Digital Facsimiles and the Modern Viewer:

Medieval Manuscripts and Archival Practice in the Age of New Media

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Abstract—Through an engagement with theory from the fields of art history, anthropology, and sociology, this article examines the archival existence of medieval manuscripts and facilitates an understanding of archival practice and its effects on user experience from the perspective of the researcher, rather than from that of the archivist or information professional. In an exploration of notions of materiality and virtuality, the author addresses the material and institutional existence of medieval manuscripts and traces the evolution of the facsimile as a solution to problems of access. Within this framework, the various altered engagements with manuscripts in physical and digital form are assessed in order to establish the costs and benefits of virtuality. The roles of new technologies that produce high-quality facsimiles are investigated through theories of (re)presentation with respect to visual materials, including images and historical text.

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INTRODUCTION

The focus of this article is the assessment of the archival existence of medieval manuscripts as well as recent solutions to problems of access in relation to such materials.[1] New technologies and advancements in digital imaging facilitate the widespread accessibility and dissemination of manuscripts through high-quality facsimiles and are therefore reducing previous limitations on viewing these works. The discovery of

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1. This article was adapted from the author's thesis for her MA in Art History, Binghamton University, May 2013.

new and inventive uses of digital resources is still underway, and the immediate effect of this exploration is the inevitable encounter with problems that accompany digital display and preservation. The digitization of manuscripts and the creation of digital collections aid research but concurrently provide a new manner of viewing, altering the standard engagement with manuscripts from visceral to virtual.

As a consequence of this shift, questions arise regarding the authenticity of the facsimile, which lead to a further consideration of the role of technology within the discourse surrounding manuscripts and digital objects. The authority of the archive in its control of knowledge-producing materials (e.g., medieval manuscripts) is then deconstructed through the lens of theories borrowed from multiple disciplines outside of the field of archives. Engaging with selective literature from the fields of anthropology, art history, and sociology leads to bridging the deep divide between these disciplines and the archival community. In an examination of the archival existence of visual materials (particularly medieval manuscripts), this investigation will allow for an understanding of archival practice from the perspective of the researcher, rather than from that of the archivist.[2]

When housed in libraries, museums, and archives, visual materials are subject to a formulated set of expectations and interpretations. The institutional nature of these materials characterizes them as objects, which are used for the transmission of information and the production of knowledge. Notwithstanding the centrality of text to the character of these objects, a recognition of their materiality and overall generative qualities reveals that they are no longer objects to be mined for textual information and read merely as expressive or representative. A further investigation of the physicality of manuscripts facilitates an understanding of the social interactions between objects and people, as well as the impact of this relationship on the life of the object. It is these qualities inherent in manuscripts that fuel the perception and interpretation of the object and shape the formation of an institutional framework for viewing such materials. This frame dictates the best practices for both the display of manuscripts and the varying degrees of access granted to individuals.

THE PHYSICAL OBJECT

Within historical scholarship, the physicality of a medieval manuscript is considered unique because of its rarity as well as for the information contained within its pages. This includes both the aforementioned literary elements that define the object as a text, as well as its material qualities. Upon scientific examination, these qualities reveal forensic evidence regarding the history of the object, and by viewing patterns of use and aging, scholars are able to better comprehend medieval cultural practices. Kathryn Rudy uses forensic technology and techniques to "apply objective criteria to the physical book and add to our understanding of aspects of the book's history, production, ownership, and handling."[3] Markings such as fingerprints and dirt reveal

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2. Although they discuss "the archive," rarely do these fields acknowledge archivists or the archival profession, and consequently the archival literature does not address its own treatment in external discourses. Joan Schwartz, "'Having New Eyes': Spaces of Archives, Landscapes of Power," *Archives and Social Studies: A Journal of Interdisciplinary Research* 1 (2007): 326–27.

3. Kathryn Rudy, "Dirty Books: Quantifying Patterns of Use in Medieval Manuscripts Using a Densitometer," *Journal of Historians of Netherlandish Art* 2 (2010), http://www.jhna.org/index.php/past-issues/volume-2-issue-1-2/129-dirty-books.

habits of wear and use, and at the same time display how medieval people interacted with their manuscripts.[4] A close study of the object reveals not only the manuscript's previous use, but also significant information regarding its origin and details of its physical construction.[5]

The physical clues and scientific evidence that reveal this information are the same elements that render the object unique. Walter Benjamin discusses singularity as the defining feature of a unique object. In his often-cited essay "The Work of Art in the Age of Mechanical Reproduction," Benjamin states that the history of the object is traced through physical changes that occur over time.[6] This history and its traces imbue the object with a unique existence, while concurrently communicating the patterns of its past use. Benjamin explains that the physical alterations revealed by chemical analyses, such as those performed by Rudy, must be "traced from the situation of the original."[7] Such marks demonstrate the progression of time (aging) and therefore serve to authenticate the object's unique existence.

Just as the unique marks on a manuscript inform scholars about its history and patterns of use, they also shape larger interpretations of the object. The manuscript is understood through the layers created by material evidence of past users' interactions with the book, whether left intentionally or unintentionally (e.g., notes in the margins, food stains, fingerprints, and lip marks).[8] Each layer becomes a filter for the interpretation of the modern book as a medieval artifact and facilitates an understanding of the object beyond the language of its text.

Through these material filters, present-day users establish a personal connection with the past and with previous users, therefore moving beyond the investments of historical scholarship and transitioning into a discovery of the experiential qualities of the object. A quality of these filters is that each layer of use builds upon the previous layers in the form of dirt, fingerprints, and other forensic clues, in a direct response to the original indentations left by the scribe or illuminator. Furthermore, through this understanding of the object, it can be argued that manuscripts created before the popularization of the printing press reveal a more direct trace of human labor than printed texts which show few marks of their manufacture such as handwriting and artistic style.[9] In interacting with a manuscript, the modern user witnesses the labor of creation as well as the subsequent history of use that is predicated on the particular details of manufacture. The book therefore projects the physical presence of its creator(s) and highlights the numerous human connections to the object.

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4. Rudy notes the marks left by a medieval priest repeatedly kissing the opening canon page of his missal. This was such a common practice that the illuminator of one particular missal provided a plaque at the bottom of the page with the anticipation that the priest's kisses would eventually cause damage.

5. Peter B. Hirtle, "The Impact of Digitization on Special Collections in Libraries," *Libraries and Culture* 1 (Winter 2002): 45.

6. Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," in *Illuminations*, ed. Hannah Arendt, trans. Harry Zohn (New York: Schocken Books, 1978), 220.

7. Ibid.

8. Marks of past use are defined here as any physical trace of wear, use, and aging associated with the continued handling of the manuscript.

9. Although the process of creating bound volumes changed drastically with the invention of the Gutenberg Press, the tradition of illuminating the pages continued within the printed books. Printed books such as the Gutenberg Bible were illuminated by hand for the sake of visual continuity. Although the media changed, the visual effect resembles its "ancestral medium." This is discussed further by David Thorburn and Henry Jenkins in *Rethinking Media Change: The Aesthetics of Transition* (Cambridge, MA: MIT Press, 2003), 7–10.

The sensual roles of sight and touch that shape our understanding of manuscripts were also significant to the medieval audience. Visual piety was, and continues to be, a core element of Catholic devotion and was expressed in the Middle Ages through a ritual engagement with manuscripts. Unlike viewing it from afar, a physical engagement with the object leaves a direct mark on the surface. For example, there is evidence that medieval readers would often rub a piece of text or marginalia out of the anxiety felt towards "evocative representations."[10] This physical evidence not only reveals readers' emotional and physical responses to particular texts and images, but it also gives insight into contemporary anxieties. The ability of a modern reader to identify with those anxieties has the effect of humanizing past users, and therefore fosters a connection between past and present.

These particular connections are established not through language (i.e., reading text), but rather in touching and viewing the manuscript. The material qualities of a unique object construct what Benjamin terms the "aura" that facilitates a physical connection with the past. He insists that the aura exists in the physical presence of the object or artwork and is essentially lost in the process of reproduction, therefore making it indivisible from the unique object.[11]

Experiencing the aura of a manuscript therefore requires the existence of a physical object. The mere presence of an object can elicit an emotional response, as the experiential qualities of physical interaction go beyond tactile engagement. An example of this is in the chronicle of Nicholas Basbanes's tour through rare book collections, in which he describes the feeling of becoming lightheaded upon invitation to touch the pages of the Gutenberg Bible.[12] Basbanes, who is well known for writing about book culture and bibliophiles, emphasizes the connection felt with something of such great age and importance and how it leaves its mark on the viewer.

Scholarly engagement with medieval manuscripts facilitates a continuation of the familiar relationship between object and user. Siân Echard, in her article "House Arrest: Modern Archives, Medieval Manuscripts," combines the concerns of historical scholarship with her own personal engagement with two separate manuscripts by the same author (Gower), one held in Columbia University's Rare Book and Manuscript Library and the other in the Pierpont Morgan Library. She chose the first object at Columbia primarily because it is deemed unusual, as forensic evidence shows that it had been well used from the time of its creation in the medieval period up until the seventeenth century.[13] The consistent handling of a manuscript provides the modern

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10. Madeline Caviness, in her text "Reframing Medieval Art: Difference, Margins, Boundaries" (published online through Tufts University) frequently mentions the process by which offensive images in the margins are expunged. She states in chapter four that several ape figures throughout the *Hours of Jeanne de Navarre* "are severely rubbed, indicating that they caused anxiety." http://dca.lib.tufts.edu/caviness/chapter4.html.

11. Benjamin, "The Work of Art in the Age of Mechanical Reproduction," 221–24.

12. Siân Echard, "House Arrest: Modern Archives, Medieval Manuscripts," *Journal of Medieval and Early Modern Studies* 30, no. 2 (Spring 2000): 189.

13. Ibid., 187. This is a good example of why medieval manuscripts, as opposed to printed books, are significant to this study. Once the printed version became widely available, it was no longer necessary to use the older, outdated versions, which is the exact quality that makes the Gower manuscript worthwhile to Echard's experience and scholarship.

scholar with a wealth of information regarding the object as a trace, as it contains more layers, compared with manuscripts that were not used continuously.[14]

Before viewing the manuscript at Columbia, Echard had to show her credentials and leave all belongings at the door. She reflects upon the protective nature of these surroundings, noting that she was asked to refrain from touching the manuscript any more than was absolutely necessary.[15] Regardless of these restrictions, she was able to engage in a tactile moment with the object. Throughout this experience, Echard compares the traces of past use with the present situation of the object in order to reach new conclusions about the manuscript. Before entering the library, Echard was concerned mainly with a traditional scholarly encounter, but it is clear in her account of the visit that the experiential qualities, as well as the institutional practices, altered her expectations. She notes the differences in the treatment of the object by its former users to that of the modern visitors of the library. Echard's interaction with the book illuminates the division between a past participant and a modern observer. The scribbling in the margins or the stain of a soup bowl on the pages exemplifies the evidence of physical use by a former owner, but Echard herself is unable to connect with the object in this way by making her own mark upon the pages. She is restricted to the status of an observer by interacting with the object visually.

Echard's examinations are located within the realm of traditional scholarship, but her conclusions are not entirely confined to that form of investigation. Her experience, constrained as it is, facilitates a unique engagement with the object and allows Echard to note not only the differences in the treatment of the manuscript from its former owners until now, but also the physicality and sociality of the artifact. Although limited and drastically altered from past experiences, the book's social interaction continues within the library/archive. Echard engages with the object as a whole, as it exists today, with all signs of wear and tear, and also finds intrigue in the traces of past use as they relate to her own reading of the object.

DIFFICULTIES OF ACCESS

Although privileged scholars and enthusiasts such as Echard and Basbanes have the rare opportunity to engage with these objects, access to manuscripts is limited to those who can prove their credentials. Beyond estimations of one's worthiness, access to these objects depends greatly on their physical condition and is subject to formalized institutional protocols.

The rarity and fragility of medieval manuscripts require that they be stored according to specific guidelines, usually within an institutional collection far from public eyes. On the rare occasions that they are placed on display there must be special lighting and climate control, and above all they are not to be handled often, least of all by visitors. These restrictions are necessary and are put in place for preservation purposes, while also enabling the collections' gatekeepers to exercise another layer of control—dictating whether or not the manuscripts are in any condition to travel, be

14. Although Echard's experience is singular and cannot be universally applied to every researcher, her reflections support the notion that varying engagements with similar materials elicit multiple responses and inspire new interpretations.

15. Ibid., 188. Echard is not disagreeing with such limitations, as they are essential for the protection of the object, but rather reflecting on how this engagement altered her experience.

on display, or be examined by scholars. That has much, but by no means everything, to do with the physical well-being of the object.

