Dominican University
School of Information Studies

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Presenting Our Past: Examining Materiality and User Experience in Physical and
Digital Archival Collections

AS PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY in Library and Information Science

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April 25, 2019
Presenting Our Past:
Examining Materiality and User Experience in Physical and Digital Archival Collections

A Dissertation Submitted to
the Faculty of the Library and Information Studies Program
in Partial Fulfillment of the Requirements for the Doctor of Library and Information Studies

Dominican University
School of Information Studies
Library and Information Studies Program

By
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Abstract

Archives house items of various material formats within their collections. While many archives are converting physical items into digital formats, there are few studies that focus upon how user experience is impacted when transitions in format occur. Though more archival holdings are being digitized, there are still individuals who visit physical locations to work with archival records. Even though digitization is occurring, it is worth examining how this impacts physical objects that either have or have not yet been digitized and how this may affect user experience. Based upon Otto’s theory of the numinous, this study continues Latham’s research regarding numinous experiences with museum objects in the context of a physical archival setting and the decisions made by users conducting research in physical archives. This study employs a qualitative methodology in order to examine user experience in relation to material format, examining whether or not there is a difference in user experience when material formats are changed. Experienced physical archive users from Midwestern physical archives will be studied via semi-structured interviews at a metropolitan historical society, university archive, and special collection archive, in order to explore questions surrounding the relationship between user experience, materiality, accessibility, and the numinous experience.
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Presenting Our Past:
Examining Materiality and User Experience in Physical and Digital Archival Collections

Chapter One: Introduction

Archives preserve a wide variety of items or records that exist in physical, digitized, or born-digital formats, in addition to hosting a broad range of visual and textual surrogates (Conway, 2015). Advances in technology, such as the popular use of mobile devices and ability to livestream or share information through social media, have led to the creation of new archival record formats, posing new challenges to archivists wishing to preserve information about a particular time, place, or individual (Caswell, 2009; Fenlon et al., 2014; Hamer, 2018; Sheffield, 2018). At the same time, archives hold physical records that are visited by individuals who wish to see a particular item in its original state and work with it physically (Duff & Cherry, 2000). While physical archival locations exist and store numerous physical records, many archivists working in physical archival locations have been digitizing their records and collections for quite some time (Chassanoff, 2013).

In addition to offering convenient means of access to records as well as lessening the stress of use on material records, surrogate formats allow for preservation. According to the American Institute for Conservation of Historic and Artistic Works, preservation is defined as “[t]he protection of cultural property through activities that minimize chemical and physical deterioration and damage and that prevent loss of informational content” (Northeast Document Conservation Center, 2015, para. 5). Essentially, the key goal of preservation is “to prolong the existence of cultural property” (Northeast Document Conservation Center, 2015, para. 5). By preserving a record, individuals will be able to access the record in a way that slows its decay and keeps the record usable for individuals. Moreover, surrogate formats offer another way for
users to experience an archival record (Clarke, 2009; Nichols & Smith, 2001). However, the original records are argued to have a unique existence and an artifactual value that is perhaps not captured fully in a surrogate format (Benjamin, 1968b; Brown, 2017; Clarke, 2009; Duff & Cherry, 2000; Newman & Smith, 2016). Though there are clear benefits to original and surrogate formats, it [may be possible] that many individuals still prefer to work directly with the physical records themselves for the purposes of their research, even after viewing a record online, possibly due to the numinous qualities of an object (Chassanoff, 2013; Duff & Cherry, 2000; Latham, 2007; Latham, 2009; Latham, 2016). In this case, the numinous qualities of an object are artifactual traits, which may affect users in ways that evoke feelings of transcendence, majesty, and overpoweringness (Latham, 2016). This allows for a non-rational religious, spiritual, or generally moving experience when in the presence of the numinous object (Latham, 2016). The numinous qualities of an object may potentially offer more information regarding the user experience, as what one perceives as numinous and one’s user experience are both subjective encounters, needing to be felt or experienced directly in order to be understood (Latham, 2007; Latham, 2009; Latham, 2016; Varnalis-Weigle, 2016; Otto, 1923). Though the numinous experience cannot be manufactured, examining reflections of user experiences with different material records in physical archive locations can offer more information as to whether or not user experience or any numinous qualities of a user experience are influenced in a research setting (Merkur, 2006).

Users may choose to work with certain types of formats for various reasons; as a result, it is worth exploring why they choose to do so and what impact format may have upon user experience (Conway, 2010). The goal of this study is to examine the experiences of physical archive users in order to determine whether or not their experiences are impacted by transitions
in the material format of a record required for their research. Grounded in theories focusing upon
the numinous as well as affect and information behavior, this study includes an examination of
the literature surrounding the numinous, materiality, and accessibility, in an effort to explore user
experiences in physical archive locations, the potential influence of varying material formats
upon the user experience, and why certain formats may be selected over others when conducting
research.

Definitions
Many of the terms referred to in this study have varying definitions across different fields of
study. In order to ensure clarity regarding how the terms are being used in this study, this section
will outline the operational definitions of accessibility, materiality, numinous, and record.

Accessibility. Accessibility of material formats refers to the ability to access an archival
record. This could include visiting a physical location in order to work with a material item in-
person, visiting a physical location to access their digital collections, or accessing an item
remotely in a digital or alternate surrogate form, made available by the institution to which it
belongs.

Materiality. In this study, materiality is defined as an interplay between the physical
characteristics and signifying strategies of an object (Hayles, 2004). This view of materiality is
“not merely an inert collection of physical properties but a dynamic quality that emerges from
the interplay” between the conceptual content of an object and the interpretive activities of its
users (Hayles, 2004, p. 72). Materiality “performs as a connective tissue—joining the physical
and mental, the artifact and the user” (Hayles, 2004, p. 72).
Numinous. According to Otto, the term “numinous” is derived from the Latin term “numen”, which means “supernatural divine power” or being inhabited by “a spirit that calls forth in many of us a reaction of awe and reverence” (Otto, 1923, p. xvi; Numen, n.d.; Maines & Glynn, 1993, p. 9). The numinous can further be defined as the following:

- a state of mind, a moment that is inexpressible and in the same category as ‘the beautiful’;
- a qualitative feeling but more than that; a feeling that cannot be taught, but awakened;
- endowed with power, transcendence, majesty, and overpoweringness that goes beyond any created thing and as beyond the familiar, the usual, or the intelligible.

(Latham, 2016, p. 2)

Otto coined the term “numinous” to describe the “‘non-rational’ religious experience” (Latham, 2016, p. 2). The Latin term “numen” is combined with the Latin word “omen”, from which “ominous” is derived, thus creating the term “numinous” (Numen, n.d.; Omen, n.d.). The numinous is introduced here as it is central to the research but will be discussed at length later in this document.

Record. The use of the term “record” refers to the archival record or archived item that is made accessible by a physical or digital archive. The record is typically part of larger collection. Records in a collection can range from being material objects, ideas, or experiences (Belk et al., 1988). According to the Society of American Archivists, records are:

- materials created or received by a person, family, or organization, public or private, in the conduct of their affairs that are preserved because of the enduring value contained in the information they contain or as evidence of the functions and responsibilities of their creator. (Archival record, n.d.)
Research Questions and Overview of the Methodology

By employing Otto’s theory of the numinous, this study aims to examine the following primary question:

1. How does format transition of an archival record affect the use of that record and the experience of the user of that record?

Specifically,

   a. How is the numinous experience demonstrated or illustrated in the use of original records?

   b. How is the numinous experience demonstrated or illustrated in the use of surrogates?

   c. How is the impact of materiality demonstrated or illustrated?

This research continues Latham’s study of the numinous in relation to museum visitors but examines the numinous experiences of users in the context of an archive (Latham, 2009; Latham, 2010; Latham 2016). This research allows subjects the opportunity to speak freely about their experiences with different material formats in archives.

This study employs a qualitative methodology in order to examine user experiences in physical archives. In implementing a qualitative methodology, the principal investigator gathered data that reflects the personal and subjective nature of user experience and allowed the users to speak candidly about their experiences with open-ended questions. This type of methodology allowed users to tell their stories regarding their experiences, capturing the characteristics of their individual experiences. By doing so, the principal investigator was able to observe, identify, and code emerging themes that manifest from the discussions of their experiences. While each user’s experience was different, the principal investigator observed any commonalities or patterns that
may emerge in terms of the experiences discussed and overall responses. Because openly sharing stories about these experiences is crucial to this research, a qualitative methodology was utilized in order to fully capture the data that emerged from the questions asked of users. Instead of focusing on quantifiable aspects of how often users access one record format over another, this study emphasizes an exploration of the experiences themselves, examining why researchers access certain material formats, the characteristics of these experiences, and the factors that may impact their experiences with the records.

The principal investigator interviewed 10-15 physical archive users across three physical archive locations in the Midwest by using a guide of semi-structured interview questions, in an effort to explore why users visit physical archives generally as well as why they might visit them for the purposes of their research. The principal investigator gathered information about variations in their experiences with different material formats and why certain formats were selected over others for their research, focusing especially upon their feelings and reactions to using different material formats in their past experiences.

This information was collected through in-person, individual interviews, conducted by the principal investigator. The principal investigator adhered to a set of semi-structured questions, asking follow-up questions when necessary. In doing so, the subjects were encouraged to speak openly about their experiences in archives, allowing them the opportunity to share recollections of their experiences in archives using different material formats that were most pivotal or memorable to them. All interviews were recorded on video in order to capture any physical expressions that indicate interest, neutrality, or disinterest as the users reflected upon their experiences. After the subjects spoke about their experiences, the principal investigator later coded their responses for emerging themes. These recordings were reviewed by the principal
investigator and transcribed for analysis. This allowed the principal investigator to determine any commonalities in responses that offered answers to the overall research questions for this study.

**Significance and Implications of the Research to LIS**

While there has been research regarding user experiences with variations in material format and how different material formats are interpreted, the existing studies are fragmented and do not offer a holistic view of transitions in material format. None of the studies examine why users visit physical archives after accessing records online in conjunction with the numinous experience. Overall, “little has been done to understand the human experience with the physical object” (Varnalis-Weigle, 2016, p.1). Though Latham has explored numinous experiences of users in relation to museum objects, the correlation of the numinous experience to archival objects within a physical archival setting versus remote access to surrogate records has yet to be explored (2007; 2009; 2016). Additionally, Varnalis-Weigle conducted a comparative study of user experience between physical objects and their digital surrogates in a lab setting, examining: multi-dimensional experiences with physical and digital objects, the construction of meaningful experiences with these objects, and which elements of the objects engage users (2016). However, there was still a need for a study held in the archival setting that users frequent, which examined user experiences with varying material formats in relation to the numinous experience and evaluated which aspects of user experience may lead users to work with one format over another.

Today, a multiplicity of formats are available to users, with “unprecedented record production” beginning to “shift the focus on records to their point of creation” (Hamer, 2018, p. 165). The popularity of mobile devices encourages the creation of born-digital records and allows them to be circulated easily, causing “the ephemeral nature of social media” to impact not
only how archivists can “collect, preserve, and use records created with these technologies”, but also how they are accessed by users (Sheffield, 2018, p. 102). In the cases where physical originals and digital surrogates exist, Varnalis-Weigle found that “the numinous affect of transformation, such as loss, death, mortality, and hope, was experienced only at the physical level” (2016). Due to this wide range of formats and increase in digital records created in or shared via Facebook Live, Twitter, or through cloud computing and digital repositories, it is worth examining what brings users to physical archives when surrogate formats are often made widely available (Caswell, 2009; Fenlon et al., 2014; Hamer, 2018; Sheffield, 2018). Additionally, it is beneficial to examine why users opt to use certain formats over others as well as their feelings and experiences throughout the processes of working with these different formats.

While users may choose to work with one format over another, this study addresses whether or not their experiences with varying formats are inherently different. In addition, this study examines which aspects of working with the record in a given format may influence user experiences. Although many studies discuss authenticity in relation to working with archival records, few explore the ideas of affect and the numinous in order to evaluate how users actually feel when working with certain material formats (Varnalis-Weigle, 2016). It is crucial for LIS professionals to “understand the meaning of the deeply connected encounter users have with physical collections for this, too, is an important part of their information journey” (Varnalis-Weigle, 2016, p. 18).

Additionally, many studies are limited to certain types of archives, geographic areas, or specific collection formats (Varnalis-Weigle, 2016). Unlike the work of Varnalis-Weigle, this study is conducted beyond the confines of a lab setting and engages users within the physical
archival setting in which they have conducted research (2016). This study also includes variations in archive type, including a university archive, special collection archive, and metropolitan historical society archive, with subjects offering qualitative data regarding their experiences for analysis across these different archive types. Moreover, these archives range from existing in the suburban communities and metropolitan communities throughout the Midwest. Rather than focusing upon one type of collection format, this study asks users to reflect upon their experiences and feelings when using a wide variety of formats for research purposes specific to them (Bushey, 2008; Conway, 2010; Conway & Punzalan, 2011; Gracy, 2013; Hedstrom et al., 2006). Additionally, this study examines the numinous experience in-depth as a potential affect that is part of the user experience in physical archives.

By exploring how changes in format affect user experiences, library and information studies (LIS) professionals can be better informed about how users experience items as they continue to provide diverse formats to these users. This research offers LIS professionals an understanding of how material format affects user experience so that LIS professionals can offer access to their collections in ways that are sufficient for users and allow them to have the experiences they require. Though users may exhibit preferences for certain formats over others, why they choose to do so in the context of their own research and their reactions throughout the processes can inform LIS professionals of how to best meet their needs.

This study’s focus on the numinous experience as a potential factor that may influence user experience adds to the discourse of how users experience archival records in different formats and why they may be inclined to work with a particular format. Unlike past studies that gather data through surveys or studies that focus upon usability of archival collections, this study allows for individualized interviews with researchers who are familiar with using physical
archives, asking them to articulate their own research needs and experiences with various material formats in the archival setting (Bushey, 2008; Chassanoff, 2013).

Furthermore, there is a need to explore the relationship between cognitive or rational experiences and experiences that are emotional or spiritual in order to better understand the human experiences that occur in archives. In doing so, archivists can better understand the lived experiences of their users, in addition to gaining a sense of understanding regarding what may make experiences in physical archives unique in times where technology continues to change and shape the LIS field. Libraries, archives, and museums are united in the fact that they are cultural institutions that respond to many overlapping issues (Usherwood et al., 2005). Unlike museum experiences that are “non-practical, goal-oriented and deeply affective”, archives typically draw users who have research purposes (Latham, 2009, p. 6). Nonetheless, it may be possible that numinous experiences can also occur in the archival setting, which might also prompt visitors to visit physical archive locations.

While user studies relating to physical collections are limited in the field of LIS, the fields of marketing and cognitive sciences examine how users can build meaning when they interact with objects through the subjective nature of user experiences (Varnalis-Weigle, 2016). As a result, there is a need to examine the unique personal experiences that may arise when users interact with items of varying material formats via archives. This study is strengthened by a review of the literature on the numinous experience and the impact of affect upon information-seeking behavior. In addition, this study offers an overview of the current literature on materiality, accessibility, and authenticity. This study addresses user experience in the archival setting to determine whether or not material formats influence the user experience and why users may choose to work with certain formats for their research. The results of this study add to the
literature about the impact of affect upon information-seeking behavior, in addition to contributing information about the numinous experience in an archival setting and its potential impact upon user experience.
Chapter Two: Literature Review

In order to study the user experience in a physical archival setting, it is important to discuss the theories upon which this study is based, as well as the topics of materiality and accessibility. The key theories to which this study refers are Otto’s theory of the numinous as well as Belk and Benjamin’s theories on the significance and symbolism of collecting. These theories are considered alongside user experience because users may recognize the numinous qualities in the archival records with which they choose to work for their research, similar to how museum visitors have expressed an interest in the numinous qualities of museum objects (Latham, 2007; Latham, 2016). A brief discussion of affect is also included, as both numinous experiences and affect are subjective and share a focus on the feelings of an individual (Latham, 2016; Zhang & Jansen, 2009). In addition to the various items in a collection possessing significance to their owners, institutions, or potential users, it may be possible that their significance is not limited to the information contained in the item. Rather, the formats of these items could be significant to users because of who created or utilized them in the past, potentially calling users to request to experience an archival record in a particular format (Duff & Cherry, 2000; Newman & Smith, 2016).

For these reasons, a discussion of materiality is also included, as the material formats of records have changed dramatically over time. Today, individuals are creating and spreading information rapidly thanks to the latest technologies, calling for archivists to be poised to consider how to archive new formats as they arrive and how to make past formats available (Fenlon et al., 2014; Hamer, 2018; Sheffield, 2018). It is possible that the ways through which individuals create information can affect their expectations of how they wish to experience archival records.
Additionally, the topic of accessibility is also important to discuss in relation to this research, as accessibility to archival records and increased discoverability of collections continues to increase with the popularity of digitization (Dempsey, 2016). Users are offered the option to examine born-digital or digitized surrogate archival records remotely, lessening the need for travel to visit a physical archival location. This can directly impact user experience, because the multiplicity of formats available to users puts users in the position of being able to choose which format they would like to access. Alternatively, users may require a specific experience with an item that might be ensured by its materiality; this materiality “should be understood as existing in complex dynamic interplay with content” (Hayles, 2004, p. 71). Consequently, users may choose to work with certain material formats over others in order to meet their research needs.

Individuals use archives and conduct research on both digital and print records, as many different types of material formats are accessible to users both within the confines of a physical archive or remotely through various digital collections offered by institutions all over the world. The purpose of this research is to examine whether or not user experiences are impacted by material formats as well as why users may choose to work with one format over another. There are clearly aspects of working with original or physical items that draw users to the physical locations, possibly for a particular user experience with the original record itself, which this study will explore. While users choose to work with original or surrogate records across physical, digitized, or born-digital formats, it is important to consider the aforementioned theories as well as materiality and accessibility, in order to better understand if user experiences differ when working with different material formats and why users may elect to work with a particular format for their research.
Theoretical Background

In order to better understand the impact of materiality on user experience, it is crucial to discuss the theories that concern the numinous as well as the importance of collecting. This section focuses primarily upon theoretical works that discuss the numinous experiences and the impact of affect on information-seeking behavior. This background offers a basis for which one can understand later discussions of materiality, accessibility, and authenticity, and their links to user experience.

The numinous experience. When encountering museum objects of significance, Latham noted that individuals expressed reactions that suggested numinous experiences (2007; 2016). Nonetheless, it may be possible that users of physical archives frequent archives and exhibit similar experiences as they work with particular material formats. Though Latham’s work is critical to this study, discussions regarding the numinous have occurred long before her study on numinous encounters with museum objects. This section includes a description of the numinous experience and addresses past literature that focuses upon numinous encounters.

German professor and theologian, Otto, popularized the concept of the numinous in 1917 in an effort to examine non-rational behavior in the context of religious studies. His study of the numinous focuses upon two types of human religious experiences: mysterium tremendum and fascinans. Mysterium tremendum refers to when an object is “numinous intrinsically, by virtue of its being” (Merkur, 2006, p. 207). Mysterium is broken into two elements, which include being caught up in a moment that is separate from normal experience and experiencing a fascinating draw to something (Merkur, 2006). Tremendum has three elements, which include awefulness, overpoweringness, and energy (Merkur, 2006). Fascinans “always implies something more than
itself” (Merkur, 2006, p. 208). Proudfoot expands upon this understanding of the numinous, explaining that it “could be said to stand in polar opposition to the mystical experience of unity with all” (1976, p. 12). Instead, the experience of the numinous “contrasts with everything familiar” (Proudfoot, 1976, p. 12). Though Otto’s discussion of the numinous can be “schematized with moral and cognitive elements”, Otto does not identify the numinous with either of these elements (Proudfoot, 1976, p. 13).

Like aesthetic experience, Otto posits that numinous experiences depend upon the individual and what the individual perceives as numinous. While Otto’s definition of the numinous holds that the numinous is difficult to quantify, Otto believed that the numinous needed to be felt directly in order to be understood. In order to “present an interdisciplinary model for understanding the origin of human consciousness in relation to incipient transcendental awareness”, Oubré expands upon Otto’s discussion of the numinous. According to Oubré, the numinous “represents an ethically neutral feeling-response or mental state that is sui generis, or totally unique and self-derived” (1997, p. 7). Her main hypothesis is that “transcendental consciousness serves as both a driving force and a product of human evolution” (Oubré, 1997, p. 7). Although any object has the potential to be found numinous, a numinous experience cannot be produced on demand (Merkur, 2006, p. 217). As a result, the ability to have a numinous experience depends upon the user and what he or she considers to be sacred or moving to him or her.

Numinous experiences can be brought on by visits to places of significance to individuals as well as various institutions that house potentially numinous objects. In the case of historical sites and museums, tourists can be motivated by more than thirst for information or entertainment; this impulse to make a “personal connection with the people and spirit of earlier
times” is coined “numen-seeking” (Cameron & Gatewood, 2003, p. 55). Numen-seekers aim to “make a personal connection with a site that may be manifest as a deep engagement, empathy, or spiritual communion with the people or events of the past” (Cameron & Gatewood, 2003, p. 57). While the numen-seeking motive correlates with general interest in history, it is not related to the nature of the site, techniques of presentation, or demographic characteristics (Cameron & Gatewood, 2003). Numen-seeking is “independent of sex, age, education, income, or residence” (Cameron & Gatewood, 2003, p. 65). Numinous responses, however, appear to vary depending upon the site or exhibit. In particular, locations that focus upon suffering and sacrifice have an increased likelihood for producing strong affective responses (Cameron & Gatewood, 2003). Sites that recall the Holocaust or various wars can be considered “high numen”, housing “the potential to induce strong emotional reactions” (Bruner, 1994, p. 399; Cameron & Gatewood, 2003, p. 67).

In addition to its examination in the LIS field and in theology, the numinous experience has also been explored in the field of psychology. Jung examined Otto’s idea of the numinous in order to enhance his understanding of religion (MacKenna, 2009). To Jung, the \textit{numinosum} is a “dynamic agency or effect not caused by an arbitrary act of will” (1970, p. 7). Jung discusses the term from a psychological standpoint, “sizing upon it as an explanation of an experience of a power greater than one’s will within oneself” (Martinez, 2011, p. 1). Jung and Otto agree that the numinous experience is highly personal, while Hoy continues the discussion of numinous as subjective (Hoy, 1983). Numinous experiences can result from interactions with “whatever is grand, beautiful and meaningful enough to us to merit our devout love and adoration” (Hoy, 1983, p. 20). Many Jungians view numinous experiences as “full of meaning and significance, as riveting, shaking, affect-laden encounters that unequivocally overpower a person” (Hoy, 1983, p.
In some cases, numinous experiences are viewed as “superlative in affect and rare in appearance” (Hoy, 1983, p. 18). Hoy argues that “numinous experiences may be much less than thunderous in affect and rather more frequent in occurrence” in order to “emphasise [sic] the nearness at hand, the constant possibility, of the most meaningful of human experiences” (1983, p. 18). In fact, some individuals can encounter numinous experiences through literature, as it “offers readers possible access to numinous energy through the subjective experience of reading imagined narratives” (Martinez, 2011, p. 1). As a result, numinous experiences need not be confined to one particular object or place because they are personal and subjective in nature.

Similarly, the seemingly sacred nature of numinous objects is not limited to institutional holdings. Instead, items collected by individuals beyond the museum setting can also take on a symbolic status for their owners and, depending upon one’s research needs and the accessibility of these items, can potentially be useful for research (Belk et al., 1988). The ability to own a particular material item in itself can be a significant or act, especially in the case of Benjamin, who sacralizes a collection of books and associates them with his sense of identity (1968a). The records in a collection can range from being material objects, ideas, or experiences, but can gradually take on a non-utilitarian ‘sacred’ status”, thereby potentially exhibiting or acquiring qualities that can be perceived as numinous (Belk et al., 1988). In other instances, collecting can create a sense of connection to another time, place, or person. For example, individuals who collect items that were handled by a particular individual may feel connected to him or her because the collected “object may serve as a psychological substitute for having contact with the person” (Newman & Smith, 2016, p. 616). Wilson explores interactions with numinous objects in the context of Pagan experiences of the holy, stating that:
Once an object or place has taken on that element of otherness and has been bestowed with *numinosity* by a group or individual, it has the ability to function as a pathway to the “other” world and facilitate an experience of the divine. (2010, pp.135-136)

In instances where material format speaks to the sacred nature of the collected items, it may be possible that users may have a different subjective user experience with one format, as opposed to another.

*Affect and information-seeking behavior.* Due to the fact that both numinous experiences and affect deal with feelings, it is important to address the relationship between the two in the context of information-seeking behavior (Latham, 2016; Zhang & Jansen, 2009). While affect is sometimes used interchangeably with emotion, affect refers to “the positive or negative aspect of feelings” and is broader than emotion (Zhang & Jansen, 2009, p. 3396).

Davidson et al. defined six main categories for affective phenomena, which included emotion, feeling, mood, attitudes, affective style, and temperament (2003, p. xiii). Emotion is a specific salient cause that “operates in the forefront” of one’s life, degrading into mood (Zhang & Jansen, 2009, p. 3396). Feeling is viewed as a “subjective representation of an emotion”, while attitudes are “affectively coloured [sic] beliefs, preferences and predispositions towards objects and persons” (Savolainen, 2015, para. 6). Mood refers to “a transient and diffuse affective state” that “does not tie with any explicit causes and usually runs in the background” of one’s life (Zhang & Jansen, 2009, p. 3396). Affective style is defined as the “relatively stable dispositions that bias an individual toward perceiving and responding to people and objects with a particular emotional quality, emotional dimension, or mood” (Savolainen, 2015, para. 6). Finally, temperament can refer to “particular affective styles that are apparent early in life and thus may be determined by genetic factors” (Savolainen, 2015, para. 6).
Varnalis-Weigle notes four affects of experiences, which include the “sensual, emotional, spatiotemporal, and numinous” (2016, p. 3). The sensual affect deals with a user’s emotional and sensorial reactions to the tangibility of a physical object, while the emotional affect refers to a user’s connection with the object through aesthetic qualities (Varnalis-Weigle, 2016, p. 3). Spatiotemporal affect refers to “transporting the user to a specific time or place in history”, while numinous qualities have “a transforming effect upon the user manifested in a sense of awe, wonderment, or fascination” (Varnalis-Weigle, 2016, p. 3). Furthermore, numinous experiences can be emotional, as the “numinous qualities of objects can awaken deep emotions—even elicit tears” (Varnalis-Weigle, 2016, p. 12). Kurin’s study also noted staff finding “visitors crying in front of cases, obviously moved” (1997, p. 38).

