of personal digital archiving while using library computers.

For the two users (B1, B5) who did not own devices that connected to the internet, their only access to the internet came from use of the library's public access computers. For B1, limited access to the internet through library computers did not deter his interest in keeping digital files. He owned a digital video recorder and actively managed his SD cards with still images and video recordings of his life, including band rehearsal, band performances, bike rides, and other daily life activities. B1 told a story of how using library computers—specifically a laptop with unlimited time—and help from library staff led to his performing in one of the most important shows in his life.

> B1: There was a few years ago, you know that concert hall down in Woodstock. Bethel Woods, '69 Woodstock. I said to myself. I'm going to see if I can get a gig at the big Woodstock. You know they had Ringo Star, Rhianna, all these big

> people, Elton John, they've played a lot of people. Let's see if I can get it. And I got in. But I spent three weeks over here with a laptop and it was so great. Of course [library staff member] helped me out. He's like a wiz.
>
> Interviewer: He's good.
>
> B1: He can deal with me. He probably knows I'm a nut because I'm a musician. So you know musicians are driven. By using the laptop... I got through to these people. … I had stuff from old recordings and it was so great because I managed to go through and get them on what I needed to get them on however, there was a clincher… It was the blocking mechanism from the copyright laws or infringement mechanism…I don't know what he did...It was all due to having access to computer at the level I mentioned. I don't think in any way, shape, or form, I can't imagine how else I would have gotten this done and had the honor to have played and performed at one of the biggest, most famous venues in the world. I did it. …

Library user B5 does not own a computer either. She visits the library nearly every day to use public access computers and read the printed newspaper. B5 was offered a computer for her retirement but she chose not to accept it because "I don't know what to do with it once something happens to it. I need to get all the supplies, and if I need to know anything or to do a different activity or whatever, I can get all of that at the library. What more could you ask for?" However, her lack of a home computer shaped her desire to keep digital files in the future.

> B5: Yes, but, see, I really wouldn't want to keep it because what would I do with it? I would just have it here. But this isn't my home… I don't see for my uses putting it on, to save it on the computer. I think if I were at home and maybe had people coming to the house or something then I would show it to them on the computer.

Her work as a retired nun focusing on pastoral care for those in hospice also shaped her interest in archiving digital objects. Further, in the interview she describes a recent hospice care visit and her role for the family.

> B5: Cancer. Liver cancer. And a variety of those kinds of problems. But you're just there. … but it all moved so …They just didn't know... [My role], it's just to be the support there. Then the wife and her husband left, shortly after. They packed up all his things and that. But the boy stayed, the son, he wanted to stay

> until after the undertaker came. So I stayed in the building, I didn't want to stay with him, I wanted to give him his space so actually I was there until 7, 7:30 until the undertaker came. You are just there, that's it. …
>
> Interviewer: So many of my questions are kind of keeping things and holding on to them. And it feels like so much of what you do is motivated by the present and being present for people in a time when they need it.
>
> B5: Yes, keeping what's on my line is not, on my email or whatever, is not important to me. If that were erased, I wouldn't [mind].

She had no long term attachment to digital files and would rather create printed copies of her correspondence and pictures about family and parishioners in her life. For B5, library computers provided free access to the internet, allowing her to continue her pastoral care work in retirement. She used library computers to receive and reply to email requests for visits to hospice patients and leave electronic messages on funeral home message boards for those who have recently died. Despite B5's lack of interest in personal digital archiving, she did value one set of records: her email address book. While observing B5 use public access computers, I noticed she depended on a function of her web-based Yahoo! email that suggests email addresses to include in correspondence based on the groups emails previously sent.

A3 and A5 also did not consider the need to digitally archive their files. A3 is a real estate broker who allowed me to observe her work during an active contract negotiation on property where she was representing the buyer. A3 did not keep electronic files of her real estate correspondence and instead kept printed files at home, but A3 could envision a future where she would need to use electronic copies of documents to speed up her processes.

> A3: I don't keep an electronic version, I keep a hard copy. Which is the next thing I'm going to have to do. To take those electronic things and keep them in a file for myself. The ones to refer back to. That's my next thing I gotta let [librarian] know we gotta do.
>
> Interviewer: And why is that the next thing you would like to learn?

> A3: Because, for the next client down the road, instead of having to…I can always have the paperwork when I do the contract. Which is also now on the computer. When I do that, if I have the file or certain document I can just attach that and make things go faster.

For A5, printing is his only preservation strategy.

> A5: Let me put it this way, which is a little different. There's some really crucial file or document, I'll print it out in hard copy. Because otherwise I'd be afraid I would lose it, or delete it by mistake, or something could happen. So, anything that's really important that I really wanted to save for 5 or 10 years it's in hard copy some place.

Some individuals in the research create and manage personal digital archives of digital materials at home, but did not save digital files while using library computers. B6 does not save files at the library because of his perception of the library as a research institution and his interest in privacy. B6 does not actively email and when he does, he uses a personal tablet with internet connection. He owns a laptop but does not have access to the internet at home. His security and virus protection software licenses expired on his laptop, so he no longer uses his laptop to go online—except for the day of our interview when he visited the library because he needed help from library staff to reset his email password. He uses public access computers at Beverwyck Public Library for researching his genealogy.

B6 uses Ancestry Plus on public access computers "but you don't have to log who you are into it. If I did I'd probably wouldn't use it I don't need it I don't want that information out there. I'm a fairly private person." B6 also researches Native American and Mohican Tribe history since he is a Native American. Whenever B6 finds research materials he would like to save on public access computers, he prints a copy and files it in file cabinets at home. When he was using his laptop to perform internet searches before the security licenses expired, he stored electronic copies of files there. He integrates the print and digital by handwriting notations on the

printed copies of his files "check the computer for such and such." B6 also keeps multiple copies of his electronic files, photos, and personal documents created on his computer and tablet.

> B6: I have hundreds and hundreds of pictures on there…I do have backups. I have a flash drives…With me, with any of this junk, I think, I need a second backup. …The way I do things, I know all this stuff gets outdated anyway in three or four years. All the SD cards were new in the last how many years? And the flash drives—they were new how many years ago? And before that, the disk, the round disk what do you call that?

B6 actively manages his paper and digital archives. He is aware of how to use media to transfer content from library computer or work computer to home computer, but B6 prefers to change his preservation practices based on the equipment and location he uses for privacy and security reasons. Using public access machines in the library, B6 does not keep digital files as he would if he were using his own laptop.

Public library computer user B7 considers his privacy when using computers at home and at the library. He uses library computers at multiple branches for quick tasks if he is near a public library and has left his laptop someplace else. B7 also specifically conducts searches on library computers to prevent data from being stored on his own computer if he's planning to purchase airline tickets. B7 "learned somewhere" that browsing for airline tickets on a computer before buying can sometimes increase the cost. To get the best price, B7 will use library computers to research flights before buying them at home.

Benign Neglect and Accidental Archiving

Many library users knowingly—or unknowingly—used public access computers for creating, editing, or managing files that they planned to use in the future, although they did not usually know how they would use them. When asked a series of questions about whether a library computer user planned on accessing documents one, five, or ten years in the future,

eleven of the seventeen interviewees wanted to reuse—or at least save documents they created today—even if they had no clear understanding of what they were keeping or how they would get back to it. Three users raised issues of their own mortality when asked about future access of files in five or ten years.

