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I Want To See It: A Usability Study of Digital Content Integrated into Finding Aids
by Tracy M. Jackson

Abstract
This paper presents the findings of a usability study conducted on finding aids from the North Carolina Collection Photographic Archives at UNC-Chapel Hill. The study focused on digital content from archival collections that is made available through these finding aids using CONTENTdm (CDM); sought to explore how users accessed and understood this digital content; and followed up on several aspects of a similar usability study conducted at the Southern Historical Collection in 2009. Findings indicated that the digital content integrated into finding aids was largely intuitive but that it could be made more consistently usable; advanced users and users with archival experience found the finding aids easy to use; novice users may need additional assistance to understand the finding aid and would prefer to access digital content through the CDM interface; and the search capabilities in CDM are very important to users but could be improved for usability.

Introduction
Users of primary source materials are increasingly expecting that such materials are available or at least findable on the web. Many internet users, regardless of situation or intent, subscribe to the axiom that “if it’s not online, it doesn’t exist.” As part of the archival response to the technological changes that have both caused and accompanied these changing expectations, institutions are digitizing materials and collections as well as making finding aids available online. By presenting digitized content and descriptions of archival collections on the internet, archives and special collections institutions seek to connect users or potential users with relevant holdings, making archival materials more accessible.

At the same time that institutions are being pushed to present more material more accessibly, most need to operate with limited resources of staff, technology, and budget. While projects that highlighted specific collections with special digital exhibits were a way for many repositories to begin digitization practices, these projects do not scale well and require more time and money than would be feasible for digitization of large amounts of materials. Thus, many archives and special collections have begun to explore how digital content might be made available online in ways that are efficient, effective, and reasonably priced. Several writers have proposed using the finding aid as the
most logical vehicle for presenting digitized content, and some archival institutions are following suit. At the University of North Carolina at Chapel Hill (UNC-CH), the Louis Round Wilson Special Collections Library (WSCL) has been presenting digital content linked directly from the finding aid since January of 2010.

The traditional finding aid was a printed document available in the archive that described a particular set of materials, including topical and physical descriptions, and was made available to researchers in some fashion so that they could make sense of a collection or find relevant material. As finding aids have moved online, they have undergone various levels of conversion from paper to electronic format, from static reproduction of a scanned print document to marked-up text on websites with commenting features, and everything in between. In recent years, a shift in focus within the archival profession from the materials themselves to what the user wants and what the user finds has become paramount to the continued progress of the archive. Usability studies, in particular, have allowed archivists to determine what users think of the way both description and content are presented. Recent usability studies of online finding aids and digital collections have brought to light both user and professional concerns with the utility of both the traditional method of description (using archival language and organizing materials according to their physical status) and the newer model of representation (a static HTML or even PDF format). The finding aid, a formerly specialized document that may have required the assistance of an archivist or the experience of many years to interpret, is now available to large numbers of users, having various levels of familiarity with archives, without the assistance of an archivist. Studies of this unmediated interaction tend to raise several issues time and again: unfamiliar terminology, too much unnecessary information, too little pertinent information, confusion over what information is where in the document, and a desire to see the contents of a collection right away. Many users express frustration and a lack of desire to use the finding aid or the archive. Similarly, usability studies of digital collections have indicated that users have difficulty navigating to and within collections as well as searching for materials, but are appreciative of the accessibility of digital content as well as information on background and usage. These studies suggest that users are interested in immediate access and intuitive tools to get it.

The Southern Historical Collection and Digital Content at UNC-CH

Special collections at UNC-CH are housed in the Louis Round Wilson Special Collections Library. The Southern Historical Collection (SHC) is the largest archival collection at UNC-CH, including over 4,600 individual collections. The North Carolina Collection Photographic Archives (NCCPA), University Archives, and Southern Folklife Collection are also housed in WSCL and contain hundreds of additional collections described by finding aids or collection guides.

In 2007 the SHC was awarded a Mellon Foundation grant to explore options for the large-scale digitization of its many collections. According to Laura Clark Brown, coordinator of the Digital SHC, the goal was to implement programmatic procedures flexible enough to expand or narrow as resources allowed. SHC staff talked to scholars...
and colleagues, investigating options for delivery of digital materials being developed and utilized at other archival institutions and taking into account current professional thinking about how best to make materials available to researchers. Numerous considerations such as technical, financial, legal, privacy, processing, and conservation concerns were taken into account during the process. Ultimately, the SHC sought to make large amounts of digitized material available online in a way that would mirror the researcher experience in the reading room and be both cost-effective and efficient. It was decided that delivery through the finding aid would be the best method for making digital content available: in this way, contextual and hierarchical information would be available to the researcher without requiring extra metadata input or additional curation.  

In 2008, the SHC also began a project to redesign its finding aid template. The redesign was intended to improve usability, with goals "to improve display, add useful navigation features, lower terminology barriers, and include new help features for both novice and advanced users." An additional benefit to the new design was that it allowed other special collections housed in WSCL to later adopt a standardized finding aid template with a uniform look and brand. While there was no usability test conducted on the finding aids before the redesign, a study conducted post-redesign indicated that the new design rated as highly useable compared to the results of published studies from other institutions. As a result of this study, the finding aid template was modified slightly to include language advising users to use the browser’s Ctrl+F search feature within the finding aid to assist in searching for specific elements, a brief explanation of the purpose and function of subject headings, and additional small changes to terminology and help features.

These two separate projects, the finding aid redesign and exploration of mass digitization, began to overlap in early 2009. Library Systems staff, in collaboration with the team redesigning the finding aids, began developing methods to present digitized content within the new finding aid template. In early 2010, as part of their 80th anniversary celebration, the SHC debuted the first finding aids that incorporated links to digitized content. Other special collections in WSCL, particularly the NCCPA, soon followed suit. The unique needs of the NCCPA and its multiple special format materials led to further development and revision of the procedures that allow digital content to be linked to the finding aid. Since the NCCPA has been scanning images for a variety of purposes over the last ten years, the adoption of the standardized finding aid template and digital collection functionality established by the SHC has allowed a great deal of digitized content to become available through the finding aids.

The basic process that allows a user to look at a finding aid and get to digitized content starts with finding aids encoded in EAD, an XML DTD, then transformed into HTML files with an XSLT stylesheet before being uploaded to the web. As part of this transformation, a JavaScript function is included in the final HTML version of the finding aid that will perform a search for digital content in CONTENTdm (CDM) each time the finding aid is loaded. If digital content is present for that collection (identified by the unique collection number), CDM returns the names of the digital files, which the script then uses to
create links within the finding aid directly to that content. The stylesheet used for the finding aids renders these links purple and adds the text "(digitized)" to the identifier. A purple box is also added just below the collection number and title at the top of the finding aid, indicating that the collection includes digitized content. The box at the top of the page, as shown in Figure 1, contains a link which takes the user to all of the digitized content available for that collection in the CDM interface, while the link created for each item or container with digital content will take the user to just that digitized item.