Institutional restrictions are the product of a set of decisions that concern where acceptable risk lies, from the best circumstances for the well-being of the object, to availability and access. The institutions that house medieval manuscripts uphold guidelines that dictate the levels of accessibility for outside users and complex hierarchies that decide who is considered the most/least worthy of access. Institutional access is most restricted behind the climate-controlled walls of the library/archive, and the hierarchy in such spaces privileges the scholar over the general public. Within scholarship, priority is given to senior over junior academics, and, at the very top of the hierarchy, the archivist.

The restrictions of the library/archive are highlighted in Echard's narration of her second visit, this time in the Morgan Library, which she describes as more rigid in terms of the precautions and control exercised over the objects. The most significant difference from the library at Columbia is that visitors must prove their need to see the original manuscript; they must convince librarians/archivists that their research could not be adequately pursued using microfilm. The scholar whose interest is in translating or transcribing text, for example, is unlikely to meet the repository's threshold for access to the original. Within the Morgan Library, visitors cannot be left alone with the object; they are required to have assistance in order to move or rearrange the book, and they are not permitted to touch the script.[16] Although such precautions are legitimate and necessary for the well-being of the materials, this experience further distances the modern reader from the medieval object and eliminates all sensual and tactile engagement with the book. The imposed guidelines create and enhance the exclusivity of the object, and it is here that Echard reveals the true nature of the archive: the restrictions on the visitor versus the privilege of the archivist.

Echard exemplifies the need to prove one's worth to the gatekeepers of the collection, but these keepers not only facilitate the visitor's experience, they also have their own connection to the objects under their care. Among the categories of individuals who care for manuscripts (librarian, museum collections manager, archivist, etc.), archivists are of greatest concern here because of the complexities of their relationship with collections. In theory, archivists can take on one of two roles within their duties as caretaker: that of the collector (as described by Benjamin) or that of the steward (as defined by Didier Maleuvre[17]).

The role of a collector is not a functionary role, as is that of a librarian. Basbanes describes book collecting as an obsession or even a disease.[18] The difference is marked by the personal connection that the collector feels towards the books. In Walter Benjamin's essay "Unpacking My Library," he describes his own relationship

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16. Ibid., 189.

17. Pamela Smart, *Sacred Modern: Faith, Activism, and Aesthetics in the Menil Collection* (Austin: University of Texas Press, 2010), 139.

18. Basbanes describes two distinguished types of collectors: bibliomaniacs and bibliophiles. The former is a form of obsessive-compulsive book collecting, even books for which the collector has no use, while the latter is simply a lover of books. Nicholas Basbanes, *A Gentle Madness: Bibliophiles, Bibliomanes, and the Eternal Passion for* Books (New York: Henry Holt and Co., 1995).

with his books.[19] He makes it abundantly clear that in personal possession, his books are not spatially confined, but are under his great care and are therefore treasured. This treatment is significant for the life and well-being of the objects, which he sees as being "liberated from such perfunctory relations of acquisition,"[20] but it poses obvious limitations to greater access.

Rather than fulfilling the role of a collector, the foundations of archival practice are based on a bureaucratic approach to the collection in which the archivist acts as a steward instead of an owner. Maleuvre discusses the steward as a caretaker without the same investment in the objects that ownership affords because of the distance between the steward and the object.[21] He claims that stewards are simply managers of resources and that they do not, and should not, have a sentimental connection with the collection. Benjamin would argue that although managers of this kind are deemed useful in a library/archive setting, the object would be under better care with a guardian who has a sense of sentimental investment. It may be more practical to state that the archivist embodies a combination of these roles: the collector's responsibilities toward the well-being of the objects, and the steward's concern with meeting the needs of the greater public by maintaining and preserving the objects in their current state.

But how does the role of the archivist affect the experience of the outsider/visitor? Within the archival framework of an institution, and throughout their interaction with the archivist, outside users are reminded of their lack of ownership over the object. This could produce feelings of alienation between the scholar and the manuscript, but even more so between the outsider and archivist. The ability of manuscripts to elicit any reaction from the user and/or the archivist further demonstrates the affective nature of the object.

Within their role, archivists facilitate the object's "house arrest," a term Echard borrows from Derrida to describe the condition of the life of the object within such a collection. Benjamin would argue that if the books were under the care of a collector they would be far from "restricted" or "imprisoned" as Echard describes them. When the manuscript is transferred from a personal collection to a library/archive, it is essentially transformed from a book into an artifact through a process that Echard terms the "fetishization of the Middle Ages."[22] A book in a personal collection has the potential of being marked with signs of wear and use, but within the institution this engagement associated with aging is slowed in favor of preserving the vessel for the textual and material information that it holds.

In effect, archives, archivists, and archival practice exclusively structure and control the reading of, understanding of, and interaction with medieval manuscripts by establishing a framework around the object. To better understand this idea, it will be useful to discuss the larger notion of a frame and how it affects viewer experience. According to Ernst Gombrich, frames establish the way in which one should view a

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19. Walter Benjamin, "Unpacking my Library," in *The Object Reader,* ed. Fiona Candlin and Raiford Guins (London: Routledge, 2009).
20. Smart, *Sacred Modern*, 139.
21. Ibid.
22. Echard, "House Arrest," 186.

work of art. He claims that when a frame is appropriate one does not notice it, as it invites the proper mode of viewing. However, the viewer suddenly becomes aware of this frame when it changes drastically beyond what is familiar or standardized. Gombrich is referring to the material border around a piece of artwork that marks it as art, while inviting yet limiting the viewer's gaze to that which is contained within this border. Daniel Miller, in the introduction to his text on materiality, radicalizes Gombrich's fairly literal thesis by opening his definition of the frame to include spaces, or notions of art itself.[23] Miller states: "It is the frame, rather than any quality independently manifested by the artwork, that elicits the special response we will give it as art."[24] In this instance, the library/archive and the practices called for within these spaces become the frame, and the artwork being viewed is the medieval manuscript. Outsiders have accepted the standard mode of viewing manuscripts within the controlled and constrained space of the library, because that is how it has been constructed. The archival framework that is held in place by institutional regulations and the gatekeepers of the collection mandate an unconscious response and understanding of these objects.

Not only does the framing of a manuscript within an institution limit access to these works, but it also shapes any reading of the text and understanding of the unique life of the object. Within archival framing, the social and "unofficial" history of the object comes to a halt, but the text is elevated "to the status of literature" simply because it is attached to an archive.[25] Unlike the text that is removed from the archival frame in numerous forms, the manuscript is confined to a singular experience within the library/archive and as a consequence the sociality of the object is significantly decreased. Its present existence does not allow for the continuous aging of the object that has visually altered it over the past several centuries.