B2 keeps documents he works on at the library so he would not have to duplicate efforts creating new documents for teaching, even if he cannot fully remember what he is keeping.

> B2: I don't know, um. Hopefully? Hopefully, I'm not just reinventing and reinventing and creating more things I can use. It seems often, more like an as needed develop something and go back to it.
>
> Interviewer: And ten years?
>
> B2: Ten years? I mean yes and no, I end up keeping things with me, I mean I've gone back to that thing I forget that I keep. Probably the problem with not organizing my Google Drive more is that I, there's a lot of stuff that I keep on there that I don't remember that is on there …so I go back to things. So I could see that.

Not remembering what was kept serves as a sort of benign neglect preservation strategy. There's an interest in keeping records because they might be of some unknown use at some unknown time. B3 describes a particular piece of digital media.

> B3: Oddly enough, I still have, for some reason,…a 3.5 inch disk sitting on my dresser. I have no idea of what's on it and I have no way of accessing it.
>
> Interviewer: It's still sitting there? Would you believe [the library has] an external three and a half inch floppy drive…
>
> B3: Well, it's. There's also that mindset, you are cleaning something out and you find something and, huh, I need to keep that. I might use it someday. You haven't seen it for twenty years. Whatever's on that disk, I haven't seen it for fifteen years so if I were to lose it, it wouldn't be the end of the world.
>
> Interviewer: But you still like knowing it's there?
>
> B3: I just haven't thrown it out.

A6 expresses the same sentiments about the appraisal and preservation strategy of benign neglect:

> A6: Oh, I want to look something up that I wrote from before, I have some letters, and sometimes I'll find something that I haven't seen in a while. I expect. It would be a tragedy if I deleted everything.

When Benign Neglect Isn't Benign: Accidental Loss and Use of Public Access Computers

A7 did lose everything a few times depending on online storage from two vendors: MySpace and Gmail. After not using his MySpace account for a number of years, he logged back into the software to find he lost everything.

> A7: MySpace went through a transition of just going to just basically a media type of thing, they kind of deleted every file. So when I logged back in after several years, they kind of gave me a note like "We deleted all of the pictures or whatever we transferred over to a media type of thing. You know you are still welcome to use MySpace, but you have to just upload new pictures."…
>
> Interviewer: So, if you were using MySpace and they deleted your files and you can't get to those anymore, but you are following the same practice of keeping files on Tumblr and Facebook, are you worried that Tumblr or Facebook could do the same thing that MySpace did and your files could be deleted?
>
> A7: That's why I kinda, learned from trial and error, and I saved them on my tablet.

A7 also experienced a loss of data when he was locked out of his Gmail account because he was using two public locations to access files and forgot his password a few times. His use of computers at Fort Orange Public library and the Department of Labor's One Stop Shop left him vulnerable. Gmail's security policies are designed for users who log into their accounts from one main location. A7 found a way to recreate his resume data, but use of his accounts on various public access computers caused issues with accessing his Gmail account.

Through interviews and observations, I was able to determine most public access computer users conduct personal digital archiving in libraries, but some components in

public libraries make personal digital archiving more difficult when using public access machines. The limiting factors to accessing the internet and digital archiving are discussed in the next chapters.

Chapter 8: What Structures Shape How Individuals Access Technology and the Internet at Public Libraries?

Understanding that users do engage in personal digital archiving practices using library computers, this chapter investigates the structures in place in public libraries that shape both access to the internet and technology. Understanding how users access the internet and technology at public libraries is crucial to understanding how public access computer users engage with digital recordkeeping, because access is a precursor to creating, managing, maintaining, and using digital archives.

According to Fulkner and Runde's view of Bhaskar's Transformational Model of Social Activity, agents interact in the TMSA with three types of structures: social rules, social positions, and social relations. These three structures were apparent in investigating events related to access in public library settings.

Social Rules

Formal rules instantiated as AUPs governing user and staff behavior in public library settings have been discussed in previous chapters. In addition to formal rules, informally created rules of computer user procedures were investigated in this research and contribute to how individuals access public computers.

Acceptable Use Policies

The most official set of structures users encounter when trying to access public computers at a library are the computer use practices and Acceptable Use Policies. According to focus group comments from both case study libraries, Acceptable Use Policies were written to

- hold the library legally harmless in case of damage to a patron's possessions after using the internet at the library;

- hold the library legally harmless if a patron engaged in illegal behavior (child pornography transmission, hacking, proliferation of undesired advertisements (spam), stalking, or identity theft);
- provide the library a way of removing a patron from internet access machines if the patron was viewing inappropriate (pornographic) materials;
- declare if filters were used or not, for compliance with CIPA and to received federal funding;
- let staff know AUP restrictions applied to them as well as patrons; and
- declare that information on the internet is not managed by library staff.

The policies are used to provide this information to patrons at least once when users log onto public access computers at Fort Orange Public Library and every time a user logs onto a public access computer at Beverwyck Public Library. Staff use the policies to remove patrons from the library if they are viewing objectionable content, in the opinion of the staff member, or to remove library users who are circumventing login screens or breaking other library rules. These policies guide interactions between users and staff and have implications for social positions.

Computer Use Procedures

In addition to Acceptable Use Policies, some libraries had written Computer Use rules regarding specifics on using library equipment. A requirement for the library card to be in good standing, without fines or fees above a certain threshold, can be part of Acceptable Use Policies, and it was for seven libraries in the sample, or part of computer use rules as it was for other libraries in the sample. Computer use rules also dictated how much users could be charged for printing, between $0.10 and $0.50 per page depending on color or black and white prints, and

limits on how many pages can be printed. Table 8 shows a comparison of computer user rules at both case study libraries.

Table 8: Comparison of Computer Use Rules between Case Study Sites

	Fort Orange Public Library	Beverwyck Public Library
Printing costs	$0.20 per b/w print $0.50 per color print	$0.10 per b/w print $0.25 per color print
Visitor passes	Unlimited, $1 per hour	Available for two hours per day, free
Library Card in Good Standing	Library cards must have fines below $10.00, no lost materials, updated contact information and Personal Identification Number, active	Library card number exists in ILS database, no other requirements
Payment Software	Payment is through money saved to library card account. Money (cash, check, or charge) is applied to account from circulation desk	Payment in cash, check, or credit card handed to information desk or circulation desk staff
User Management Software	Smart Access Manager (SAM) from Comprise Technologies	PCReservation from Envisionware
Printing software	Print release station using library card from SAM in library	Print release through code entered on keypad in library
Wireless printing/ untethered printing	Through downloadable Comprise Wireless Printing software. Only for use onsite	Though Print Where driver for onsite use OR through website upload or email
Time Extension	Patrons can request more time from library staff.—Only some branches allow time extensions	Patrons are provided a pop up message on library computers if they would like an extension. Patrons can request more time from library staff.
Express Computers	Patrons can use 2 Express standing stations without chairs for 15 minutes. Must wait 15 minutes to log onto library computers. 15	Patrons can use 2 Express standing stations without chairs for 15 minutes. 15 minute time limit softly enforced by Library staff.

	minute time limit enforced by software	
USB Devices	USB devices are allowed to be used on library computers	USB devices are allowed to be used on library computers
Filtering	No content is filtered, except by staff interaction	No content is filtered, except by staff interaction
Use of P2P software	If P2P software is detected, connection is drastically throttled so data transfer is almost impossible	Torrent software not allowed
Acceptable Use Policy	Requires acceptance at least once. Stored in login software if AUP was accepted	User must agree each time user logs onto computer

Often computer use rules require a library user to agree to the Acceptable Use Policy as presented to the user before logging onto a computer. Some libraries keep a record of whether a user agreed to it; others require users agree to the policy each time they log in.