Fig. 1: A finding aid with purple box for digitized content

This process allows newly digitized content to be automatically linked to the finding aid without processors needing to change the finding aid each time. The redesigned finding aid template and XSLT transformation process mean that every single finding aid can include this function regardless of its level of processing, and the XSLT generation of metadata is a simple workflow that can be used to get digitized materials into the CDM collection. No separate sites of digital content need to be maintained, and all online digital items can be managed within CDM.

About 18 months after the digitized content finding aid first debuted at the SHC, there has yet to be a formal evaluation of user reaction to or satisfaction with this functionality or interface. Anecdotal evidence from WSCL Research and Instructional Services (R&I) staff suggest that some users are thrilled to discover easily available content, some users have difficulty finding digitized content even when it is available through the finding aid, and some users may be disappointed that content is not fully transcribed or downloadable; general unsolicited feedback has been positive overall. However, a formal evaluation of user interaction with the finding aids, including observation of users performing tasks and asking targeted questions about design, function, and satisfaction is clearly needed to inform future development of this aspect of the WSCL's online presence.

Literature Review

In recent years, the increasing number of usability studies of online archival finding aids has reflected the growing interest of many archivists and archival institutions in making their materials as accessible as possible to as many users as possible. This interest is certainly not limited to finding aids; it has been demonstrated and debated in articles on methods of processing, user studies, analyses of digital collections, and the evolving theoretical discussion on the role and impact of the archivist on collections and the historical record. While the number of usability studies has grown, the authors of these studies generally lament that the total number is still small, and the problems found are still persistent. Many of the usability studies of online finding aids, as well as the design and usability literature they cite,
point to what seem to be fundamental difficulties between archivists and users as successive falters on the path to the truly accessible archive. Nevertheless, finding aids and the opportunities they give for greater access to materials continue to evolve apace with the professional desire to connect with users, and a new segment of the literature is emerging to describe the integration of digital content with the descriptive information traditionally given in finding aids.

In the past twenty years, finding aids have gone online in increasing numbers and in a variety of forms. As early as 1997, institutions and archivists were beginning to question the effectiveness of simply uploading traditional finding aids to the internet. Dennis Meissner addressed the realization that traditional finding aids required extensive mediation by archival staff and a fundamental re-thinking of the structure, order, and presentation of information could vastly improve use.13 In 2004, Christina Hostetter conducted a survey of university archives and archivists, and found that most had ten percent or less of their finding aids online. Practices varied widely and there were problematic perceptions of the utility and function of online finding aids, from some who considered online finding aids a "luxury" to those who recognized the value of online finding aids as the access points by which our users will learn about, use, and evaluate both our resources and our institutions.14

As the presence of online finding aids began to be perceived as the norm for archivists and users alike, a shift in focus within the archival profession, from the materials themselves to the users and the uses that make them valuable, produced a core group of usability studies. A review of these studies reveals that most have compared finding aids across institutions, and very few have compared designs within one institution; only one study conducted iterative testing. Many of the studies, particularly the earliest ones, emphasize user disappointment, confusion, and unmet expectations, particularly with the nature of the materials and the lack of immediate access to them. However, some later studies that have included extensive user analysis or close attention to design guidelines have had more positive user feedback.

The first major finding aid study to appear was conducted by Wendy Duff and Penka Stoyanova, published in 1998.15 Done in the very early days of online finding aids, this study used mock-ups of potential finding aid designs to get feedback from users. Important findings of the study included user complaints of too much information presented, difficulties with labels and terminology, and user preference for "an archival display created according to design guidelines" over traditional presentation.

In 2004 two major studies were published that conducted quantitative analysis of finding aid usability. The first was conducted by Christopher Prom and compared finding aids across eight institutions and included advanced and novice users. The results of this study directly relate to the design of the finding aids involved, and Prom made a number of concrete recommendations on design. Users had difficulties with extraneous information or search options, archival terminology, and overall design of the sites, prompting the researcher to advise that "self-apparent layout and visual clues are as important as using simple terminology" and "interfaces should not unwittingly or unwittingly undermine context."16
The second study from 2004, from Elizabeth Yakel, was similar to Prom's study, but also specifically addressed the interface used and included finding aids from one institution, with one design. The primary difficulties users identified in this study were with "archival jargon" and differentiating between "contextual information" and "content information." Yakel is also the first to suggest the use of expanding information as "something between the full text and outline view" such as a drop-down or explode-able view of finding aid contents.

Wendy Scheir produced the first study to focus specifically on novice users, who are likely to have more difficulty using finding aids than archival experts. The study explicitly focused on terminology, navigation, display, and structure. The interesting results of this study included the "desire among participants to obtain immediate answers, with little patience" for either hierarchical/contextual information or "dense blocks of text" and the intermingling of navigation, display, and structure feedback, all having to do with the design of the site. Users here, as in other studies, had difficulty with archival terminology, and this study also suggests the importance of simple design with "drill down" capabilities. Perhaps the most important finding of this study was that "two users of equally minimal experience with archives, with equivalent educational backgrounds and facility with computers, had very different experiences with the same site," echoing the subjectivity of assessment found in the design literature.

Another study published in 2008, by Rita D. Johnson, a graduate student at UNC-CH, is very similar to Scheir's study in structure and results, building upon the previous study to further emphasize novice users' difficulties with archival terminology and confusingly dense finding aid displays.

These finding aid usability studies were summarized and analyzed, along with several others, in another UNC-CH master's paper, by Emily Walters, in 2008. Walters found persistent inconsistencies in both methods and reporting of usability tests within the archival literature, but also the common themes of user difficulties with display, terminology, and search capabilities of online finding aids. She points out that many of these studies reveal users performing what appear to be site workarounds (such as using browser search functions rather than site search functions) to complete the tasks of the studies, which seems to indicate problems with the presentation of finding aid contents. Walters further observes that users learn throughout study participation, such that archival expertise and computer expertise may actually indicate search expertise. If users develop search expertise, which effectively "relieves some of the onus on online finding aid creators and instead places that burden on users of the system," they can succeed even in "poorly designed systems."

Literature on user-centered design emphasizes design principles and how they are used to make a system that is efficient, effective, and satisfactory, but it also emphasizes that usability is "context dependent." While it is easy to fixate on the frustrations and failures of online finding aids, it is useful to keep in mind some issues of system design and evaluation when assessing the purpose of the online finding aid and how this purpose is realized.

The design of any web page matters because it determines how we use an interface to complete a task, but design literature emphasizes that usability is context...
dependent. Usability testing is an evaluation of the site rather than the user, conducted in a controlled environment with the goal of deciding "whether the product being developed is usable by the intended user population to achieve the tasks for which it was designed." The scale for usability testing can vary widely, but current thinking suggests that even small, informal tests with as few as five people of any level of domain experience are valuable for informing design decisions. However, scholarly research into usability testing suggests that problems exist with many usability studies, and while any amount of usability testing may be useful in informing design decisions, attempts must be made to ensure the validity of results for the specific user community.