The only experience available to the viewer is justified by the fragility of the object. Even Echard does not deny the necessity for the careful treatment of the manuscripts that she views. The solution to the fragile nature and consistent viewing of medieval manuscripts by scholars is for the institution to create a high-quality facsimile that can be used in place of the original.

SOLVING THE PROBLEM OF ACCESS: THE VATICAN LIBRARY

As scholarship and public interest expand and evolve, repositories are searching for new ways to make their collections available and accessible to the community. Accessibility has long been a problem in the exhibition of manuscripts because of issues regarding the preservation of the object. Some institutions have found a solution by constructing reproductions for study and display.

From November 2010 until March 2011, the Vatican Library staged an extensive exhibit of manuscripts called *Understanding the Vatican Library: A History Open to the Future*. The title itself promotes the notion that this archive, renowned for its closed

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23. Daniel Miller, *Materiality: Politics, History, and Culture* (Durham, NC: Duke University Press, 2005), 5.
24. Ibid.
25. Echard, "House Arrest," 189.

attitude towards outsiders, is inviting the public to share some of the library's most precious items and therefore granting access to its collections.

The idea of granting full access to this infamously closed collection is unfathomable. First of all, the sheer size and scope of the library's holdings are close to impossible to navigate, even by its own staff.[26] Secondly, there are strict guidelines regarding who is granted access to original works, and there are extensive conditions by which visitors are permitted to view the manuscripts.

The exhibit was separated into six sections: History of the Library, Manuscripts, Printed Books, Prints and Drawings, Coins and Medals, and Services Offered by the Library. Visitors were welcomed with a full reproduction of the Sistine Hall, complete with frescos and reading tables bearing high-quality, touchable reproductions of some of the library's books and manuscripts. One visitor, Melody McMahon, notes in her review of the exhibit that among the many religious texts on the tables were Dante's *Divine Comedy* and Ptolemy's *Geographia*,[27] books of great historical importance not often seen. McMahon also mentions that the design and layout of this first room created the feeling that one was strolling through the library itself. Not only was there an interactive experience with manuscript reproductions, but the exhibit also offered a recreation of the exclusive space in which the privileged scholars engage with the original objects. Echard may interpret this situation as a liberation of the object because the frame is radically altered to an extent that the viewer is free to engage with the book "naturally." She may also see it as a further restriction on the original object because with such a high-quality reproduction there is no reason to remove the original from the archive. This illusionistic frame continued into the next rooms.

After traveling through the section showing the history of the library, the visitor came to the manuscript room. Here, proudly on display, was the first known transcription of the gospel dating from the late second century, placed among other manuscripts in cases displayed under low light.[28] It took a keen eye to realize the illusion that this display creates: close to half of the manuscripts in the cases were facsimiles like the ones available to touch in the previous room. The facsimiles in this room were seamlessly integrated into the exhibit and treated as originals. The constructed frame for viewing these works was therefore continued, and an observant visitor may wonder why these too are not available to be handled. The role of the visitor evolved along the linear exhibit: the first section situated the visitor in the role of the privileged scholar, but as the exhibit evolved into a more traditional display, the visitor was transformed back into the typical museum guest. The visitor's engagements were fully constructed within the design and layout of the exhibit.

McMahon was a visiting scholar, one of three hundred guests invited to participate in a conference at the Vatican Library to celebrate the library's reopening. She

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26. Father Michael Collins, who has written extensively on the library's collection, in an interview with *60 Minutes* on April 10, 2011, comments on the impossibility for "the human brain to understand" the contents of the entire collection. http://www.cbsnews.com/news/a-rare-look-at-the-vatican-librarys-treasures-25-12-2011/.

27. Melody McMahon, "Attending the Vatican Library Conference, Rome," http://www.academia.edu/1495238/Attending_the_Vatican_Library_Conference.

28. "Vatican Library Opens Doors for Exhibition of Their Oldest Manuscript," YouTube video, 2:25, http://www.youtube.com/watch?v=b3Sw_po7clw.

expressed resentment that she was unable to see the original objects. McMahon exclaimed: "I do not recall ever being offered facsimiles in such exhibitions and found this extremely off-putting. Though they were all quite magnificent, it doesn't quite give the same feeling as knowing that object is its real self!"[29] This articulate scholar was upset presumably because of her desire to experience a personal connection with the past, as she may have had the opportunity to do in similar exhibits. McMahon therefore questions the validity of an exhibit that displays mostly reproductions.

Understanding the Vatican Library had several shortcomings in terms of its design and execution that can be attributed partially to the negative connotations regarding the display of copies. Traditional scholarship and the standard practices for museum display highlight the centrality of the object, and copies of historical objects are often perceived as being vacant because they lack the "purity" and "allure." In the case of the Vatican Library, such concerns do not override the importance of the preservation of the object. The library assessed the acceptable risk and chose to favor the well-being of the object over availability and access.

VIRTUALITY

The use of facsimiles in the Vatican Library's exhibit is problematic, but there is yet another type of copy that raises a new set of issues and questions: the digital facsimile. With advancements in technology, digital facsimiles have surpassed the effectiveness of physical copies and have further altered the engagement with manuscripts.

The field of art history has much to gain from collaboration with the relatively new field of digital imaging, as the digitization of objects and images and the outcome of this practice are of great concern to the art history community as a whole. Remote access to high-quality facsimiles has created the possibility of new interpretations and new research within the field, but this new engagement is made possible only with the mediation of information technology professionals. The production of digital images is a technical process that is not limited to creating an image but includes the manner in which images are stored, labeled, and accessed.

Libraries and museums have, for the most part, been the largest contributors to the production of digital objects and the standardization of images, databases, and metadata because of their financial resources, staff expertise, and access to the original works from which images are created. These institutions use digital imaging as a tool to create online databases and as a means of displaying visual and textual information. The application of digital imaging within institutions greatly increases public access to digital objects that may not otherwise be available in their original form.

Digital imaging and its numerous applications implement two types of digital objects: born-digital material, which originates in digital form, and digitally reformatted material, which results from the digitization of analog materials.[30] Within digital reformatting, there are two ways of creating digital objects: with a scanner or a camera. The Northeast Document Conservation Center considers photography to be the

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29. McMahon, "Attending the Vatican Library Conference, Rome," 3.