Some computer use procedures are written and published. At Fort Orange Public Library, computer user procedures are online on the *Use a Computer* page. At Beverwyck Public Library, computer use procedures are not written, but they are verbally shared among staff and are part of new staff member training. Fort Orange Public Library visitors must pay $1.00 for a visitor pass and cannot have fines or fees over $10.00. Notably, three Fort Orange library users interviewed who had library cards still paid $1.00 for visitor passes. These limits can disenfranchise library patrons. Blocking access to computers based on money owed to the library puts up inequitable restrictions on the patrons who are most dependent on library services. As stated by the Library of Michigan in their 2014 guidelines regarding charging fees to access the internet:

> Finally, the policy should demonstrate that it is related to the desired end: does the policy, for example, limit access because demand exceeds capacity or because the individual who wants to use the equipment has book fines that have not been

> paid? Allocation of limited resources is likely to be considered reasonable, while a correlation between fines and use restrictions would most likely be seen as punitive and possibly discriminatory.

The Beverwyck Public Library does not limit access to public internet computers based on patrons' fines or money owed. As stated by a Beverwyck library administrator

> BFG1: Nope. We made a purposeful decision and one that hasn't changed since the first moment we instituted this—we had a lot of discussion, we talked all about this a lot: the computer is an in-library resource. …but that the internet access on the computer was an in-library resource that we wouldn't restrict using circulation rules any more than I would restrict someone using World Book Encyclopedia or looking at a magazine. It's a service that's available if you are in the library. You can't take it home with you, it's not like we are offering you a check out. [There's] no risk to the library except the time of the service.

This is acknowledged and also a point of concern for Fort Orange Public Library administration. As noted by a staff member in a focus group:

> FOFG1: And I've seen too many people who are running into the door of the library because they need us as a service that we are selling… needed. I like to say we are the digital safety net for the community where everything is digital, and what you have is people who are running into the library and five years ago they didn't replace, Thong on Fire and they need to get this application done or they need to get something printed out and all of a sudden they are told they can't do it because they owe fines. And you see that more and more.

At both libraries, computer use rules are codified within the library software. Social rule structures are enforced by objects changing structures of social relations between user and object. SAM and PCReservation are programmed to enable computer access for patrons depending on each library's rules. Both tools are programmed to delete files added to the computer's hard drive upon reboot. In other words, library computers boot from a standard profile and patron added files are wiped with each reboot. However, when a user logs off a session, the computer files remain on the hard drive until the computer is turned off. This

practice was chosen for the speed at which public access computers need to turn over from patron to patron, and to prevent users from being accidentally logged off and all of their files wiped. This way, if a user makes a mistake, there is still a copy of the files they were working on—if saved to the hard drive. As older computers are replaced by newer computers with faster startup times, rebooting computers between sessions becomes more practical. But wiping files on reboot only instead of between sessions also retains hidden computer files such as cookies and accidentally stored login information on websites, some of which are commonly used by many patrons including, Google, Gmail, Yahoo! mail, Facebook, Twitter, Instagram, Microsoft Outlook online, Microsoft OneDrive, Google Drive, Blogger, WordPress, and Dropbox. Library users I interviewed mentioned how frequently they check to make sure they do not remain logged in at the end of a session. A7 also said he would write emails to individuals from their own account if the account remained logged in on the library computers to remind the first user that their account was vulnerable if not logged off. After writing an email to the logged in user, he would log them off. B5 mentioned how a friend of hers at the library saw another user accidentally log into B5's Yahoo! email and the friend mentioned it to the Information Desk librarian to pass it along to B5. That is how B5 discovered to log off her accounts after using library computers and how to deselect the box that keeps users logged in. The experience of B5 shows disparity between agents who understand social rules and those who do not. Configurations to the computer which at the time allowed B5 to remain logged into a public computer after her session ended, were made aware to her by library staff. Unaware of software configurations, B5 was vulnerable to exposure of private information.

After mentioning issues with saving user data in internet browsers to Beverwyck library administration as part of this research, the IT department clarified that in the past two years

internet browsers on public access computers have been configured to remove cookies and stored passwords upon closing. Beverwyck Library patron experiences described in interviews occurred prior to the configuration changes. However, this bring to light issues with knowing—or not knowing—how public access computers are configured before library patrons use them. Computer configuration changes or procedures codified in systems are not transparent to library staff or users.

Internet Use Policies at both library case study locations specifically deterred customers from conducting personal transactions. Fort Orange Public Library has a "WARNING" preventing conduct of personal business on library networks. Beverwyck Public Library's Internet Use Policy does not warn against conducting personal business over the internet at the library; however, the version of the Internet Use Policy on the signup station and on individual computers which users click "Accept" when they log onto the internet or sign up for a computer session had a list of tips for using the library computers including a statement on not conducting personal transactions[4]. The Privacy Policy at Fort Orange Public Library also states "Users are also reminded that, when accessing the Library's website from public access computers, the input of personal and/or financial information on a Library computer is done at the user's own discretion and risk. Users are encouraged to safeguard personal information while working on Library computers."

Rules of AUPs and computer use procedures also demonstrate the roles library staff play in interacting with library users. Rules established by the library can place a unique burden on

[4] After discussions with library staff during the research, these tips which were not officially part of the Internet Use Policy were removed from the policy presented to users in PCReservation. The policy presented to users is what they needed to "Accept" in order to use library computers.

public access computer users who need to use library computers as described above that limit their ability to fully participate in educational, governmental, social, and financial activities online. Limiting access due to library rules with little risk involved unfairly limit chances for digital archiving or conducting any transactions online.

Social Positions

In the environment of the public library, library staff act as educators, fact finders, experts, and rule makers, rule enforcers, or rule benders. This social position condenses power at the hands of library staff who work with members of the general public who are in positions of lesser power. The work of librarians as experts was why some users visited the library in the first place: to receive help from library staff regarding use of technology, to find information, or to gather advice on popular movies and books.

Librarians enforce rules, but not always uniformly, which raises even greater disparity between library staff and user. Enforcement of some rules codified in software that shape access to the internet, such as time limits, are not universally followed at all branches or by library staff. Rule enforcement is subjective. The rules are different for each library, each branch, and sometimes the rules change—or situations for breaking the rules change—from one library staff member to the next.

> Interviewer: Do all librarians and library assistants extend the same amount of time, in the same cause, in the same manner?
>
> BFG2: No, once again I think it's a case by case basis.

Subjectivity of librarians enforcing procedures is not unique to time limits. Librarians are forced to determine what is obscene, or inappropriate for library viewing

based on Acceptable Use policies. Librarians make judgments on content of materials purchased for library collections. The Children's Internet Protection Act (CIPA), written by legislators but implemented by libraries, privileges *bona fide research* for removing filters. Library staff make decisions based on the value of work computer users are performing. Many rules mentioned by library staff in both case study focus groups mention privileging homework, test taking, job applications, and research for time limit extensions, offering laptops, free printing, or general bending of library rules.