This concentration on the user and how they might best be served is reflected in the archival literature by an increasing number of studies focusing on particular groups. These studies examine a particular subset of users, their characteristics, expectations, expertise, and search habits, and taken together, they reveal that archives and finding aids are not understood or accessed in a universal way.

Two recent usability studies of finding aids have found positive reactions to some problem areas specified in previous studies. These studies address the design process and user input, as well as hint at future possibilities addressed in successor articles on digital content and streamlined processes for making materials available.

Cory Nimer and J. Gordon Daines produced the first usability study discussed here to display some form of iterative testing. As part of a project to redesign finding aids at a single institution, the authors engaged in a multi-step process of attempting to analyze user needs through the creation of user profiles, analysis of other institutions' finding aids, gathering user preferences through usability testing of other institutions' finding aids, and through usability testing of a design informed by the first three stages. While the project was still in progress, initial tests indicated that users appreciated a display that indicated location in a collection's hierarchy and that both more experienced and less experienced users were able to understand terminology used. In addition, the authors were excited to address the possibility of incorporating Web 2.0 technologies such as commenting and RSS feeds, based on positive feedback from users questioned.

The second study was conducted at the SHC by a UNC School of Information and Library Science (SILS) master's student, Joyce Chapman, who in 2009 presented the results in her master's paper. Chapman's study tested a new design of the SHC's finding aid display, a design that was created with specific goals "to improve display, add useful navigation features, lower terminology barriers, and include new help features for both novice and advanced users," with new features including hyperlinks to different parts of the finding aid, expandable/collapsible sections, a FAQ page, and hover captions to inform a user of their location in the collection hierarchy. Participants of the study included novice and advanced users who were asked to locate materials and navigate the finding aids through a series of eight tasks; time taken, ability to locate items, search strategies, and qualitative feedback were measured. Results indicate that novice users were able to self-educate, and users as a whole reported much less confusion and frustration with location and understanding than in previous studies. Chapman discovered, as in previous studies, the tendency of
advanced searchers to utilize browser functions for keyword
searching, which led to greater rates of success in study tasks
for those users who were aware of this possible avenue of
search. Interestingly, in a post-test questionnaire intended to
gauge interest in further development of the finding aids,
participants in this study revealed a distinct lack of desire for
Web 2.0 technologies such as commenting or tagging,
although there was some interest in the ability to share or
bookmark finding aids.

These studies are just a small part of a rising tide of
publications describing innovative uses of the finding aid,
theoretical and practical. Many suggest various possible
additions to the finding aid to create richer context, from post
-modern assessments of the impact of the archivist to Web
commenting, bookmarking, and collaborative filtering
features.\textsuperscript{3}\ Another discussion centers around streamlining
arrangement and description, best embodied in the pivotal
2005 article by Mark Greene and Dennis Meissner, “More
Product, Less Process” (MPLP).\textsuperscript{3}\4

The need for archivists to restructure their
processing to incorporate more collections and a broader
range of activities has been more recently, and for the
purpose of this paper more pointedly, addressed by Max
Evans in 2007. Evans was one of the first to suggest that the
finding aid be used to provide access to digitized items. He
was particularly addressing this need as the result of
movements towards mass digitization motivated by user
demand. He envisions that “a finding aid entry for a file unit
will open a virtual folder, beginning with the first page of the
first item. Navigation buttons and menus allow movement
among pages and items. There is no description of each item;
like researching among the originals in the reading room,
what you see, in the context of the whole, is what you get.”\textsuperscript{3}\5
Mark Greene similarly proposes mimicking the physical
context of materials in the digital world in his discussion of
applying MPLP to mass digitization. Greene argues that
although many institutions may be reluctant to rush headlong
into making every collection digital, “we must acknowledge
that these expectations will be an increasing reality” and
suggests that the most direct way to organize digital content
is “by linking folders of material to their place in online
finding aids; [which] provides the most and best context for
the material.”\textsuperscript{3}\6

Several institutions are exploring this method of
making digital content accessible, but as yet there is little
published material detailing the experiences of incorporating
or linking digital or digitized material to online finding aids.

In 2009 the Northwest Digital Archives conducted a
user study of a variety of user groups aimed at answering the
question “Why digitize, and for whom?”\textsuperscript{3}\7 The study
conducted interviews with nineteen users of archival
materials (including those digitized) and came to several
interesting conclusions. On the whole, users “vastly
preferred keywords as a search entry method over browsing”
and “wanted contextual material for digitized objects and
collections and expressed some preference for the type of
information presented in finding aids over that presented in
digital asset management systems even though they disliked
the presentation of finding aids.”\textsuperscript{3}\8

A 2011 article by Jody L. DeRidder fully illustrates
efforts at the University of Alabama (UA) Libraries to link
digital material to finding aids, describing a National
Historical Publications and Records Commission grant-
funded project to devise the technologies and workflow
capable of “recreat[ing] the patron experience in the reading room via the Web.” DeRidder outlines the methods, including file-naming conventions and software applications, by which the UA Libraries began integrating digitized content into their finding aids, starting with one particular collection and moving to include all collections with digital content.

A usability study of the new finding aid interface with digital content was conducted by Jody DeRidder, who kindly forwarded to the author a copy of the article describing the results prior to its publication in *The American Archivist*. This study uncovered some fascinating differences between use of the finding aid to discover digital content and use of the searchable “item-level described collection.”

Generally, the study concluded, participants found the item-interface more efficient in performing known-item searches and were also more satisfied with that than with the finding aid interface. Users with greater levels of special collections experience performed significantly better on the finding aid interface than other participants, and novice users with no experience in either special collections or digital library interfaces also performed slightly better on the finding aid interface than did users who primarily had digital library interface experience. These results led the authors to suggest that the finding aid “method of web delivery may currently be more suitable for scholars than for students.” However, in their conclusion the authors make some extremely salient points about the advisability of continuing to pursue the finding aid as the primary delivery method for digitized content. They point out that this method “is extremely cost-effective” and “provides a solution to digitization of large manuscript collections that may never otherwise see the light of day online.” Their conclusion eloquently sums up this entire approach:

Although it is apparent that it takes more time and steps to use the finding aid interface, this must be weighed against savings in cost. Does more time and effort necessarily hamper usability? The finding aid provides much more context, which requires time to peruse. For this reason, perhaps interface efficiency is not a useful comparison. By increasing the ease of use and verifying the learnability of the finding aid interface, we will be better positioned to leverage this low-cost digitization method to provide online access to large manuscript collections.

**Methodology**

This study sought to explore how users of archives navigate finding aids that have links to digitized content, how users access that content, and how satisfied users are with the experience of using a finding aid to locate and view archival content, analog and digital. The study examined the finding aid design currently in use by UNC-CH’s WSCL, which includes links to any content that may be digitized and uploaded into the archival digital collection. This was designed as a usability study to provide quantitative data on participants’ ability to use and satisfaction with the finding aids, and qualitative data on user perception of and satisfaction with the finding aids.