30. The digital image exists as a data file that is displayed on a screen. This article deals only with digitally reformatted materials, as it discusses manuscripts that originate in physical form and are converted into digital form.

best practice in creating a digital object because it captures the three-dimensionality of the original item, whereas scanning can add reflections to the image and may provide inaccurate color.[31] Photography once resulted in microfilm or slides, which were used as references to materials within a collection, rather than being considered objects themselves. But as digital cameras improve exponentially, slides are quickly becoming obsolete. With these improvements, digital data viewed on a monitor can be used as an independent object that no longer functions merely as referential material.

Because of the heavy involvement of photography in the creation of digital facsimiles, it is important to note that within this study the facsimile is considered as a reproduction rather than a representation. A representation is a photograph *of* an object that is mediated by the aesthetic choices of the photographer. Rather than considering the object within the photograph, a reproduction considers the image as the definitive object acting as a replica of the original. Although photographic theory touches upon similar themes mentioned in this article (reproducibility, the impact of the digital, authenticity, and aura), an analysis of digital manuscripts within this framework would engage with the literature in a manner that would alter the parameters of the argument. It would require a distinct treatment of the camera: its objectivity, its positioning, the lens, and the photographer. These elements are irrelevant to the discussion of the creation of facsimiles.

If the digital facsimile constitutes a means of reproduction, how does this new approach affect understandings of the object, both digitally and physically? Digital facsimiles provide another filter in the life of the object in the same way that past users have created filters through their material interaction with the manuscript. Echard emphasizes this idea in the existence of "large greasy rings" on two separate folios.[32] How does the soup stain on the manuscript differ from the stain one sees in the digital reproduction? The inability to identify and separate these layers of use once the pages have been digitized redefines our understanding of the history of the object. We can begin to answer this question through Benjamin's statement that even the best reproduction of a work of art lacks a unique existence.[33]

It has already been noted that the uniqueness of the object is determined by its progression through time and the traces of its origin and past use. Digital facsimiles eliminate these clues as the layers become inseparable, and instead of revealing information about medieval bookbinding and illuminating techniques, they actually reveal more about contemporary cultural practices regarding the construction and transfer of data. The information attached to the digital object that relates to the creation and movement of the data replaces the material evidence of the manuscript's manufacture. Digital information does not allow for the examination of the material qualities that make up a bound volume, and the viewer is not prompted to seek this information from the surface of the image, but rather from the embedded and stored data. In changing the way in which visual information is evaluated (by physical examination versus the investigation of technical elements) there evolves a distinct

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31. Tom Riegel, NEDCC, in the session "Digitizing Originals—From Best Practice to Archival Image," Visual Resources Association Annual Conference, Providence, Rhode Island, April 3, 2013, http://www.vraweb.org/conferences/vra31/program/.

32. Echard, "House Arrest," 188.

33. Benjamin, "The Work of Art in the Age of Mechanical Reproduction," 220.

separation between the modern viewer of the digital object and the past viewers of the material manuscript.

In digital form, there is no visual evidence of the object's progression through time and therefore the process of aging that has shaped the manuscript for the past half-millennium is eliminated. The digital image solidifies the manuscript in time, essentially erasing the object's unique existence, no longer allowing the object to operate as a trace of its past. Echard argues that signs of "passage from one condition to another" are important in the reading of the text because the reader will "approach the object in its 'medieval' condition . . . and trace the evidence of that object's passage from one culture to another."[34] Without evidence of the "medieval condition" the reading of the object as a whole is altered.

Although a natural process, aging is also a source of worry in terms of preservation. The concern for the preservation and longevity of the object are the primary explanations for arresting the manuscript at a particular, yet arbitrary point in time. With digital reproduction at its present quality, there is no longer a justification for the constant use of the book, and the object fares better away from oily hands and light. This slows the process of aging associated with physical interaction.[35] But there is a trade-off: access to the original becomes even more exclusive and there is no longer the opportunity to experience the trace and aura that exemplify the object's unique history.

The aging and preservation of the physical manuscript make it apparent that the manuscript and its digital counterpart age differently, essentially providing two versions of the same object. The digital object does not age visually in a way that affects the object's surface, as the aging associated with data manifests through processes of technological decay such as bit rot and media obsolescence. The existence of an object that has been virtually arrested in time is still technically aging, and its surrogate is therefore no longer representative of the original. This could be potentially problematic in creating interpretations regarding the object's surface.[36] Since it is common in museums and academia to work with pictures of objects, it does not seem to bother people that "the subtleties of the appearance of the surface are lost or falsified in these reproductions."[37] In viewing these images, the object is presented so that the users' memories and past experiences fill in small inconsistencies and/or damage, as their brains fill in any missing information. Manuscripts are preserved digitally from a condition of "the natural state"—those circumstances under which objects are left to age that convey to the viewer the natural progression of time. In the digitization of the manuscript in this state, the past experiences of the unique object are compressed into a single layer of the object's history and viewed as a whole. It is no longer *a* moment, but rather the definitive, albeit arbitrary, moment in which the manuscript will be viewed from the point of digitization onward.

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34. Echard, "House Arrest," 186.

35. However, the lack of handling does not eliminate the aging process completely.

36. On a separate note, it can also provide excellent documentary evidence of any physical changes incurred since the moment of digitization.

37. Ernst Van der Wetering, "The Surface of Objects and Museum Style," in *Museum Objects: Experiencing the Properties of Things,* ed. Sandra H. Dudley (London and New York: Routledge, 2012), 104.

Without physical evidence of the object's unique past, it becomes easy (both psychologically and literally) to erase the signs of wear, age, and ownership from the visual surface of the digital image. The rather subjective process of digital restoration is an interesting concept because the object is being returned visually to what the restorer believes it should/would look like in an earlier form. In actuality, there is no reversal but rather a further alteration from the natural progression and another step away from the "natural state." Digital restoration is a potentially useful tool that expands beyond traditional scholarship, in that it allows scholars to view a "restored" version of a manuscript by altering the surface without making permanent changes to the physical pages.

Outside of the form that viewers are accustomed to, without physical signs of wear and past use that mark its passage through time, the object becomes displaced and no longer fits into the context of a library/museum/archive. It is not only the institutional frame that creates the expected mode of viewing, it is also the object, or in this case the surface of the object, contained within the frame that adheres to a set of expectations by the viewer. These expectations, based on past experiences and memories, may be altered, and the possibility then arises for the elimination of the archival frame. This leaves the manuscript without a specific referential context, but in the absence of a constructed mode of viewing, a personal/individual frame emerges.