Identity

The identity of "being a librarian" also played an important role in this study both for the research and the interviewees. As an interviewer, I introduced myself in the beginning of the research recruitment or in the interview as a librarian who was working on finishing her Ph.D. dissertation. A2 and B8 asked questions of me at the end of the interview regarding how to become a librarian. A8 is a working librarian and B6 used to work in a library. Both A8 and B6 conceptualized librarians as people who have information, rather that people who find information. B6 told a frightening story for this researcher about when his friend lost all his data for his Ph.D. and called B6 for help "And he knows I'm not good at computers. But he figured because I work at the library I'd know somebody." A8, who is also a librarian, expressed his own need for acquiring knowledge and using the internet "Part of being a librarian, is that I need to know stuff. …Even though you don't know why you need to know it, even if you don't even know you need to know until you know it."

All users interviewed noted interactions with library staff at some point to learn how to log onto a computer, print, use the Wi-Fi, or sign up for a library card. The social position of

library staff holds immense power over users in daily activities. This can put library staff in positions of gatekeepers or enablers limiting or ensuring access to library services and resources.

But library staff do not hold all the power in the staff/public relationship. Almost all libraries in New York State supported by tax dollars require consent of taxpayers for certain actions. In libraries that are publicly funded institutions (such as school district or special district libraries in New York State), voters hold the power to approve annual budgets and bonding initiatives. Voters also approve trustees to serve on library boards that make administrative decisions about libraries. Ultimately, library staff and library board members are beholden to the general public to support public libraries. The power of social positions changes depending on context.

Social Relations

A third type of structure shaping interactions in the TMSA are social relations. Social relations describe other relations that do not fit the criteria of social rules and social positions. These relationships can refer to the "'other-relatedness' of many items in the social realm, including humans and their activities, as well as social positions and other kinds of entities (Lawson, 2003)."

Institution-Agent Relations

One overarching structure that became apparent in the research was the broad concept of "library" or "public library" as a special place in our social world. John Palfrey describes this phenomenon when he wrote in his book *BiblioTech* (2015), "Survey after survey, anecdotal encounter after anecdotal encounter, shows us that people 'love libraries.' Just as we all love a *memory* of a childhood experience, we love the idea of libraries in general." Most of the individuals I interviewed responded positively to the broader concept of libraries in our

conversation. Focus groups respondents referred to libraries as "digital safety nets" and a welcoming place. B5 told me "libraries are the best places. And when I walk out of here I say to people who are on their way in, I say 'That's the best place to be.'" A5 characterized himself as a "library buff" who visited libraries up and down the east coast and considers them a "hangout."

Additionally, as I interviewed library users in my case studies, it became clear that they visited multiple libraries and brought those experiences to the conversation. Although the research focused on specific case study locations, my interviewees responded about their experiences at libraries in general. Interviewees visited multiple library branches in the multi-branch Fort Orange Public Library (A3, A4, A5, A6, and A7) as well as multiple libraries in the Upper Hudson Library System (B1, B2, B6, B7, B8, B9). Many users mentioned using libraries on vacation or when traveling, specifically A5 and B9. This intense interest in libraries in general in my sample could arise from the users who volunteered or who were referred by library staff as potential participants or that the research participants liked libraries enough to spend their time speaking with a researcher. All interviewees encountered the research while visiting the library for their own reasons, and were compelled to participate in the study for many potential reasons (perhaps a free gift card, interest in contributing to the library, or out of a sense of obligation to support the work of other librarians). Most reasons for participating in the research were motivated by making libraries better. The broader concept of library as referred to by Cavanagh is the "social transcript such that we continue to subscribe to the public library as if it has always and will continue to perform as our cultural platform (2015)." The broader structure of the library as cultural platform directly shaped user perceptions and experiences of internet access and personal digital archiving activities in the library.

The individuals I interviewed were all relatively frequent library users, if not always public access computer users. These individuals had all managed to learn or develop methods of navigating computer access policies and structures. It would be telling, but out of the scope of this research, to interview users who rarely frequent the library to investigate how library structures shape how they learn library rules. The sample of library computer users I interviewed could speak about their experiences engaging with structures in the library to reveal their thoughts and potential issues with use.

Agent-Object Social Relations

In addition to relationships between library software codifying social rules and enforcing rules upon agents in the TMSA, other relationships exist between agents and objects in events of using public access computers in libraries.

Library computers are often used for personal digital archiving if something goes wrong with a personally owned computer. B9 explains her current problems with her home computer and how the library makes it possible for her to archive files when her computer is failing.

> B9: … when we had to reformat the computer and wipe it out. I think that was when I put [downloaded photos] on the flash drive. So I could save them, and then, you know, have them, so I wouldn't lose them when I got the computer fixed I'd be able to put them back.
>
> Interviewer: And when the computer was fixed were you able to put them back?
>
> B9: Yes. That's another thing that's good about the computers here: if you can't get to a computer you can always come here and it doesn't cost anything.
>
> Interviewer: Yeah. When you're deleting everything on your computer at home, are you concerned about the files on the home computer?
>
> B9: Yeah. It's the files, like my dad's got all his Navy stuff. And there's just stuff saved on there like pictures, and then also like, I do a lot of gaming and my mom plays games and some of them you don't like the ones where you log on, Your

> stuff is stored online on the server, but the ones you downloaded, you lose all your progress on the game. And you have to start over again.

Another user, B4 explained her reason for visiting the library: "I had some PTO (Parent Teacher Organization) business I had to do. My Excel subscription expired so here was the place I came to get it done." Both A5 and B6 were experiencing issues and came to the library for help. A5 noted "My laptop is not functioning right now. It hasn't for months and it's more convenient for me to go to the library." Public access computers in the library filled a social position of personally-owned objects when not fully functional.

Pop-up messages from library software caused many issues of access and use for patrons. Multiple library users at Fort Orange Public Library Main Avenue branch described their dislike of pop-up warnings that indicated a computer session had been idle, when patrons were actively using a computer. B1 received a pop-up while playing a computer game called Dead Frontier claiming his computer session was idle for 15-minutes, even though he was actively using the computer. This caused him to "get hit and killed" in his game. A3 was actively working in her email when the pop-up appeared and, said "When that little thing comes up here it gets me nervous." A6 specifically asked to participate in this research project because he wanted to comment on his experience with the "device idle" pop-up messages.

> A6: Yeah, I mentioned that before, I generally don't like this idea that you've been on for two minutes, and we'll cut you off. This is the only library that has it.... Sometimes there's a whole page and I really want to read it. It doesn't happen in the [other local] library, it doesn't happen in [Beverwyck]. I just wanted to read that thing and I feel like I have to rush what I'm reading because the thing will come up again.

When asked about these messages, one Fort Orange staff member noted "We don't want patrons to leave things open, get up and walk away, and then anybody can see your, or even identity theft of a patron if they are logged into their own Facebook or Gmail." When pressed about the

message appearing even when users were actively using a keyboard, the staff member first assumed the patrons was doing "something unsupported" and then declared "we'd rather have that policy than not." This is a clear example of policy not aligning with use or patron satisfaction. Not all pop up message boxes were negatively received by patrons (including messages of time remaining below 5 minutes) but messages that seemed unclear or inaccurate were more of an annoyance than instrumental in using the computers.