Study participants, or users, were solicited via e-mail. Several potential study participants were identified by staff members of the SHC’s R&I department and received an e-mail describing the study and requesting their participation. An e-mail was also sent to graduate and undergraduate
students in the history department at UNC-CH via their departmental e-mail discussion list. Two additional participants were invited to participate in the study through their association with SILS. Participants were offered monetary compensation (ten dollars in cash) for their participation in the study. Eight participants were sought, and nine people ultimately participated in the study.

The study was conducted on the UNC-CH campus, at Davis Library. Seven sessions were conducted in a computer lab on a desktop computer equipped with Morae screen-capture software. The other two sessions were conducted in a conference room on a laptop computer also equipped with Morae. The primary researcher attended all nine sessions, observing the study and conducting the post-test interview; for two of the sessions, Jackie Dean, faculty advisor, was also present and participated in the post-test interview.

Users were first given a short questionnaire to determine their age, gender, level of education, affiliation with the University, experience with archives and finding aids, experience with using the internet, and experience specifically using finding aids and archival materials from WSCL. After completing this questionnaire, users' answers to questions about archival finding aid experience at WSCL were analyzed to determine their status as novice or advanced users. Users who indicated they had used these finding aids more than five times were classified as advanced users and instructed to skip the first task. All other users were instructed to begin with the first task. This was intended to find out how users acclimated to this finding aid design.

The written part of the study included eight tasks, some of which had several sub-tasks. The computer being used for the study had the web browser Mozilla Firefox open to a page with the list of NCCPA finding aids listed in order by collection number; task questions then directed users to a specific collection finding aid or asked them to choose one they had previously used during the study. Study tasks presented participants with a general scenario and asked them to answer questions about a collection or find a group of items or a specific item. Participants were given space on the study paper to write answers such as what they found, where, and why they answered as they did. Participants were encouraged at the beginning of the study to think aloud and indicate verbally when they were beginning a new task, so that researchers could calculate the time taken for each task. Six of the participants spoke their thought processes to some extent.

After completing these tasks, users were asked to fill out a post-test questionnaire asking them about their experience and perception of the finding aids and digital content pages. These questions used Likert scales to determine each user's level of satisfaction with aspects of the finding aid and digital content design, as well as their overall experience. Participants were also asked if they would be interested in the availability of some Web 2.0 features on finding aids, in order to compare current results to these answers with results Joyce Chapman found in her 2009 study. After completing this questionnaire, users were verbally asked several questions about their experience using the finding aids, and these conversations were recorded as part of the study session. The total time required for the study varied from 40 minutes to just over an hour.
Results

The study pointed to three different groups of users instead of the anticipated two groups (novice and advanced, as shown in some of the previous studies described in the literature review), and indicated that some aspects of the digital content inclusion in the finding aid were intuitive, while others were not. Novice users of archives and finding aids demonstrated some confusion over the nature of the finding aid and the difference between it and the digital content interface, although they were able to complete the tasks of the study. Interestingly, users who claimed familiarity with archives and finding aids fell into two distinct groups in their search behaviors, and this depended on their level of familiarity with using online finding aids in general and using this institution's finding aids in particular. Those users who were nominally familiar with online finding aids clearly preferred to use the digital content interface to find items and had some difficulties navigating the finding aid, although they showed more willingness to use the finding aid page to search for items and a greater understanding of its nature than the novice users. Users who indicated advanced experience with finding aids in general and WSCL finding aids in particular navigated the finding aid pages quickly using the Control Find (Ctrl+P) function, but also relied on the search box function in the CDM interface from time to time.

One study participant was never able to access the digital content due to technical difficulties, which was not fully realized until partway through the study. The researcher decided to have this user go ahead and finish the study, and her feedback on the finding aid design and navigability is included, but this session was excluded from the discussion of the integration of digital content.

Usability results showed that many people did not find the purple box at the top of the page, which indicates that a finding aid includes digital content, unless they knew about it or specifically looked for it. Many people did not see or notice the purple box even after it appeared; others noticed it but did not think it was important. All participants noticed the links at the container level, however, and used them with no hesitation. All users noticed the red text describing access and use restrictions and indicated understanding what these restrictions meant. Overall reaction to the finding aid design was positive, while reaction to the digital content display was mixed. Most participants mentioned that the order of information in the finding aid was good, giving them necessary information for using the finding aid and materials at the top of the page. Novice participants reacted to the CDM interface more positively than advanced archival users, with the intermediate archival user group demonstrating mixed reactions. All users who were able to access the digital content tried the “advanced search” feature in CDM and most users expressed some dissatisfaction with it. This dissatisfaction primarily related to the list of collections available for search, which confused users by not listing all collections used in this study by name and will be discussed in greater depth below.

This study also brought to light some probable differences between research in photographic collections and research in manuscript collections. Researchers were intrigued by questions raised in this study about conceptualizations of the finding aid and archival collections, as well as the responsibility of the finding aid to educate
users about itself. These issues and questions will also be discussed further below.

Participant Characteristics

The nine participants in this study were mostly students at UNC-CH. Two were undergraduate students, six were graduate students, and one was a recent graduate of a master’s program. Five participants listed History as their main area of study, with an additional person indicating a History minor. Other areas of study were American Studies, Latin American Studies, and Information Science. The recent graduate listed his area of work as Education. The average age of participants was thirty-one.

Four people described their level of archival experience as Advanced, two as Intermediate, two as Beginner, and one as None. A total of seven people indicated previous use of online finding aids, including five people who had used WSCL finding aids, while two people indicated no previous experience with finding aids. All participants rated themselves either Intermediate or Advanced on experience using computers and the internet. Five people rated themselves Intermediate and four people rated themselves Advanced.

Observation led the researcher to conclude that these characteristics provided incomplete predictors of how participants used the finding aid pages. The three participants who described themselves as Advanced users of archival materials and indicated extensive use of WSCL finding aids demonstrated the greatest ease with and understanding of the finding aid overall. They relied on that page as their main source of information, used Ctrl+F to search within the page for different combinations of keywords, and demonstrated an understanding of the distinction between the finding aid as a description of the entire collection, and the CDM interface as a way to view the digitized portions of the collections. The researcher, therefore, describes just this group as the advanced archival users. The two people who had never used online finding aids before demonstrated some confusion over the nature of the finding aids, as well as the reasons for the differences between the finding aid pages and the CDM interface. These users displayed a distinct preference for the CDM interface and the ability to use a search box; they also displayed a general lack of interest in using the finding aid page. The researcher describes this group as the novice archival users.

The four people who did not clearly fall into either of these groups represent a portion of users who have some understanding of and experience with archives and finding aids, but display a wide range of preferences and search patterns. Their self-identification regarding level of archival experience did not reflect their apparent comfort with using these finding aids or digital content, and their search techniques varied widely. Three of these people were apparently unaware of the Ctrl+F function, as they never used it during their sessions, relying instead on scrolling or advanced search (all other participants used Ctrl+F at some point during the study). The researcher grouped these users together as intermediate users of archives for this study.