Kuhlthau’s constructivist approach to the information-seeking process includes the impact of affect as one of the key influences on the process, in addition to including an uncertainty principle that is comprised of “process, formulation, redundancy, mood, prediction and interest” (1999, p. 14). Kuhlthau developed a model that depicted a “focused approach integrating the affective and cognitive elements of information seeking” (Savolainen, 2015, Discussion section, para. 1). Alternatively, Wilson holds that affective needs were one of the primary drivers of information-seeking behavior, interrelated with physiological needs and cognitive needs (2006). These needs can inform one another, with physiological needs generating affective or cognitive needs and vice versa. In order to satisfy these needs, a user may partake in information-seeking behavior, which Wilson views as “information seeking towards the satisfaction of needs” (2006, p. 664). Dervin also emphasizes the importance of emotion in the process of sense making, viewing emotions as a “major measure of outcomes for human beings”; playing “a large role in human capacities to share and cooperate with other people”; and
as a “site of human struggles” (1998, p. 42). The impact of affect upon user experience and materiality, however, has not been studied in detail, although “[a]ffect as a lens for understanding information behavior has always lurked predominantly in the field’s theoretical shadows” (Fisher & Landry, 2007, p. 211).

Though Wilson expresses the importance of information-seeking in order to fulfill needs, he “fails to explain what the exact influences of mood are on information seeking” (Zhang & Jansen, 2009, p. 3395). In the field of psychology, the influence of mood on information-seeking behavior has been studied in relation to affect-as-information theory. In a 2009 study, 58 participants were primed for a happy or sad condition through viewing video clips and were then asked to perform a search task. The findings supported affect-as-information theory, concluding that “the comparatively happy participants were inclined to process more general and less specific information”, while “the comparatively sad participants were likely to process more specific information” (Zhang & Jansen, 2009, p. 3395). A negative mood “makes people process information more carefully and systematically in order to mitigate their problematic solution”, while people in a positive mood are “more secure” and “not fully motivated to process information in a comprehensive way” (Zhang & Jansen, 2009, p. 3396). The affective feelings of an individual can be shaped by “perceptions, cognitions, and behaviors” and can therefore influence the ways in which an individual will “process information and make decisions” (Zhang & Jansen, 2009, p. 3395).

The affect evoked during the information process is worth studying, as it correlates with user experiences and can help inform user preferences. Kuhlthau notes that “information seeking is a holistic experience with thoughts, actions and feelings interwoven into a complex mosaic rather than separate distinct entities” (1993, p. 348). As a result, this study examines affect in
relation to the broader user experience. Moreover, this study explores how affect and user experience inform one another as users interact with various material formats. This research also contributes to the literature on information behavior, particularly relating to the impact of affect upon information-seeking behavior.

Materiality

Though many records found in archives today were initially only available in physical form, advances in technology have allowed for a multiplicity of formats. Physical records can be digitized and therefore accessed digitally. Furthermore, additional records are born-digital, meaning that they originated as digital records and did not have to undergo a digitization process. With the increase in technological devices that offer individuals the ability to produce and disseminate media digitally comes the growth of more born-digital records to be considered for preservation.

Materiality is defined as an interplay between the physical characteristics and signifying strategies of an object (Hayles, 2004). In the past, materialism as a theoretical paradigm assumed that all things in the world, physical or not, were “tied to (and in some cases, determined by) physical processes and matter” (Casemajor, 2015, p. 5). However, advances in technology and digital media studies have led to new discussions regarding what constitutes materiality, as digital artifacts have their own composition which differs from that of physical objects (Casemajor, 2015). In the case of offering a digital surrogate for a physical item, Burns argues that “the materiality of the original object is not ‘lost’; it is only translated into metadata and digital information” (2017, p. 5). According to Burns, the main difference between reading a material image versus viewing a digital collection is “merely phenomenological” (2017, p. 5).
This has led to the proposed view of materiality as a dynamic quality emerging from interactions between an item and its users (Hayles, 2004). As a result, materiality refers to the means of connecting the artifact and the user (Hayles, 2004). This section will offer an overview of the discuss the importance of context when material transitions occur, in addition to describing key differences among digital and physical formats as well as their surrogates.

**Material transitions in context.** Shifts in means of communication have been documented throughout human history. The communication methods of Western thought, for example, have moved from oral, manuscript, print, electronic, and digital formats (Latham, 2010, p. 3). Consequently, these changes in format are reflected within the holdings of various archives and accessed by researchers all over the world.

In order to discuss material transitions, it is first necessary to discuss the types of changes that occur when a record is transferred from one format to another. Once a record is transitioned to a new format, a translation or “change in state that inevitably alters a multiplicity of meanings” occurs, creating a “contextualization and disembodiment” (Fraistat, 2005, p. 59; 108). This observation is especially true in the field of textual studies and its concepts of bibliographical and linguistic codes, as certain physical characteristics of paper cannot be copied. For example, “indentations made in the paper by the ‘bite’ of the type can reveal the order in which two sides of a sheet were printed,” which cannot be seen in any copy (Latham, 2010, p. 5). Paper-based sources must therefore be preserved because of the information they provide as being tangible sources with informative physical characteristics, in addition to their contents.

Nonetheless, digital records possess their own benefits and are accessed widely by researchers all over the world. Koltun reflects upon the popularity of digitization and its implications in the archival setting, concerning herself with whether or not the digitization of
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Records or creation of information in a digital format can impact the meanings that archival records embody and express. Koltun notes that when a new medium is popularized, it is viewed as "the ultimate in mass communication and a threat to world social stability" (1999, p. 116). While the potential behind the new medium can be exciting, in time, users become accustomed to it. As a result, each medium can contribute to a “collective body of expressive communication in unique ways, rarely replaced in power or scope by a subsequent medium” (1999, p. 116). Just as selecting physical records for preservation is never neutral, the transposition from a physical format to a digital format is also biased; the decision to acquire certain digital or digitized records and how they are made accessible depends upon the archivists and the institutions they represent.

Over time, advances have been made to ensure the fixity and bit level integrity of digital data as well as offering contextual information alongside digitized records (Bushey, 2008; Gladney, 2009). Gladney worked to create a means of “structuring information objects to contain or to refer reliably to context that their creators and keepers believe essential and a way of representing such objects so that our descendants will be able to interpret them” (2009, p. 403). This is referred to as the Trustworthy Digital Object (TDO) or “mechanism that makes any record’s authenticity, or lack thereof, readily testable by anybody who depends upon that record” (Gladney, 2009, p. 403).

Additionally, Gladney offers various solutions in order to ensure the integrity of a digital record. In order to be suitable for preservation, a record “must contain provenance information or be linked to such information, and the whole record must be protected against undetected tampering” (Gladney, 2009, p. 415). TDOs should have authoritative metadata “bound tightly to each preserved object” (Gladney, 2009, p. 416). Furthermore, TDO structure can offer “options
for evidence of authenticity, contextual information, and whatever might make an object self-describing” (Gladney, 2009, p. 416). This allows for creator choices to be enabled, as opposed to actively prescribing choices to information creators (Gladney, 2009). Reliability is also addressed with the suggestion that each individual who “adds to or updates a work being prepared for preservation can nest or link the initial version, thereby creating a reliable history” (Gladney, 2009, p. 418).

In terms of context, Gladney recommends the use of object identifiers, such as a unique, universal identifier (UUID) and a digital resource identifier (DRI). The UUID is defined as “a special kind of identifier whose context is the union of all contexts, that is, the set of all entities that might be identified” (Gladney, 2009, p. 420). Since digital objects can have shared prior versions, this can be signaled by a DRI which can “denote things other than single objects, as well as things that change over time” (Gladney, 2009, pp. 420-421). Use of DRIs can help users learn more about the history of information that is of interest to them (Gladney, 2009, p. 421).

Gladney also offers a discussion of object versions and audit trails, as the only occasions when two people surely have the access to the same version of a work is when the work is transferred from a creator to a successor (2009). Gladney suggests a nesting concept for TDOs, in which each successor could include a TDO as he or she makes a copy of the TDO as received (2009). According to Gladney, “If every successor does this, the latest TDO will reflect the entire history of the work” (2009, p. 422). Otherwise, successors may even include reliable links to prior versions (Gladney, 2009). As a result, each individual who is part of a TDO creation sequence can become acquainted with a predecessor and successor (Gladney, 2009).

Though Gladney aims to have any user easily decide whether a preserved record is “sufficiently trustworthy” for use, there are records that are susceptible to changes that could
make them misleading (2009, p. 428). Gladney uses the example of the authenticity of documents being evidenced by “wax seals affixed with signet rings” as a comparison for the digital counterpart of message authentication codes bound to a record (2009, p. 428). In doing so, “a cryptographic certificate can itself be authenticated by a recursive certificate chain” (Gladney, 2009, p. 429). In summation, Gladney’s TDO approach “shifts the locus of trust to a relatively small set of public cryptographic keys and to the adequacy of the metadata bound to preserved objects” (2009, p. 432).

Collomosse et al. continue the discussion of ways to cryptographically ensure the provenance and immutability of archived documents (2018). Due to the fact that digital documents are ephemeral, the de-centralized architecture for public archives called ARCHANGEL uses Blockchain to “store chronologically ordered transactional data, permanently preserving that data through peer-to-peer distribution and consensus checking without the need for a trusted third party” (Collomosse, 2018, para. 2). Rather than having users trust the authority of institutions alone, ARCHANGEL “enables a shift from an institutional underscoring of trust, to a technological underscoring of trust” (Collomosse, 2018, para. 5). ARCHANGEL also allows for the creation of a decentralized repository filled with “content evidence independent of the document itself that is collectively maintained across multiple participating archives through consensus checking on the Blockchain” (Collomosse, 2018, para. 5).

Donaldson also offers suggestions regarding the trustworthiness of digital objects in order to “ensure that users can be confident that they are interacting with authentic digital objects” (2011, p. 20). According to Donaldson, users need to know that a record:
is the same as that was placed in the file by the creator of the file itself and that it has been preserved in its integrity; is the same as the one that was transmitted to its addressee, and has not been manipulated or substituted in the course of the transmission was made under controlled circumstances as part of the regular workflow; was made under controlled circumstances as part of the regular workflow; was made within a reasonable time after the occurrence of the facts it is about; and was generated by somebody who was competent to make that specific record, with either duty or the direct interest to make it accurate. (2011, p. 20)

In order to communicate the trustworthiness of digital objects, Donaldson proposes exposing preservation metadata relating to their authenticity and reliability, in addition to using cues or symbols to denote their authenticity and reliability (2011). Moreover, Donaldson proposes seals of approval to be distributed at the document level as well as repository certification (2011).

With the advances made in the integrity of digital sources, technologies that were once popular in analog format have since moved towards offering widespread digital output. Over time, photographers have transitioned to using digital devices to produce and maintain digital products. In 2005, the “Survey on the Record-Keeping Practices of Photographers using Digital Technology” was conducted in order to study the “practical aspects of how photographers create and manage their digital images as reliable records, and preserve their authenticity over time” (Bushey, 2008, p. 128). A born-digital image differs from a digitized image in that it has no analog original. A digitized image, on the other hand, is an “electronic manifestation of the physical medium” (Bushey, 2008, p. 130). Instead of stemming from an original physical format, a born-digital record is “generated entirely from digital hardware and software” and depends upon certain software and devices on order for its contents to be accessed and viewed (Bushey,
2008, p. 130). According to Bushey, analog photography is seen as objective, unbiased, and reliable, as it is crafted “on the basis of the photographer acting as a passive operator of the mechanized camera, and the correlation between reality and the photographic referent” (2008, p. 130). Digital cameras and their accompanying software offer more editing options than are available to analog photographs, causing others to believe that the born-digital image is “a potential fabrication of reality and ‘subjective’ at best” (Bushey, 2008, p. 130). In order to ensure the integrity of a digital image, contextual information is crucial. Digital records can have accompanying metadata, which aids photographers in “creating, managing, and preserving their image collections as reliable and authentic records” (Bushey, 2008, p. 132).

According to Edwards, “[T]echnology alone does not necessarily determine shifts of meaning in images, for arguably photographs maintain an integrity of their own as images[,] which can be spread across multiple forms” (Edwards, 2010, p. 31). Rather than viewing digitization as restrictive, Edwards notes that it can “enliven photographs, moving them into new spaces” (2010, p. 31). Photographs, in particular, can be seen as “multi-sensory objects”, allowing for “multi-sensory responses that shape and enhance the emotional engagement with the visual trace of the past” (Edwards, 2010, p. 21). Photographs are a unique example of material culture because of their social dynamics in various environments. Depending upon their context, photographs can be “caressed, stroked, kissed, torn, wept over, lamented over, talked to, talked about and sung to, in ways that blur the distinction between person, index, and thing” (Edwards, 2010, p. 23). Edwards also links the performative interactions between image and materiality. While photographs trigger emotion, elicit feeling, [and] create affect through their sensory qualities, they also embody a sense of the past (Edwards, 2010, p. 23). In this case, Edwards defines feeling as “an intense, individual and subjective […] sensory experience related
to a state of mind, in relation to contexts, determined through practices of non-verbal communication” (Edwards, 2010, p. 24).

Though the content of an image is important, its materiality and context are arguably significant. Edwards describes “the stories told with and around photographs, the image held in the hand, features delineated through the touch of the finger, an object passed around, a digital image printed and put in a frame and carefully laced, dusted and cared for, are the registers in which photographic meanings are negotiated” (2010, p. 24). Handling photographs in their physical form brings about the opportunity to touch them. It is the act of touching a photograph that has the capability of accentuating “a sense of the presence of the subject, confirming vision, as touch and sight come together to define the real” (Edwards, 2010, p. 26). When a photograph is touched, stroked, or kissed, “touch transfigures the indexical into the real for a moment, as fingers trace the image of the referent, a sensory accumulation which materializes historical or memorializing consciousness” (Edwards, 2010, p. 26). Edwards believes that images can be just as moving in the Digital Age, especially since images are reproducible through many different formats. Moreover, technology comes with new possibilities for accessing the material. Interactions with physical records possess their own characteristics, while interactions with digitized or digital records hold yet another set of distinct qualities. A user viewing a digital record may manipulate a screen, keyboard, or mouse a certain way. Alternately, the user can employ “the stroking movements of the touch screen—almost stroking the photograph into life or even touching or kissing the screen itself” (Edwards, 2010, p. 32). As a result, regardless of form, “[p]hotographs are caught in a continual tension between visual document and emotional conduit” (Edwards, 2010, p. 33).
Though an archive will not allow users to kiss a photograph as items are often fragile and needing to be handled with care, it is the act of coming into physical contact with an item made available by an archive that can offer the user an experience of feeling connected to particular time, place, or person (Edwards, 2010). Reflecting upon Historical Authenticity, considerations of scarcity and market value can play a role regarding why people may value experiences with such items (Newman & Smith, 2016). Though one-of-a-kind objects may be valuable, there are many that have little to no value. It is here that the valuation of contagion becomes an influential factor.

Contagion is defined as the belief that the immaterial qualities or essence of an individual can be transferred to an object through physical contact (Belk, 1988; Bloom, 2004; Bloom, 2011; Frazer 1890; Nemeroff and Rozin, 1994; Rozin et al., 1989; Tylor, 1871). Due to this reasoning, “people may value an original artwork or a celebrity’s possession, because they believe that those objects contain some physical remnant of the person (e.g., the celebrity and artist), whereas a duplicate object does not” (Newman & Smith, 2016, p. 615). In a study examining the link between contagion and the valuation of original paintings and authorized reproductions, Newman and Bloom found that participants rated the original artist’s painting as more valuable, suggesting that contact with the particular individual plays an important role in judgments of value (2012). Similar observations have occurred with objects that have come into contact with celebrities, loved ones, and important historical figures (Newman & Smith, 2016). As an example, a qualitative study found that visitors to a Shakespeare museum are motivated to frequent the museum because of the belief that the items had direct physical contact with Shakespeare (Grayson & Martinec, 2004).
Though physical sources possess their merits, the digitization of different types of objects, as opposed to only papers is more complicated and their physical characteristics are all the more important to note. According to Object Knowledge Framework, encounters with tangible objects are meaningful due to the visitor’s lifeworld, document’s objectworld, and unified experience (Latham & Kearns, 2016, p. 1). In other words, the person interacting with the object brings previous knowledge to this experience, while the object itself also elicits meaning and information. In addition, the phenomenological touch or “lived experience of making physical contact using ones’ own haptic senses with a real physical thing” can bridge the gap between person and object, “connecting all that is within the person and all that is available with the object” (Wood & Latham, 2011, p. 57). The transaction that occurs during the connection of person and object provides a unified experience (Wood & Latham, 2011).

Contextual information with artifacts of varying material formats is also essential, especially when considering user responses to transitions in format. Varnalis-Weigle found that although physical objects appeared to offer a “higher level of emotional intensity and engagement for the user based upon the level of interest and complexity of the object”, users also appeared to be “highly engaged with the digital documentation provided with the digital objects” (2016, p. 15). While supporting documents for physical objects were also of significance to the user, they “did not appear to have the same high level of engagement compared to the digital user”; rather, users seemed to be more engaged with the information being provided by the physical attributes of the object (Varnalis-Weigle, 2016, p. 15).

While the material format of a record is important, the information that the record contains is all the more crucial. In his reflections on archival quality and information quality, Conway reflects upon O’Toole’s discussion of permanence and its relation to physical records.
Conway notes that O’Toole “implicitly granted permission to archivists to favor information over artifact”; an idea that seems to have been adopted by archivists over the years and has manifested in the case of digital artifacts and the information they hold (Conway, 2011, p. 296). Today’s environment of digital information “transforms the ‘artifact to information’ transition into a de-emphasis on media and a renewed focus on the characteristics of digital content”, leading to many discussions arguing the benefits of digital formats (Conway, 2011, p. 296).

Similarly, Mitchell concerns himself with the information or image held within a photograph, rather than the material format of the photograph itself. In his reflection on visual representation, Mitchell distinguishes between picture and image. Mitchell describes a picture as “a thing you can burn or break” or the physical artifact itself, while an image is described as “what appears in a picture, and what survives its destruction—in memory, in narrative, and in copies and traces in other media” (Mitchell, 2007, p. 16). While the image can appear in different formats, it is not necessarily bound to them. An image “transcends media” and can reappear as a “mental picture […] in memory or imagination” (Mitchell, 2007, p. 16).

At the same time, archives can also transcend their spatial limitations through digitization. Hoskins examines the mediatization of archives as a series of three phases. The first phase is “the actual physical placing or storage of an item” while the second is “that which separates information about the first order objects from the objects themselves” (Hoskins, 2009, p. 97). The third phase, however, is one that calls for the “removal of the limitations previously assumed inevitable in the ways information is organized” (Hoskins, 2009, p. 97). In progressing to this third phase, the “archive appears to have new potential, liberated from its former inherently spatial and to some extent institutional constraints” (Hoskins, 2009, p. 97). As a result, the information housed in the archive is not necessarily bound to that particular space; therefore,
the “traditional materiality associated with the artefactual archive has been challenged by the fluidity, reproducibility, and transferability of digital data” (Hoskins, 2009, p. 97). With the limitations of physical spaces being diminished by increased accessibility, there are more opportunities for archives to collaborate and network with one another.

**Digital formats and fluidity.** Due to today’s technologies, digital formats are being created and shared rapidly through a variety of means. In 2010, the Library of Congress (LOC) and Twitter announced an agreement that would provide the LOC with a digital archive of all tweets from 2006 onward (Hamer, 2018). As of 2017, however, the LOC announced that it would no longer archive every tweet; rather, the LOC would be more selective about which tweets are archived (Wamsley, 2017). This was due to the volume of tweets received, with the LOC amassing a half-billion tweets per day in 2013 (Wamsley, 2017). Moreover, tweets today are longer and largely visual; because the LOC was receiving the text versions of tweets, text-only collections were limited (Wamsley, 2017). User-generated collections also extend to other platforms, such as collections of “photographs on Flickr” (Fenlon et al., 2014, p. 3). The increase in use of mobile devices have also propelled the creation and dissemination of digital information, with cell phones having the power to “generate records of enduring value” (Caswell, 2009, p. 135). The September 11 Digital Archive hosts a wide range of phone-generated materials in order to create a record of the day, with the largest collection of phone-generated materials coming from “the Sonic Memorial, an audio collection of materials relating to 11 September”, coming from mobile phones and land lines (Caswell, 2009, p. 137). The increase in digital information brings about questions of storage, with individuals and institutions turning to cloud-based means of storage for digital information (Hurley, 2016). In addition, Facebook Live is now a “mechanism for reporting events from multiple perspectives while
bypassing traditional media and avoiding state intervention” (Sheffield, 2018, p. 99). Facebook Live offers “any registered user of this platform to stream videos using a mobile phone camera over WiFi or cellular networks without any additional hardware or software” (Sheffield, 2018, p. 98). The user’s video appears in the news feeds of his or her followers, who can view and comment on the video in real time (Sheffield, 2018). Once the live video feed has ended, the video can be posted to the Facebook timeline, allowing followers to access the video asynchronously (Sheffield, 2018). This technology was launched in 2016 and “takes advantage of the global ubiquity of cellphone cameras and the market reach of Facebook, a for-profit corporation offering online social media and social networking services” (Sheffield, 2018, p. 98). This technology, along with the aforementioned advances in the creation of information can empower “citizen journalists, activists, and bystanders to record events as they unfold and broadcast them to a wider audience” (Sheffield, 2018, p. 99).

As more digital information continues to be generated, archivists must consider which digital records are worth preserving and how to do so. Today, archivists find themselves in a period of “too much rather than too little information”, with new material formats posing unique challenges and characteristics that must be considered during the preservation process (Cook, 2007, p. 401). Digital information is full of “virtual, destabilized, fleeting documents”, leaving “paper minds trying to cope with electronic realities” (Cook, 2007, p. 401). In order to keep abreast of the popularity of digital information, the need to care for physical records will be “replaced (or, at the very least) enhanced by a focus on the context, purpose, intent, interrelationships, functionality, and accountability of the record and especially its creator and its creation process” (Cook, 2007, p. 418). Thanks to developments in storing and accessing digital information, “the idea of a record physically belonging in one place or even in one system is
crumbling before new conceptual paradigms, where ‘creatorship’ is a more fluid process of manipulating information from many sources in a myriad of ways, or applications, rather than something leading to a static, fixed, physical product” (Cook, 2007, p. 423). While paper and digital records possess content, structure, and context, how these elements are represented varies significantly. Paper records are “readable to the human eye”, with obvious content and structure (Cook, 2007, p. 426). Electronic records possess a similar manifestation of content, discerned by viewing the text and symbols that appear on the record. Unlike paper records, electronic records are not able to be viewed without the aid of a machine or accompanying software, thanks to their unique structure.

Kirschenbaum reflects upon the notion of the loss of materiality through digitization. Though a first generation electronic object’s “primary ontological horizon is exclusively digital”, this does not mean that these objects cannot “enter into very intimate relationships with physical artifacts” (Kirschenbaum, 2002, p. 20). Moreover, this also does not mean that the objects have no material existence whatsoever. However, digitization can be viewed as “another mode of material presentation—a re-presentation” (Conway & Punzalan, 2011, p. 70). This is viewed as “the tactile fallacy”, holding that electronic objects are not perceived as material because users “cannot reach out and touch them” (Kirschenbaum, 2002, p. 43).

As a result, digital archives differ from physical archives and need to be managed in a way that is not limited by the norms of physical archives. According to Klareld and Gidlund, “Culture and discourses affect our understanding of the archive in the digital environment: preconceptions, norms, and practices developed in a paper-based administration colour [sic] and limit perceptions of digital archives” (Klareld & Gidlund, 2017, p. 81). In addition, the “physical constitution of paper records differs from that of digital records” (Klareld & Gidlund, 2017, p.
While physical records may be damaged when consulted, the “possibilities of reuse are more wide-ranging for digital records” (Klareld & Gidlund, 2017, p. 107). Digitization allows for “access to digital images while preserving rare and fragile original records and documents” (Kenely et al., 2016, p. 75). Moreover, the digitization of records “allows for multiple asynchronous usages, meaning that access to large parts of an archival resource is now feasible” (Kenely et al., 2016, p. 80).

There are many more differences between the virtual and material worlds. On one hand, the material world possesses the weights of “aura, evidence, the passage of time, the signs of power through accumulation, authority, knowledge, and privilege”, while multimedia is seen as an “other” that is “temporary, modern, popular, and democratic” (Witcomb, 2007, p. 35). Individuals who are threatened by multimedia view it as a threat because of the potential “loss of aura and institutional authority, the loss of the ability to distinguish between the real and the copy the death of the object, and a reduction of knowledge to information” (Witcomb, 2007, p. 35). However, others view these losses as potential opportunities to restructure and facilitate access to information, as opposed to solely maintaining it.