Agent-Agent Social Relations: Physical Space

Physical space presents a limiting structure for accessing the internet because it limits the number of internet access stations available. Space also helps define the physical orientation of library computers. Both libraries in the case study are hoping to meet demand for pubic computer access with portable Chromebook laptops which can allow portable use of computers around the library. One notable difference between using desktop computers and Chromebooks is the physical layout of the device. Desktop stations have a larger screen, a separate keyboard, and computer mouse. Multiple interviewees mentioned how they like the library desktop computers because of the physical characteristics of the devices with a larger screen than their laptops, tablets, or phones.

Another aspect of structures shaping access in public library spaces is the presence of other users. Being in public changes how users access the internet. It alters what library users view, which physical libraries they like to visit for certain tasks (depending on the physical space of computer carrels), if they sign into their email, and if they sign into social media sites. The presence of other users and the noise they create can affect how long individuals remain using computers. This may be by choice (because the presence of other patrons bothers a user) or by library rules and practice (if other users are waiting for a computer.)

Agent-Agent Social Relations: Privacy

Many interviewees expressed concern—with different interpretations—for their private information when using public computers. Concern for information security is why B7 does not log into some websites on library computers, such as Google Chrome. However, her limit for personal information exposure doesn't prevent her from logging into other sites such as Facebook.

Patrons' views on privacy and information security are reflected in their activities using library computers. A5 frequently buys items on eBay, Abebooks, Amazon, Amtrak, and other websites where he must use his credit card in another local public library. A5 exemplified one perspective of library privacy; B9 demonstrates the other. B9 does not log into Google for email or to access the Chrome browser settings on public computers. B9 noted:

> B9: But if we go away on vacation, I'm using my own [device], because they tell you not to use a business computer, you can but they tell you not to check your email because that's a public thing, it's not as secure as using your own, you know. I just know how things are nowadays and I don't trust using public computers for certain things. You know, especially with all this stuff about being hacked compromised, I mean if they can hack the government, they can certainly hack my email, so.
>
> Interviewer: I understand.
>
> B9: I just want to be safe. My bank account and my email. Those are two things I don't want people seeing.
>
> Interviewer: When you are looking at Facebook you are logging into that website?
>
> B9: Yes.
>
> Interviewer: Are there any other sites? Have you logged into the gaming website here?
>
> B9: Yeah, I would do that.

For this user, there is a difference between email, banking, and social networking sites that require varying degrees of privacy protections. B9 uses free services from Facebook, Yahoo!, and Google for correspondence or information sharing that mine user content for information, but those privacy risks are lower than potential identity theft from or data capture from another person in the library, or potentially the library itself.

One of the most intriguing arguments for digital inclusion is that access to the internet makes "participation in the online environment a necessity for education, employment, finance, and civic engagement" (Jaeger, et al. 2012). Access alone, through personal devices such as a smartphone or tablet, does not meet the needs of citizens because some tasks are not possible or easy to accomplish with mobile devices (which was apparent from interviews with users and in focus groups). Jaeger and other researchers show public libraries need to provide high-speed internet access to promote digital inclusion and reduce the digital divide. However, many of the activities one would accomplish in the online environment for education (online applications), employment (online applications), finance, (online banking, applying for loans, purchasing goods), and civic engagement (registering to vote) would be the types of "personal business of a confidential nature" that one would be advised against completing in a public setting according to both library Acceptable Use policies at the case study libraries and most other libraries. How can libraries provide true access for digital inclusion if users requiring the access cannot accomplish their private, personal duties at public libraries? If users who feel the library is not a suitable option for engaging in civil, educational, business, or governmental activities using personal information, then their potential for personal information management and personal digital archiving activities are limited drastically. The disconnect between touting public library access computers as the only place in the community for all users to participate in the digital

reality of online education, digital government, internet-based job applications, e-commerce, Web 2.0 tools, and other internet-based social participation and the discouragement of using the library for personal or private communications is the *privacy paradox* in libraries. It is the contradiction in library rules and patron expectations.

Other concerns for public access computer users include privacy risks. "Though access to computers and the internet can provide opportunities to members of marginalized communities, opportunities come with risks, including privacy intrusions and social control due to surveillance. Sometimes risks originate from the technologies themselves; in other cases, they extend existing social practices of disciplining poor people and people of color" (Gangadharan, 2015). Older adults should be added to Gangadharan's list as seven of my interviewees were retired individuals (A4, A5, A6, B3, B5, B6, and B7). Public access computers in public libraries present structures enabling surveillance and control of library users' information. Examples unique to the public library include handing personal information, including credit card data, to librarians to help renew her real estate license (A3) or capturing logs of individual library card holder internet usage through sign-on computer software. Even the library service of providing free copies of IRS forms, as mentioned in Fort Orange Public Library focus group, requires users to verbally request the IRS form from a library staff member, thereby requiring the library user to share with library staff the type of taxes the user plans to file.

The difference between these privacy risks involving library staff members and privacy risks based on information shared over the internet is that librarians have additional social rules to follow, including the American Library Association Code of Ethics. Librarians have dealt with questions, requests for information, book suggestions, and guidance on sensitive tops since libraries opened their doors and became a gateway to recorded information. "We protect each

library user's right to privacy and confidentiality with respect to information sought or received and resources consulted, borrowed, acquired or transmitted" (Statement III in the Code of Ethics, 2008). Perhaps it is time to extend protecting a users' right to privacy across internet networks accessed in the library as well.

As more activities in everyday life occur online, access to computers and the internet are critical to participate in all aspects of daily life. Public libraries are promoted as inclusive places where individuals can reduce the digital divide. However, due to policies, procedures, and contradictory guidance, libraries are not currently providing real digital access when personal activities are discouraged at libraries. Public libraries can address the privacy paradox by 1) recognizing it exists, 2) changing library policies and procedures to prevent leakage of personal information, and 3) creating an environment where public access computers could provide enhanced security compared to use of other Wi-Fi networks or even home computers. Libraries have the opportunity to improve personal privacy protections for library public access computer users as an enhanced service instead of deterring use of library computers for personal digital archiving and related activities.

Library structures of social rules, social positions, and social relations do shape how public access computer users access the internet. Unfortunately, the biggest difference between the purpose of public access computer use—to fortify digital inclusion—and the experience of its limitations on personal activities on public computers due to privacy reasons creates a juxtaposition between access that makes it almost impossible to provide this service as an "Opportunity for All."

In addition to access structures, other structures in the TMSA in public libraries shape events of personal digital archiving. Investigation of the existence and impact of public library structures on personal digital archiving in discussed in Chapter 9.

Chapter 9: What Structures in Public Libraries Shape How Individuals Create, Use, Manage, and Keep Personal Digital Archives?

In addition to the structures shaping how individuals access the internet and computers in public libraries, similar structures shape how users create, use, manage, and keep personal digital archives. A full understanding of the environment of access and related limiting structures, as described in Chapter 8, provides groundwork for investigating if structures in libraries change how users engage with their digital archives. In Chapter 9, I extend concepts raised in Chapter 6 of how people act in real situations using library computers and how their individual actions, and actions of staff, shaped by library structures affect their resulting archives. Through analysis of the three types of structures—social rules, social positions, and social relations—personal digital archiving in libraries can be fully investigated.