Tasks

Task 1

This task was specifically for novice users and was intended to check understanding of the purpose and function of the finding aid as a description of and guide to archival
materials. All participants who had used online finding aids from WSCL five times or fewer were directed to the Portrait Collection (P0002) finding aid and asked what kind of materials they thought the page described, where the materials were physically located, how they could view the materials in person, and if they could view any of the materials online. This question was largely the same as in Chapman’s study, with slight changes to reflect focus on users’ understanding of the inclusion of digital content.

- Five participants completed this task: two who had never used archival finding aids before and three who had used finding aids at other institutions.
- All participants indicated a fairly good understanding of the collection, its physical location, and how to physically access it; they appeared to find this information from the Abstract and the Information for Users sections.
- No user ever gave any indication that they read the small print under the collection number and title that describes the nature of the page.
- When asked if they could view materials online, three users gave the correct answer that they could, one by using the purple box at the top and the other two by using links to digitized content in the Contents List. Two said no, one who was experiencing technical difficulties, and one who later found digital material but did not change her answer.

These results differ somewhat from Chapman’s results, which can be attributed to two main differences: the significant change in size of the explanatory statement at the top of the page and the addition of the purple box and red restriction text. Changing the size of the text explaining the nature of the page clearly made it much less likely that users would read it, and adding two additional features in color just above it seems to have distracted users. In addition, novice users in both studies clicked on the FAQs or How to View Materials links at some point in the study, but participants in Chapman’s study who used these tabs were taken to different explanatory pages (specifically for the SHC) than users in this study (pages describing the NCCPA).

Task 2

This task was intended to see how users would begin to navigate a finding aid and how well they understood cues regarding digital content. Participants were asked to use the Portrait Collection finding aid to see if someone named Thomas Wilson was included in the collection and if they could see a picture of him.

- All users answered this question correctly, finding at least one Thomas Wilson.
- Six users correctly answered the second part of this task by seeing and clicking on the link to the digitized content in the entry for Thomas Wilson directly below the folder title.

One user apparently did not see this link (although she saw others throughout the study), one user did not see the link because it never appeared, and one user found the digital content directly without using the finding aid.
Task 3

This task sought to test how users find basic information about what is included in a collection. Participants were directed to the Frank Clodfelter Photographic Collection (P0032) finding aid and asked what picture formats were in the collection, how many there were of each, where they found this information, and if the collection included images of steam engines.

- All participants correctly described the two photographic formats in the collection.
- Seven participants indicated that they found the answer to this question in the Abstract alone or the Abstract and another place (Scope and Content or Series Quick Links). The other two users indicated the Scope and Content as their primary source of this information, with one also citing the Series Quick Links.
- Participants all found steam engines within the collection, although search methods varied.

Task 4

This task was specifically designed to prompt users to find the link in the purple box at the top of the finding aid to all digital content for that collection in the CDM interface, by asking if there was a way for users to view all digital images for this collection. This task was also performed on the Frank Clodfelter finding aid.

- As previously mentioned, one participant never saw the purple box because it did not appear during her session.
- Five people answered this question correctly using the anticipated method.
- Three participants (two advanced and one novice) who had the purple box appear during their session never clicked on the link within it. One of the advanced users interpreted Task 4 to be still referring to steam engines and used advanced search within CDM, after having clicked on a link within the Contents List during Task 3. Of the two participants who did not click on the purple box, one wrote "I don't see a way besides clicking each link individually," while the other expressed frustration that he did not find what he was sure existed, saying "I would ask for help at this point."

Task 5

This task was intended to learn more about how users understand and navigate the finding aid: how users understand the subject headings and how subject headings relate to the contents of the collection, how users will navigate a large finding aid, and how (or if) users will search within a digital collection. Participants were directed to the Edward J. McCauley Photographic Materials (P0082) finding aid, and were asked if they thought the collection would have images of former North Carolina governor Terry Sanford, why they thought so, and if they could view any such images.

The McCauley collection was partially digitized and presented as a special digital collection several years ago. This was done before the decision to include digitized material in the finding aid as it is now done at the NCCPA.
As a result, there is a separate CDM collection, the purple box does not rely on the JavaScript and is instead a permanent link that appears on the page as it is loaded, and links underneath container descriptions redirect the current page rather than opening a new tab. However, this finding aid uses the same template and stylesheet, and therefore still includes the script that searches for digital materials and takes time to fully load, even though the links to digital content are already present.

This task demonstrated the distinct advantage of using Ctrl+F to search a large finding aid. Every participant found Terry Sanford’s name in this finding aid, but only those who used Ctrl+F actually found him within the Contents List; others mainly found him in the Subject Headings.

- When prompted to view these pictures and asked how many they could see, five users used the search function in the CDM collection to find 101 scanned images that have Terry Sanford’s name in the description, which they wrote as their answer.
- The two intermediate users who did not use Ctrl+F never found Terry Sanford at all, despite searching for him several different ways, scrolling through or clicking on various subseries that seemed promising. After getting frustrated by searching within the Contents List, these participants clicked on the link within the subject headings list, sometimes more than once, to confirm that it did not take them to Sanford’s appearances in the collection.

Task 6

This task was meant to see if users would find and understand the restriction information about a collection, and is a follow-up to Chapman’s similar question. Participants were directed to continue using the McCauley finding aid and were asked if there were any restrictions on this collection, and if so, what they were.

Since Chapman’s study was conducted in 2009, the “Information for Users” section has been revised due to her findings, since her participants displayed some hesitance and confusion regarding these statements. While the current study used a different collection with slightly different restrictions, the current results indicate a better understanding of restrictions that is likely due to the rearrangement of this information. Now, when restrictions are present in a collection, the template automatically adds red text to the top of the page under the collection title and purple box that indicates the presence of restrictions; the template also includes a link to the Information for Users section where the restrictions are spelled out.

Every participant answered this question correctly and demonstrated a good understanding of the restriction information. All participants then correctly identified the restrictions as allowing access but limiting use, with some users simply indicating that they could access materials and some also mentioning that they would need some staff assistance; all users indicated that they understood they would need permission to reproduce materials.

Task 7

This task was broken into four parts and was intended to see how users would navigate a very large...
collection, which includes digitized content sporadically throughout, to find materials that are not easily keyword searchable. The last part of the question was specifically intended to see how users would navigate within the CDM interface. Participants were directed to the UNC-CH Photographic Laboratory Collection (P0031) finding aid and were asked if they thought the collection would have pictures of basketball teams or games, why they thought so, if there was a digital image of the 1947 men’s basketball team, if there were any pictures of women’s basketball, and how they could be viewed. In the last part of the task, participants were directed to a specific image, told to view the digital version, and asked how they might look for more digital images of basketball from that page.

Participants generally answered the first part very quickly, and seven used the Abstract and/or Subject Headings from the beginning.