Rather than viewing multimedia as only a tool for interpretation, it can be used to enhance exhibits and user experiences, as has often been the case in museum settings. Multimedia installations in museums build upon the “affective’ possibilities of objects”, engaging emotions through “shared experiences, empathy, and memory” (Witcomb, 2007, p. 36). Witcomb examines museum exhibits in order to explore how the use of multimedia affects the display of objects from a collection and to examine a broader message of its use within the museum context. In response, Witcomb suggests two functions of multimedia installations in exhibits: “the ability to privilege the role of interpretation itself” and the ability to act as
“releasers of memory” (2007, pp. 35-36). Multimedia installations can “make unconscious memories conscious”, allowing for a visitor to have an “experience in which their sense of self is altered” (Witcomb, 2007, p. 37). Though multimedia has been used to support museum exhibits, it has become more of a focal point within the exhibits over the years. Like material objects, multimedia can be “three or two dimensional, can be touched, looked at, in some cases viewed from all angles, exist in real time and are the results of a human production process”, offering meaning in their own right (Witcomb, 2007, p. 38). Moreover, these objects can produce an affect or physical reaction evolving into an “emotional response that leads to a greater degree of understanding” (Witcomb, 2007, p. 41). By making interpretation “an object of attention” and allowing for the facilitation of an affective response, multimedia installations created a “physical, mental, and emotional space which prepares the audience for a sensitive re-reading of those objects that are on display” (Witcomb, 2007, p. 46). As a result, multimedia installations can have “both physical expressions and material effects” when viewed “alongside objects and not as their other” (Witcomb, 2007, p. 47).

**Physical formats and fixity.** In a seminal work, O’Toole examines the idea of permanence as it relates to archives, in terms of the information and physical records in which this information resides. Archives house records that are identified as having “permanent value” (O’Toole, 1989, p. 11). While it is important to recognize this value, O’Toole argues that preserving the physical record is “not ultimately as important as preserving the information” contained therein (1989, p. 12). In the twentieth century, the preservation of information was viewed as important but the preservation of the record became important, as well, because newer technologies made its preservation more viable. Archivists worked to combat deterioration and decay since there were methods to do so; to ignore preservation of the record would otherwise be
perceived as a failure on the part of “those whose responsibility it was to keep the permanent records of society” (O’Toole, 1989, p. 12). O’Toole’s work is still significant today, as additional formats continue to emerge. In response, archivists find themselves working to preserve a wide range of formats, both physical and digital, in addition to offering access to users who wish to access these formats. Moreover, today’s creation of digital surrogates for physical items echoes O’Toole’s emphasis on preserving the information, as opposed to only preserving the record.

Today, there are those who believe that physical records also possess characteristics that do not necessarily translate to new formats when digitized (Varnalis-Weigle, 2016). In The Social Life of Information, Duguid shares an anecdote regarding a time when he was researching in an archive that housed wooden boxes full of letters; however, opening a letter would trigger an asthmatic attack, leading him to long for “a digital system that would hold the information from the letters and leave paper and dust behind” (Brown et al., 2017, p. 163). As he was reading the letters, a postal historian also visited the archive and suggested to him that he should sniff the letters, as letters were disinfected with vinegar to hinder the spread of cholera. Historians have been able to trace the progression of the cholera outbreak, thanks to the “traces of vinegar that survived 150 years” (Brown et al., 2017, p. 164). In this case, digitization would not be able to reproduce the faint smell of vinegar that has been crucial in the work of other researchers. On a similar note, Seremetakis argues that “[t]actility extends beyond the hands”, citing scent as an example (1993, p. 5). According to Seremetakis, “[e]ach smell generates its own textures and surfaces” (1993, p. 5). The same can be said for the intersection of sensory memories and emotions with handling the object itself. Objects can evoke memories and emotions, while also “incarnating remembrance and feeling” when handled, based upon what they represent to a given individual (Seremetakis, 1993, p. 14).
Over time, the meaning and significance of intrinsic value have expanded, as demonstrated by the National Archives and Records Service (NARS). As NARS started to consider the replacement of paper records with copies, the idea of intrinsic value became a popular topic of discussion among archivists. The term refers to “historical materials that should be retained in their original form rather than as copies” (National Archives and Records Administration, 1999). Even though all records have aspects of their physical form that cannot be copied, “records with intrinsic value have them to such a significant degree that the originals must be saved” (National Archives and Records Administration, 1999). Characteristics of intrinsic value can relate to the “physical nature of the records, their prospective users, and the information they contain” (National Archives and Records Administration, 1999). NARS developed a Committee on Intrinsic Value (CIV) in an effort to distinguish between records that should or should not be retained in their original form. CIV worked to “write a comprehensive and broadly applicable definition of intrinsic value”; “define the qualities and characteristics of records having intrinsic value”; and “demonstrate application of the concept of intrinsic value in decision making” (National Archives and Records Administration, 1999). While original records can be considered valuable, researchers also turn to the surrogate formats.

**Use of surrogates.** As archives continue to digitize their collections, they produce a wide range of visual and textual surrogates. According to Conway, a “surrogate is something that stands in for or takes the place of something else, in this case the original source” (2015, p. 52). This creation of digital surrogates stemming from archival sources can be viewed as a “process of representation, far more interesting than merely copying from one medium to another” (Conway, 2015, p. 52). Conway argues that digitization is necessary for archives; otherwise, they run the risks of being “marginalized because their collections are not accessible in digital form,
impoverished through the reallocation to digitization of fixed or declining resources, or outsourced to sources and sites that can deliver acceptable digital content” (2015, p. 55).

While libraries and archives typically work to preserve their physical and digital collections in their original formats in order to keep their significant properties intact, various limitations often force these institutions to preserve them in surrogate forms. The growing demands on physical collections are a concern to the conservation and preservation community, offering surrogates as a way to “mitigate damage and exposure of the physical objects” (Schneider & Grafakos, 2013, p. 91). Alternatively, they can be used to work with physical items that are otherwise too fragile to be handled directly (Hotchkiss, 2013; Shein & Lapworth, 2016). Digital surrogates can also “provide a backup copy of materials for which eventual deterioration cannot be prevented, such as analog audiovisual recordings” (Shein & Lapworth, 2016, 29). The use of surrogates lessens the stress imparted upon physical records, and in some cases is preferred to utilizing the original source. Additionally, surrogates can increase access to a record and are often more convenient alternatives to traveling to a physical location. In an instance of an original item being privately owned, the surrogate may allow for the only means of public access (Shein & Lapworth, 2016).

Thoughts on the use of surrogates have evolved over time, with some institutions embracing the use of surrogates and others opposing them (Schneider & Grafakos, 2013; Shein & Lapworth, 2016). Individuals argue that digital surrogates for physical objects “become far removed from their physical counterparts” (Burns, 2017, p. 2). Shein and Lapworth state that “humans generally prefer to work with physical originals, casting doubt on whether digital surrogates will be accepted and used by researchers” (2016, p. 28). According to Burns, archivists have historically rejected “the notion that surrogates carry any archival value […] and
their value is therefore measured primarily through the provision of immediate access to the visual and/or textual content of the original object” (2017, p. 2). Because digital surrogates of material items preserve a representation of content rather than a complete reproduction of the material format, Burns argues that “the process of digitization creates an entirely new material object: a digital surrogate that represents the original virtually” (2017, p. 2). Though not meant to act as a replacement for the original item, they possess a documentary value that should not be overlooked (Burns, 2017).

Though some may argue that Benjamin’s aura is lost when reproductions occur, Burns notes that this viewpoint fails to recognize the surrogate as an object with its own history and provenance (2017, p. 6). Due to the fact that the surrogate preserves an original item at a certain point in time, it “draws its significance from the ongoing narrative of its physical counterpart and serves as a mediator between the viewer of the surrogate and the creator of the original work” (Burns, 2017, p. 6). In opposition to the belief of a loss in aura, MacCannell states “reproductions are the aura” (1999, p. 48). While the object separates from its archival context, a surrogate “points back to the original as a marker of its originality, authenticity, and materiality” (Burns, 2017, p. 6). Since the physical and digital object age differently, a surrogate can offer “two versions of the same singular object” (Burns, 2017, p. 7). As a result, a surrogate has the ability to preserve past “stages of the physical object’s existence, and with the addition of technical and descriptive metadata, the digital file is situated as a faithful and reliable reproduction of the original” (Burns, 2017, p. 7).

Moreover, Burns believes that the claim of digitization preserving “only content and not form” is misguided, as “it is not the materiality that is lost, but rather the substance that is not able to be rendered digitally” (2017, p. 7). For example, in Varnalis-Weigle’s comparative study
of a physical object and digital surrogate, the numinous affect of transformation was only experienced at the physical level (2016). While working with digital surrogates perhaps “does not replicate the emotions inspired by physically handling primary sources, it is critical that the loss of that one characteristic does not overshadow the benefits of creating digital surrogates” (Shein & Lapworth, 2016, p. 33). Though “not every element of materiality will be preserved in the digital surrogate”, an incarnation of the physical item transitions to the digital file (Burns, 2017, p. 7). Burns goes on to say that the processes of digital capture, technical metadata, and wide dissemination can retain the aura of which Benjamin speaks, and go on to preserve and amplify “to an extent that the singularity and originality of the physical archival photograph depends almost entirely upon the existence of its digital copies” (2017, pp. 7-8). Similarly, if the surrogate is “created, acquired, and stewarded according to emerging best practices, digital surrogates reflect the authenticity and maintaining the integrity of the original” (Shein & Lapworth, 2016, p. 14). At the same time, if the original object from which the surrogate was derived is lost or altered, the surrogate form can serve as “trustworthy evidence (which can be confirmed by digital forensics)” (Shein & Lapworth, 2016, p. 14).

Nonetheless, there are also individuals who support the use of surrogates. According to Shein and Lapworth, “Survey data shows that the use of digital surrogates has increased significantly in the past decade” (2016, p. 32). As archives increasingly offer access to surrogate records, Frost notes that exhibits are “moving away from the original object to re-representation of the original as a physical or digital surrogate” (Frost, 2013, p. 91). Though representations or facsimiles are being used, they are not without context. At the Library of Congress, digital copies are “rigorously checked for quality and accompanied by “items such as maps and color plates, all from the original, which are inserted into the facsimile” with an added note highlighted the
original elements retained (Drewes, 2013, p. 91). Furthermore, digital surrogates possess the benefits of increased discoverability, access by multiple individuals either separately or collaboratively, and easily extractable data (Shein & Lapworth, 2016). Today, users of archives “are not only increasingly accepting and using digital surrogates, but are greatly relying on them to conduct scholarly research” (Shein & Lapworth, 2016, p. 34).

Today, archives possess original and surrogate records in many different material formats for a variety of reasons (Burns, 2017). The ability to preserve and offer access to these collections remains a priority for archives. Scholars predict that digital surrogates will continue to grow in use and that “archives will be expected to provide access through digital surrogates in order to remain relevant” (Shein & Lapworth, 2016, p. 26). However, the question of how to offer access to records in a way that best supports the user experience is still an issue. While much has been written about the individual formats themselves, there is a need for studies that compare user experiences when working with records ranging across different formats and examining whether or not user experiences are influenced by format. This study fills the gap in the research regarding how transitions in material format may affect the user experience, in addition to examining why users may choose to work with certain formats over others.

**Accessibility**

Though the acts of collecting and preserving materials are still essential to archives, added goals have arisen over time. In an 1899 address, the president of the Massachusetts Historical Society stated that “To accumulate was our special function in the nineteenth century; our function in the twentieth will be to make all accumulations available” (Adams, 1899, p. 118). While these words capture the initial goals of archives, these goals have become complicated by
records existing in a variety of material formats. Collecting and accumulating continue to occur, though there are many more avenues from which new information can be collected for preservation. However, making this information accessible in a way that allows for an ideal user experience is a challenge. In response, LIS professionals have aimed to address this issue while also attempting to make predictions regarding the duties and material makeup of future archives. This section addresses changes in archival collections, offering an overview regarding the quality of conversions and sharing information about user groups that access archives for research purposes.

**Changes in archival collections.** Belanger offers several predictions regarding the fate of rare books and special collections, holding that the popularity of digitization will lead to a decrease in housing physical records as part of collections. With the advancements of the internet as a means of offering access to materials, users “will perceive that they do not ever need and do not ever want access in printed form to the bulk of this material—a circumstance already routinely the case with users of large online databases” (Belanger, 2003, p. 185). Moreover, he holds that if the “master text is machine-based rather than paper-based” it is probable that “paper copies are going to be used and viewed as the temporary physical manifestations of a permanent electronic ideal” (Belanger, 2003, p. 185). Though digitization can improve access to materials, it also makes them more malleable, allowing users “to copy, excerpt, index, translate, store, and retrieve” (Belanger, 2003, p. 185). Belanger warns his audience of librarians with the following words:

> We must not let whatever personal affection we have for books as physical objects blind us to the fact that most persons are, when push comes to shove, quite free of emotional
While Belanger consistently supports that digitization will become popular and greatly reduce physical collections, he posits that some physical records will remain. He predicts that institutions will retain physical records that are “part of its own history”, “notable for their physical beauty or sentimental appeal”, “good examples of their physical genres or formats”, or represent a strong “local connection or relevance” (Belanger, 2003, p. 189). These characteristics should prevent certain physical records from being discarded. Though institutions “will not be able to save much of anything in its original format […] they must find ways to save something of everything” (Belanger, 2003, p. 190).

Like Belanger, Brand also defends the printed book, claiming “the printed book will remain constant”, even though society will continually adapt to new technologies (2016, p. 44). Brand points out that the pages in a printed book are fixed, forcing readers to interact with the book (2016, p. 44). Unlike the malleability and movability of digital texts, a printed book allows “[y]ou to feel the paper between your fingers” and “hear the page crinkle softly as it turns” (Brand, 2016, p. 44). Digital texts will even mimic the process of page-turning, as readers may still anticipate turning pages similarly (Brand, 2016, p. 44). Brand also offers a term for a reader nearing the end of a printed book—“the pinch”—in which “there are so few pages left to read that your fingers seem to touch through them” (2016, p. 45). In this case, print can become a “physical manifestation of the emotion a reader experiences near the end of a good book”, embodying “simultaneous anticipation and dread: anticipation of finding out what happens, dread that the book will end” (Brand, 2016, p. 45).
In response to Belanger’s lecture, Hirtle wrote an article that aimed to identify further developments regarding digitization and whether or not these developments could be directed or controlled (Hirtle, 2002). According to Hirtle, digitization has three benefits: an increase in collection use; new types of research; and a combination of new users and new uses for collections (2002, pp. 43-44). Hirtle holds that the primary benefit of digitization is the increased use of collections. He shares examples from the University of Michigan’s Making of America (MOA) collection, citing an increase in their collection use when their physical copies of nineteenth-century American monographs and serials were digitized. Cornell University also experienced similar success upon digitization; the university’s circulation increased from “at best a few hundred volumes” per year to “5,000 views per day” of their digitized collections (Hirtle, 2002, p. 43). Hirtle claims that “In hard copy the material may have seemed obscure; when digitized it becomes a core resource” (2002, p. 43).

While offering collections for free in another material form may have helped increase their use, access is not the sole reason for this escalation in use. Dempsey notes that the evolution of learning and research practices in a networked environment lead to growth in terms of the discovery, curation, and creation of collections (2016). According to Dempsey, library collections, organizations, and professional practices were “strongly shaped by a print logic,” which called for the distribution of print copies to local destinations (2016, p. 339). Today, there is a “response to the reorganization of research work by the digital environment” or “inside-out Library”, in which creation occurs with an interest in process, products, and learning, leading the institution at which they occur to want to share this information beyond the institution (Dempsey, 2016, p. 339). Products of research as well as learning materials are now visible and sharable (Dempsey, 2016). Though the previous library models of collections were “outside-in”,...
the inside-out model “supports resources which may be unique to an institution, and the audience is both local and external” (Dempsey, 2016, pp. 340; 341). In most cases, the goal is the ability to “share these materials with potential users outside the institution” (Dempsey, 2016, p. 341). Like Hathi Trust, libraries are working together due to “a shared interest in collective collections—an aggregate view of collections, print or digital, across their institutions” (Dempsey, 2016, p. 341). Additionally, there is a “response to the reorganization of the information space by the network” or “facilitated collection”, in which an institution focuses upon facilitating access to “a coordinated mix of local, external and collaborative services assembled around user needs and available on the network” (Dempsey, 2016, p. 339). The impact of the inside-out model is echoed in characterizations relating the user relationships with libraries. Over time, there has been a shift from considering “the user in the life of the library” to “the library in the life of the user” (Dempsey, 2016, p. 342). While the user in the life of the library deals with “building collections for possible use”, the library in the life of the user is more user-focused and considers “the flow of users’ research and learning practices, and about how those practices are evolving” (Dempsey, 2016, p. 341). Overall, the inside-out library model “is about more deeply engaging with the creative life of the university, mobilizing library services and expertise to support the creation, curation and discoverability of institutional assets” (Dempsey, 2016, p. 342). As a result, the library has moved from “discovery to discoverability”, wishing to “share institutionally created materials with a broader community, with researchers elsewhere, with professional colleagues, and so on” (Dempsey, 2016, p. 348).

The use of digitization can also create new opportunities for research. For example, digitized manuscripts can use “imaging techniques to highlight elements of the text that could not otherwise be seen” (Hirtle, 2002, p. 44). Moreover, the availability and accessibility of
records in digital formats “can change the audience using the material” (Hirtle, 2002, p. 44).

Hirtle believes that five developments will occur as digitization continues: “Electronic access will replace most uses of printed, paper copies”; “The use of paper originals will decrease”; “The number of books available as digital facsimiles will increase”; “Special collections print holdings will become less special”; and “Special collections librarianship will change” (Hirtle, 2002, pp. 45-48). Though a “physical manifestation of a book or manuscript can also carry information about its date, process of creation, and previous use, none of which can be determined from a digital scan”, Hirtle claims that electronic access will still replace the use of physical records found in special collections (2002 p. 45). As availability of digitized surrogates increases, Hirtle posits that the use of paper originals will decline. In the case of the MOA collection, few print volumes are still requested and “half of those were withdrawn once the patrons learned that they could get access to the volumes online” (Hirtle, 2002, p. 46). While there are certain aspects of a physical record that are of significance to researchers, those who are interested in the contents of the record will find the digital surrogate acceptable (Hirtle, 2002, p. 46).

As a result, how certain archives market their collections will have to be revisited and prioritized in a way that will attract more researchers. Today, special collections distinguish themselves by the unique records they house, drawing users to their collections because these records are rare and difficult to access. Hirtle suggests that special collections will still be useful if they focus upon emphasizing “those elements in their holdings that are truly unique”; “reinvigorate the idea of special collections as museums”; “become active participants in the conversion of special collections materials”; and “look for new collecting areas” (Hirtle, 2002, pp. 49-50). In the end, he holds that the “original works have inherent value as artifacts” (Hirtle,
2002, p. 50). Though online or electronic surrogates will be able to deliver the content of materials, the intrinsic value of books as objects will need to be stressed to users in order to encourage interaction with the physical objects. Despite this claim, however, Hirtle posits that while “digital copies become available for reading, the need to consult the local print holdings will decline” (2002, p. 47). Over time, Hirtle expects an increased availability of “digital surrogates for more and more material, and more and more people will prefer to work with those surrogates” (2002, p. 49).

**Quality of conversion.** In order to access transferred or surrogate records, the quality of conversion must be suitable for researchers to use; however, the quality of digital conversion is dictated by the limitations of capture and display technologies. According to the Society of American Archivists, “Digital conversion places less emphasis on obtaining a faithful reproduction of the original than on finding the best representation of the original in digital form” (1997). Instead of focusing on the best representation, the key goal for preservation quality of digitized artifacts is “to capture as much intellectual and visual or aural content as is technically possible and then display that content to users in ways most appropriate to their needs” (Society of American Archivists, 1997). While improved access is one of the main benefits of digitization, offering “high-quality, high-value, well-protected, and fully-integrated” versions of original source documents, the impact of digital technology extends far beyond enhanced access (Society of American Archivists, 1997). Digital imaging technology “involves transforming the very concept of format, not simply creating an accurate picture of a document, photograph, or map on a different medium” (Society of American Archivists, 1997).

Today, many collections of archival moving images are undergoing the process of digitization and online distribution in order to increase user access to them. However, with the
rise in access come “concerns about quality of digital surrogates” (Gracy, 2013, p. 346). In her study, Gracy interviewed several archivists in an effort to learn how cultural heritage institutions are working towards increasing access to archival moving image collections through the internet. She found that “few archival institutions had digitized more than 5 percent of their motion picture or analog video collections”, and that several digital projects carried out were “exploratory or ‘low risk,’ using lower-quality formats for web-friendly distribution” (Gracy, 2013, p. 347). Nonetheless, the use of digital technologies has become a favored method of preservation by archives, offering a viable way of achieving the “long-term goals of better access to paper-based and still photograph collections” (Gracy, 2013, p. 348).

Gracy examines the role of digital distribution and its correlation to institutional missions as well as its impact and critical challenges to explore how new avenues for moving image consumption can shape future decisions concerning digitization. While digitizing for streaming online is viewed as “the ‘quick and dirty’ way to get things online”, the creation of “digital copies for access purposes rather than for preservation purposes” can attract newer and broader audiences to the moving image collections of an archive (Gracy, 2013, p. 357; 369). According to Gracy, “Archival moving images digitized primarily for access purposes may initially be deemed inferior to preservation-quality transfers; however, their increased availability and utility to users will eventually be considered preferable to the market and displace the previously favored product” (2013, p. 370).

As archivists move towards offering newer formats for their users to access, it is important that they have the tools to engage users through modern methods of access. Trace discusses how computers operate in order to familiarize archivists with how digital records can exist within a computer system and to acquaint them with the tools and processes required when
acquiring and preserving born-digital records (2011). In archives, computers work to “create, manage, and store those digital objects, which are later deemed to have long-term or enduring value” (Trace, 2011, p. 5). As computers continue to become more engrained in everyday life, archivists need to understand the computer interfaces used to provide resources to users and to “engage user communities in ways that make the most sense to them” (Trace, 2011, p. 25).

As material formats continue to change, the likelihood of archives inheriting more hybrid collections will increase. In response to these acquisitions, archivists will need to process these collections in a way that is conveniently accessible to their users. Moreover, the integrity of the collection will need to be preserved, which will lead to decisions regarding which material formats will be made accessible to users.

**Use of digital and physical records.** As institutions digitize their work and make information available in more formats, the needs of the user have been taken into account. Digitized book libraries grow larger in scale, leading their curators to explore the “range of ways in which scholars conduct research, or want to conduct research, in the context of massive libraries of digital books” (Fenlon et al., 2014, p. 1). Whether or not scholars are operating in a digital environment, they are relying upon collections and creating collections of their own as they progress through their research (Fenlon et al., 2014). According to Fenlon et al., collections service as research products and are reusable resources (2014). Moreover, certain scholars are “actively involved in digitization and consider it a phase of their collecting work” (Fenlon et al., 2014, p. 4). In addition, there is a need for metadata that can “transcend the conventions of the bibliographic record” and scholars have expressed a “willingness to help create and share that metadata” (Fenlon et al., 2014). Fenlon et al. determined that “scholars regularly enrich data in the course of their analytic work” and that “harnessing these vital contributions to metadata
enrichment as a component of scholarly discourse is key to maintaining relevant digital resources that serve researchers’ needs” (2014, p. 9).

Digitization of physical records has become increasingly popular among scholars who regularly utilize reading rooms. Specifically, the “use of digital cameras in the reading room to photograph sources” is becoming widespread, due to the “efficiency and convenience” of being able to capture primary source material in this way (Rumer & Schonfeld, 2012, p. 12). In a report by Rumer and Schonfeld, an interviewed sample of scholars who regularly bring along digital cameras to reading rooms shared that they would visit the reading room to photograph collections but “would often postpone viewing the images until they returned home from the trip” (2012, p. 12). This habit expresses that certain scholars “no longer engage intellectually with the sources while in the archive; these trips have become more of a collection mission” (Rumer & Schonfeld, 2012, p. 12). Due to the fact that scholars can have access to photographs of primary sources, thanks to their digital cameras, they can now “interact with their sources from their homes or offices” without “having that activity relegated to a few days or weeks in an archive” (Rumer & Schonfeld, 2012, p. 12). The opposite is also true, as “studying digital objects can encourage users to experience the physical object” (Varnalis-Weigle, 2016, p. 17). While these claims can be considered clear benefits to scholars, photographing primary sources with digital cameras also brings about its own set of challenges. Scholars must be able to organize their photographs in a way that is accessible to them, often relying on “complex file structures and good memories to access their files once home from the archive” (Rumer & Schonfeld, 2012, p. 12).

Similarly, Chassanoff conducted a study that explored how academic historians search for materials; which primary sources they use; how they access materials; and how they
evaluated primary source materials that have been digitized (2013, p. 459). By examining the following information behaviors, Chassanoff aimed to “inform how archival research environments can better serve the information needs of academic historians doing research with primary source materials” (2013, p. 459). Digital collections can be beneficial to scholars who are interested in the “ease of using digital formats” and “fast access” (Chassanoff, 2013, p. 463). Moreover, utilizing digital collections can “save time and money for scholars in judging the relevance of materials to their research” (Chassanoff, 2013, p. 463).