Social Rules

Social rules in place at public libraries in the form of AUPs and computer user rules are designed to limit exposure of personal information of users. Users cannot, or it is recommended they do not, store passwords or user names in browsers. Files cannot be kept on hard drives longer than twenty-four hours. It is at the nexus of privacy protection and digital archiving that *migratory digital archiving* is born. To prevent exposure of personal information and to protect user privacy, public access computer users must practice migratory digital archiving, or the potential to store files for reuse separate from the physical instantiation of a particular device. This comprises the events and activities allowing users to use and maintain files they create on public access computers. Users must purposely save files on removable media, in email, or using cloud-based services—three of the six ways to practice personal digital archiving as described by Marshall (2008a). The other three methods Marshall describes only occur using privately owned devices—thinking of system backups as the same thing as a long term archive; using a

succession of My Documents folders as an archival collection that is stored on the owner's current PC; and saving the entire platform—are not options for public computer users. Migratory digital archiving requires purposeful efforts and archivally-focused personal information strategies to store files on removable media, in email, or on cloud-based platforms. This is a major difference to the way some users with steady access to computers can simply save a file to their device through download or initial creation retaining the files chance or file recovery protections. Additionally, traces of internet activities stored on home computers, such as cookies or password, are never retained for future access by public access computer users.

Social Positions

Formal social positions with roles in personal digital archiving events include library employee, librarian, board member, library administrator, library user, and community members. Each of these positions has a role in the library ecosystem and some have roles of access to library services and computers. In terms of personal digital archiving, the public access computer holds a specific technical identity and therefore, as Fulkner and Runde (2013) posit, a social position. The technical identity of the public access computer arises from the function of the computer as an internet gateway as well as a tool for performing computing tasks. The technical identity of the public access computer also comes from its form as a desktop computer. The public access computer looks and mostly acts as a desktop computer one would have in your home or at work, but the underlying configuration and software installed on the computer makes it function differently than a home device, as is evidenced by the experiences of my interviewees. These differences shape how personal digital archives are created by public library users.

Social Relations

Agent-Object Relations: Software

The relationships between how users engaged with library software exposed in this research were often fraught with challenges. Library software configuration confused patrons such as B1. When logging onto Microsoft Word for the first time in his session, a pop-up box shows up prompting a user to add his or her initials for user metadata created by the file. B1 is confused and asks for help in the interview and asks "Username? Should I just keep Patron?" Although this feature would increase the accuracy of metadata kept about a file which could help assign creator identity for archiving purposes, the message was useless for B1 who was looking for a way to access his stored video and clicked on the wrong icon. Even if he were using Microsoft Word, what he might input in the message box might not be accurate and might work better if the option were not available to public library users looking for a streamlined user experience on public access computers. Continual interaction with pop-up messages meant for library administrators to update software or change configuration frequently confused library computer users.

Structures related to the choice of, availability, and setup of library software changed how the users A3, A4, and B4 engaged with library computers, which altered how they create and manage personal digital archives on library computers. As noted in Chapter 6, A3 ran into issues accessing via email and printing documents when using library print release software. A4 choose a specific, dated file format of Microsoft Windows 97-2003 files to utilize Microsoft Word 2016 at the library and Microsoft Word 2010 at home because it functioned for him. B4 was overwhelmed and frustrated when navigating between Microsoft Excel online, Microsoft Excel installed on a library computer, and Google spreadsheet software to accomplish data

conversion for a PTO email blast. Personal digital archiving activities are possible for these users through use of library computers, but the activities are also changed because of the use of library computers.

Some users deal with the lack of owning a desktop computer by depending on free, online software to conduct migratory digital archiving. A7 makes this point:

> Interviewer: So, how do you access those files again?
>
> A7: Well, I know this is like the library and its public access, so its not permanently mine. If I was at home I would probably save it on my computer, and you know you could just go to it anytime, but I always delete so I kinda cover my tracks.

A7 uses free photo editing tools such as Picmonkey and Befunky that he found by looking for photo editing tools that one can use for free.

> A7: Well the Picmonkey or whatever, I just Googled what's the best editing tool? You know, they do pictures for free on the computer. I went through a couple of them, I like that one the best so I chose that one. The video to mp3 I was told about that one a long time ago, I never used it, because I never had an mp3 and then I got one. So I kinda like Googled that as well, so there's a various of them, so I just go by it like that. So kinda hearsay, word of mouth, I research.

A7 also depends on free social media services such as Facebook and Tumblr to store his files. He does copy some images on his two tablets as a backup. He downloads files that he has edited to the library hard drive using a free online photo editor. Then he uploads the file he wants to share or save to his Facebook or Tumblr account. After saving a copy of his file online, he takes the file he has created on the library hard drive and converts all the pixels to black as a way of redacting his work. After converting the image to a redacted, all black pixel version, he either deletes the file or keeps it on the computer because it will be automatically deleted when the computer is turned off next.

Agent-Object Relations: Use of Computers in Many Locations

Using public access computers in a variety of library locations also directly caused an issue for keeping A7's email account. In the exchange below, A7 mentions that using Gmail in a public location has caused him to be locked out due to accidents with the keyboard that might be set up in a non-standard way from a previous use (for instance if the caps lock has been set). Additionally, using the same account in multiple different locations like many public library branches and the Department of Labor sends a security red flag to Google. When a Google account is blocked because of suspicious activity, an alternate communication mode, such as a cell phone, is employed to send a default password for unlocking an account. If a user's phone number changes frequently based on A7's use of multiple phones since his initial account creation, it causes issues accessing and keeping data in free personal accounts. A7 describes his experience:

> A7: I don't know like, for instance if I go to the Department of Labor, I create these files and I use their computers with my Gmail there, it's like very sensitive, so if I happen to come here just to check my email, and I make a mistake and type in the wrong, like uppercase or something, lowercase something, you know wrong, I guess wrong password, then, when I try to get in again. It'll say nope, it's locked because somebody suspicious activity.
>
> Interviewer: Uh huh.
>
> A7: Is going on from your account, it was used from a different location, or device, so I'm like "Aw, Man" and sometimes I get locked out like that, so I have to go through different procedures to get it back open.
>
> Interviewer: And you've been able to get it back open?
>
> A7: Well, rarely, like once maybe, so now I use my total real ID, and like my phone, sometimes if you change phones if you use your phone number for a contact for security and says it's years ago and you get a new phone, new number, they can't text it this phone now cause it's a new number and they like "Aw, you locked out. You can't get nothing." You know I called, they give me the run around. So I'm like, just make a new one.

Use of public access locations directly compromised A7's recordkeeping habits with a free service provider like Google. Google's account structures are designed for users who own their own equipment. The privacy structures depend on storing cookies to recognize devices. Computer users in public access centers won't be using the same devices, the same IP (which is often dynamically generated), and will not allow the storage of cookies.

Microsoft accounts allow users the opportunity to use a single use code if they sign into their account on a computer that is not owned by the user. Microsoft enables the user to provide their mobile telephone number as a place to receive the single use code for signing on instead of typing a password into a public machine. Google provides a similar service, but Google requires users to enter their password and the single use code. The two-step verification process is an account setting, instead of a login option, as Microsoft's login is, and the two-step verification from Google still requires users to type in a password. Ideally, if a password and a code are used to log in, having someone know your password is useless, unless the potential hacker has your mobile device and access to the code sent for logging on. Unfortunately, users frequently use the same password in multiple applications, making Google's two-step privacy verification more troublesome for public access computers than Microsoft's option for using a single-use code for signing onto an account.