The second part of this task asked users to find a digital image but used terms that differed slightly from item descriptions in how they were ordered. Search patterns were similar to Task 5, with the three advanced users and the same novice user engaging Ctrl+F from the beginning and the same intermediate user and novice users, who had success with searching the digital content immediately, using that approach here as well. The other three intermediate users began by scrolling through the collection, clicking on the subject headings, and trying various subseries in the Series Quick Links section, before the two who knew there was digital content available used the purple box at the top to access all digital content in the CDM interface.

Users then began searching for pictures of women’s basketball, of which only two from 1960 are currently digitized.

- The three advanced and two novice users who had used Ctrl+F to answer the previous question about men’s basketball continued with that method to find images of women’s basketball, most often using the terms “women’s basketball.” Two of the advanced users experimented further after they noticed that titles varied slightly.
- When asked how to view these materials, four of these users did not see any digitized images and answered that they would need to view the materials in person, while one saw the link to a digitized image and included it in her answer.
- Two of the intermediate users, who had used the CDM interface to answer the previous question also used the CDM advanced search function for “women’s basketball.” Both of these users were searching only the Digital NCCPA collection, because it had been pre-selected by the person who performed in the study just before them. They found the only two images of women’s basketball currently digitized, both of which happen to be from the Photographic Laboratory collection.
- The other two intermediate users continued looking in the finding aid without the use of Ctrl+F. Both eventually succeeded after extensive scrolling, with the user experiencing technical difficulties continuing to express frustration that she was not able to more easily find images.
The final part of this task was specifically intended to find out how users navigated the CDM interface. It had first been anticipated that users would spend most of their time during the study using the finding aid and that this question would gather the most information about how users navigated the CDM interface, but this assumption turned out to be quite wrong. The only user who was unable to complete this task was the user who could not access the digital content; while she did locate the item mentioned within the finding aid, the researcher stopped her at that point.

All users, after arriving at the correct item, clicked on the thumbnail or the title to look at the full-size image and then scrolled down to look at the metadata that appears under the image. The question asked them to decide from this point how they would search for additional images of basketball. Much of this metadata is hyperlinked, and two users indicated that they understood this. At this point, however, interpretation of the question varied.

- Two advanced and one novice user then selected “advanced search,” with one advanced user first selecting “browse” before changing her mind and then selecting “advanced search.”
- The three advanced users then began performing additional searches to find the best way of getting more digital images of basketball (although this was not asked).
- The other user who had clicked on advanced search, a novice user, did not attempt a search but indicated that he would use this method.
- An intermediate user also indicated that he would use advanced search without actually exploring it at this time.
- Another intermediate user noticed that the metadata was hyperlinked and wrote that she would “click on the link to the photo archives.”
- The other novice user found the link to the finding aid in the metadata and clicked on that, only realizing at that moment that he had been using the finding aid “all along.” He navigated back to the digital image metadata in CDM and then clicked on the collection number, which took him to all digitized content for the collection in CDM, just as the link in the purple box does. He listed this as his answer because “it does get the job done.”
- The other intermediate user also indicated that she would simply click on the link for all digital content in the collection, presumably by using the link in the purple box to CDM.

Task 8

This task was intended to assess how users might approach a collection with a general research need. Participants were asked to find a picture of former UNC-CH basketball coach Dean Smith using any of the collections they had used so far in the study.

The researcher had assumed that users would approach this task through the finding aids, but most users began this task from wherever they finished Task 7. Two users began searching the Photographic Laboratory Collection finding aid before switching to the Portrait
Collection finding aid, one using Ctrl+F while the other scrolled. One advanced user went first to the McCauley collection finding aid, navigated to CDM from the top of that page, and used the search box on that page without success. He then went to the Photographic Laboratory finding aid, then finally to the Portrait Collection finding aid, where he used Ctrl+F to find Dean Smith.

Six users began with the advanced search function in CDM. One of these users, a novice, gave up in frustration after attempting to limit his search there to only the Portrait Collection and getting no results, then went to the Portrait Collection finding aid directly and successfully used Ctrl+F. Two others also attempted to limit their search to collections previously used, but were not able to do so. Of the six users who attempted to use advanced search, five succeeded to some extent, although only one of these users did not attempt to limit or modify their search by collection (this user was also only searching the Digital NCCPA due to selections made in a previous session).

All users ultimately found images of Dean Smith, and eight of them found digital images of him. Four used the finding aid for the Portrait Collection directly and then tried to view the digitized images in that collection, while the other five eventually found the same digitized images in their result lists via the advanced search in CDM.

**Participant Feedback**

Users who were already familiar with finding aids, whether from WSCL or other institutions, were generally pleased with these finding aids. Novice users were much less positive about the finding aids overall, and both also expressed some lingering confusion about what the finding aid actually was. Reaction to the digital content integrated into the finding aid was a little more even across user groups, with the intermediate user group giving the most positive feedback. All users indicated that it was easy to tell if images were available online.

Seven participants rated the finding aids as “well designed” and six thought they were “user-friendly.” When broken down by user group, the results are slightly less rosy, with only half of novice users rating the finding aids as “well designed” and none of them rating it “user-friendly.” However, all intermediate users and two of the advanced users rated the finding aids as both well designed and user-friendly. Most users said in the post-test interview that the finding aid layout made sense, with several comments about the most useful information being placed at the top. Intermediate and advanced users who were used to finding aids from other institutions thought that the organization and design were very good in comparison. An advanced user indicated appreciation for the left side navigation menu, comparing it favorably to other institutions where information “isn’t broken up like this at all.” One intermediate user who was most familiar with Russian archives said, “If this were my field, my life would be a whole lot easier.” Still another advanced user stated outright, “You guys have some of the better finding aids out there.”

Despite these positive assessments, most users had some suggestions for improvement. Novice users specifically mentioned wanting a search box or a way to search within a specific collection that was smarter than Ctrl+F, while an intermediate user who did not use Ctrl+F during this study indicated that he “relied heavily” on search boxes (when available) on other institutions’ finding aids. One advanced
user suggested breaking up the very long Contents Lists, and both an intermediate and a novice user suggested moving the subject headings to the bottom of the page. Interestingly, another intermediate user mentioned wanting the subject headings to be even more prominent.

All advanced and intermediate users thought that the finding aids were written in language easy to understand, while neither of the novice users thought so. This suggests that there is still a very steep learning curve for people who are brand-new to finding aids, but that those people who are familiar with finding aids find the ones at WSCL easy to understand. Both novice users mentioned wanting more help in figuring out what a finding aid was, in the form of some kind of introduction or more instructive FAQs and How to View Materials links.

All users responded that it was easy to tell if images were available online. Even the one participant who experienced technical difficulties with the digital content integration responded to this question and indicated that it was easy, based on a conversation with the researcher at the end of her test, in which she did finally get to see and immediately understand a link to digital content within the Contents List of a collection. It is interesting to note that although all users responded this way, several had suggestions for improvement. Several users discussed wanting the link to all digital content at the top of the page to be more obvious, with suggestions including making the text yellow, bigger, and bolder. One user also said that she wants an indication of when digital content is NOT available.