Chassanoff conducted a survey with 86 academic historians, studying the materials that they consult in their research; types of sources used most frequently; how these sources are accessed; when they choose to examine sources in person after finding them online; and any potential barriers to using the materials (2013, p. 468). Her respondents shared that they primarily accessed “accounts and ledgers, correspondence, diaries, and manuscripts in person; there was some indication that respondents who access materials online also pursue them in person” (Chassanoff, 2013, p. 469). Alternatively, her respondents also shared that “they access works of art, oral histories, photographs, sound recordings, film recordings, and video recordings more frequently online than in person” (Chassanoff, 2013, p. 469). Of the 86 respondents, 25 shared that “they pursue in-person access to materials after first seeing them online” (Chassanoff, 2013, p. 469). The reasons for this ranged from a “dissatisfaction with the quality of digitized materials, preferring to view them in person” and “concern over the completeness of the online source and its related materials” (Chassanoff, 2013, p. 469-470). Of the 86 respondents, 80 indicated that they use digitized materials in their research, leading to Chassanoff’s overall conclusion that “historians seem to feel most comfortable using digitized sources when an online environment replicates essential attributes found in archives” (Chassanoff, 2013, p. 470).
Academic historians typically want to access an “entire collection online and obtain any needed information about an item’s provenance”, so that they may feel that the source is trustworthy and able to be used for the purposes of their research (Chassanoff, 2013, p. 470). Finally, Chassanoff asked her respondents to share which types of sources they would like to see digitized (2013). Her results demonstrated that 27 of the 86 participants noted that they wanted to have “searchable online access to full runs of historical newspapers” for their research (Chassanoff, 2013, p. 471). Her respondents also listed formats such as “manuscripts, oral histories, popular magazines, photographs, and diaries/journals” as records to which they would like to have digital access (Chassanoff, 2013, p. 471).

In conclusion, archives today possess a wide range of material formats accessed by researchers for a multiplicity of reasons. Each type of format possesses its own characteristics, leading researchers to pursue certain formats over others. Despite the existence of information regarding how archives are adapting to implementing various material formats and making them accessible to users, there is a lack of studies that closely examine user experiences in relation to how and why certain material formats of records are being accessed more than others. Additionally, it is clear that archives are beneficial to users who want to access records but a thorough review of user experiences with different formats and reactions to them is still necessary.

Conclusion

Presently, there are studies that examine the benefits of different material formats to users and substantial literature regarding the topics of accessibility of collections. As more materials are being digitized, it is worth exploring the numinous feelings of users and whether or not these
feelings have the potential to be minimized or enhanced during their experiences. Though studies regarding numinous encounters have been conducted in the museum setting, none have focused upon the archival setting and archival records housed in physical or digital collections. Additionally, no studies have interviewed users of archives in a way that also measures affective style as part of their reflections on experiences with different material formats in archives.

This study acknowledges and fulfills a need to evaluate user experiences with items of varying material formats in the archival setting. Though many archival records are accessible online, some users may choose to visit physical archives in order to work with an item personally because the online source may not have been sufficient for their research. In other cases, users may frequent physical archives because of attributes of an item that might not be transmitted digitally. This study examines whether or not user experiences differ when users work with items of varying material formats, in addition to evaluating which aspects of the user experience might lead to users choosing to work with certain material formats over others.
Chapter Three: Methodology

Information is consumed by users through a wide variety of material formats. As a result, libraries and archives have been impacted by the material format preferences held by their users. In order to meet the demands of users, archives have been working to make their collections as accessible as possible. The digitization of many collections has been one such effort that has allowed for increased accessibility to archival collections. While transitions in format are not new, there are few studies that examine affective user experiences when working with various formats. Though there have been studies that examine authenticity and preference in relation to material formats, none have approached the topic with potential links to the numinous experience in the archival setting. It is possible that users often exhibit preferences for certain formats over others, potentially due to the numinous qualities of an item and the feelings they experience when working with a particular format.

In response, this study examines whether or not user experiences differ when users work with items of different material formats. All of the users who participated in this study had previously worked with different formats, namely physical items and digital surrogates, throughout the course of their research. Regardless of how many different types of formats users have referenced, they all responded to the same set of interview guide questions required by this research. In order to explore the impact of material format upon user experience, this study employed a qualitative methodology to best capture the subjective nature of user experience and the numinous. The use of a qualitative methodology allowed for the gathering of information about how individuals respond to and interact with certain objects and produced qualitative information for analysis.
Participants

The participants for this study consisted of a group of 11 users of physical archive locations, at least 18 years of age, across three different archives. Five of the participants were males, while the remaining six were females. Of the 11 participants, one was Hispanic and the remaining ten were Caucasian. In terms of age, six participants were under the age of 35, while the remaining five participants were over 35 years of age.

Participants in this study were semi-randomly selected, as the individuals’ participation in this research was prearranged by the principal investigator and archivist. The principal investigator contacted archivists in advance asking for them to recommend frequent users of their archives who would be willing to participate in this study. The archivists and participants received the letter of introduction offered in Appendix B. From there, the principal investigator coordinated with the archivists and participants through email to arrange for a day to conduct in-person interviews for this study. All participants in this study frequented physical archives and have used digital collections. Participants were not selected because they automatically felt that a physical record was more important; rather, all types of physical archive users were recruited and had knowledge of the study topic from the start. All participants responded to the same set of interview guide questions, in addition to any follow-up questions posted by the principal investigator in order to promote a more elaborate response.

In this study, participants were all serious researchers with a wide range of research interests. The individuals who participated in this study had interests in World War II, primary sources, genealogy, art history, education, military history, university history, and various other academic interests. Over time, they had also consulted a rich array of materials for their research. The materials consulted included periodicals, books, diaries, journals, Bibles, diagrams, audio
material, video material, booklets, labels, Sanborn maps, census data, correspondence reports, photos, meeting minutes, university communications, oral histories, and other artifacts.

The three archives utilized in this study included a university archive, a metropolitan historical society, and a special library archive, all located within the Midwest. While the university archive and special library were in suburban areas, the historical society archive was located in a metropolitan area. Each of these locations has both physical and digital archival materials housed in their collections.

**Instruments**

The instrument used in this study was an interview guide created by the principal investigator, which was read aloud by the principal investigator in order to guide the participant through the semi-structured interview. The questions included in the guide were designed to allow the participants to verbally respond to questions about their past experiences in working with different material formats in archives. Additionally, the principal investigator also video-recorded the participants to note any physical or non-verbal reactions exhibited during their responses to the interview questions. While the questions listed on the interview guide were posed to all participants, the principal investigator also asked follow-up questions when necessary in order to encourage elaboration of have the participant clarify a certain response. The questionnaire form is included in Appendix D.

The interview guide outlines a set of eight questions linked to the key constructs of this research, which were posed to the participants in order to gather information about their past experiences in working with items of varying formats in archives. The questions were designed to address background information, general user experience (including materiality and
accessibility), and the numinous experience. First, there were two questions that dealt with background information. The first question asked the participant to consider broadly why he or she visits archives. The second question asked the participant which types of materials he or she had used from archives in the past. The next three questions dealt with general user experience, with questions that focused on materiality and accessibility. Here, participants were asked if the items to which they referred were available in other formats. Participants were also asked to share an experience in which they used one or multiple formats of a source. Additionally, participants were asked to discuss a time during which they worked with an original item and a time during which they worked with a surrogate version of the same source. The final three questions in the interview guide dealt with the numinous, attempting to gain information about whether or not working with particular formats elicited experiences that were moving or special to them. Furthermore, the second question addressed how important these potentially moving or special experiences were to the participant and to the participant’s research. The final question asked participants to consider how they would react if an item relating to their research were suddenly discovered and made available, in addition to asking which format they would prefer to use.

In asking this set of eight questions linked to the key constructs of this study, the principal investigator linked participant responses to user experience, materiality, accessibility, and the numinous experience, in an effort to offer conclusions that could answer the research questions posed by the principal investigator for this study. Each participant was interviewed once by the principal investigator with the questions offered in Appendix D. Each interview lasted approximately 30 minutes in length. All individual interviews with participants were
recorded on video for the principal investigator and dissertation committee to reference during data analysis.

**Procedure**

Upon reading the letter of introduction to the research and signing a participation consent form, available in Appendices B and C, participants proceeded through the interview guide as the questions were read aloud by the principal investigator. The interviews took place in the physical archive locations. The metropolitan historical society archive interviews took place in their main research room, while the special collections archive and university archive interviews took place in conference rooms. Each interview was video-recorded in order to capture reactions relating to affective style, focusing specifically on indications of interest, neutrality, and disinterest. All interviews were conducted on an individual basis with the principal investigator and each individual was interviewed once. The semi-structured interview questions were designed to elicit verbal responses to the questions in addition to any physical or non-verbal responses that could occur as the participants reflected upon their experiences and shared their responses with the principal investigator.

Initially, participants were asked general questions about the purposes of their visits to archives and materials accessed. The archive at which the interview was occurring provided one physical item and one digital surrogate item with which the individuals being interviewed at that archive interacted. Participant interactions with these objects were video-recorded, as well as their responses to questions that focused upon their experiences with the different formats accessed during this portion of the interview and their preferences for using different formats.
The remaining questions asked them to share information about their past experiences using different formats as part of their research processes.

Just as in prior studies on the authenticity and emotional aura of physical objects and digital surrogates, the participants engaged in video-recorded, semi-structured interviews, guided by the principal investigator (Conway, 2010). Due to the personal and subjective nature of user experience, interviews were an optimal way to capture participant interactions with records of varying material formats. The open-ended and semi-structured style of the interview questions helped the principal investigator understand user experiences, thoughts, and numinous experiences, through the participants’ points of view (Varnalis-Weigle, 2016). This approach was approved by the Institutional Review Board at Dominican University, as evidenced in Appendix A.

**Data Analysis**

Ultimately, the qualitative information gathered from the interviews was transcribed and coded in an effort to better identify potential patterns and regularities. The interview footage was reviewed by the principal investigator in order to be transcribed into typed text documents. Interview footage was also reviewed in order to note any expressions of affective style that indicated interest, neutrality, or disinterest when interacting with objects of varying material formats. In an effort to avoid researcher bias, the principal investigator reviewed the interview footage for indications of interest, neutrality, and disinterest, sharing observations of any manifestations of interest, neutrality, and disinterest and submitted the transcriptions and indications to the corresponding user for verification. This process of participant verification occurred before data analysis. In doing so, the principal investigator worked with accurate data to
code and analyze. Upon verification, changes in participants’ facial expressions during interaction with a physical item as well as interaction with a digital surrogate item were quantified to better understand participant experiences with varying material formats. Overall, this study produced descriptive data.

Upon transcription of the interview, the principal investigator reviewed the video footage for interest, neutrality, and disinterest, chronologically logging any manifestations of these responses. The typed transcripts and any fluctuations in facial expressions were coded in order to better identify patterns and regularities, as well as what conclusions may be drawn from this data by employing the Facial Action Coding System (FACS). The FACS refers to “a set of facial muscle movements that correspond to a displayed emotion” (Facial Action Coding System (FACS) – A Visual Guidebook, 2002, para. 1). It was initially developed by Hjortsjo with 23 units of facial motion in 1970, expanded upon by Ekman and Friesen, and updated in 2002 (Facial Action Coding System (FACS) – A Visual Guidebook, 2002). The FACS offers a listing of physical action units that, when combined in a certain way, can express a particular emotion. Today, the FACS identifies seven categorical emotions, including joy, anger, surprise, fear, contempt, sadness, and disgust (Facial Action Coding System (FACS) – A Visual Guidebook, 2002). The principal investigator chose to employ FACS because of its ability to help identify the aforementioned categorical emotions in a way that could be seamlessly incorporated within this study. In the past, FACS has been used to study cognitive-affective states during learning, in neuropsychiatric disorders, and in nonverbal communication in humans and animals (Craig et al., 2008; Hamm et al., 2011; Vic et al., 2007). Though FACS has not been studied in the context of LIS, its application in this study was useful in determining participant facial reactions as indicators of emotions, in addition to the verbal responses of participants.
For the purposes of this research, neutrality was identified as the absence of any changes in facial expression. In the FACS, happiness/joy is exhibited as cheek-raising and the corners of lips being pulled (Facial Action Coding System (FACS) – A Visual Guidebook, 2002). Sadness is expressed as inner-brow raising, brow lowering, and corners of lips being depressed (Facial Action Coding System (FACS) – A Visual Guidebook, 2002). Surprise is exhibited as the inner and outer brow being raised, the upper lid being raised, and the jaw dropping (Facial Action Coding System (FACS) – A Visual Guidebook, 2002). Fear is exhibited as the inner and outer brow being raised, the brow being lowered, the upper lid being raised, the lid being tightened, the lips being stretched, and the jaw dropping (Facial Action Coding System (FACS) – A Visual Guidebook, 2002). Anger is expressed by the brow being lowered, the upper lid being raised, as well as the lid and lip being tightened (Facial Action Coding System (FACS) – A Visual Guidebook, 2002). Disgust is exhibited by the nose being wrinkled, lip corners being depressed, and the lower lip being depressed (Facial Action Coding System (FACS) – A Visual Guidebook, 2002). Finally, contempt is expressed by the lip corners being pulsed and dimpling on one side of the face (Facial Action Coding System (FACS) – A Visual Guidebook, 2002).

The coding process took into account participant responses to the interview questions in order to deduce any patterns and themes regarding the numinous experience. Themes and patterns were coded based upon the recurrence of certain aspects of participant responses to the interview questions, as well as any correlations among the responses of different participants. Rather than grouping participants’ emotional responses as positive or negative, emotional responses were all seen as strong reactions aroused by working with an item. It is also important to note that reactions of anger or disgust in this study were not reactions to an item; instead, these reactions were to the technology being used to access a digital item. In addition to reviewing the
data for themes, the principal investigator examined the data through the lens of Varnalis-Weigle’s four affects of experience (2016).

Due to the qualitative nature of this study, the process of coding the descriptive data and evaluating it for themes was crucial. Since individual experiences differ, the use of a qualitative methodology and an interview guide with open-ended questions encouraged participants to tell their stories was ideal. In doing so, participants produced ample qualitative data that was coded for patterns or commonalities across their varying experiences. This qualitative methodology ensured that research participants expressed their stories as thoroughly as possible in an effort to have the principal investigator capture the characteristics of their experiences. Identifying any shared characteristics across participants allowed for the identification of themes for further examination.

This study did not focus upon the quantifiable nature of how often certain records or formats are accessed; rather, this study was concerned with why certain records or formats are accessed and the nature of overall user experiences with different material formats. Ultimately, there was a need to produce qualitative data to address the research questions of this study in a valid and reliable way by addressing the experiences of frequent users of archives. All information about the participants and locations was kept private and destroyed within a year of publication.

**Conclusion**

Much can be gained from examining user experiences with different material formats, observing the potentially numinous properties of certain formats in addition to user feelings as they interact with items of different formats. Different individuals may possess preferences for
certain material formats over others, depending upon their research needs at a given time. All the while, archivists work to ensure that collections are made available and accessible to their users, in addition to emphasizing their authenticity as reliable sources. However, as records are transposed and made available through a variety of formats for users, it is worth examining if material format has an impact upon user experience and numinous encounters. There are clear advantages and disadvantages to different material formats and it is important to address whether or not the format has an impact upon the user experience and why users may choose to work with certain formats over others.
Chapter Four: Data Collection

This research was designed to investigate the experiences of physical archive users in order to determine whether or not their experiences are impacted by transitions in the material format of a record required for their research. The study aimed to explore user experiences in physical archive locations, the potential influence of varying material formats upon the user experience, and why certain formats may be selected over others when conducting research. This study employed a qualitative research design. After examining relevant literature on the themes of materiality, accessibility, and the numinous experience, semi-structured interviews were conducted with 11 individuals across three different archives in the Midwest. The three archives included a university archive, special collections archive, and metropolitan historical society archive.

The principal investigator worked with the archivists at their respective locations in order to arrange appointments with participants for the purposes of the interview. Of the 11 participants, two interviews were collected at the university archive, three were collected at the metropolitan historical society archive, and six were collected from the special collections archive. All of the users were over 21 years of age and had utilized both physical and digital collections in the past for the purposes of their research.

During the interviews, the participants were asked eight different questions. The first two questions to which they responded offered background information in relation to their research and use of archives. The questions in this group were:

- Generally, why do you visit the archives?
- What kinds of materials have you used from the archive?
The next three questions offered information about their general user experience. The first question in this group relates to the theme of accessibility, while the remaining two relate to the theme of materiality. The questions in this group were:

- Were the items you used available in another format?
- Tell me about your experience using one or both formats.
- Give me an example of a time when you worked with an original item and a time when you worked with a surrogate item of the same source. Did your experience with the two formats differ? If so, how?

The final three questions offered information regarding the numinous experience. The questions in this group were:

- In the experience you shared, was there anything particularly moving or special to you about your experience with the different formats?
- If so, how important was that experience to you and your research?
- What if an artifact or record related to your research were suddenly discovered and made available? How would you react to that? Which format would you be more inclined to use?

All of these questions appeared on an interview guide, which the principal investigator referenced throughout the interview process. Additional questions were also asked when appropriate in order to encourage elaboration or to further explore an answer. All interviews were recorded with a video camera and transcribed for analysis. In addition to reviewing footage for transcription, it was also viewed by the principal investigator to note any changes in facial expressions when participants worked with items of varying material formats.
Facial expressions were categorized by using the Facial Action Coding System (FACS). Changes in facial expression were noted in brackets on the transcribed interview documents. Each participant received the transcribed document electronically, which included the notes regarding changes in facial expression, and agreed that it properly reflected the data gained from their interview sessions.

This section will offer an overview of the key aspects of participants’ responses to the questions regarding their research experiences in archives, general user experiences, and numinous experiences. This section will also include any changes in participants’ facial expressions when they interacted with physical items and their digital surrogates. This data will be used to draw findings and conclusions in the following chapter.

**User Background**

The questions relating to background offered information regarding the individual research interests of the participants and why they have accessed physical archives to meet their needs. This set of questions also asked participants to share which types of materials they had accessed before in physical archives. The following section offers the results to these questions, in order to offer an understanding of the different research backgrounds of the researchers interviewed as part of this study. Table 1 offers a description of the backgrounds and materials accessed by the participants who participated in this study.
Table 1
*Descriptions of Participant Backgrounds and Materials Accessed*

<table>
<thead>
<tr>
<th>Participant Number</th>
<th>Research Interest</th>
<th>Materials Accessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>User 1</td>
<td>History</td>
<td>Periodicals</td>
</tr>
<tr>
<td>User 2</td>
<td>Theology</td>
<td>Books, documents, diaries, journals, Bibles, and other artifacts</td>
</tr>
<tr>
<td>User 3</td>
<td>Music and Performing Arts</td>
<td>“ Mostly paper documents”, including journals, diaries, diagrams, texts, handwritten materials, audio material, video material, and fragile documents</td>
</tr>
<tr>
<td>User 4</td>
<td>Art and Design</td>
<td>Diaries, booklets, medicine bottle labels, and rare books</td>
</tr>
<tr>
<td>User 5</td>
<td>History</td>
<td>Newspapers, microfilm, and census data</td>
</tr>
<tr>
<td>User 6</td>
<td>Art and Design</td>
<td>Sanborn maps, maps, pictures, catalogs, letters, and postcards</td>
</tr>
<tr>
<td>User 7</td>
<td>Music and Performing Arts</td>
<td>Sheet music, LPs, DVDs, CDs, books, correspondence, and photos.</td>
</tr>
<tr>
<td>User 8</td>
<td>Music and Performing Arts</td>
<td>Curriculum-based materials that act as resources for teachers</td>
</tr>
<tr>
<td>User 9</td>
<td>History</td>
<td>Public, historic, and personal documents, newspaper clippings, and magazines</td>
</tr>
<tr>
<td>User 10</td>
<td>History</td>
<td>Board of Trustees minutes, personal records of faculty communications within the university, official department regulations, and photographs</td>
</tr>
<tr>
<td>User 11</td>
<td>History</td>
<td>Correspondence reports, oral histories, video histories, films, and artifacts</td>
</tr>
</tbody>
</table>
User 1 visits the archives to conduct “more in-depth research” and to “get more details about something.” User 2 visits the archives for various projects or academic research essays. User 3 visits the archives “to get a better idea of primary sources” because “a lot of times, they aren’t well defined when looking on the internet.” By gaining access to the physical items, the user noted: “I can sort of quickly gauge what I am interested in looking at, moving more quickly than scrolling or Googling.” User 4 visits archives due to a background in history, in which “a lot of emphasis is placed on primary sources.” In addition, the participant also has experience working with textiles. The participant also uses physical items for the “emotional connection” provided to the subject being studied. User 5 visits the archives for research projects relating to World War II when needing to find out specific facts. User 6 visits the archives for personal genealogical research, preferring the individualized attention from archivists in order to better understand Sanborn maps and interacting with the physical maps themselves. She has also studied art history and paintings. User 7 visits the archives for information relating to a thesis project. In addition, this user refers to the archival collections to create social media postings about the collection items. User 8 visits the archives in order to create educational programs. This user aims to work with audiences of various ages and uses archival material in order to see how it may connect to other topic areas of interest for a lesson. User 9 visits the archives to research stories and consume information regarding different historical topics of interest that relate to the researcher’s journalistic background. User 10 visits the archives to research university military history and information about the military science department. User 10 notes that his visits to the archives are often “because a lot of the stuff that I’m interested in is stuff that we have not yet digitized.” User 11 visits the archives to study the history of a particular university.
General User Experience

This set of questions asked the participants to address whether or not the materials they consulted were available in formats beyond their original physical states. In this section, participants were asked to share information about a time during which they used a physical item and a digital item in order to offer information about how their experiences differed, if at all. Participants were also asked to interact with a physical item from the archival collection at which the research interview was taking place as well as its digital surrogate. The full interviews were recorded for transcription and to note any changes in facial expression while the participants interacted with the different material formats. In terms of observing participant facial reactions, maintaining a neutral expression was considered the baseline expression.

The principal investigator reviewed footage for changes in facial expressions, which are noted in separate tables for interactions with the physical item and the digital surrogate. Table 2 denotes the FACS responses by participants when working with a physical item, while Table 3 depicts the FACS responses by participants when working with a digital surrogate item. This section reports on the themes of accessibility and materiality in order to offer a more informed perspective of the general user experience.

User 1. User 1 was aware of many physical copies of materials existing in relation to his research interest but not as aware of digital alternates. In the past, User 1 consulted physical and digital resources when researching Vikings. For his research purposes, the user was able to visit an institution that had a Viking sword. When reading about the item, User 1 assumed that the item would be heavy. However, when he was able to
handle the item, he was intrigued and surprised by its light weight. User 1 felt that his previous interaction with the physical artifact changed his perception about the artifact.

User 1 was asked to interact with a physical item and a digital surrogate item at the archive in which the research interview was taking place. User 1 expressed that working with a physical item “kind of puts you in the place of a person that actually had this at one point.” The user also felt that working with the physical item was “impactful” because he was able to “acknowledge the fact that someone made this, someone held this, someone read this.” In response to the digital item, User 1 felt his interaction was “kind of boring, really.” The user noted that some of the characteristics of the item’s age did not transfer to the digital version. The user noted that the digital item was “just white with black and it’s just very straight to the point. There’s really no discoloration. It doesn’t show its age. […] I think it’s mundane.” While working with the physical item, User 1 expressed happiness twice. The participant’s expression remained neutral when working with the digital item.

In summation of his experience, User 1 felt that “there’s more weight, there’s more feelings, there’s more things to observe” with a physical item. User 1 did acknowledge that the digital item may, however, be more accessible to individuals in some cases, but he “would recommend using a physical” item. User 1 “enjoyed using the physical copy” and appreciated that “someone actually read this copy.” This allowed him to “put yourself in that person’s shoes, in that situation.” User 1 felt that using the digital surrogate “kind of takes away from that experience.”
User 2. User 2 noted that alternate formats were available “most of the time.” When working on her research in the past, User 2 accessed both physical and digital items in relation to her topic area. She referred to digital research journals frequently but also accessed physical copies. While digital items were typically more accessible to her, she noted that the physical copy gave her more excitement. She shared that “I’ve seen this online but now I get to see it in person. Now, I get to physically hold it and feel everything else about it.”

When interacting with the physical and digital items from the archive, User 2 mentioned that the physical item shares more information beyond content. She felt that “[t]here’s a lot of other things that I think researchers could look for and take the work beyond the very obvious content.” User 2 felt that using the physical item allowed her to see “more detail in the documents,” such as the thickness of the paper. The physical item aroused a sense of frustration because it “wasn’t necessarily quick to read because of the handwriting sometimes.” While the digital item allowed her to zoom back and forth, she felt that “searching through the PDF was a little bit primitive […] just very basic.” When working with the digital item, she felt that it took her longer to examine the details “because the scans themselves were shrunken on the page, so I had to zoom in very closely just to get the watermark or addresses.” User 2 also mentioned that the digital item “had a lot of shadows” in comparison to the physical, which “was a little more difficult.” While working with the physical item from the archival collection, the participant exhibited happiness three times and anger once. When working with the digital counterpart, the participant expressed anger once.
Overall, User 2 indicated that she preferred using the physical format. User 2 is used to handling older items housed in archives and treating them with care, feeling that she will “take the time” to work with them and ensure they are treated appropriately. If she were working with the digital item, she feels that she “would just scroll through and probably overlook some things.” The physical version also seemed to offer better visual clarity of the item for her.

**User 3.** User 3 noted “kind of a split” in terms of items that were or were not available in other formats. As a result, this participant noted that “more often than not, I would go see things that were not digitized” and that he “had to really have that physical experience because they did not have plans to digitize them.” User 3 consulted physical and digital items throughout his research, having mixed experiences with both formats. In one case, he found a picture printed in a book but could not make out the faces that were photographed. After consulting an archive’s digital collection, he was able to work with a TIFF file of the picture. As a result, User 3 “was able to zoom in and see it much more clearly.” In another instance, User 3 was researching a singer from the 1940s and table advertisements relating to her career. The advertisements would be folded and propped up on a table to promote the act. User 3 noted, “I’ve seen a lot of these on the internet but when I actually held them with my hands and I was able to set it up on the table, I got to see what it would have presented like. You’ve got to see the three-dimensional representation of it.” In this case, the participant had a positive experience with the physical format. Here, the participant mentioned, “On one of them, there was […] a small piece of fabric on it […] and for me that was a very interesting experience.” Due to the
different materials used and the three-dimensional representation of it, User 3 felt that
“[a] digital file could not have reproduced it in the same way.”