The true liberation of the manuscript and the complete reconstruction of the frame are revealed when the object can be accessed outside of the controlled space of a library, archive, or museum. Away from the constructed space, the viewer can be mindful of his/her careful response to the object as artifact. The user then becomes aware of the manuscript's status under "house arrest" and begins to question whether, according to the gatekeepers of the archives, many are worthy of setting eyes on the real thing. The viewers' expectations of the original manuscript that were once based on the archival frame no longer apply to the digital image, as remote viewing allows for a progression away from this framework.

DIGITAL EXHIBITION: THE JEWISH MUSEUM

Although the possibility exists and can be useful for expanding research, the institutional frame is not always eliminated in the viewing of digital facsimiles. Digital objects can be accessed remotely, from any number of devices, and repositories are among those that seek to employ emerging technologies in order to facilitate a new understanding of objects. In this case, a reshaping of the frame can provide a simplified, yet useful engagement with the object, still under the authority of the stewards. Many institutions are incorporating touch screens into their exhibits in order to enhance viewer experience and participation with the object.

From September 2012 to February 2013, the Jewish Museum in Manhattan put on an exhibit of manuscripts entitled *Crossing Borders: Manuscripts from the Bodleian Library*. The exhibit featured interactive touch screens that presented visitors with digital facsimiles of select pages from several manuscripts that were displayed in glass cases. The message of the exhibit was to highlight the cross-pollination of ideas and the intellectual exchange through books in the medieval period, a tradition that was continued through the existence of this very exhibit.

The linear layout guided the visitor through four rooms with a total of six cases. Forty-nine manuscripts of varying size from Europe and the Middle East were distributed among the cases. The visitor's first contact with the digital aspect of the exhibit was on the second case. Juxtaposed with the manuscript at the end of the row was a touch screen built directly into the frame (no larger than a standard iPad). The manuscript was open to the first page of Genesis, and the touch screen allowed the visitor to scroll through significant pages of the manuscript, starting with those that were open behind the glass. The images were of high quality with sophisticated zoom features, allowing the viewer to examine details too small to be seen with the naked eye.

In the next room, the visitor encountered three manuscripts in another case: a Qur'an, the New Testament written in Arabic, and the Kennicott Bible, written in Hebrew. Separated from the books, there were five touch screens displaying all 922 pages of the Kennicott Bible. They were displayed in order, starting at the right and moving to the left, the direction one's eyes would travel if reading the Hebrew text. The pages could be viewed one at a time, or previewed together in thumbnails.

The juxtaposition of digital pages with original manuscripts made for a unique visitor experience in that visitors could *see* the rare books while also exploring the option of a haptic engagement, an element not associated with manuscript exhibits. This experimental layout functioned as a supplement to the traditional experience of visiting an exhibit, as visitors were generally more interested in the manuscripts within the cases than in the touch screens. Visitors would reach the end of the case and swipe the screen, but ultimately spent more time with their faces close to the glass, squinting at the books.

The reason for this is presumably an issue of prioritizing the experience. The images on the touch screens are more easily accessible and can be found through a quick Internet search, whereas there are few opportunities to view the physical books in this context. On the website, where the viewer has remote access to the entire Kennicott Bible, the themes of each group of manuscripts are laid out with a list of objects corresponding to that section. The user is then able to click on the manuscript title and see a single digitized page that exemplifies why it is labeled under this category. There was no mention within the exhibit of such themes, nor were the sections marked as separate groups as they are on the website. In this instance, viewers within the museum exhibit were left to make their own interpretations about how the manuscripts were displayed and how to utilize the technology aspect, but on the website these spatial hierarchies do not exist, and the relationships between the manuscripts must be preserved with linked and complex data structures.

The success of the digital aspect of the exhibit is debatable. What are visitors able to obtain from interaction with touch screens that they cannot get from examining the fixed double-page spread? Because of the overload of information and the exclusivity of displaying text, it is arguable that this particular aspect of the exhibit was unsuccessful in enhancing the user experience. It creates the fiction of a direct relationship of author and user while introducing a haptic experience with the touch screen: an engagement that simulates the privilege of the scholar and archivist.

THE OBJECT OUTSIDE OF THE ARCHIVAL FRAME

The exhibit at the Jewish Museum is just one example of the use of digital facsimiles to enhance the visitor's experience with medieval manuscripts, still within the controlled and defined space of the museum. But how does the engagement and understanding of manuscripts change when the digital object is viewed entirely outside of the institutional frame? Digital facsimiles, so long as they are made available, can be accessed remotely, enabling endless possibilities for the individual frame. This makes the standardization of the frame nearly impossible; besides the fact that the image is viewed on a screen, it is not limited to a physical space. Remote viewing of manuscripts, as well as the elimination of the role of the institution in situating the object, could be interpreted as a liberation of the object—as Echard might say they are no longer confined to formulated framings, or they could be interpreted as being cast adrift. Without the library/archive or access to the original manuscripts, the information within the digital image remains without referential context and therefore no longer relates to its physical counterpart. Thus, the viewer's experience and expectations of the object are altered.

Such alterations are made possible because digital images do not allow for the familiar conceptualization of ownership. As it is easy to save a digital file and access it regularly without restriction, there is no concern for who "owns" the file.[38] Without tangible limitations such as the physical exchange of borrowing or purchasing that applies to books and manuscripts, or a reminder of the lack of ownership over the physical object in an archive, access to manuscripts is no longer tied to possession.

The frame (or lack thereof) for viewing the digital object invites the possibility for what Pamela Smart terms the "vicarious possession" of the image through the transformation of a "passive consumer" into a collector.[39] Creating a digital collection is not a new concept for academics, as building a personal repository of images is a popular method for teaching and researching. Depositing manuscripts, or even individual pages or images, into a digital space is essentially creating a museum-like collection that does not exist in a physical environment.[40]

Without the traditional notion of ownership, there emerges a disassociation of the subjects and objects that Maleuvre relates through the "aloofness" of art in a modern gallery.[41] Because the art in these spaces does not belong to anyone it can stand alone, and the meaning that is derived from the object/artwork is therefore no longer dependent on its relationship to the owner/collector.[42] This notion is easily applied to manuscripts and their digitization, as the digital facsimile exists in a similar position; it is liberated (or for Maleuvre, alienated) from the confines of ownership and the associations that accompany an attachment to a collector/collection. In this state, the viewer of the medieval manuscript, without an owner, collector, or archivist to impose

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38. There is always, however, the concern for who owns the *image*. Copyright is taken very seriously, and permission must be granted for the use of an image in published materials. This article is not concerned with intellectual property rights, but rather with the availability and access to digital materials for personal use.