In giving feedback on the way digital content was available through the finding aid, it was not always clear whether users were responding to how links to digital content were designed and placed in the finding aid or to the CDM interface. Given the decidedly mixed responses to this question, it seems possible that users interpreted this question differently. Novice users seemed to think the integration of digital content was decidedly average, while the intermediate group responded very positively. Since the novice users expressed a preference for the CDM interface over the finding aid but responded very poorly to the finding aid in general, and the intermediate users were very positive overall, it is difficult to interpret these results. Advanced users generally found the digital content through the finding aid very easily, but were not as positive about the CDM interface; it seems likely that this group interpreted this question as referring to the CDM interface, which they generally did not find as easy to use. One advanced user who responded enthusiastically to questions about the finding aids said, when asked about the display of digital content, "That one's not as awesome." Another advanced user expressed frustration with not being able to easily obtain a copy of digital files from the interface (by downloading), when "it doesn't actually stop anyone" and "you'll give it to anyone who e-mails anyway." The third advanced user thought there should be greater "connectivity" between the pages, apparently referring to the difference in look and design between the finding aids and the CDM pages, and thought the CDM interface looked "sterile."

Web 2.0

These questions were asked of users in order to follow up on Chapman's 2009 study which sought to find out whether users of the SHC were as interested in Web 2.0 features as has been proposed in the archival literature.
Chapman did not find a great deal of interest in most of the features proposed, and none of these features have been implemented in WSCL finding aids. This study sought to find out if this was still true two years later, after the integration of digital content. Chapman’s questions, which used a Likert scale to gauge level of interest in seven different Web 2.0 features, were reproduced for this study, but participants were not asked for additional feedback in the post-test interview.

It was found that users expressed the most interest in being able to save some finding aids to an online “bookbag” in order to revisit ones they used the most (eight users indicated strong interest in this feature, an increase from the time of Chapman’s study) and in being able to export collection citations to a citation manager such as Refworks or Zotero (six users expressed strong interest). Other Web 2.0 features attracted some level of interest, but users were overall unenthusiastic about most features. In fact, this study found even less interest in many features than did Chapman’s study, indicating that overall interest in Web 2.0 features for archival finding aids remains low. This study did not attempt to investigate users’ reasons for these responses, only to gauge general level of interest.

**Limitations**

This usability study had a number of flaws and limitations that should be taken into account when considering the results.

The researcher intended to use time as a measure of usability for all tasks; however, during the course of the study it became apparent that the structure of the questions and the choice to ask users to write their answers (rather than always speak them aloud) meant that there was too much variation in time taken for time to be a consistent indicator. Some users wrote more slowly or wrote longer answers than others, and many users did not speak all their thought processes aloud, so it was frequently difficult to determine when exactly they found or decided on the answer to a question. In addition, the structure and order of the questions meant that some users actually ended up answering more than one question at a time, or realizing immediately upon reading a task that they had already found the answer while working on an earlier task. Tasks and questions were not as discrete as they could have been, and the researcher did not encourage the users to think aloud strongly enough, although some users felt comfortable doing so anyway. Moreover, some results related to the CDM interface were skewed because of browser cookies, which pre-limited the advanced search parameters.

The number of participants, while large enough to give some information on usability according to current thinking regarding the study topic, was still small and not representative of the entire user population. Technical difficulties also limited the experiences of at least two participants.

In addition, this researcher knew of only one other usability study of digital content integrated into online finding aids before beginning this study (the one that was conducted by Jody DeRidder and her team at UA) and that study had not yet been published. While the researcher attempted to base these study tasks on previous finding aid and digital content usability studies, this was new territory at the time the study was being designed. As a result, the tasks that users were asked to perform are not likely to be the best...
way of actually getting at the usability of these pages. The researcher did not intend to study the CDM interface to any great extent and anticipated, incorrectly as it turned out, that users would use the finding aids as the primary discovery tool for digital content. Instead, the study essentially had users perform searches on two distinct interfaces, but did not design the study with that in mind and consequently did not adequately explore these differences. This paper has attempted to address these differences as far as possible, but this discussion is incomplete.

This study may not have provided novice users with enough opportunity to learn what the finding aid was before they began rapidly trying to perform tasks. Chapman's study demonstrated learnability within the finding aid interface, but made different FAQs and How to View Materials pages available to users than this study did. These differences were not realized until the study was underway, and may have put these novice users at a disadvantage in comparison to the earlier study.

Discussion
This study attempted to follow up on some aspects of Joyce Chapman's 2009 usability study of finding aids at the SHC in WSCL. Since Chapman's study was conducted, a number of changes have been made to the WSCL finding aids, most obviously in the inclusion of digital content. Not every aspect of Chapman's study was included in the present research, and attempting to investigate the usability of the digital content necessitated some significant changes. The following sections discuss the major findings of this study and compare them, where appropriate, to the previous study.

Integration of Digital Content
This study primarily differs from Chapman's study in its attempt to test user understanding of the integration of digital content to the finding aids. The first and most important issue raised here is the obviousness and immediacy of indicating the existence of digital content, or specifying the lack of digital content availability. It appears that once users are familiar with the presence of digital content, they expect that it will be available, and may prefer a more obvious indication if it does not exist.

The way digital content currently is integrated into the finding aids gives two separate indications of its presence. The first is the purple box at the top of the finding aid containing a link to all digitized content for that collection; the second is a purple link at the record level for each container that has digitized content. These two methods showed drastically different rates of success. The second method of indicating the presence of digital content had an excellent success rate, with all users who had the record-level links available to them noticing and using these links. Users all clicked on these links without any hesitation, indicating that these links are completely intuitive. The purple box's success rate was not as positive.

It was anticipated that users would not notice this box immediately, but the number of participants who apparently never noticed this box or what it contained was surprising. Of the eight participants for whom the digital content integration worked properly, only five ever clicked on the link in the purple box. Of these users, one was an advanced user who indicated previous knowledge of the presence of this link, and commented that it was "only a purple link and it doesn’t always come up right away... you
have to notice that there’s a link there.” Another user said, “At first I did have the hesitation to skip this purple box, even though it says in big friendly letters ‘digitized content.’” Both novice users commented on the size of the text in the box as off-putting. One, who never clicked on the link, said when asked about it that he had “sort of” noticed it, but didn’t pay much attention or read what it said because “the text was smaller, so . . . it just seemed like something that wasn’t as important.” He also said “it seems like ‘the fine print’ that, you know, everybody skips.” The other said “my natural inclination is to not read little type, because you don’t put important things in little type.” He also said that he only noticed the purple box “out of the corner of my eye” when “something appeared on the screen,” making him first doubt his own perception.