In the archive where the research interview was taking place, User 3 interacted
with physical and digital items from the collection. As User 3 interacted with the physical
item, he noted that “[i]t’s interesting to catch the light against the paper and see that they
are watermarked.” He also noted the “physicality” of the item, expressing an interest in
the type of paper, saying that “this is almost tissue paper. It’s very fine and almost
transparent—you wouldn’t expect that.” While interacting with the digital item, User 3
noted that the digital format offered a “cursory look at a collection.” He noted that “it’s a
bit difficult to navigate” with the software used by the archive and that some of the
documents were harder to read. In the digital format, the participant felt that it offered “a
different experience” and that “[i]t’s just really there for content purposes.” Here, he was
unable to see the watermarks that interested him and felt that the item was “stripped of its
character.” User 3 also noted that some of the context clues were lost to him, which
included “the quality of the paper, the watermark, the fading of the paper. You lose that
and I’m really just looking at text, which tells me—as a researcher—much less.” When
working with the physical item, User 3 expressed happiness once and surprise twice.
While working with the digital item, User 3 expressed anger once.

Overall, User 3 felt that the physical format “is really good for getting more subtle
things that I didn’t really go in expecting.” Here, the participant mentioned a significance
to the physical item, stating that “there’s something about just holding and having what
the person had at the time in your hands. […] I was thinking […], wow, this was really
important to somebody at one time and they folded it four ways and they put it away so
they could access it later.” However, User 3 also mentioned that the find tool in the
digital format could be helpful if one were overwhelmed with the amount of physical
files and wanted “just one piece of information.”

User 4. User 4 was unsure as to whether or not some of the items accessed during her
research were available in surrogate formats. She typically traveled to physical archives
to exclusively use the physical records of interest. When working with textiles and
assisting in the process of offering them digitally, User 4 noted that audience responses to
the photographs versus seeing the textiles themselves differed. She felt that the
experience of showing a photo to someone was different from having “somebody walk
up to the work that you’ve done and to actually see the piece in person and […] note that
[…] you put a lot of time and effort in making something presentable.”

User 4 was asked to interact with a physical item and its digital surrogate at the
archive at which the research interview was taking place. While working with the
physical item, User 4 was intrigued to see an individual’s handwriting. She was also
interested in the individual’s stationary. When working with the digital item, User 4
found herself drawn to the metadata offered and felt it would be useful to a researcher.
User 4 also described the digital item as “flat” in comparison to the physical format. User
4 felt that the physical copy allowed her “to pick it up and feel the weight of the
stationary and actually see that […] her name is embossed […] in gold.” User 4 felt that
the interaction was more limited digitally, stating that “I can’t interact with that other
than just looking at it. I don’t know how it feels.” User 4 also noted discrepancies in the
coloring, mentioning that “I can’t tell that […] her name is a little bit sparkly” with the
digital format. She mentioned “it almost kind of looks a little dirtier than it actually is.”

When interacting with the physical item, User 4 expressed happiness twice, anger once, and sadness once. When interacting with the digital item, User 4 expressed disgust once and surprise twice.

Overall, User 4 felt that the physical item “holds a little more gravity than just seeing it on a computer screen, where it’s just a picture and I can’t touch it.” User 4 felt that “there’s just something really special about being able to touch […] the real thing.” Additionally, User 4 acknowledged that viewing the item digitally can be beneficial to those who cannot travel. However, in terms of her preferences, User 4 stated that “if I can go and get my hands on the real thing, even though it’s going to be a little bit more work, it’s always going to be my preference.”

**User 5.** User 5 was aware of alternate formats but was unable to access them. In other cases, there were files that were only available physically. Other items could only be accessed physically. In her previous research, User 5 consulted digitized versions of rare books as well as physical rare books. User 5 felt that the digital versions were “a lot easier to flip through since you have to be so careful with the original ones.” However, to her, “it was more exciting to see the original one.” The physical version intrigued her because of “the history of it and the fact that it […] has existed for so long—so much longer that I have—and it’s […] right there.”

User 5 interacted with physical and digital items from the archive at which she was being interviewed. While User 5 worked with the physical item, she felt “more hesitant” because she didn’t want to “hurt it.” She noted the folds in the physical item, its
coloring, the use of staples, and how it had been torn open. When User 5 was working with the digital item, she mentioned that she was more comfortable getting closer to the item. When using the physical item, she was worried that she might “damage something from the archives.” User 5 did notice some differences in the item’s coloring in the digital version, noting that the shadows on the screen “makes it look like it’s crumpled a lot more than it actually is in real life.” She also felt that that “a little bit of the detail is lost” in the handwritten portion of the document that she was reviewed digitally. When working with the physical item, User 5 expressed happiness four times, fear once, and surprise once. While working with the digital item, User 5 expressed happiness once, surprise once, and anger once.

After overcoming her sense of hesitation, User 5 felt that overall, the physical item was “much neater” in terms of interest. To her, the individual who wrote the document that she reviewed was noteworthy. User 5 felt that the physical item afforded her a sense of closeness to the individual.

User 6. User 6 was also aware of alternate formats existing online but was unfamiliar with navigating the software and the records online. In her research of art, User 6 shared an example of working with a particular painting in person and noting the colors of the painting. In addition to the vivid colors, the painting was large in scale. Witnessing it physically caused her to experience an “overwhelming feeling” which was not reproduced when examining a digital version of the painting. When consulting the digital version, she felt that the “overwhelming feeling of it went away, so I was able to be a little more critical about it.” She felt that the separation from that feeling allowed for her
to research more objectively “versus in-person, when I kind of couldn’t be objective because I was just looking at this painting twice my size.”

When User 6 interacted with the physical item from the archive at which the interview was taking place, she noted that she felt a connection and that the item was “just so personal.” Though she indicated she was “scared to touch it,” she felt excitement and described that she was “geeking out that I can touch something that’s from 1970.” Once User 6 switched to the digital item, she was interested in the metadata and the evidence of crease marks. To her, the marks made the item seem “real […] that it’s not fake.” She indicated disappointment when she realized that one side of the item was not available in the digital version, saying, “I wish I could see the back of it with the tear.” When working with the physical item, User 6 expressed happiness four times, surprise once, and fear once. While working with the digital item, User 6 expressed happiness three times.

Overall, the participant saw the merits of both formats. She enjoyed the physical aspect, saying, “I love being able to touch and see the […] handwriting strokes on the envelope.” However, she felt that the digital version stayed true to the original by displaying its imperfections while also adding metadata. User 6 claimed, “I’ve still got the same excitement as I did with the physical but there’s more information attached to the digital.”

User 7. User 7 was aware of some of the items being available digitally but not all of them were accessible to her in a digital format. As someone who works in social media, User 7 works with physical items and photographs them to share. In terms of using the
items for research, she feels that “[i]t’s easier to work with the physical item for that because I have a little bit more flexibility” and that she can encourage a “the human connection to the piece.” In one instance, she worked with a cocktail napkin that had lyrics scrawled onto it, leading her to feel “shocked […] in a wonderful way.” In working with the digital version, she noted, “I don’t think I got that seeing a picture of that item. I didn’t get that full effect.” User 7 feels that working with physical items is akin to “working with a piece of history in your hands, kind of telling the story. Not that you’re not digitally. I guess I just don’t think of it in that way.” To her, the digital version does not have “as much gravity to it because it’s on a screen in front of me instead of seeing […] the actual piece itself or holding the actual piece itself.” In terms of the digital software she encounters, User 7 feels that some features need improvement. She notes, “I’m not sure if the features we have right now […] show the kind of significance of that piece. So, sometimes we’re not fully grasping […] the gravity of the piece itself.”

When User 7 worked with the physical item from the archive at which the interview was occurring, she exhibited an interest in the content contained in the item, in addition to its condition. She felt that this particular item was in “great shape” in comparison to others from the time that are “old and worn.” Some of the handwritten portions of the item were unclear and “just not as distinct” to her. While working with the digital item from the archive, User 7 found herself drawn to the metadata. Here, she felt that “I’m almost reading that before I look at the artifact itself, rather than really studying the content, which I did on the physical version first.” She noted some issues in terms of how the digital item was displaying and felt she was not “able to see the details […] because it’s just small when it all come down on the digital.”
physical item, User 7 exhibited happiness six times. User 7 maintained a neutral expression throughout the process of working with the digital item.

In comparing her experiences with the physical and digital item from the archive, User 7 saw the merits of working with the digital item as an accessible format. However, she felt that the metadata alongside the digital version distracted from the item. User 7 said, “I almost miss the […] artifact itself because all the information is there.” At the same time, working with the digital format allows for a sense of ease because she feels she does not have “to be so careful”, which calms her worries of handling the item. To her, “there’s just nothing like seeing the physical artifacts and the physical materials […] to hold it in your hand.” User 7 feels a sense of connection to the past when holding a physical item. “It’s still surviving today and you’re holding it.” The physical item also affords her the chance to observe some details that did not transfer to the digital format. User 7 notes, “When I’m looking at the full page digitally, I miss some of the details that I did when I was looking at the full piece physically.” Furthermore, User 7 refers to working with the physical items as a “warmer experience to do your work, to feel something in your hands and see it in person.”

**User 8.** User 8 noted a split in terms of items that are only available physically and ones that were also available digitally. In her past research, User 8 worked with physical and digital sources relating to basketry. User 8 felt that digital records “can be changed” and that the physical object depicted its own characteristics and information. Optimally, User 8 felt that the physical and digital records could be used in conjunction with one another for a stronger understanding of an item.
While working with the physical item, User 8 was interested in some of the details evident in the physical item. This included color, variations in type, and the combination of handwriting and type. User 8 felt a sense of nostalgia as she examined the item, stating that “this kind of makes history come alive to have a little piece like this.” While working with the digital item, User 8 noticed less of a contrast in coloring. She mentioned that with the digital item, she was “looking more at the note itself, the physical writing, rather than some of the subtleties” of the physical. The digital version appeared “more two-dimensional” to her. When working with the physical item, User 8 expressed happiness six times. While working with the digital item, User 8 expressed happiness twice.

In terms of her overall experiences with the physical and digital items from the archive, User 8 appreciated “the level of detail I can see physically and hold in my hand with the original” while the digital “is great for information.” User 8 felt that the digital version piqued her curiosity thanks to its content, while the physical version interested her in terms of its content and the possibility of other existing materials in relation to the physical one she was consulting.

**User 9.** User 9 was aware of the items existing in alternate formats. In his past research, User 9 worked with digital and physical photographs. He referred to the interactions with the two material formats as “two sides of the coin for that research process.” User 9 feels that “[y]ou need that digital database to search through and that may provide you side data that leads you down another path.” However, if one is intrigued by various details of
a given photograph and needs to obtain it, “then [...] the missing piece is actually finding the real object.”

User 9 then interacted with a physical and digital item from the archive at which the research interview was being held. While examining the physical item, User 9 was interested in the handwritten portion and its “personal touch that makes it interesting.” Once User 9 switched to the digital version, he was interested in the metadata, saying that “it’s cool to have the metadata right there, [...] what you don’t have quite as conveniently accessible with the physical object.” User 9 noted that he was still able to see the document digitally but he did not have “the visceral experience of holding it in your hand, turning it over, and seeing what’s on the back.” As a result, User 9 felt that “in some ways it’s more informative, in other ways it’s less informative than the experience of the physical item from the archive.” When working with the physical item, User 9 expressed happiness once. While working with the digital item, User 9 expressed surprise once.

Overall, User 9 acknowledged “a trade-off between the real physical item and the [...] emotional and visceral impact you might get from that.” According to User 9, “one of the key differences is that there’s [...] almost subliminal perceptions that you may not fully grasp, that you lose, when you’re looking at an electronic version. [...] [T]here are intangible things that you pick up from seeing the physical object.” In the case of the digital item, User 9 lauded the “powerful tools or abilities that you have” such as cross-referencing other relevant source material. User 9 feels that “the real aficionado would say, if you really want to experience this art form, you have to see a film in a theater on a big screen or you have to listen to a vinyl record that has a different sonic quality than a
digital file on your phone or streaming over the Internet.” User 9 echoed the idea of a “trade-off between that rich physical experience versus all the convenience of being able to organize things digitally.” According to User 9, “I think you trade ease and convenience and some of those powerful tools for the other visceral parts of the experience. The feeling and smelling and everything else all becomes part of the experience.”

User 10. User 10 noted that his items of interest were not usually available in other formats, though some have become available digitally. In some instances, the items that he requested had not been cataloged or existed in boxes as unprocessed items until he consulted them and encouraged digitization of some of the items pertinent to his research. During his past research, User 10 had worked with personal correspondences as well as artifacts from past wars. As far as the artifacts, User 10 expressed an interest in handling them directly and knowing their history. However, in the case of correspondences, some of them were inflammatory and, as a result, not as vital for him to handle directly. Though User 10 is glad to have worked with some of the physical correspondences, he does not “feel bad not handling the original” as he continued his research; however, he would scan the correspondence for the visual aspect of it in order to make the piece look as authentic as possible.

While User 10 worked with the physical item at the archive at which the research interview was occurring, he noted the “very personal stories” evident in the item, prompting him to discuss the different questions he raised about the document and how he would go about pursuing answers to them. Once User 10 switched to the digital item,
the software functions were voiced as a hindrance. User 10 offered, “When I go online, I always get a slight glitch with the way this software functions,” though he has been able to utilize screen shots of digital items for presentations in the past. He noted that the digital items are often quicker for him to get through, saying, “I have found I skip stuff a whole lot more when it’s digital. When using the digital format, he is able to skim through documents at a fast pace by scrolling. He holds that “[s]ome of that, I think, is driven by the software that we use here. This sometimes, as you can see, it gets a little clunky.” When working with the physical item, User 10 exhibited happiness twice and surprise once. While working with the digital item, User 10 expressed happiness twice and anger once.

In terms of his overall experiences with both formats, User 10 felt that typically “start[s] with whatever the physical thing is for no other reason than if I sit in my office on my computer I’ll get distracted […] whereas, if I come here, I can kind of focus and then just have that in front of me.” Upon examining physical items and taking notes about them, he photographs them as a surrogate for reference or refers back to the digital version if it is available.

**User 11.** User 11 noted a split in terms of what was available digitally and what was not. He noted that “when you look at big collections […] oftentimes, if some earlier researchers have looked at certain things, then oftentimes they digitize those items and then put them back into the collections so then they are available online as well as in the physical format. But most collections were not completely available.” Throughout his research, User 11 has worked with both physical and digital formats. He frequently
evaluates the content of an item, “which doesn’t include the physicality of the object.” According to User 11, when he accesses a digital item, it acts as the “physical object that’s not in the same form and you can manipulate that a different way.” In the case of evaluating sources strictly for content, User 11 feels that the materiality of the item does not matter to him.

When User 11 worked with a physical item from the archive at which the research interview was occurring, he noted the “very personal” nature of the items and how aspects of an individual’s personality were exhibited through the item. When interacting with the digital item, User 11 felt that “[i]t’s kind of a hassle at times” though “it is helpful sometimes if you’re working at home or the archive is closed.” User 11 also noted that the digital item is faster to navigate through if it is not necessary for him to access every single scanned item in a folder. He is able to skim through them and focus on the ones he really needs. However, the interface can be a drawback. User 11 says, “[I]t’s kind of clunky but it does work enough. You sort of go back and forth and click on each one but […] it does give you what you need.” When working with the physical item, User 11 expressed happiness once. When working with the digital item, User 11 expressed anger once.

Overall, User 11 prefers the physical format but uses the digital as a means of referring back to the item when necessary. He notes that there are costs to working with the physical items, mentioning that “it does take a certain amount of getting to the archives” in addition to the costs of travel and time spent. However, he sees the presence of archival staff as a major support because they are “really helpful to get you through the process.” Though he often uses physical sources, User 11 notes that he is able to
photograph the physical items he accesses, which allows him to be more efficient in progressing through the sources. As he advances through his research process, having access to the photographed sources is a strong reference tool for him. Nonetheless, User 11 cautions that not all sources are available digitally, so individuals may need to visit an archive. If only parts of a collection are made digital, User 11 feels that “human nature” will lead “people to focus on the stuff that is digitized and then you get into a certain rut.” In terms of his own experiences using different types of formats for research, User 11 admits that “[w]orking with the digital kinds of things is very new to me. I’m more comfortable with the physical.” While User 11 does use digital items in his research, he feels that their availability can be viewed as “an adjunct to going to the archives and actually manipulating the materials.”

Table 2

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<th>Fear</th>
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Table 3
FACS Responses Exhibited by Participants When Working with a Digital Surrogate Item

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The Numinous Experience

The final theme addressed in the interviews was the numinous experience. Here, participants were asked to reflect upon moments in their past research and whether or not they experienced anything moving or special to them when working with one format over another. As a follow-up to their time working with a physical and digital item during their research interviews, they were asked to consider if one format was more moving to them than another. Participants were also asked to consider how important it is to have that moving or special experience while conducting research, if at all. As a follow-up to their past numinous experiences and any possible present ones gained during the interview, participants were also asked to consider a hypothetical scenario in which an item of relevance to their research were
discovered. Here, they were asked to consider what their reactions would be and which format they were more inclined to use.

As in the previous section on general user experience, participant facial reactions were also observed in the footage, coded according to FACS, and noted in the interview transcripts. Table 4 denotes the FACS responses by participants when responding to the hypothetical scenario in the numinous experience section. This section reports on the results of the questions dealing with the numinous experience.

**User 1.** In general, User 1 considers himself “more of a physical, hands-on type of person. While he “would always prefer physical over the digitized”, he feels that if the physical is not accessible, “you have to do with what you have.” As a result, he has used both formats in his research.

User 1 was asked to consider if there was anything particularly moving or special about working with one format over the other. After User 1 interacted with the physical and digital items from the archive at which the research interview took place, he felt that “actually holding something is much more impactful.” He likened the experience to seeing a “child’s picture book of animals” to “seeing the animal up close or in its natural environment.”

When offered the hypothetical situation of an item relating to his research being suddenly discovered and made available, he felt that the existence of such an item would be “mind-blowing” to him. In the case of Audie Murphy, User 1 felt that seeing a newly discovered medal, for example, would be “more impactful than just a picture.” If given the opportunity to interact with the item, User 1 would “love to absolutely use the
User 1 felt that “I’d want to hold it. I would like to see it, weigh it. [...] I think I’m much more emotionally connected to that than just a picture.” In interacting with the item physically, User 1 felt he would feel impacted in knowing the history behind it and would experience “a sense of bravery.” In contrast, User 1 felt that if he were to work with a digital surrogate, he would not have the same emotional reaction, stating, “That’s just a picture. It’s not the real thing. [...] It’s just not the same as holding it to me.” Though User 1 acknowledges that he could possibly find a great deal of information about the item online, the rarity of working with the original would also encourage him to pursue the physical. User 1 feels that “if you could actually hold it—the original—there’s a sense of more value to it and impact.” As User 1 responded to the hypothetical scenario, he exhibited surprise three times and happiness twice.

When asked how important it is to have a moving or emotional experience in research while working with different material sources, User 1 feels that it is “a part of history to be able to see, to touch.” In doing so, he feels that he is putting himself in another “person’s position and getting a sense of that time.” To him, the digital format offers “a generalist look at it” and compiles “lots of information in a way that you can get through very quickly so that it is accessible to your needs.”

**User 2.** User 2’s past research experiences have offered numinous experiences with physical items. She thinks that it is especially moving to work with the physical copy because the item itself is one that was handled physically by individuals in the past. In the case of advertisements she consulted for her research, she was aware that “people could have that put in their mailbox instead of just seeing it online.”
When working with the physical and digital items during the research interview, User 2 felt that “there’s something moving about working with a physical collection because these are documents that have been touched 100 years ago.” User 2 also recognized that “there is definitely a value in, for me, emotionally, looking at a physical collection because you get to really feel history and see what people experienced at that time.” When asked if the digital item also offered her an emotional reaction, she responded with, “Not really but I am biased. […] I have a physical collection in front of me. It’s an obvious choice.” However, User 2 went on to say that if she did not have the physical collection on hand, she would be “happy with the digital because that’s the thing that I can afford or have access to.” If given the choice, User 2 would elect to work with “[a]bsolutely the physical.” User 2 feels that “having a physical object in front of me allows me to see more details.” User 2 elaborates, “Sometimes, when people take the photos, they […] just look at the surface. If it’s a hat, I wonder—is there a label inside, is there a tag, is there hair inside, is there dirt inside—what is in it up close that I couldn’t see through a picture?”

Once User 2 was asked to consider the hypothetical discovery of an item relating to her research, her response was, “I think the first thing I would do is start figuring out how I can put my hands on it. How can I physically go and see it?” She also mentioned that she would “immediately contact whoever might possess the document” and ask how she could see it or if she could get a picture of it. User 2 anticipates that she would feel excitement in addition to “comfort because I know, generally, when new discoveries come out […] they then go online.” User 2 contends that if she could not access the item physically, she “could be patient” because she feels that she will eventually “be able to
just Google it and find it online.” As User 2 responded to the hypothetical scenario, she exhibited surprise once and happiness once.

When asked how important it was to have that moving experience with an item while conducting research, User 2 feels that it is “important enough because [...] when you’re writing about something, especially if it’s extensive, it can get boring or it can get tiresome and stressful.” To her, “being able to have some sort of excitement and feeling like you can personally relate to those artifacts in that level gives you a new sense of inspiration.” User 2 feels that if she were to access that hypothetical item digitally, she would still get an emotional response but it would be heightened if she were to work with the item physically. User 2 notes, “it’s [...] that much more being able to physically see it in person or physically hold it because I think just that little bit of excitement for me makes me feel like ‘wow, I’m a researcher.’” Overall, User 2 feels that she is “very passionate about the physical collection but I think I could be equally as passionate about the digital collection if it were held to the highest standard.” Some digital collections she has accessed in the past have had high-quality transfers of items whereas others did not. User 2 thinks that there could be “equal inspiration” found in both physical and digital formats but feels that “most often, that doesn’t happen because every institution is different in the way they digitize materials.”

**User 3.** As User 3 conducts research, he feels that “you’re looking at a certain time and you want to have the most intimate sort of reaction that you can to put yourself there.” In order to accomplish the written components of his research, he mentions a need for “strong, descriptive words” in response to being “able to conjure up the spirit of the
time.” User 3 argues that the “physical item puts you there.” To him, it is “very important to have these experiences” because it “helps connect your readers to that time period.” User 3 notes that “you can write about an experience in sort of a very factual way but when you’re doing writing for an audience—whether it’s a popular publication or if it’s for a research document—you need to use and harness the emotional experiences you have interacting with those documents.” User 3 believes that this interaction can be “channel[ed] […] into an experience your reader can have.” Regardless of the objectives of informing or entertaining, “you have to use those feelings you can get when interacting with these physical documents.”

While User 3 interacted with the items from the archive during the research interview, he was asked to consider if there was anything moving or special about working with one format over another. User 3 felt that “the digital was devoid of that special feeling” and that the digital item was used to glean information rapidly. To User 3, “[t]here’s just something about holding the document that was important on April 2, 1927. […] Somebody kept this in this condition for these purposes. There’s just something about interacting with the document […] to know that this is how people are commenting at this particular time—it’s very cool to have in your hands and to interact with.” When working with the physical item, User 3 mentioned he felt a sense of “wonderment that this document exists […] as proof that there was a different time.” To User 3, working with the physical document was “like reaching out to the past. Just having the past being in the present is very cool for me.” User 3’s overall experience with the physical item is “a much more intimate experience” than with the digital item. In contrast, his experience with the digital item was “very transactional”, allowing him to
use a search function to find the exact piece of information he wanted. With the digital item, he could “call things up […] and not worry about them but with the physical” he had to “delicately handle these documents.” User 3 feels that working with the physical item makes him “much more conscious of the importance of preserving the original and that makes me care more about what I’m carrying and handling.”

When presented with the hypothetical scenario of an item relating to his research being discovered, User 3 felt that he would be “very excited” and that he has experienced that situation before. User 3 notes that “[y]ou just want to consume it, get your hands on it, and place yourself in that point in history.” While he works to get the information he needs, User 3 also has “this sort of feeling that this document was important to somebody else.” In response, he feels that “[t]here’s a joy, an elation when that happens. Excitement. And it’s just special and powerful.” As a result, User 3 would choose to interact with the item physically. To him, “[r]esearch is a multifaceted thing. You want to take in the musty smell of it, how it feels against your fingers. You want to take in how it looks in a different light. There are so many different aspects of it that—once you drink in that experience with the document—you can revisit it to some degree with the digital format.” With the digital format, User 3 feels he can “put my blinders on and glean the information that’s factual” in order to take time “scrolling through files that have a lot of data—taking in smaller things you might have missed.” However, working with the physical item can capture other facets of the item such as “if they had a scent” or “the quality of the paper.” User 3 thinks that “there’s so many things that you get from the physical that you don’t with the digital”, leading him to “probably be more excited by the
physical.” According to FACS, User 3 expressed surprise once during this particular question and response.