39. Smart, *Sacred Modern*, 126.

40. Michelle Henning discusses this in terms of virtual museum collections. Michelle Henning, "New Media," in *Companion to Museum Studies*, ed. Sharon MacDonald (Oxford: Blackwell Publishers, 2006), 307.

41. Smart, *Sacred Modern*, 141.

42. Ibid.

a "correct" mode of viewing, is free to construct his/her own frame and begin to analyze the object in new ways that were not previously possible.

This liberation of the object in digital form facilitates a democratization of information and user experience. Peter Hirtle names three major benefits of the digitization of special collections: new research, increased use, and new users.[43] Opportunities for new research are particularly significant for scholars focusing on the medieval period, as they often face the problem that many of their resources are fragmented and spread across several collections in various geographical locations. Digital access to these works is instantaneous, therefore scholars who previously spent most of their time trying to *see* the objects, can now spend that time analyzing their content. Hirtle's argument for the increased use of these materials through digitization is related to the institutional restrictions, but also to the fact that scholars may not have known that some of these resources exist. He makes the point that in hard copy the material is deemed obscure and is rarely cited, whereas in digital form it becomes a core resource.[44]

A project that exemplifies Hirtle's argument that digitization will attract new users (and also supports new uses/research) is the Digital Mellini project run by the Getty Research Institute.[45] Murtha Baca, head of the Digital Art History Program based in Los Angeles, is working closely with a team of researchers and programmers to develop a prototype for an online tool that allows scholars to collaborate on an analysis and translation of a seventeenth-century Spanish manuscript. Digital Mellini is essentially a digital workspace in which users are able to view the manuscript pages, share annotations, and suggest changes to translations, all within one application that is accessed by a number of users across the globe. The Getty website describes the goals of the project as follows: "First, to make this uniquely valuable scholarly resource widely available to researchers in art history and other fields of study, from linguistics to social history; second, to explore new methods and tools for digital publication with other art historians; and third, to develop a model for building collaborative digital publications that incorporate facsimiles of historical texts, computational tools for linguistic and visual analysis, and forums for scholarly communication and knowledge sharing."[46]

In a comparison of Echard's experience with the Gower manuscript at Columbia to that of the Getty scholars with the Mellini manuscript, it becomes clear that it is indeed possible for the modern viewer to respond to the digital manuscript in a manner that leaves a mark in the form of a layer or filter for viewing or interpreting the object. Instead of taking notes in the margins of the vellum pages for future readers to see, the same process is executed digitally without altering the actual pages. The collaborative online model created by Digital Mellini allows for the manner of sociality with the object that was essentially eliminated when the books were accessioned into the institutional space of the library/museum/archive.

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43. Hirtle, "The Impact of Digitization on Special Collections in Libraries," 43–45. Hirtle's work was written over a decade ago, when the digitization process was not as sophisticated or widely used as it is today, but he had several accurate predictions when evaluating the future of the field.

44. Ibid., 43.

45. "Digital Mellini," The Getty Research Institute, http://www.getty.edu/research/scholars/research_projects/digital_mellini/.

46. Ibid.

As previously noted, the physical manuscript creates a set of expectations for view-ers that shapes their understanding and interpretation of the object. When interacting with the digital version without reference to the original, these expectations will not be available to project onto the digital facsimile.[47] A primary example of a digital collec-tion that allows for these new interpretations is the Bodleian Digitization Project that contains objects from the Bodleian Library's special collections. The library has cre-ated a searchable database of all digitized materials, not exclusive to manuscripts. The links are separated by individual collections that lead to an external website where the images are hosted.

Within this larger database is a collection of woodblock prints from the fifteenth and sixteenth centuries. Although they are not medieval, the site offers complete manuscript facsimiles captured from the original object (as opposed to being scanned from a microfilm version). There are fifty-eight manuscripts listed by title, date, and number of pages, with full descriptions of each folio as well as an explanation of historical context for each object. In the presentation of this collection, the images are pre-interpreted for the viewer. This textual description and interpretation facilitates questions regarding the library's awareness of its audience. Visitors to a museum generally desire a scholarly "answer" to the materials, whereas researchers require the raw data in order to draw individual conclusions. This textual interpretation by the Bodleian is an example of how the library is accustomed to providing a mode of viewing and shaping an engagement within an institutional framework. Fortunately for some users, the object can easily be separated from these textual explanations.

Digitization facilitates the separation of an object and its institutional interpreta-tion, and similarly the separation of the object's content from its vessel. A medieval manuscript is made up of mostly text and frequently illuminated imagery. In large-scale digitization projects that result in online collections, such as those implemented by the Bodleian, it becomes easy to crop both images and/or text from the remaining content, therefore distorting the true form of the manuscript. The choice of what content to extract from the object depends largely on the object's treatment as either a stand-alone artifact or a document, useful for its textual content. Books and manu-scripts blur the boundaries between documents and artifacts and their treatment and manner of digitization vary based on the needs of the user or institution. Ideally the treatment of the manuscript as an artifact considers both the images and text as a whole, which can then become distorted in the processes of display and digitization.

Echard takes issue with such large-scale web-based projects because she explains that it puts extreme emphasis on images with little regard to the manuscript as a text.[48] What Echard does not point out is that this emphasis is replicated in the traditional display of manuscripts, to which there are obvious limitations. Tradition-ally they are opened to a fixed double-page spread, and for the sake of the visitor those pages almost always show illuminations. This is due to the exclusivity of exhibiting text and the problems that curators encounter with contextualizing the manuscript.

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47. These are the same expectations that fill in the missing surface information that Van der Wetering explains is lost in digital reproduction.

48. Echard, "House Arrest," 200.

Images are associated with oral culture and can be understood by almost anyone, but text and reading are part of a learned culture and signify a sense of exclusive elitism that carries forward from the Middle Ages, as only monks and nobility were taught to read.[49] In modern times this elitism manifests in the role of the scholar, particularly of medieval texts, who is able to read and interpret medieval languages and annotations. Suddenly, an otherwise literate public is rendered illiterate, and there is a strict separation between those who can and cannot decipher medieval texts. The common museum visitor is presumed not to have prior reading knowledge of medieval languages, and is therefore unable to contextualize the text on display without the help of curators, which causes them to automatically defer to the images for their understanding of the object. It then becomes the responsibility of the curators either to facilitate the viewer's ability to orient the object within a larger cultural frame, or to eliminate the problem altogether by placing the focus of the exhibit on beautiful images and the pages that contain very little text. At this point, aesthetics trump form as the curators attempt to appeal to the widest possible audience. Although this solves the problem of alienating the visitor, it distorts the object's full form.