Library computer users face unique digital literacy challenges requiring a deep understanding of hardware and software as well as methods for file storage suitable for migratory archiving. This is different from home computer users who can configure their machines in ways to prevent the need to remember passwords, or a variety of methods for using files, printing, accessing software, and other tasks. For some users, digital literacy in foreign environments such as the library is a hurdle that prevents digital archiving (A3, B6). Public access computer users

must learn to use unfamiliar software—often configured in unknown ways—on unfamiliar devices in a variety of locations which alters the methods they choose to complete tasks. Hardware and software configuration structures, available software, digital literacy skills, and use of multiple public access computers in multiple locations has an impact on recordkeeping using public access computers. As methods of access and use change between personally owned and public/shared devices, resulting personal digital archives change as well.

Chapter 10: Do Personal Computers in Public Libraries Fill Unique Technical Identities in Relation to the Transformational Model of Social Activity (TSMA) Specifically in the Context of Personal Digital Archiving?

In Chapters 8 and 9, I investigated library structures that shape public access computer users' internet access and digital archiving activities. I outlined relationships between agents, objects, and structures through investigation of social roles, social positions, and social relations. This chapter extends discussion of the TMSA to investigate how public computers in libraries differ from privately owned machines and how those differences contribute to personal digital archiving by library computer users.

One key component of the TMSA is interactions between agents and social structures in an ongoing support, transformation, and recreation of social experiences. Faulkner and Runde describe Bhaskar's TMSA as "the emergent realm of social rules, social positions, and social relations that condition and provide order to human affairs." (2013). Applying the TMSA to the social environment of public libraries provides a new perspective of transformation and change within libraries as well as a real world example of the model. Using critical realism in this research also provides the opportunity to hypothesize underlying mechanisms activated by the structures presented in Chapters 8 and 9.

TMSA in Public Libraries

One example of a social structure supported, transformed, and recreated through human activity is library policies. Acceptable Use or Internet (Use) policies change as the library environment of internet and computer access has changed since the late 1990's. Change in policy at Beverwyck Public Library is evidenced by revision dates of 2002 and 2005 after initial January 1998 adoption. As noted in Chapter 5, many Internet Use policies were not written until after CIPA was passed in 2000 and enacted in 2001. The template policy written by the

Cybrarian company dates from 2003 but many of the policies investigated in Chapter 5 were revised again in the past fifteen years. The Fort Orange Public Library Internet Use policy written in December 1998 was revised in 2014. Changes to procedures were widely discussed in the library focus groups as responsive to library patron requests and needs. The library director at Beverwyck Public Library describes the frequent interaction between patron response to a policy or procedure and the library's alteration of the rules.

> BRG1: I get to deal with people who are super unhappy with the policy. They have already run afoul of the policy. And then it needs to be more carefully explained to them or whatever. They would come to me to appeal a policy and then I can take that to the Board [of Trustees] and communicate that the patron is dissatisfied with the Internet Use policy, which they haven't, more about the procedures… Someone has a problem with our policy, they run afoul of a policy or procedure, and then we create a way around that for the exception that can usually meet their needs but can also not blow up the whole general procedure. The express machines, the guest passes, the laptops, all of these things are props that allow that procedure, that core procedure to continue to exist. At some point, you get to a point where you back off and look at it and say, are we protecting a core procedure that doesn't need to exist anymore.

Another staff member describes flexibility in procedures as "another change we made to be more user friendly." Other changes were enacted to purposely curb computer user behavior:

> BFG3: [I]t changed people's perspective with it. When [printers] were all just sitting there [next to each computer], they would print whatever they want. And a ton of it. We had people abuse that too. But you know, they have to go stand up there and pick up their job with all of these people milling around. So, when [another local library] moved theirs behind the circ[ulation] desk and you had to pick it up there, all the [explicit material] stopped being printed. When they were sitting at the 5th [computer] was where the printer was, it was kind of shielded. But when you had to walk behind the circulation desk, after the first day, when someone printed [explicit material] and didn't pick it up nobody's printed out [explicit material] ever since. …. I think it's also "guilted" people more in paying [for their printouts].

Likewise, when Fort Orange Public Library started using software to enforce time limits and user registration for public access computers, an additional hour was offered to computer users instead of only one hour per day in the hope that users would accept the new software,

> FOFG5: When we went to SAM, [staff member] who was the former head of reference was generally of the opinion if you were giving something away it was always good to throw something in if you were asking people to use the system for registration, so how about we give them a second hour. … And at the time, particularly here, the queues could get very long. So, that was just seen as the fairest way of getting as many people as possible at least an hour, more if they wanted it.

At Beverwyck Public Library the change from one hour only to a possible two hours came about more slowly as library software was programmed to offer computer users additional time in twenty minute chunks for a total of sixty extra minutes (a second hour) only if no other patron was waiting to use the computers. Slowly, that approach gave way to allow the possibility of an additional hour (totaling two hours per day) if no one was waiting. Now, extensions are allowed only at staff member discretion: with some library staff favoring no extension (but offering a Chromebook or laptop for in-library use) and others allowing short extensions for homework, research, or employment related activities.

These are examples of the TMSA in action at two public libraries. A structure is created, library users encounter the structure and either change their actions (such as to stop printing explicit material) or they voice concerns to people holding social positions such as other users, library staff, library administration, or directly to the library Board of Trustees.

Public Access Computers as Objects

Using an extension of the TMSA of adding objects as part of social relationships as theorized by Faulkner and Runde (2013), I consider how library public access computers and software used on those computers fit into the TMSA. In public libraries, computers occupy

different social positions, follow different social rules, and have a different technical identity than other computers outside the library environment.

Faulkner and Runde conceive of technical objects in the TMSA with unique relationships to structures and agents. Objects are defined as structural continuants, and technical objects as "any object that has one or more uses assigned to it by members of some human community (2013)." Material technological objects have physical mass, shape, and volume whereas nonmaterial technical objects have a non-physical mode of being, granting they are inscribed on some physical material for access, storage, or transportation.

Public access computers hold different social positions compared to home computers. Library computers are provided for any member of the public and are supported by additional library staff dedicated to helping users understand technology. Library computers exist in a library which fills the social position of a gateway to the internet and a tool for completing computing tasks. Computers in libraries are configured with software to enforce local rules and policies which do not exist for home use. Software configurations are often hidden to end users either due to the complexity of configuration or the digital literacy skills of users.

Work or school computers also come with relationships with technology experts. However, library computers fill a unique social position because they are provided for any public user—although sometimes for a fee or for a member of the established community—instead of only users employed by a company or pupils of a school. Additionally, considering the phenomenon of personal digital archiving, work and school computers may not always be used for personal recordkeeping because of limitations of social rules established by employer or school, and this is different than with public library computers.