User 3 was asked to consider how important it is to have that moving experience with an item during research. To User 3, it is important because he “want[s] the feeling to be contagious.” In order to ideally evoke similar feelings in his audience, he feels that you can “get them by interacting with the document and then you’re able to use those feelings” in an effort to connect with an audience. User 3 feels that “you can’t have that experience of taking in information in a very interactive way without including touch, smell—just the visual experience and feelings. I think it’s kind of your right-hand man when you’re composing things for consumption.” User 3 notes that the digital format is ideal when high-quality versions are offered or if the item needs to be referenced quickly to access content. In doing so, he does not “have to sift through the whole folder to get that piece of information.” At the same time, User 3 would not have to “worry about things like oils on your hands” and “be careful with delicate documents” when using the digital version. In the end, User 3 thinks that if he is “really serious about that research”, he will “need as many experiences as [he] can get with them.” While he describes the digital as “a great search tool” that is “organized well” and “can be dissected and taken apart”, the physical is his “bread and butter” and allows him to take in as much information about the item as he can.

**User 4.** In her past research experiences, User 4 found that working with physical materials not only moved her but also “impressed” others who saw her physical output relating to textiles. She felt that “it’s one thing to come home and talk about how you
dressed 15 mannequins” or show pictures of them and “it’s another thing to actually see
them on the mannequins and see where the lace is falling apart, […] what the lace pattern
was, and how it would have looked on the dress when it was whole.”

As User 4 interacted with the physical and digital items during the research
interview, she felt a sense of caution with the physical items at first because of her
experiences in museums and policies against touching items. However, she felt that “it’s
really cool to be able to touch something” handled by an individual of historic importance
because it “acts as a point of connection between yourself and your subject.” While the
information contained by the item is important to her, she feels that the point of
connection allows her to “get inside of someone’s head” and experience more
information about the past individual who was originally connected to the item.

When asked about how she would react to the hypothetical discovery of an item
relating to her research, she felt that she would be “super excited.” Due to her interest in
textiles, she follows various archives and collections online and is aware of them posting
photographs of their pieces digitally. User 4 notes that “even though they’re just photos,
that’s still really exciting. […] I can’t imagine what I would do if I had the opportunity to
actually glove up, […] touch them, and see all of the […] intricate detail work that has
been done on these garments that a photo doesn’t do justice to.” If given the opportunity,
User 4 would choose to work with the physical copy. Her rationale for this is because
“[i]n doing so, you’re not just using one sense. You’re not just looking at it.” User 4 feels
she would be able to touch the item, smell it when she picks it up, and get a feel for what
sounds it may produce, which “adds to the experience of doing research.” User 4
expressed surprise twice and happiness three times when responding to the hypothetical scenario.

To User 4, having moving experiences is important to her because “it can tell a more complete story.” User 4 calls herself a “very emotional person” and notes that “there were definitely times in working with the physical objects where I was just […] overwhelmed at the history that I was literally able to hold in my hands.” User 4 feels that “while photographs can offer some of that excitement, […] being able to see something and touch something just brings it to a whole different level.” This experience allows her to continue to be “excited and passionate” about what she is researching, otherwise “it’s not going to be as fulfilling as it could be.”

**User 5.** User 5 enjoys the ease of use that comes with the digital, feeling that it is easier to get physically close to the item and “get more detail out of the original one.” She describes working with the digital item as feeling more “academic” while the physical format was “more interesting.” However, she feels that there may be additional pieces of the item that are represented physically, allowing researchers to potentially feel a “sense of excitement with working with the physical item.”

When working with the physical and digital items from the archive during the research interview, User 5 described working with the physical one as being “much neater” because a historical figure actually wrote on the item. User 5 feels that there is a sense of “human-ness” and a “closeness” to the person by working with something actually owned by the individual and “now, it’s with us.” She describes this component of the physical item as “exciting.” When asked about her emotions while handling the
digital item, she felt that she did “[n]ot really” experience the same emotions. While she can work with facsimiles of individuals’ handwriting, she describes it as “not quite as exciting.” As a result, User 5 felt that the physical item offered her an experience that was more “novel” because she could work with the “original item […] and hold what she [the historic individual] held, which is pretty exciting.” In contrast, the working with the digital item put her in the mindset of “getting it done” and the interaction “felt faster” since she did not have to be as careful.

Afterwards, the principal investigator related the hypothetical scenario to User 5. User 5 responded by saying she “would be excited” about the discovery. In her past research, she remembered a source being announced as available online and she took advantage of that mode of access. Alternatively, she would have had to take a “very long trip” to get to the source material. In the case of the hypothetical scenario, User 5 felt that the format she would want to access would be influenced by what the item was and how it could relate to her work. User 5 noted that if she were just starting out on a research project or looking to access more details about an item, she would want to consult a physical source to try to “get […] inspiration.” If she needed to reference a source briefly for its content, she would consult the digital version. However, if she were to pick one, she would likely use the physical source “because there is that detail and you can flip it over.” During this response, User 5 exhibited happiness once.

User 5 felt that having a sense of excitement over a certain format is, to an extent, important to her. She described that when she is researching something, it is typically because she has an interest in it. While she feels that working with a physical item would not necessarily make her more interested in a subject, it would remind her as to why she
is interested in it. User 5 rationalizes that she would still complete her research with or without the feeling of connection or excitement but she “would miss it if it wasn’t there” and “would miss that connection.”

**User 6.** This particular user studied art history and worked with paintings both physically and digitally. In her experiences, she has been moved by seeing paintings in their physical format, which has been a contrast to the miniaturized ways she has accessed them digitally. To her, the scale of some of the works gives her a sense of awe. User 6 describes these experiences as arousing an “overwhelming” feeling that “is connected to so many things.” To her, she feels “a little hint of excitement” when she first sees the work in person and is intrigued by how “someone actually took the time and all the years to make this item that you’re looking at or holding.” She also describes having a “calming feeling” and feeling as though she were “relaxing” when seeing one of her favorite paintings in its physical form, to the point of her visiting the pieces and being able to “sit in front of it for hours and just relax.” Now that she is far away from the piece, she accesses it digitally and still gets “a little hint of calmness but it’s not the same.” Rather than sit in front of it like she would with the physical version, she now has to access it online but “move[s] on in 10 minutes.”

As User 6 interacted with the physical and digital items from the archive’s collection at which the research interview was taking place, she found that she experienced a sense of hesitation in touching the physical item due to visiting museums but found herself experiencing a sense of joy. She felt that working with the particular physical item and responding to its content “gives one a good feeling.” In this case, she
felt that the actual content of the item was more interesting than holding the item because she did not feel as much of a connection to the particular item. User 6 mentioned that she had a background in classics and that if the principal investigator were to hand her “something that’s ancient Greek”, she would not want to view it digitally; rather, she would want to “hug it.” If User 6 is grappling with a subject about which she does not have a deeper understanding, she feels that she would prefer the digital item. She feels that “you can still get personal with it.” In the case of her classics background, User 6 felt that she would like to see a classics text “in person and actually physically be able to touch it.” She noted that it was something she “had learned about for so long” and likened it to going to an art museum and seeing some masterpieces after only seeing them on a computer screen. Nevertheless, she enjoys the digital aspect for the additional tools it may provide, such as translation. She feels “so far removed from the languages,” so the option to translate is an added level of information that she would utilize. However, User 6 contends that the physical format would be more moving to her. Her rationale is that “history only lasts so long, so having that […] physical proof is nice.”

In response to the hypothetical discovery, User 6 felt that she “would probably freak out and find all the articles” she could on the subject, in addition to contacting her past professors who are still active in the field and sharing information about it via social media. She affirmed that she would feel a sense of excitement about it and would access the physical format if she could have access to it. In her example of working with ancient texts, she feels that they can tell the story of how people “lived, what they did” and that individuals cannot understand that “without the physical.” She feels that the “idea of contextualizing lives and realizing that history happened is so cool.” While she would
“still look at it online for that further bit of evidence and information”, she would
“absolutely go firsthand to see it” if she had the opportunity. User 6 expressed happiness
twice during her response to the hypothetical scenario.

When asked about how important it is to have that emotional response while
conducting research with a certain format, User 6 felt that it “depends on the situation.”
User 6 describes herself, as “a realist and I know that sometimes […] my optimism and
excitement […] can kind of cloud what I’m doing.” While she may get excited over
working with an item, she feels that “it’s best to keep that in check so that you can do
your research and you can be somewhat objective about it.” User 6 feels that “[t]here’s
nothing wrong with that but when it comes to researching physical stuff, that can be a
little more critical.” As for feeling a sense of connection, User 6 thinks that it is not
completely necessary while she conducts research. She thinks that it “can’t be the sole
driving force for your research.” She contends that “it’s awesome to have a passion” for
something, but one does not need a passion for the subject to complete the research; this
way, one can learn “two sides of this one story.”

User 7. User 7 has accessed physical and digital archives in the past to research music.
While she is closer to a physical archive now, when she was still a student, she had to
rely on digital access or coordinate with the archivist to gain access to the item. To her,
the digital format was “amazing” to access when the item was not readily available to her
at school. When working with the physical item, she feels that she experiences a “warmth
of emotion” as she holds the artifacts, feeling that she is “lucky” to have access to these
items.
As User 7 worked with the physical and digital items during the interview, she felt that the physical format “always leaves a deeper impression”, especially if she were to compare the physical and digital formats next to each other. She contends that if she did not have access to the physical, she would “still have that reaction to the digital” if she had not seen the physical first or did not have access to the physical. The rarity of working with a certain physical item is part of what makes the experience special to her. User 7 explains, “With something from 1970, there’s only a particular amount of items that still exist from that time […] between these two individuals, and these physical artifacts tell their story.” The physical format allows her to “see and touch and feel this living, breathing story”, though the same story is given increased access with the digital. However, she feels that “being able to feel, touch, see those things—it’s just such a special […] and unique experience.”

When presented with the hypothetical scenario of a new discovery, User 7 felt that the situation “would be amazing.” She related her own experiences in studying American music in a global sense and a struggle to find research materials. She feels if something had been discovered in relation to the topic, it would have changed her research. User 7 feels that she would access both the physical and digital versions of the item, if possible. While she “would love to access the physical”, she feels that access can often be an issue. Moreover, the digital version typically offers additional tools to help individuals better grasp the information an item has to offer. User 7 explains that “having access digitally would have been life-changing […] but if I had the choice, I would love to see the physical.” She expressed an interest in the physical format, saying, “There’s just something about the physical materials and the story they tell” in addition to “a
magical quality” about being able to work with the physical material. User 7 feels that she experiences a stronger emotional response when working with the physical items. Similarly, she still feels an emotional response when working with the digital format but “[i]t’s just not as strong.” While she feels “engaged in the piece” when viewing it digitally, holding it in her hands gives her a “happy, comforting sort of sense.” User 7 exhibited happiness once during her response to the hypothetical scenario.

User 7 was asked about how important it is to have emotional responses to working with different material formats in research. She feels that is “so important” because “research is hard” and having “breakthrough moments where you can have inspiration from a physical item that’s telling the story that you’re trying to tell is inspiring.” User 7 notes that “it’s helpful during your process and you can discover things that you can’t necessarily if you don’t have access to them.” She also acknowledges that individuals view materials in different ways and from different perspectives, “so everyone’s going to notice something different about that physical item.” As a result, she feels that this reasoning is what is special about “being able to have those moments during research when you’re here and you’re really having the experience yourself” in addition to being able to “draw takeaways from your own experience with an item or a piece of history.”

User 8. User 8 has noted the merits of both digital and physical formats, feeling that one may inform the other. In her past research relating to Native American basketry, she frequently held the artifacts and was “able to flip” the items around in her hands. To User
8, she feels that she could “do a lot of things with a physical object” that she finds “really tiring when trying to do […] digitally.”

While working with the physical and digital items from the archive during the research interview, User 8 noted that the physical format evoked a sense of nostalgia in her, causing her to recall past aspects of her life and childhood, especially in terms of the technologies used in the source. User 8 feels that she will “always try and make the room for a real object” because it causes her to formulate additional questions she will want to explore. She feels a sense of being “fortunate” to be able to use the “real thing.” Even if she were to be referencing an item digitally from a great distance, she feels she would “then want to visit.”

In the hypothetical scenario of a newly discovered item, User 8 thinks that the discovery would “be fantastic”; however, if it were far from her, she “would ask a friend to go visit it.” To her, “just knowing that the thing is out there and has been discovered, I think I’d be elated” and that “someone should make sure that it is preserved.” If User 8 were far from the item and unable to travel, she would access the digital version but would “much prefer to see the original.” Her rationale for seeing the original is that “there might be other researchers and we could compare our notes.” User 8 believes “there’s a lot of sharing that could go on about original materials.” Additionally, User 8 would use the original “[b]ecause I could hold it” and would not have to “do a 360 rotation […] digitally.” User 8 exhibited happiness once during her response to this scenario.

When working with a physical item, User 8 feels that she enjoys the thought of community among scholars who are also researching similar items. She is “thrilled” to
have access to “the real thing” but if not, she is “glad someone has taken the time to
digitize it.” However, if given the opportunity, she works with the item physical because
she is “that kind of a learner.” She also feels “like it’s a connection to a person” when she
interacts with a physical item. To her, the emotional connection is “very important and
unlocks a number of things.” User 8 feels that working with the physical item “does drop
emotion” and makes her think of its provenance and existence in the present as forming
“a beautiful story.”

User 9. In his past research, User 9 feels that there is “definitely an emotional connection
or response that happens when in the presence of something.” While he looks up
photographs for his research, he has also traveled to physically work with items or visit
places where historical events occurred. User 9 feels that this is “an irreplaceable
experience [...] maybe not as important from a scholarly standpoint but just in terms of
having a human impact.”

As User 9 worked with the physical and digital items throughout the research
interview, he felt that the nature of the object would have an impact upon how moved he
would be by a certain format. He sees the digital interface as being “a powerful and
useful and convenient way to locate items” in addition to being able to “follow a trail of
cross-reference[s]” and find additional relevant items. However, once he finds something
he is looking for that is the focus of his work, then he “would want to go for the physical
item and actually see the collection in person” in order to explore “that extra level of
depth.”
In response to the hypothetical scenario of an item of relevance to his research being discovered, User 9 felt that he would react “with enthusiasm” and would find it “exciting.” In today’s age, User 9 feels that “there are lots of really amazing physical artifacts that have been hiding somewhere” and if it were not for the “technology that can help to discover and more widely disseminate things, you might never know.” In terms of his preference for accessing the item, User 9 felt that it “would certainly depend upon the situation.” He feels that “searchability would be an important feature” for a large document and “the electronic format gives you the capability to do that.” In other cases, he feels there may be a certain technique he would want to research and the best way to do that would be by accessing the physical object, though there may be ways to convey that digitally. However, when accessing a physical item of interest or being in its presence, User 9 feels that it “kind of gives you chills when you think about it. You know, just to be in a space like that […] can be hard to replicate through looking at a screen.”

When asked how important it would be to have an emotional response to a particular material format in research, User 9 felt that it would be important to someone who is “wanting to convey an experience to someone else in a way that touches on those sensory perceptions and the emotional impact” of being in the presence of something versus looking at a picture of something. He also felt that the same could be said for working with physical objects if someone were “trying to create more of an impressionistic reflection of what this object means or what being in a particular place means, as opposed to someone who’s doing a […] dry textual analysis, where just an image of someone’s correspondence would be fine.” In the case of textual analysis or
correspondence between two historical figures, User 9 feels that the information would be “easily conveyed through an electronic image.”

**User 10.** To User 10, material formats can be moving depending on the nature of the item and his interest level in it. User 10 has worked with items that expressed content that he disagreed with or shared information from which he felt removed, which eliminated a sense of emotion or connection for him. There have been other scenarios in which he has worked with items that were of historic importance but also matched his personal and research interests, allowing him to feel a stronger response to them. He has also connected with family members related to the individuals who produced certain items that reside in archives and has been able to see their impact firsthand upon these family members.

While working with the items from the archive during the interview, User 10 feels that sometimes the technology does not fully capture what other information is housed in a given archival box. He found that sometimes the material is not fully processed and cataloged. In other cases, some of the digital versions do not fully capture some of the physical details of an item. With one item, User 10 wanted to flip it over and look at the back of it, which is something he was not able to do with the digital version. When working with the physical format, User 10 feels like he will “always get a little excited” when finding an item with an individual’s signature on it. He related an anecdote from a past moment in his research in which he wanted to make the connection between an individual and a particular physical book. When he accessed the book, he found the individual’s signature on the check-out slip and was so “excited” that he “couldn’t sleep.”
The emotional response motivated him to write about the discovery. User 10 felt that seeing the signature online “wouldn’t nearly be as exciting as the physical treasure hunt of finding.” User 10 also felt that working with digital items is “quicker and easier” in comparison but does not elicit the same response in him.

Should the hypothetical scenario occur, User 10 felt that he would “get really excited” and that a similar situation has happened to him before. He related an anecdote about how a newly contributed collection in relation to his research was donated to the physical archive he accesses and he immediately visited the archive after being contacted by the archivist. User 10 “dropped everything and came over there” as if it were an “emergency.” User 10 felt that “[i]t was amazing to find those things.” User 10 notes that he will “always love something that physically ties back” to a certain individual who handled the item at one point in the past. This is heightened for him when he makes the past individuals’ family members aware of the discovery. User 10 feels that “there’s an element of sacred ground to physical spaces and personal things” and allows him to immerse himself in the time period. User 10 acknowledges that he cannot travel everywhere and that the digital counterparts of an item are “almost as good as seeing the documents.” To him, there is “something kind of magical” when he thinks about the history of the physical item in connection with the person who is handling it in the present. If User 10 were to access the newly discovered item, the choice of which format he would like to access would depend upon the item. Should the item be a routine publication or if it is something that would be hard to read physically, he would prefer a digital version. However, if the item is something that “people have actually put their mark on or thoughts on, things people filled out themselves,” he describes himself as
having “a tendency to feel it would be cool to see the original.” User 10 expressed happiness five times and surprise twice during this response to the hypothetical scenario.

When User 10 was asked how important it is to feel an emotional response in connection to a particular material format during research, he felt that it is important for a researcher “to connect people to place.” According to User 10, a researcher can do that in two ways: through storytelling or physically handling an item. To User 10, working with a physical item can enhance research in a way that “means something when you physically see something like that,” as opposed to seeing a digital picture of an item.

**User 11.** In User 11’s past research, he has viewed seeing certain physical items as moving because they are “extreme cases.” According to him, these would be iconic and well-known works that frequently receive visitors. While many individuals may have seen copies of the item, seeing it in person is “something different” because it has “been there for a long time.” To him, “the digital thing is just another iteration of the copy.” In other cases, pieces that are not iconic and are instead very personal can elicit an emotional response. To User 11, everyday items from a time period act as a “human empathizer” because “[y]ou imagine yourself back in that time” when working with the items. In this case, User 11 finds working with the physical items “more personal, as opposed to scholarly.” User 11 contends that “of course, scholars love their subjects but, yes, it is a different kind of love.”

When working with the physical and digital items from the archive during the interview, User 11 felt that researchers could make interesting discoveries when working with either the physical or digital items. In the case of the physical item, User 11 thinks
that “there’s something about the physicality of the paper […] that might tend to make it easier to get into the time.” User 11 elaborates about a sense of connection he may experience to the individual who initially produced the physical item, arguing that “you know that that person actually looked at those papers and there’s actually oils from his hands or her hands on that paper.” Due to this, “it’s easier to sort of imagine them through some connection between that person and what you’re doing. I mean, bringing that person to life.” User 11 expressed a variety in physical document types such as judicial records or visiting very moving historical places, thinking that “physicality […] really does matter” in those cases. As a result, User 11 believes that this support of the physical is partly why museums exist. User 11 thinks that “digital copies cannot replace” but digital versions can “definitely augment and they might be able to call some physical features out.”

When presented with the hypothetical situation, User 11 felt that his reaction would depend upon the discovery. User 11 thinks that there is a great deal of material “hidden in the archives” and that it is “great to get more archival material out there.” If given the choice as to which format he would access, User 11 felt that he would “probably go to the digital version first. Then, maybe go to the original.” His rationale was that there are many different variables that could come into play. If the digital copy were questionable, he felt that he would prefer to work with the physical version. Otherwise, he thought that the digital could “simulate well […] in two-dimensional ways.” User 11 expressed happiness once during his response to the hypothetical scenario.
In terms of how important it is for a researcher to experience an emotional response to a certain material format, User 11 felt that it is “just part of being a human.” According to User 11, “You have to have some kind of emotional connection to your subject. I think that’s how people work. […] It’s because our thinking is built upon our emotions.” User 11 thinks that when a researcher visits a physical archive, he or she has “personal connections and conversations.” Alternately, User 11 thinks that researchers can have moving or special experiences with digital items if an archive can “do a really nice digital exhibition of really high quality photographs of letters and things.” To User 11, looking at the digital versions is “like going back to the original.” On their own, he does not think that the items stand out as special but they can be depending on one’s “emotional capacity” and “[h]ow much you can imagine.”

| User 1 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| User 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| User 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| User 4 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| User 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| User 6 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| User 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| User 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| User 9 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| User 10 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| User 11 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Totals: | **10** | **19** | **0** | **0** | **0** | **0** | **0** | **29** |
Conclusion

Overall, the results of this study were gathered in order to determine whether or not user experiences are impacted by the transitions in material format of the records consulted for their research. Additionally, the data aims to examine why certain formats may be selected over others when users conduct their research. This data also captures information regarding the numinous experience in relation to original and surrogate records, in addition to the impact of materiality upon the user experience. The following chapter will offer an analysis of the data collected.
Chapter Five: Data Analysis and Conclusion

By collecting data surrounding the background information of users of archives, general user experience, and the numinous experience, this study aimed to find answers to the following research questions:

1. How does format transition of an archival record affect the use of that record and the experience of the user of that record?

   Specifically,
   a. How is the numinous experience demonstrated or illustrated in the use of original records?
   b. How is the numinous experience demonstrated or illustrated in the use of surrogates?
   c. How is the impact of materiality demonstrated or illustrated?

During the data collection process, the sample of physical archive users shared their responses regarding their past research experiences, in addition to their interactions with physical and digital items from the archives at which the research interviews occurred.

This chapter offers an analysis of the data reported in the previous chapter and links user responses to Varnalis-Weigle’s four affects of experiences: the sensual, emotional, spatiotemporal, and numinous (2016). Moreover, this chapter includes conclusions to the research questions posed in this study, based upon common themes that arose during user interview responses to the interview questions focusing on general user experience and the numinous experience. In addition of offering an analysis of the data collected, this chapter also discusses the limitations of this research, its significance to the field of LIS, and potential areas for further research.
Summary of Results

During the interview process, users responded to questions regarding their background information and the materials they accessed during their previous research. This was done in an effort to understand the different research interests that the participants demonstrated and the materials that the participants used in the past. The interview guide questions relating to general user experience and the numinous experience were designed in a way that allowed the principal investigator to note any common themes among researchers.

This section offers an analysis of general user experiences, which includes an overview of the availability of research materials in digital surrogate formats, in addition to an examination of the impact of materiality as demonstrated by the users. The potential impact of materiality is examined in conjunction with Varnalis-Weigle’s four affects of experiences, which include the sensual, emotional, spatiotemporal, or numinous reactions expressed by users during their responses to interview questions relating to general user experience (2016). This section also includes an analysis of the numinous experience, examining how the numinous experience is potentially felt when working with physical objects and with digital surrogate formats.

**General user experience.** In an effort to understand the availability of surrogate formats to the participants in their past research, participants were asked about whether or not they were aware of their physical research materials existing in digital surrogate formats. The majority of participants indicated a split in terms of item availability in surrogate formats. According to the interview responses, three participants indicated with certainty that surrogate formats did exist, six indicated that surrogate formats occasionally existed, while two were unsure. No participants
indicated a lack of digital surrogate items with certainty. Table 5 depicts the participant responses regarding the availability of their research materials in digital surrogate formats.

Table 5
*Participant Responses to Availability of Materials in Digital Surrogate Formats*

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>Sometimes</th>
<th>No</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>User 1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
</tr>
<tr>
<td>User 2</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>User 3</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
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<tr>
<td>User 4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
</tr>
<tr>
<td>User 5</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>User 6</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>User 7</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>User 8</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>User 9</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>User 10</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>User 11</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Totals:</strong></td>
<td><strong>3</strong></td>
<td><strong>6</strong></td>
<td><strong>0</strong></td>
<td><strong>2</strong></td>
</tr>
</tbody>
</table>

As participants interacted with physical and digital surrogate items at the archives in which the research interviews occurred, the participants were asked to share information about their experiences with each format type. This portion of the study sought to address the following research question:

- How is the impact of materiality demonstrated or illustrated?

The participant responses aligned with Varnalis-Weigle’s four affects of experiences, spanning from the sensual, emotional, spatiotemporal, and numinous (2016). The sensual affect aligns with the participant’s emotional and sensorial reactions to the tangibility of an item, while the emotional affect aligns with a participant’s sense of connection to an object through aesthetic
qualities (Varnalis-Weigle, 2016, p. 3). The spatiotemporal affect deals with a feeling of being transported to a specific time or place in history, while the numinous affect elicits a sense of awe, wonder, or fascination (Varnalis-Weigle, 2016, p. 3). The participant responses to these questions when working with physical and digital formats have been examined alongside Varnalis-Weigle’s four affects of experience and are depicted in Table 6 (2016).