This notion of distortion is similarly a quality of digital manuscripts.[50] Repositories create online collections, many of which seem to focus exclusively on illuminations and images rather than text. One such example is another collection from the Bodleian Digitization Project. One would expect that the section entitled "Medieval and Renaissance Manuscript Illumination" would contain a great deal of material useful to students and scholars. Upon further investigation, one will discover a collection of 25,000 images scanned entirely from 35mm slides and filmstrips. The title implies that the illuminations have been removed from their larger context, and the collection itself contains only low-quality illuminations and cropped images. Images in this form are hardly useful beyond examining basic content and composition. Instead of providing useful facsimiles, as with the sixteenth- and seventeenth-century woodblock prints, this serves only as a reference database of their holdings, which has limited uses. These images could hardly be considered facsimiles because they are profoundly far removed from the original.

Although there is a deep fragmentation of the manuscript in digitization, including the loss of materiality and three-dimensionality, the digitization of medieval manuscripts has the potential to excite new understandings in a way that is not possible in a traditional manuscript exhibit. An example is the viewing of the Kennicott Bible at the Jewish Museum. The display of this particular facsimile in the museum was limiting because of the overwhelming amount of medieval text. But in a different context, for the right user, the ability to access the digital facsimile through the museum's website has the potential to be immensely useful.

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49. David Thorburn and Henry Jenkins discuss this in the introduction to *Rethinking Media Change: The Aesthetics of Transition* in relation to the combination of text and images in the Bayeux Tapestry as a multimedia bridge between the peasants (oral culture) and the monasteries (learned culture).

50. The process of digitization automatically eliminates the three-dimensionality of the object. Peter Ainsworth has proposed a solution by creating a virtual reality in which to view manuscripts that "allows for the development of additional research tools using image compression and manipulation." Peter Ainsworth, "e-Science for Medievalists: Options, Challenges, Solutions and Opportunities," *Digital Humanities Quarterly* 3 (2009): 1–15.

CONCLUSION

Through a discussion of the changing character of digital manuscripts it is evident that the institutional framework put in place to ensure the protection of the original objects can be bypassed with the creation and dissemination of the facsimile. In an exploration of the physicality of manuscripts, this article has considered the manner in which these objects have traditionally been received, handled, and displayed within the context of the library/museum/archive. With the advent of new technologies and the creation of facsimiles, the fragility of the manuscript is no longer a limitation for the scholar. Institutions give precedent to the conservation of the object over the access of the scholar and therefore provide a "proper" mode of viewing, but the creation of digital copies of medieval manuscripts introduces the option for the complete elimination of this institutional frame. The outcome of this elimination is more accessible and easily manipulated tools that enable opportunities for new research.

However, even with improved research tools, access to the object through facsimile, and searchable databases of information, there are still many concerns about conversion to digital format. The cost of virtuality is the loss of informational quality, which is explained by the limitations of current technologies. Digital standardization and preservation practices are constantly evolving, but they are not, as of now, consistent or widespread enough to warrant a full replacement of the original. There is a disposable nature to digital materials, because of the lack of tangibility, which increases the likelihood of ignoring issues of digital preservation. Data does not simply exist; it also needs maintaining and preserving as it too suffers decay and alteration. For instance, as digital information is copied, converted, or reformatted, there are thousands of properties that may be affected including, but not limited to, file size, quality, and orientation.[51] Therefore, the digital "original" is altered in presentation, appearance, and behavior in a manner that may change the interpretation of the image as an object.

At some point in the digitization process, colors and details are altered in the final image. Users must therefore practice visual literacy and learn how to read digital works in order to find the standard image among a wealth of versions that may have been profoundly altered from the physical object. Artstor is an example of a widely used online repository of images to which several hundred institutions contribute. Although standardization practices are upheld at most of these institutions, there are many "bad" images of poor quality that cannot be used for scholarly purposes. The problem is that unless there exists a better version with which to compare the bad one, the user is forced to use the terrible image, and may not even be aware of its poor quality because of the lack of comparative materials. Improvements to imaging design and monitor quality will eventually display colors more accurately, but until then viewers must recognize these problems and take them into account when interpreting digital objects.

Questions of the authenticity of the facsimile lead to a discussion of the inherent

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51. Margaret Hedstrom, Christopher Lee, Judith Olson, and Clifford Lampe, "'The Old Version Flickers More': Digital Preservation from the User's Perspective," *The American Archivist* 69 (Spring/Summer 2006): 161. These changes are so minor that they may not be recognizable at first, but when copied multiple times, these changes can alter the image.

qualities of manuscripts that are transferred to digital format. Regardless of the positive and/or negative effects of digitization, digital facsimiles are ultimately constructed in a manner that simulates the sensual experiences associated with an encounter with the original object. The visual image, the sound and animation of pages turning, the feel of a page, and even the smell can all be recreated in a full simulation. But even with these attempts to create a seamless transition from physical to digital, a digital facsimile does not excite the same emotional response as does the sight of the physical object. Such reactions are attributed to the object's age, history, and/or importance, and are not equivalent to responses to the intellectual content of the document. Without physical contact, memories and expectations are neither made nor conjured, as users engage in a seamless viewing experience where the turning of pages is replaced with clicking through content without ever moving more than a finger. The expectation that the experiences can be preserved with digital materials is an illustration of "how inherited forms and traditions limit and inhibit, at least at the start, a full understanding of the intrinsic or unique potential of emerging technologies."[52] In the design of digital materials, there has not been an exploration of all possible options with regard to form because the focus of facsimiles has been on the object's inherent qualities. This can be detrimental to the study of medieval manuscripts because with the advancements in technology, access to the originals will continue to diminish, and scholars will be left without a long-term solution for viewing these works.

The costs and benefits of virtuality become clear in this larger discussion of authenticity, technological progress, and the shift from a visceral to virtual engagement with medieval manuscripts. Scholarship continues to push boundaries regarding the presentation of visual materials, and it drives the discourse on the effects of materiality and virtuality on the study of manuscripts, medieval or otherwise.

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52. Thorburn and Jenkins, "Introduction: Toward an Aesthetics of Transition," 10.