Technical objects also have a technical identity, meaning that the kind of thing an object is in its community is based on function and form. In public libraries, public access computers have a unique form and function. Moreover, public access computers in different public libraries have a unique form and function based on library rules. Public access computers are inscribed with technology as substitute computers for library users encouraging migratory archiving. They are not designed to store files after reboot or to retain cookies after reboot. They are designed as computing devices allowing individuals to complete tasks but not as storage media or personally customizable devices. Public access computers reproduce social structures (library policies and procedures) as Faulkner and Runde describe "not from their intrinsic affordances and capacities in the first instance…but from their being implicated in structured human activities" across time (2013). Public access computers of the same manufacturer using the same type of computer access software differ between libraries based on the unique library structures in place. The same is true for nonmaterial technical objects, such as internet browsers. As each browser is configured (home page, acceptance of cookies, handling of temporary internet files, available access time, and internet filters) differently based on library rules and structures, each browser is referenced and used differently by community members.

Noting computers in various environments, specifically public libraries, fill unique social positions based on different technical identities reveals differences in personal digital archiving based on the context of computer use. As library computers fill unique social roles in the lives of users, historical and social contexts of public access computing have greater impact on users' activities and documentation of those activities. The function of public access computers has been greatly shaped by the CIPA, introduction of reservation and filtering software, proliferation of mobile devices, and increasing dependence on the internet for participation in social activities

in education, government, and work. Additionally, as demonstrated by many of my observations with users in this research, public access computers—and relationships between users and computers—vary greatly because of public library structures.

Mechanisms

Additionally, this research, based on the theory of critical realism, into the events of accessing technology and personal digital archiving in public libraries allows for the theorization of mechanisms activated by discovered structures. Throughout the previous chapters, structures and relationships between agents, structures, and objects stem from one proposed mechanism: acceptable vs. unacceptable actions in the library. In addition to laws that govern behavior across the town, city, county, state, and country that apply regardless of where one might be, public libraries establish rules and enforce behavior according to what is acceptable or unacceptable. Fines, filters, payment for visitor passes, requirements for library cards, policies, library printing software and reservation software, time limits, and more are designed by library rule makers and enforcers to coerce acceptable behavior and prevent unacceptable behavior. This mechanism has the greatest impact on how public library users engage with access computers and their personal digital archiving activities. The layer of structures in public libraries applies to users who may not have steady access to working internet enabled devices or desktop computers for completing their information management needs. This continues practices noted by Gangadharan (2015) of "extending social practices of disciplining poor people and people of color." Public libraries, operating under a mission to provide access to all, need to be aware of the mechanism of acceptable vs. unacceptable behavior activated by structures to determine which structures should be changed.

Conceptualizing the TMSA in the context of public libraries offers guidance for decision makers when developing library structures such as policies, procedures, space planning, and others. It offers a perspective of library experience where administrators, staff, users, and objects create interconnected and recursive relationships. Adding computers and software to the concept of the TMSA present a unique functional identity for the objects that will shape their configuration and use. If these objects are viewed as more than static, standardized tools and instead are conceived of as playing an active role in user experience and personal recordkeeping, then libraries might focus greater attention—and greater resources—to public computing in libraries. Most importantly, awareness of the mechanism of acceptable vs. unacceptable behaviors and coercion in libraries would allow library decision makers to re-evaluate their expectations for library users and staff to enable more opportunities for access and personal digital archiving possibilities. This would provide a voice of library users that is potentially missing in individual and broader social archives documenting experiences which would otherwise be unknown and unseen.

Chapter 11: Conclusions and Future Work

In my research, I describe how individuals in two collective case studies conduct personal digital archiving, the social structures shaping access to technology and personal digital archiving, TMSA in public libraries, and the extension of the TMSA to include public access computers. I have shown that structures of social rules, social positions, and social roles embodied in library policy shape how users access the internet and affect their personal digital archiving activities. I also provide examples of how public access computers users face hurdles using internet services and library software individuals owning their own home devices do not encounter. I demonstrate that many users accomplish computer related tasks through trial and error on public access computers in ways unanticipated by the library. Additionally, I introduce the concept of migratory digital archiving.

Future related streams of research would contribute to the questions raised by this dissertation. More investigation into the mechanisms activated by social structures presented in the research will illuminate personal digital archiving in public libraries even more.

The privacy paradox in libraries emerged during my analysis of interview transcripts. It would be enlightening to interview a new group of users and directly ask them about their privacy expectations in public libraries. Conducting action research including offering a class on protecting privacy at home and in public would enable another stream of interviewees discussing privacy. Through interviews I would discover if users recognize the privacy paradox in libraries or how they might use technology in public libraries to safeguard their private lives.

Including new case study sites would also illuminate the findings of this dissertation. Case study locations from Group I, II, or IV would provide another set of individuals to interview and structures to unearth. A case study in a rural location would also provide an

interesting view of personal digital archiving in libraries since this research investigated urban and suburban libraries. Expanding the boundaries of the research to a different state such as Texas or could reveal unique findings based on social, cultural, and political differences in each state.

Including a new type of library user in future research would be fascinating. Research of minors using school libraries or college students using college libraries could present a wealth of perspective between types of libraries and users.

Research into the role of software such as PCReservation or Smart Access Manager (SAM) in the TMSA would provide another extension to Faulkner and Runde's work as well as reveal hidden relationships between software, staff, organizations, and users in libraries. Both pieces of software codify library policies that affect patron actions and activities. Looking deeper into the form, function, and technical identities of each software would illuminate the research questions I asked in this dissertation.

Another stream of research could focus on Chromebook implementation in both case study sites. Research would focus on organizational implementation and rule development using new technology to fill an established need for public access computers at libraries.

The research I conducted in this dissertation provided a deeper understanding of personal digital archiving in public libraries, but it also raised new avenues for investigation. Future research could further describe personal digital archiving in more public library locations, technology adoption by organizations, new policy and procedure development, material and non-material objects in the TMSA, and solutions to the privacy paradox. In this research I aimed to provide the perspective of users who depend on using public library computers for conducting

their digital lives. It is my hope that including them in personal digital archiving research reveals new concepts in archival theory as well as practical applications of library theory and policy based on their individual experiences. I hope this research continues previous streams of research providing true “Opportunity for All.”

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Appendix A: Draft Interview and Focus Group Questions

Date: _____

Interview Questions for Library Patrons:

1. What brings you to the library today?

2. What applications/software do you use on library computers?

3. Do you own any other devices connected to the internet?

4. Do you ever save any files you create on public library computers?

5. How do you access those files again?

6. Do you think you will use those files in 1 year? 5 years? 10 years?

7. Do you have digital files (documents, digital photographs) that you created before today?

8. Do you use other computers besides these at the public library?

9. Can you describe how you learned the rules for using the libraries computers?

10. Would you change any rules for using the computers?

~~11. Can you walk me through a typical visit to the library to use the computer?~~

12. Can I observe you work on a task while you are here?

13. Do you have any other comments or questions for me?

Date: _____

Focus Group Questions for Library Staff:

1. Do you have an Acceptable Use Policy?

2. How is it used by library patrons?

3. Do you have computer use practices?

4. Do all your locations follow the same practices?

5. Are any limits placed on how library patrons use public access computers?

6. Is there software installed on the public access computers to control use of the machines?

7. In your opinion, what is the purpose of public access computers in libraries?

8. Can you tell me about an interaction you have had enforcing library computer use procedures with a library patron?

9. Do you think library patrons use library public access computing for personal digital archiving?

10. Is there anything you would like to change with current computer use policy or practices?

11. Do you have any other questions or comments for me?