Table 6
**Participant Responses Aligned with Varnalis-Weigle’s Four Affects of Experiences.**

<table>
<thead>
<tr>
<th>Participants</th>
<th>Sensual</th>
<th>Emotional</th>
<th>Spatiotemporal</th>
<th>Numinous</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User 1</strong></td>
<td>Physical: “[T]here’s more weight, there’s more feelings, there’s more things to observe.”</td>
<td>Digital: “It doesn’t show its age. […] I think it’s mundane.”</td>
<td>Physical: “[K]ind of puts you in the place of a person that actually had this at one point.” Physical: “[S]omeone made this, someone held this, someone read this.” Physical: “[S]omeone actually read this copy.” Digital: “[K]ind of takes away from that experience.”</td>
<td>No comments made in relation to this category.</td>
</tr>
<tr>
<td><strong>User 2</strong></td>
<td>Physical: Shares more information beyond content. <strong>Physical</strong>: Willing to take the time to work carefully with the physical item. <strong>Digital</strong>: Moves through content faster, possibly skipping information.</td>
<td>Physical: Can see “more detail in the documents” such as the thickness of the paper. <strong>Digital</strong>: Issues with the quality of the scan. “[H]ad a lot of shadows” making it “a little more difficult.”</td>
<td>No comments made in relation to this category.</td>
<td>No comments made in relation to this category.</td>
</tr>
</tbody>
</table>
| User 3 | **Physical:** Notes the “physicality” of the time. “It’s interesting to catch the light against the paper and see that they are watermarked.”  
**Physical:** “[T]his is almost tissue paper. It’s very fine and transparent—you wouldn’t expect that.”  
**Digital:** Drawn to “find” tool. | **Digital:** Difficult to navigate. | **Physical:** “[T]here’s something about just holding and having what the person had at the time in your hands.” | No comments made in relation to this category. |
| User 4 | **Physical:** Could “pick it up and feel the weight of the stationary” and see embossed name.  
**Digital:** “[F]lat” in comparison. Interaction was more limited.  
**Physical:** “[H]olds a little more gravity than just seeing it on a computer screen, where it’s just a picture and I can’t touch it.” | **Digital:** Drawn to metadata. | No comments made in relation to this category. | **Physical:** “There’s just something really special about being able to touch […] the real thing.” |
| User 5 | **Physical:** Hesitant to use because did not want to damage the item.  
**Digital:** More comfortable with getting closer to the item. | No comments made in relation to this category. | **Physical:** Offered a sense of closeness to an individual. | **Physical:** “[M]uch neater.” User was more intrigued by the physical item in comparison to its digital surrogate. |
| User 6 | **Physical:** Excited to touch | **Digital:** Drawn to metadata. | **Physical:** Offered a sense of closeness | **Digital:** “I’ve still got the same
something from the time period.  
**Physical:** Initially hesitant to use physical item to prevent damage.  
**Digital:** Crease marks captured on the digital surrogate made the item seem “real.”  
**Digital:** Could not see the other side of the item.  
**Physical:** “I love being able to touch and see the [...] handwriting strokes on the envelope.”

| User 7 | **Physical:** | [T]here’s just nothing like seeing the physical artifacts and the physical materials [...] to hold it in your hand.”  
**Digital:** More comfortable because she felt she did not need to be as careful.  
**Physical:** Sees more details because the item can be viewed in full, as opposed to scrolling. | **Digital:** Drawn to metadata.  
**Digital:** Issues with the quality of the scan. | **Physical:** Feels a connection to the past. “It’s still surviving today and you’re holding it.” | No comments made in relation to this category. |
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</thead>
<tbody>
<tr>
<td>User 8</td>
<td><strong>Digital:</strong> Appeared “more two-dimensional.”</td>
<td>No comments made in relation to this category.</td>
<td><strong>Physical:</strong> “[T]his kind of makes history come alive to have a little piece like this.”</td>
<td>No comments made in relation to this category.</td>
<td></td>
</tr>
<tr>
<td>User</td>
<td>Physical</td>
<td>Digital</td>
<td>Physical</td>
<td>Digital</td>
<td>Notes</td>
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<td>--------------------------------------------------------------------------</td>
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<tr>
<td>User 9</td>
<td>Sees more details in the physical format.</td>
<td>Did not have “the visceral experience of holding it in your hand, turning it over, and seeing what’s on the back.”</td>
<td>“There are intangible things that you pick up from seeing the physical object.”</td>
<td>Drawn to metadata.</td>
<td>No comments made in relation to this category.</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>No comments made in relation to this category.</td>
</tr>
<tr>
<td>User 10</td>
<td>More focused when working with the physical item.</td>
<td>Difficult to navigate.</td>
<td>Offered a sense of closeness to an individual because of “very personal stories.”</td>
<td></td>
<td>No comments made in relation to this category.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No comments made in relation to this category.</td>
</tr>
<tr>
<td>User 11</td>
<td>More comfortable with physical because he has been using that format longer.</td>
<td>Difficult to navigate.</td>
<td>“[V]ery personal” nature of items.</td>
<td></td>
<td>No comments made in relation to this category.</td>
</tr>
</tbody>
</table>

As the participants worked with the physical and digital surrogate items, each participant expressed a unique reaction to the items at hand. While not all participants exhibited all four affects of experience, the four affects were each expressed at some point across the sample of participants.
**Sensual.** The vast majority of participants related expressions that connected to the sensual affect of experience, highlighting the tangible aspects of the physical item. This includes Users 1-3 and 6-9. Users 1, 3, and 4 commented upon the physicality of the item, exhibiting a sense of connection to the item through its tangible characteristics. In terms of the physical item, Users 2, 3, and 3 expressed a greater sense of information and impact offered by the item because of its physical characteristics and being able to interact with it directly in a physical setting, as opposed to through a computer. Additionally, Users 6, 7, and 9 mentioned touch directly, with User 6 expressing excitement about being able to touch the physical item. In contrast to the depth and impact of the physical item, Users 4, 6, and 8 expressed that the digital item did not offer the same sense of impact or offered a more limited sense of interaction. User 9 cited the lack of touch and not being able to turn over the item to gain additional information.

Alternately, User 6 appreciated the physical characteristics of the item coming through in the digital version, feeling that they made the surrogate seem more “real.” User 3 utilized the find tool as he worked with the digital item, almost treating the tool as a means of making the digital item seem more tangible and interactive for his research. User 9 also noted the benefit of using digital tools when interacting with an item.

Some participants also expressed their levels of comfort when working with one format over another. Users 5 and 7 mentioned that that they felt more comfortable getting closer to the digital item. User 5 was more comfortable with the digital item because it alleviated worries of potentially damaging the physical item. User 7 felt more comfortable because she felt she did not have to be as careful with the digital item. While User 6 did not directly state being comfortable with one format over another, she did mention that she initially felt hesitant to use the physical item because she also did not want to damage it. In contrast, User 11 expressed that he was more
comfortable using the physical item because he was more familiar with using it, as opposed to navigating the digital interfaces.

Participants also expressed their levels of efficiency and focus when working with the different formats. User 2 felt that she would take the time necessary to properly work with a physical format and treat it with care because she feels that she moves faster and possibly misses details and information when working with the digital version. User 10 also felt that he was more focused when working with a digital item but a digital item would allow for him to move through the material more efficiently. User 11 also felt that the digital version was more efficient for him, though he felt more comfortable with using the physical item. Users 7 and 8 felt that they saw more details with the physical item because they were able to view it in full, as opposed to having to scroll through it or rotate it on a screen.

**Emotional.** The emotional affect of experience stresses a connection to the item based upon its aesthetic qualities. Nine of the participants shared remarks that related to this category. In terms of the physical format, User 2 felt that she could notice more detail in the item and its characteristics. User 9 felt that in addition to seeing the physical characteristics of the item, he was able to glean intangible information relation to the item and its time period.

While the digital format aimed to reproduce the physical characteristics of the item in a visual manner, many participants took notice of the metadata as a substitute for not being able to handle the item physically. Specifically, Users 3, 4, 6, 7, and 9 each directly mentioned their interest in the metadata in order to gain information about the item. While the digital metadata was a strong support, User 1 felt that the digital version of the item did not accurately reflect the aesthetic characteristics of the item. To him, he felt that the digital version was presented in a
way that did not show the age of the item and he felt his emotional response not as favorable as a result.

In other situations, the quality of the scan and issues with the software hindered participant connections to the digital item and its aesthetic qualities. Users 2 and 7 experienced issues with the quality and clarity of the scan, which complicated their experience. Similarly, Users 3, 10, and 11 noted that the archival software for the digital items was difficult to navigate.

**Spatiotemporal.** The spatiotemporal affect of experience was strongly connected to interactions with the physical item. Eight of the eleven participants made remarks in relation to this category. Users 1, 3, 5, 6, 10, and 11 each felt a sense of closeness to an individual based upon the item or the personal nature of the item. Users 1 and 3, in particular, both mentioned the possibility of someone in the past handling the given physical item and the item existing in the hands of the respective users today. In contrast to the more personal or individualized connections, Users 7 and 8 also felt a connection to another time period but in a more general sense. User 7 felt a general connection to the past, while User 8 felt that the general past became more accessible through being able to handle the physical piece.

In considering the digital version, User 1 was the only user to remark about the digital item in this category. Here, User 1 felt that working with the digital version took away from the spatiotemporal experience offered by the physical item. In his case, his being unable to hold the item used by an individual in the past did not afford him the same sense of connection to another time period.

**Numinous.** In this particular set of questions, Users 3, 5, and 6 made remarks that connected to the numinous affect of experience. Users 4 and 5 expressed the numinous affect of experience when handling the physical item. User 4 expressed a “special” feeling when being
able to have tactile experiences with physical items as a whole. Similarly, User 5 expressed a stronger fascination in the physical item, as opposed to its digital surrogate.

Interestingly, the numinous affect and feelings associated with it were not limited to the physical item in the user responses to the set of questions dealing with general user experience. User 6 shared that she experienced the same level of excitement with both the digital and physical formats. Though she was excited to touch an item from the time period, her excitement surrounding the digital item was propelled by the quality of the scan. Here, the digital item captured the aesthetic qualities and imperfections of the physical item, allowing her to feel that she was working with a copy that accurately reflected the original physical item.

**Common themes of the general user experience.** The impact of materiality is demonstrated in numerous ways that relate to general user experience. The common themes addressed in this section are as follows:

- Physical items offer characteristics that are not always captured by digital surrogates.
- The spatiotemporal affect of experience is limited in digital surrogates.
- Metadata and accessibility are favored by users who are not able to access the items physically.
- The quality of a digital scan and digital software navigability can positively or negatively impact user preference when choosing whether or not to use a digital item.

In the case of the physical item, the participants in this study indicated that handling the physical item is able to offer them access to the information and aesthetic characteristics of the item that may be lacking in the digital version of the item. User 3, for example, expressed a need
to work with the physical item in a physical archive location to hold the item against the light and to study its watermarks. In other cases, participants commented on the tactility of interacting with the physical characteristics of the item. While participants could read about the physical characteristics of a digital surrogate item thanks to metadata, some participants relied upon tactility as a key part of their experience with the item.

The spatiotemporal affect of experience of the item strongly correlated with the physical item, with User 2 noting that the opportunity of experiencing the spatiotemporal affect is hindered when working with the digital item. In handling the item in its physical material format, participants felt that they could experience a connection to a past individual or a more general connection to another time period as they conducted research. While they could glean written content from a digital item, they could gain the same content plus the spatiotemporal experience of connection from the physical item.

As participants interacted with the digital items, many of them expressed an interest in the metadata and tools that accompanied the digital item. Metadata seemed to act as a substitute for tactility in some cases, while other digital tools improved participant efficiency in navigating the digital item for specific pieces of information. The richness of the metadata depended upon the archive. The accessibility of the digital items is also appreciated by participants, as Users 1, 4, 9, and 11 each commented upon the accessibility of the item as being a major convenience for their research.

Finally, the quality of the digital surrogate and digital software appeared to be an issue for participants. Participant preference for using a digital item in this study was impacted by the quality of a scan. In the case of participants interviewed in this study, some felt that the digital scans were low quality and were not discernible. Some archives used black and white PDF scans
of an item, whereas others offered more interactive color scans. In another case, one participant responded negatively to a scan that seemed to be more pristine than the original physical item itself, feeling that the aesthetic characteristics of the item were not accurately portrayed. Another participant expressed an interest in a digital item that was scanned in a way that reflected the aesthetic characteristics of the physical original. In the instance of the digital software used to access the digital items, several participants expressed a sense of frustration. As a result, there may be a need for balance in terms of accurately reflecting the aesthetic characteristics of an original physical item in its digital surrogate form without hindering access to other types of information provided by the digital item.

Overall, while both physical and digital formats have their merits in research, there are some aspects of physical items in relation to the affects of experience that do not thoroughly transfer into their digital surrogate formats for the participants examined in this study. This particular group of participants attend physical archival locations in order to meet these needs and experiences the aesthetic characteristics of an item, in addition to affects of experience, firsthand. Though Users 1, 2, 4, and 11 directly mentioned their preference in using physical items in this set of questions, they had not neglected to refer to digital points in the past at various points in their research. The digital format is supported by users of physical archive locations, who voice a clear appreciation for the convenience and accessibility of digital items when conducting research. However, there is a need to examine user experiences in relation to the quality of scans and the navigability of software in order to afford users with the quality of scans that are useful to their research and software that is easier for them to navigate.

**The numinous experience.** As participants interacted with physical and digital surrogate items at the archives in which the research interviews occurred, the participants were asked to
consider whether or not they experienced anything moving or special when working with the different formats. Due to the fact that numinous experiences are subjective, participants were asked to consider a hypothetical scenario in which an item of relevance to their research were discovered, addressing their reactions and format preferences. Finally, participants were also asked to consider the overall importance of having a numinous experience while conducting research. This portion of the study sought to address the following research questions:

- How is the numinous experience demonstrated or illustrated in the use of original records?
- How is the numinous experience demonstrated or illustrated in the use of surrogates?

The participant responses to questions concerning the numinous experiences when working with physical and digital formats have been included in Table 7.

In Table 7, participant comments when working with the physical and digital formats have been categorized by format type. The number of FACS responses are also included for the respective material formats. The table also includes participant format preferences in response to the hypothetical scenario and the reason why the given participant chose a particular format type. The amount of participant FACS responses have also been included in the table. The number of FACS responses during the hypothetical scenario are also offered in the table.
Table 7
Participant Responses to Questions Relating to the Numinous Experience with Varying Formats.

<table>
<thead>
<tr>
<th>Participants</th>
<th>Responses to Physical Format</th>
<th>Responses to Digital Format</th>
<th>Hypothetical Scenario Format of Choice</th>
</tr>
</thead>
</table>
| User 1       | • “Actually holding something is much more impactful.”
  • “Seeing a newly discovered medal would be more impactful than just a picture.”
  • “I’d want to hold it. I would like to see it, weigh it. […] I think I’m much more emotionally connected to that than just a picture.”
  • “I would feel a sense of bravery.”
  • Enjoys the “rarity” of working with the original.
  • **FACS Responses: 2** | • Feels he would not have the same emotional reaction. “That’s just a picture. It’s not the real thing. […] It’s just not the same as holding it to me.”
  • **FACS Responses: 0** | • **Physical**
  • “[I]f you could actually hold it—the original—there’s a sense of more value to it and impact.”
  • **FACS Responses: 5** |
| User 2       | • The item itself was once handled physically by individuals in the past.
  • “[T]here’s something moving about working with a physical collection because these are documents that have been touched 100 years ago.”
  • “There is definitely a value in, for me, emotionally, looking at a physical collection because you get to really feel history and see what people experienced at that time.”
  • **FACS Responses: 4** | • Digital item did “not really” offer her an emotional connection.
  • Feels she is “very passionate about the physical collection but could be equally as passionate about the digital collection if it were held to the highest standard.”
  • **FACS Responses: 1** | • **Physical**
  • “[H]aving a physical object in front of me allows me to see more details.”
  • **FACS Responses: 2** |
“You’re looking at a certain time and you want to have the most intimate sort of reaction that you can to put yourself there.”

Wants to “conjure up the spirit of the time.”

The physical item “puts you there.”

“You can write about an experience in [...] a very factual way but when you’re doing writing for an audience [...] you need to use and harness the emotional experiences you have interacting with those documents.

“There’s just something about holding the document that was important on April 2, 1927. Somebody kept this in this condition for these purposes.”

“There’s just something about interacting with the document [...] to know that this is how people are commenting at this particular time—it’s very cool to have in your hands.”

Felt a sense of “wonderment that this document exists [...] as proof that there was a different time.”

“[L]ike reaching out to the past. Just having the past being in the
present is very cool for me.”  
- “[M]uch more intimate experience.”  
- **FACS Responses:** 3

<table>
<thead>
<tr>
<th>User 4</th>
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</table>
| • Moved her.  
• “It’s really cool to touch something” handled by an individual of historic importance because it “acts as a point of connection between yourself and your subject.”  
• Allows her to “get inside of someone’s head” and experience more information about the past individual.  
• **FACS Responses:** 5 | • “It’s one thing to come home and talk about how you dressed 15 mannequins” or show pictures of them and “it’s another thing to actually see them on the mannequins.”  
• Even though they’re just photos that’s still really exciting.”  
• **FACS Responses:** 3 | • **Physical**  
• “In doing so, you’re not just using one sense. You’re not just looking at it.”  
• **FACS Responses:** 5

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<thead>
<tr>
<th>User 5</th>
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</table>
| • Working with the physical item is “much neater.”  
• There is a sense of “human-ness” and “closeness” to working with an item owned by someone that exists in the present.  
• “Exciting.”  
• **FACS Responses:** 6 | • Did “[n]ot really” experience the same emotions.  
• “Not quite as exciting.”  
• Put her in the mindset of “getting it done.”  
• Interaction “felt faster.”  
• **FACS Responses:** 3 | • **Physical**  
• “[T]here is that detail and you can flip it over.”  
• **FACS Responses:** 1

<table>
<thead>
<tr>
<th>User 6</th>
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</table>
| • Seeing the scale of some works gives her a sense of awe.  
• These experiences arouse an “overwhelming” feeling that “is connected to so many things.”  
• She feels “a little hint of excitement” when  | • Accessing a favorite work digitally gives her “a little hint of calmness but it’s not the same.”  
• Spends less time viewing the digital item online.  
• “[Y]ou can still get personal with it.”  
• **FACS Responses:** 3 | • **Physical**  
• They tell the story of how people “lived, what they did” and that individuals cannot understand that “without the physical.”  
• **FACS Responses:** 2
seeing a work in person.
- Intrigued by how “someone actually took the time […] to make this item that you’re looking at or holding.”
- “Calming” or “relaxing” feeling when seeing a favorite physical work.
- Working with the physical item “gives one a good feeling.”
- “History only lasts so long, so having that […] physical proof is nice.”
- **FACS Responses: 6**

<table>
<thead>
<tr>
<th>User 7</th>
<th>Feels that the digital would leave a strong impression if she did not have access to the physical.</th>
<th><strong>Physical</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Feels “engaged in the piece.”</td>
<td>“There’s just something about the physical materials and the story they tell” in addition to “a magical quality.”</td>
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<tr>
<td></td>
<td><strong>FACS Responses: 0</strong></td>
<td><strong>FACS Responses: 1</strong></td>
</tr>
<tr>
<td></td>
<td>Allows her to “see and touch and feel this living, breathing story.”</td>
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<tr>
<td></td>
<td>“Being able to feel, touch, see those things—it’s just such a special […] and unique experience.”</td>
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<td></td>
<td>Holding it in her hands gives her a “happy, comforting sort of sense.”</td>
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<tr>
<td></td>
<td><strong>FACS Responses: 6</strong></td>
<td></td>
</tr>
</tbody>
</table>
| User 8 | • Evokes a sense of nostalgia.  
• Feels a sense of being “fortunate” to use the “real thing.”  
• **FACS Responses:** 6 | • No comments made in relation to this category.  
• **FACS Responses:** 3 | • **Physical**  
• Would use the original because she “could hold it” and would not have to “do a 360 rotation […] digitally.”  
• **FACS Responses:** 1 |
| --- | --- | --- | --- |
| User 9 | • Feels that there is “definitely an emotional connection or response that happens being in the presence of something.”  
• There is “an irreplaceable experience […] maybe not at as important from a scholarly standpoint but just in terms of having a human impact.”  
• Working with a physical item or being in the presence of a significant location “kind of gives you chills when you think about it. You know, just to be in a space like that […] can be hard to replicate through looking at a screen.”  
• **FACS Responses:** 1 | • Though the digital interface is “powerful and useful”, he “would want to go for the physical item and actually see the collection in person” in order to explore “that extra level of depth.”  
• “[T]here are lots of really amazing physical artifacts that have been hiding somewhere” and if it were not for the “technology that can help to discover and more widely disseminate things, you might never know.”  
• **FACS Responses:** 1 | • **Depends upon the item.**  
• “[S]earchability would be an important feature” for a large document, which the electronic format offers. In other cases, there may be a certain technique he would want to research and the best way to do that would be by accessing the physical object, though there may be ways to convey that digitally.  
• **FACS Responses:** 3 |
| User 10 | • Always “gets a little excited.”  
• An emotional response to a physical item motivated him to write about the discovery.  
• Will “always love something that”  
• Seeing the item online “wouldn’t nearly be as exciting as the physical treasure hunt of finding.”  
• Working with the digital is “quicker and easier” but does  
• **Depends upon the item.**  
• If the item is a routine publication or something hard to read physically, he would opt for the digital. If the item is something that “people have
physically ties back” to an individual.
- “[T]here’s an element of sacred ground to physical spaces and personal things” and allows him to immerse himself in the time period.
- Thinks there is “something kind of magical” when considering the history of the physical item in connection with handling it in the present.
- **FACS Responses: 2**

<table>
<thead>
<tr>
<th>User 11</th>
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</thead>
<tbody>
<tr>
<td><strong>Certain physical items are moving because they are “extreme cases.”</strong></td>
</tr>
<tr>
<td><strong>Feels that pieces that are not iconic but are still very personal can elicit an emotional response.</strong></td>
</tr>
<tr>
<td><strong>Everyday items from a time period act as a “human empathizer” because “[y]ou imagine yourself back in that time when working with the items.”</strong></td>
</tr>
<tr>
<td><strong>Finds that working with the physical items is “more personal, as opposed to scholarly.”</strong></td>
</tr>
<tr>
<td><strong>“There’s something about the physicality of the paper […] that might make it easier to get into the time.”</strong></td>
</tr>
<tr>
<td><strong>“[Y]ou know that that person actually looked</strong></td>
</tr>
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</table>

- not elicit the same emotional response.
- Acknowledges that he cannot travel everywhere and the digital counterparts of the item are “almost as good as seeing the documents.”
- **FACS Responses: 3**

<table>
<thead>
<tr>
<th>Digital</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The digital could “simulate well […] in two-dimensional ways.”</strong></td>
</tr>
<tr>
<td><strong>FACS Responses: 1</strong></td>
</tr>
</tbody>
</table>
at those papers and there’s actually oils from his hands or her hands on that paper.”

- Feels it is easier to connect to a past person by interacting with the physical items. It’s a means of “bringing that person to life.”
- “[P]hysicality really does matter.”
- **FACS Responses:** 1

| The numinous and the physical format. | According to Table 7, Users 1, 6, 7, 9, and 10 mentioned that the physical format was more impactful to them for a number of reasons. In the case of Users 1, 3, 6, 7, and 8, acknowledging the rarity of the item allowed them to have a numinous experience. Users 1, 3, and 5 said that the numinous experiences from working with physical items evoked emotions, while User 3 went on to say that having an emotional reaction could be used to enhance his research. Participants experienced a broad range of emotions evoked by the use of physical items, describing their feelings as ones of bravery, wonderment, excitement, awe, overwhelming, calmness, and relaxation. Other participants described feeling fortunate to hold the item or experiencing a “magical” or “good feeling” in addition to a “warmth of emotion” brought on by working with the physical item. The majority of participants, which included Users 2, 3, 4, 5, 9, 10, and 11, felt a sacred connection to the past through touch. |

| The numinous and the digital format. | In the case of the digital format, Users 1, 2, 5, 6, and 10 felt that they did not experience the same emotional reaction to the item in its surrogate form. User 3 went on to say that he experienced no emotional reaction to the digital surrogate item. Users 3, 5, 6, and 10 made remarks that suggested that the digital version felt very |
transactional. Due to its minimization of emotional reactions, the participants felt less of an ability to connect with the item and more of a need to complete their research objectives with it. Though emotional responses were lessened, Users 4 and 6 felt that one could still experience excitement with a digital item or get personal with it. Here, the emotions experienced included a “hint of calmness” and the possibility of the item being “still exciting” to interact with in its surrogate form. User 2 felt that she could potentially have strong emotional reactions to a digital surrogate item if it were held to higher accessibility and quality standards by the archive. Otherwise, Users 2, 7, 9, 10, and 11 mentioned that the digital format was a good alternative to the physical format or could be used to supplement a physical format.

*Format preferences in relation to the hypothetical scenario.* When presented with the hypothetical scenario, participants were asked to indicate which format they would prefer to use in order to interact with the imagined newly-discovered item. Of the 11 participants, eight indicated that they would prefer to use the physical item, two felt that it would depend upon the item, while one individual would prefer to use the digital format. The individuals who preferred the physical format offered varying reasons for their format preference. Users 1, 6, and 7 appreciate the impact or value of the physical item. Users 2 and 5 felt that they could better observe the details of an item in its physical form. Users 3 and 4 preferred the sensory experience that the physical item could afford them. Finally, User 8 appreciated the ease of use offered to her by the physical item. The two individuals who felt that their choice would depend upon the item gave potential reasons why they would pick one format over another. In the case of User 9, he felt that if he needed an item to have a searchability feature, he would elect to use the digital format. In contrast, if he were to be studying a particular technique, he would use the physical item. User 10 felt that if the item were a routine publication, he would use the digital format.
However, if the item were an item that had a more personal connection to an individual or group of individuals, then he would refer to the physical format. User 11 preferred to use the digital format when given the choice of formats because he felt that the digital format could simulate well in a two-dimensional way, which could fulfill his research needs.

*Facial Action Coding System (FACS) responses to items of varying material formats.*

Overall, the highest amount of FACS responses occurred when participants interacted with physical items. Participants exhibited FACS responses a total of 42 times. The lowest number of reactions exhibited by a participant was one time, whereas the highest number of reactions exhibited by a participant was six times. In total, happiness was exhibited most by participants, being noted 30 times across the group of participants. Surprise was exhibited seven times, anger and fear were exhibited twice, and sadness was exhibited once. Contempt and disgust were not exhibited with the physical item.

In examining FACS responses exhibited by participants when working with a digital surrogate item, participants exhibited FACS responses 22 times. In this case, the lowest number of reactions exhibited by a participant was zero times, while the highest number of reactions was three times. Happiness remained the reaction exhibited most, being noted eight times across the group of participants. Anger was exhibited five times, surprise was exhibited four times, and disgust was exhibited once. Anger and disgust, in this case, were reactions to the digital software being used to access the digital items. Sadness, fear, and contempt were not exhibited with the digital surrogate item.

In the case of presenting participants with a hypothetical discovery relating to their research, participants exhibited FACS responses a total of 29 times. All of the reactions were largely positive, with 19 instances happiness and 10 instances of surprise as the FACS reactions.
The lowest number of reactions exhibited by a participant was one time, while the highest was seven times. Sadness, fear, anger, contempt, and disgust were not exhibited in the hypothetical scenario.

After participants responded to questions concerning the hypothetical scenario, they were asked to consider how important it is for researchers to have a numinous experience while conducting research. Participants responded with various levels of importance and for different reasons which supported their responses. Table 8 depicts the participant responses to the importance of the numinous experience during the research process, including the level of importance for participants and their reasons.

Table 8
Participant Responses to the Importance of Numinous Experience During the Research Process

<table>
<thead>
<tr>
<th>Participants</th>
<th>Level of Importance</th>
<th>Reason</th>
</tr>
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<tbody>
<tr>
<td>User 1</td>
<td>Important</td>
<td>It is “a part of history to be able to see, to touch.” In doing so, he wants to be able to put himself in another person’s position and feel as if he is “getting a sense of that time.”</td>
</tr>
<tr>
<td>User 2</td>
<td>Important</td>
<td>It is “important enough because […] when you’re writing about something, especially if it’s extensive, it can get boring or it can get tiresome and stressful. […] BEing able to have some sort of excitement and feeling like you can personally relate to these artifacts in that level gives you a new sense of inspiration. [I]t’s that much more being able to physically see it in person or physically hold it because I think just that little bit of excitement for me makes me feel, like, ‘Wow, I’m a researcher.’”</td>
</tr>
<tr>
<td>User 3</td>
<td>Important</td>
<td>He “want[s] the feeling to be contagious” for his audience. He feels that he can evoke similar feelings in his audience by relating his emotional responses in his writing. “[Y]ou can’t have that experience of taking in information in a very interactive way without including touch, smell—just the visual experience and feelings. I think it’s your right-hand man when composing things for consumption.” If he is “really serious about research”, he feels he needs</td>
</tr>
<tr>
<td>User</td>
<td>Importance</td>
<td>Comment</td>
</tr>
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<td>------</td>
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</tr>
<tr>
<td>User 4</td>
<td>Important</td>
<td>“as many experiences as he can get” with the physical item. This experience allows her to be “excited and passionate” about what she is researching, otherwise “it’s not going to be as fulfilling as it could be.”</td>
</tr>
<tr>
<td>User 5</td>
<td>Somewhat important</td>
<td>She feels she would still complete her research with or without a numinous experiences but she “would miss it if it wasn’t there” and “would miss that connection.”</td>
</tr>
<tr>
<td>User 6</td>
<td>Somewhat important</td>
<td>Feels that sometimes her optimism and excitement can cloud what she is doing. “[I]t’s best to keep that in check so then you can do your research and you can be somewhat objective about it.” She also feels that the numinous or a sense of connection “can’t be the sole driving force for your research.”</td>
</tr>
<tr>
<td>User 7</td>
<td>Important</td>
<td>It is “so important” because “research is hard” and having “breakthrough moments where you can have inspiration from a physical item that’s telling the story that you’re trying to tell is inspiring.” She thinks that “everyone’s going to notice something different about that physical item.” To User 7, “being able to have those moments during research when you’re here and you’re really having the experience yourself” allows the user to draw takeaways from her own experience.</td>
</tr>
<tr>
<td>User 8</td>
<td>Important</td>
<td>Having an emotional connection is “very important and unlocks a number of things.”</td>
</tr>
<tr>
<td>User 9</td>
<td>Important</td>
<td>It is especially important to someone who is “wanting to convey an experience to someone else in a way that touches on those sensory perceptions and the emotional impact” of being in the presence of something. This could also be helpful if he were “trying to create more of an impressionistic reflection of what this object means or what being in a particular place means, as opposed to someone who’s doing […] dry textual analysis.”</td>
</tr>
<tr>
<td>User 10</td>
<td>Important</td>
<td>It is important for the researcher to “connect people to place” and a numinous experience can enhance research.</td>
</tr>
<tr>
<td>User 11</td>
<td>Somewhat important</td>
<td>It is “just a part of being a human.” User 11 thinks that “You have to have some kind of emotional connection to your subject. I think that’s how people work. […] It’s because our thinking is built upon our emotions.” When individuals visit an archive, they can have “personal connections and conversations.” While individual items may not stand out as</td>
</tr>
</tbody>
</table>
numinous to him, he feels that they can be, depending on one’s “emotional capacity” and “[h]ow much you can imagine.”

The importance of the numinous experience. When participants were asked how important it is to have a numinous experience in research, the majority of participants felt that it was important for differing reasons. Eight participants felt that the numinous experience was important, while three felt that it was only somewhat important. No participants mentioned that the numinous experiences were unimportant in research.

The participants who felt that the numinous experience was important in research were divided in terms of the reasons why they held this opinion. Users 1 and 10 felt that having a numinous experience would offer them a stronger sense of the time periods that they were researching. Users 2 and 4 felt that they appreciated the excitement that the numinous experience brought on and felt that it was beneficial to their research. Users 3, 8, and 9 each mentioned the emotional connection or reaction brought on by the numinous, with Users 3 and 9 voicing a need to harness this emotional reaction in order to have their audience react in a certain way. Though User 8 mentioned an emotional connection, she only discussed it as important to herself as she conducted research, as opposed to trying to elicit a reaction in an audience. Finally, User 7 felt that the numinous experience afforded her with a sense of inspiration that could further motivate her research process.

The remaining three participants felt that the numinous experience was somewhat important to research, with variations in their reasoning. User 5 felt that she would still complete her research without a numinous experience but mentioned that she would miss it if it were not a part of her research process. While User 6 acknowledges the possibility of a numinous experience, she feels that it cannot be the sole driving force behind one’s motivation to complete
research. User 11 felt that everyone has the potential to have an emotional connection to a subject in general but not necessarily with individual items, therefore feeling that the numinous experience is not something that needs to be sought when conducting research.

**Common themes of the numinous experience.** The numinous experience is demonstrated or illustrated in the use of original or physical records in ways that differ from how the numinous experience is demonstrated or illustrated in the use of digital records. The common themes addressed in this section are as follows:

- The numinous experience is demonstrated or illustrated in the use of original records through the rarity of working with the item, the emotions evoked, the range of emotions evoked, and the sacred connection to the past through touch.
- The numinous experience is demonstrated or illustrated in the use of digital records through the emotions evoked and the range of emotions evoked.
- Working with the original or physical item offers more potential for a numinous experience because of the broader range of emotions evoked and the frequency of emotions evoked.
- Working with a digital surrogate item offers less potential for a numinous experience because the emotional reactions are minimized and the range of emotions evoked is less broad.

According to participant responses when working with the physical or original item, users described aspects of their experiences with the item that could be classified as numinous. In the case of the physical item, some participants felt that the numinous experience could be brought on by realizing the rarity of working with the item. Other
participants felt that a numinous experience could be brought on by the emotions evoked by the item, with one participant commenting that these emotions could be used to enhance research. In examining the FACS responses to the physical or original items, the data showed that the physical or original item had the potential to evoke a broader range of emotions among participants, with some participants describing their experience as allowing them to have a sacred connection to the past through touch.

In contrast, the digital format could also offer a numinous experience to participants but to a lesser extent. While some participants still felt that the digital item evoked emotions in them, the emotions evoked were more minimalistic than experienced with the physical or original item. Though some participants experienced minimized emotional reactions, one participant felt that the digital item did not offer him any emotional response. The amount of FACS responses noted when participants worked with the digital surrogate item was smaller with less of a range of emotions expressed.

Though working with the digital surrogate item evoked less emotions and offered a smaller range of emotions expressed, some participants responded to the minimization of emotions in ways that could be favorable to research. Due to the decreased emotional response to the item, some participants felt that even though they had less motivation to connect with the item, they were more motivated to conduct research in what seemed to be an impersonal but objective manner. Another participant felt that she could have a stronger numinous experience if the quality of the conversion and the software she was using could have been held to a higher standard, allowing her to experience less frustration with examining the item and being able to focus more upon the item and its contents. Nonetheless, several participants mentioned the merits and convenience of the
digital surrogate format in their research, feeling that it was still a useful alternative or a worthy supplement to the original format.

*Common themes in user format preference.* During the interviews, participants indicated their format preferences as part of a hypothetical scenario in which an item relating to their research were discovered. When given the choice of which material format they would prefer to use in order to consult the item, participants offered different reasons for their choice. In this section, the common themes addressed are as follows:

- Users are more inclined work with the physical or original format due to
  - the impact or value of the item;
  - an ability to better observe the details of the item in-person;
  - the sensory experience provided;
  - the ability to experience a more personal connection to an individual or time period; and
  - the overall ease of use.

- Users are more inclined to work with the digital item when
  - the item offers effective search tools if it is an item of extensive length;
  - the item is less personal;
  - the item simulates well in a two-dimensional way; and
  - when a sensory experience is not required by the researcher.

In the case of the physical or original item, participants elected to use it because they wanted to experience the impact or value of the item firsthand, strongly linking back to the numinous qualities of the item. Furthering the notion of the numinous, they wished to experience
a more intimate connection with a past time period or individual. Aside from the numinous qualities of the item, participants expressed an interest in having a stronger sensory experience with the item. As a result of this, they could better grasp the details of the item. In other cases, certain sensory qualities did not transfer to the digital item, requiring participants to seek out the item in its physical format.

Participants who elected to use the digital format did not express a need for the numinous qualities of the item. Rather, they required a two-dimensional depiction of the item and felt that the would be able to glean the contents of the time through the digital format. They did not express a need for other sensory aspects of the item because their research needs did not call for them. One participant felt that if the item were a routine publication and not personally connected to an individual in a deep manner, then the digital format would be ideal to consult. Another participant felt that the digital tools accompanying an item of considerable length could make the research process more efficient and, therefore, felt that the digital surrogate format would suffice.

**Common themes in the importance of the numinous experience to research.** While not all participants expressed the numinous experience as essential to the research process, the majority of participants did find the numinous experience to be important in research. The following theme was observed in the case of participants who classified the numinous experience as important to the research process:

- The numinous experience is important to users who
  - want a stronger sense of the time period or an individual being studied;
  - want to connect emotionally with the materials they consult, whether for personal reasons or to influence an audience; or
wishing to feel the excitement and inspiration evoked by the numinous experience as motivational factors during their research processes.

The participants who expressed importance of the numinous experience during the research process discussed a need to have an intimate connection with their subject and wishing to experience subject materials in ways that they would have been experienced in their time period of everyday use. Similarly, some participants felt that handling items used by individuals of importance to their research afforded them with a stronger sense of connection to their subject. In other cases, participants mentioned the emotions evoked by the numinous experience, harnessing them as useful to them for personal reasons or as a means of ideally igniting similar emotions in the audience members for their research output. Finally, other participants mentioned feeling a sense of excitement or inspiration brought on by numinous experiences which could serve as motivating factors for them as they progressed through their research processes.

The minority of participants felt that the numinous experience was only somewhat important in the research process largely because they felt that the focus of their research did not depend upon encountering a numinous experience. While one participant mentioned that she would miss the numinous experience and the sense of connection it brings, she felt that her research would still be completed in the absence of a numinous experience. At the same time, other users argued that the numinous experience should not necessarily be the sole driving force of one’s research and that it does not always need to be sought. Rather, the purposes for conducting research could be supported by numinous experiences instead of researching in order to have a numinous experience. The numinous experience is highly subjective and could be viewed as an organic reaction to a given item or subject that does not act as a primary motivation for research.
In the case of the group of participants evaluated in this study, the format transition of an archival record can affect the use of the record and the experience of the user of that record. In physical archive locations, users carry different responses to the format types with which they interact, encountering various affects of experience while using different formats. The amount of FACS reactions they express will vary based upon the material format of the item being consulted, offering variations in the ranges and frequencies of emotions experienced.

While subjective, the ability to have numinous experiences with an item is also influenced by its material format, with users electing to use certain formats over others due to their research needs and overall valuation of the numinous experience. Depending upon the factors concerning the uses’ responses to the materiality of an item and the users’ level of need for a numinous experience with the item, users will choose to work with a given format over another as they work to meet the needs of their research.

**Limitations**

While this study worked to address specific research questions through using a qualitative methodology it does possess limitations that need to be addressed regarding the participant group, archive types, methodological approach, and the items used in the archives. One of the limitations of this study is that the amount of users interviewed is small, with 11 individuals participating in the study. Though the sample size is small, the quality of the users is appropriate to this study. In this case, all of the users were serious researchers who routinely visit physical archival locations in order to conduct their research. They were experienced with using both physical and digital formats and were comfortable in terms of archival intelligence, having
already been familiarized with the processes of working with items housed in physical and digital archival collections.

Additionally, the types of archives used in this study must also be addressed. While this study included different types of physical archive locations, it did not focus upon any particular type of physical archive. Similarly, the number participants representing each type of archive was not evenly distributed. In the case of this study, more participants were users of the special collections archive, skewing the results toward this type of archive. Rather, the inclusion of different physical archive locations was deliberate in order to capture a diverse sample of participants who frequented different physical archive locations. It is possible that users of one type of physical archive would be less familiar with another type of physical archive and would have potentially offered variations in their responses when exposed to a different type of physical archive location. In this case, users of physical archives were interviewed at the physical archive location that they frequent typically.

Furthermore, it is important to note that all interviews took place at physical archive locations, potentially leading the data to be biased towards physical archive locations. In this study, the participants were already predisposed to using physical archives. Moreover, the participants also had access to physical archives. While these facts are true of the participant group, they are not the case for all users. Other users may not be as familiar with using physical archives or lack access to them. As a result, users who lack access to physical archives may turn to other ways of accessing the resources they need in order to complete their research which does not necessarily include a visit to a physical archive. There is a need to conduct a similar study in a setting that offers predominantly digital collections in order to see how the results may possibly differ or share certain commonalities.
The methodological approach used in this study is also worth describing as a potential limiter. In the case of this study, the use of semi-structured interviews possibly limited the data, as participants were recorded during the interview process. The presence of the camera could potentially affect how participants acted and thought, offering an interaction that could have been hindered or altered. However, the camera was required in order to reference participant facial reactions alongside FACS responses.

Additionally, the items selected for use during the interview process were chosen by the archivists at their respective physical archive locations. The archivists aimed to offer items that the participant had already accessed in the past, in addition to also offering up other items that participants may not have utilized previously. While the participants recognized the majority of items with which they interacted and had already made a point of visiting them before the interviews occurred, the participants may have felt a stronger sense of connection to or familiarity with these items as they interacted with them. In other cases, if an item were not familiar to the participant, he or she would have been less likely to have a numinous experience with an item because he or she may have felt less of a connection to it or a passion for it. Though these factors have not hindered the study, they must be addressed as they can be viewed as variables to potentially be explored in future research.

**Significance of Research**

The results of this study are significant because they offer a perspective on the user experience which can better inform archivists about the impact of variations in material formats provided by physical archive locations. This research shows user variations in affect when working with items of varying material formats. When users choose to work with the physical
format, the affects of experience that they encounter differ from the affects of experience brought on by digital items. While both physical and digital formats can be useful in the research process, physical items offer characteristics that are not always captured by digital surrogates. This is heightened when examining the spatiotemporal affect of experience, which the data showed to be limited in digital surrogates.

This research also furthered discussions of the numinous experience, highlighting the impact that the numinous experience may have upon users and its place in the research process. According to this research, the numinous experience can be brought on by physical items, which also happen to elicit a broader range of emotions in users at a higher frequency than the digital format. Participant responses were examined by evaluating FACS responses, with the principal investigator connecting the use of FACS to LIS research in relation to the user experience.

The numinous experience was also examined alongside the digital format. This study found that digital items could also elicit numinous experiences among users in the participant group but to a lesser extent. Moreover, digital items elicited a smaller range of emotions and a lower frequency of occurrence. Due to the fact that the majority of participants interviewed found the numinous experiences important to them during the research process, users from this participant group attend physical archival locations because of the numinous experience and affects of experience brought on by their time interacting with items there as they worked to accomplish their research. As a result, this study demonstrates the importance of the numinous experience during the research process in physical archives, showing that the numinous experience continues to be realized by users beyond the museum setting.

Overall, the numinous experience has a clear place in LIS in terms of its presence in archives. Today’s archive users enjoy the advantages and improvements that accompany
working with digital surrogate formats, particularly lauding the accessibility that the digital format affords users from a wide range of geographic locations. Nonetheless, the participants in this study still feel the need to attend physical archives in order to accomplish their research in a way that also allows them to potentially have a numinous experience with an item.

**Potential Future Research**

Though this study evaluates potentially numinous user experiences with items of varying material formats in an archival setting, there are many opportunities for future research. One of the limitations of this study is the fact that the sites at which data will be gathered are all physical locations. It would be ideal to later explore digital archives that offer no physical alternatives to their collections and to learn if users still inquire about physical alternatives in that setting. Furthermore, since this study focuses upon users of archives, it would be worthwhile to also interview archivists and to collect information about their observations regarding materiality and user experience.

Additionally, the Fields of Vision model offers information about how users can interpret different objects. This model could be tested further to see if there are certain connections between one means of interpreting an object and a preferred material format. Furthermore, FACS reactions could also be examined alongside the Fields of Vision model in order to better inform archivists of the user experiences surrounding the interpretation of an object and an eventual choice in terms of which format to use during the research process.

Finally, this study can be expanded to focus upon only one type of archive (university, special, etc.) or a specific user group (divided by age, geography, etc.). Each of these areas of further research could lead to a more informed view of materiality’s impact upon the user.
experience. LIS professionals can then use this data in order to help them reassess how they approach materiality and accessibility for their users. By filling the gap of examining material formats and their relationship to user experiences, LIS professionals can gain a more thorough understanding of how to serve users in a way that allows for optimal user experience.

Conclusion

As technologies continue to advance and offer new tools and greater accessibility of digital surrogate records to users all over the world, the use of physical items in physical archival locations is still relevant to users. Today, users have a wide range of reasons as to why they access physical or digital surrogate records, ranging from accessibility, ease of use, or a need for a sensory experience. In addition, different material formats impact users through the affects of experience that they may realize during their research process in addition to the potential of having numinous experiences with records. Users respond to material formats in ways that vary in terms of their frequency emotions expressed and range of emotions realized.

While the choice to work with one format over another is subjective, so, too, is a user’s potential to have a numinous experience with an item. According to the results of this study, physical records excel in the spatiotemporal affect of experience, as they offer more potential for a numinous experience in addition to eliciting a higher frequency of emotions and a broader range of emotions in users. The digital format is also capable of offering a numinous experience and eliciting emotional reactions in users but to a lesser extent, which possesses its own strengths challenges. Consequently, users choose to work with different formats based upon how important the spatiotemporal affect can be to their research, in addition to factors considering the accessibility of the item and the fulfillment of any need for sensory experiences with the item.
Overall, though not every researcher feels that the numinous experience is necessary to have as part of the research process, the majority of users in this study’s participant group appreciate having a numinous experience with an item as a means of personal connection to a time period or individual, source of motivation or inspiration, and a means to elicit an emotional response in the audience members consuming their research output to some degree. Though users will choose to work with certain formats over others, the majority of users today have referred to both physical and digital surrogate formats in order to fulfill their research needs. Moreover, the existence of multiple formats is considered advantageous to researchers; while the two formats offer their differences, they can also serve to complement or supplement one another. As a result, the relevance of archives will continue to be strengthened as they continue to perfect the preservation and dissemination of varying material formats, in response to offering their users the opportunity to have the meaningful user experiences needed in order to complete their research.
References


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MacKenna, C. (2009). From the numinous to the sacred. *Journal of Analytical Psychology,*


Appendix A: IRB Approval Letter

DOMINICAN UNIVERSITY

May 8, 2018

To: Annette Bochenek

Project: "Presenting Our Past: Examining Materiality and User Experience in Physical and Digital Archival Collections"

IRB # 2018-279

The above-referenced human-subjects project has been approved for 12-month May 8, 2019. If your study will take place over several years, you will need to renew your study annually by submitting a continuing review every 12 months until your study is fully complete, including data analysis.

This approval is limited to the activities described in the approved protocol narrative, and extends to the performance of these activities at each respective site identified in the Application for IRB Review. In accordance with this approval, the specific conditions for the conduct of this research must comply with Federal Policy (Common Rule) for the protection of human subjects and informed consent from the subjects must be obtained as indicated.

If you have any questions regarding this guidance, please contact me at dking@dom.edu or irbadmin@dom.edu.

Respectfully,

Denise E. King, MSN, RN-BC, CCM
Chair, Institutional Review Board
Appendix B: Letter of Introduction to the Research

LETTER OF INTRODUCTION TO THE RESEARCH

Introduction:
Thank you for your willingness to voluntarily participate in this study. This study is being conducted by Ms. Annette Bochenek of Dominican University, under the supervision of her dissertation chair, Dr. Cecilia Salvatore. Please be assured that your participation is voluntary and that you are free to withdraw your participation at any time.

Description of Project:
Archives preserve a wide variety of items that exist in physical, digitized, or born-digital formats. While many physical archival locations exist and store physical items, many archivists working in physical archival locations have made efforts to digitize their collections and make items available in surrogate formats. Users prefer to work with certain types of formats for various reasons and it is worth exploring why they choose to do so as well as whether or not format can impact user experience. One way to study this is to gather information regarding user experiences with items of different formats. Ms. Annette Bochenek’s current research questions or study objectives are as follows:

1. Are user experiences impacted when transitions in material format occur? If so, how?
2. Which aspects of the user experience potentially lead users to select certain formats over others?

By exploring how changes in format affect user experiences, Ms. Annette Bochenek will be able to better inform LIS professionals about whether or not user experience is impacted by transitions in format.

Data Collection Process Overview:
I. Review and Sign Consent Form
   a. You will be asked about your experience with using different material formats in the archives. Your interactions will be recorded.
II. Interview
III. Receive Incentive for Participation

Please note that your identity and recordings will be kept anonymous in this study and will only be available to Ms. Annette Bochenek, her dissertation chair, and two Dominican faculty committee members.
Appendix C: Consent Form to be a Research Participant

CONSENT FORM TO BE A RESEARCH PARTICIPANT

1. I understand that I am being asked to participate as a participant in a research study designed to assess user experiences with different material formats. This research is part of Ms. Annette Bochenek’s dissertation at Dominican University. This research project is being supervised by Dr. Cecilia Salvatore of the School of Information Studies at Dominican University.

2. I understand that my participation in this study will show Ms. Annette Bochenek how changes in format may affect user experiences. By offering my participation in this research, Ms. Annette Bochenek will be able to better inform Library and Information Studies professionals of what is gained or lost when shifts in format occur.

3. I understand that participation in this research will involve taking part in an interview regarding my experiences with using different material formats in archives. The interview will last between 20 to 30 minutes.

4. I understand that my participation in this study is completely voluntary and I am free to withdraw my participation at any time.

5. I have been made aware that the interviews will be video recorded. All personal references and identifying information will be eliminated when these recordings are transcribed and all participants will be identified by numerical code only; the master list for these codes will be kept by Annette Bochenek in a locked file, separate from the transcripts. Video footage will be stored on an external hard drive in the same locked file. Coded transcripts and video footage will be seen only by Ms. Annette Bochenek and her three faculty advisors; all data is otherwise confidential. One year after the completion of the research, all written and recorded materials will be destroyed.

6. I am aware that all study participants will be furnished with a written summary of the relevant findings and conclusions of this project. Such results will not be available until May 1, 2019.

7. I understand that my participation involves no more than minimal risk.

8. I understand that if I have any further questions about the study, I may contact Ms. Annette Bochenek at abochenek@my.dom.edu or her research supervisor, Dr. Cecilia Salvatore at csalvatore@dom.edu or at (708) 524-6852. If I have further questions or comments about participation in this study, I may contact the Dominican University Institutional Review Board (IRB), which is concerned with the protection of volunteers in research projects. I may reach the IRB Administrator by calling (708) 524-6914, emailing at irbadministrator@dom.edu, or by writing to IRB Administration, Office of Research and Sponsored Projects, Dominican University, 7900 W. Division Street, River Forest, IL 60305.
9. All procedures related to this research project have been satisfactorily explained to me prior to my voluntary election to participate.

I have read and understand all of the above information regarding this study. I voluntarily give my consent to participate. A copy of this form has been given to me for my future reference.

________________________________  __________________________________
Signature                                           Date
Appendix D: Interview Guide

I. Background Information

1. Generally, why do you visit the archives?

2. What kind of materials have you used from the archive?

II. General User Experience (Materiality, Accessibility)

1. Were the items you used available in another format?

2. Tell me about your experience using one or both formats.

3. Give me an example of a time when you worked with an original item and a time when you worked with a surrogate item of the same source. Did your experience with the two different formats differ? If so, how?

III. Numinous Experience

1. In the experience you shared, was there anything particularly moving or special to you about your experience with the different formats?

2. If so, how important was that experience to you and to your research?

3. What if an artifact or record related to your research were suddenly discovered and made available? How would you react to that? Which format would you be more inclined to use?