Only one of the four collections used in this study included the purple box from the first moment the finding aid was loaded. The other three finding aid pages, including the first two where users were directed, rely on the JavaScript in the source code to generate the box, which takes time to display. The amount of time taken for the box to appear varied slightly by collection, with larger finding aids taking an average of forty-three seconds to load, and an overall average load time of just under thirty-seven seconds. The more records included in the finding aid, the more time it takes for the scripts working on the page and on the CDM collections to check for digitized items and create the dynamic links. Users, even those who knew about the purple box and its link to digital content, rarely waited for the page to finish loading.

It seems likely that while this purple box is visible and some users who were previously unaware of its existence may find it eventually, it is not as obvious as it should be. While the box does contain the “big friendly letters” that says it has digital content and which made some users click on it, it also contains “the fine print” that told other users to skip it. This box and the link it contains need to be made more visible or the presence of digital content needs to be made obvious in some other portion of the finding aid. Three users who began searching for a link to all digital content during Task 4 spent some time looking in the Information for Users section, while others checked the left navigation menu or the How to View Materials link in the top banner. The user who was never able to view digital content (because of some unknown technical issue that prevented the content from loading to the page) searched in multiple places for an indication that digital content existed. The experience of this user demonstrates more clearly than anything else that the existence of digital content must be indicated on the finding aid page in some way that does not rely on a dynamic script. This user searched four different collections that have a combined total of 898 digitized items and did not find a single one, leading her to believe that no digital content existed. By the time she reached the finding aid for the Edward J. McCauley Materials, which does have a permanent purple box, her previous experience with two collections that did not have digital content visible appeared to have taught her that there was none to find.

Users indicated that knowing about the presence of digital content was extremely important to them, with one novice user saying “nothing on that page is so important to me as ‘here’s the link to the digital content,’” while one advanced user said “if you go to a page where nothing is digitized, it’s not always easy to tell, oh, nothing’s there. I’m
not missing something.” These statements demonstrate that in order for the integration of digital content to the finding aid to be fully successful, the presence or absence of digital content must be explicitly stated. A statement could be added to the Information for Users section from within the template that specifically says no digitized content exists, and individual collections that have digitized content can then replace this with a standard advisory containing a link to the CDM homepage. The restriction statements work in this way, and this extra step takes very little time, but communicates a great deal. While part of the advantage in the current set-up of digital integration is that it specifically does not require changing the finding aid each time digital content is added, adding this text when digital content for a collection is first uploaded will save a great deal of confusion for the users, making it absolutely worthwhile.

**Control Find (Ctrl+F)**

In Chapman’s study, she found that users who utilized the Ctrl+F function had greater rates of success than those who did not. As a result of this finding, text was added to the finding aid template advising users about this function. Previous usability studies or content analyses have discussed instances of this function’s use as indicating some type of failure on the part of the finding aid design, but Chapman treated it as a recognized tool which the archivist could expect users to utilize. The overall success of users who search this way demonstrates that it is a legitimate method of search and supports Chapman’s (and UNC-CH’s) view of the matter. Users who relied heavily on Ctrl+F performed most tasks better and more quickly than those who searched through the finding aid without this function; one intermediate user who never used Ctrl+F actually performed several tasks much faster without it, by reading and interpreting before scrolling, but this method was completely ineffective in larger finding aids with very long container lists. In this study, four out of nine users began their session with no apparent knowledge of this avenue of search. Only one of these users actually read the text advisory and began using Ctrl+F to search the finding aids and this did allow him to perform more successful searches than the users who did not use Ctrl+F at all.

**Subject Headings and Restrictions**

Another persistent usability issue was the presence of the linked subject headings. In these finding aids, subject headings for topics included in the collection are hyperlinked as subject searches within the entire library catalog. Clicking on the Terry Sanford subject heading link takes users to a new tab displaying all instances of his name used as a subject heading throughout the UNC-CH Libraries, which looks entirely different from the finding aid page.

Users expect the hyperlinked subject headings near the top of the finding aid to take them to content within the collection that fits this topic, and while the language of the finding aid specifically disavows this, users are disappointed to be unable to search this way. Six participants in this study clicked on a linked subject heading at least once, expecting it to take them to another part of the finding aid or to the digital content relevant to that subject. Three users did this more than once. None of the users indicated that they found this feature useful, although several did mention the subject headings as the source of answers or assumptions about what was included in the collection. One of the advanced users...
mentioned that since keyword searching is so easy, subject headings are most useful when searching in the library catalog.

Participants in Chapman's study also expressed confusion about the subject headings and their relationship to the contents of the finding aid. At the time of her study, however, the subject headings were not hyperlinked at all. The inclusion of this feature does not appear to have cleared up the confusion significantly, and users now express confusion about why the subject headings behave this way, instead of confusion about why the headings are there in the first place. Therefore, it may be advisable, as Chapman and two of the present participants suggest, to move the subject headings to the bottom of the finding aid. It is worth noting, however, that while users expressed some dissatisfaction with the subject headings as they are, task completion was not actually affected.

In her study, Chapman also addressed confusion over restriction information. Only 75% of her participants correctly interpreted restriction statements. Restriction information has since been modified and this study demonstrated that 100% of participants correctly interpreted restriction information. While the restrictions on the collections used in this study differed slightly from those in Chapman's study, this improved rate of success nevertheless suggests that the current arrangement and wording of restriction information is more intuitive to users. Users reacted positively to having this information appear in red, and the fact that all users noticed this red text at the top of the finding aid (while many failed to notice the purple text just above it) indicates that users recognize red as denoting important information, with one participant even specifically mentioning that she liked how "things you need to know are in red."

**General Navigation Issues and the Finding Aid versus CDM**

Two of the finding aids used in this study describe enormous collections. The Edward J. McCauley Photographic Materials include some 83,000 items, while the UNC-CH Photographic Laboratory Collection contains well over 100,000 items. Users, especially novice and some intermediate users, sometimes found the long lists of items/folders/containers overwhelming when trying to search for items. While some of this frustration may be unique to the NCCPA due to the nature of some of their collections, it is a problem that has arisen in usability studies of finding aids before, and it may be inherent to most finding aids for large archival collections.

One of the novice users wanted to make the pages more dynamic, suggesting "checkboxes" similar to the CDM interface or the library catalog as a way to gather relevant results for later review, "because once I scroll past something or hit next, you know, I don't know what I've already looked at." This intriguing suggestion resembles the Web 2.0 features users expressed the most interest in at the collection level of an online "bookbag" or account that allows them to save favorites. The UNC-CH Libraries catalog has an "add to folder" feature, as do many academic or serials databases (for example, those managed through the publisher EBSCOhost). It is possible that this could be explored with collection management software such as Aeon and it may make browsing much easier for users, especially within very large collections like these.
This study reiterates the findings of previous user and usability studies which claim that the finding aid is most suitable for browsing, but users want to search by keyword. The finding aid and CDM are two separate interfaces with separate usability issues, a distinction that was not clear to most participants. While this study was meant to focus on the finding aid interface, it also gathered a great deal of information on the usability of CDM. Unlike DeRidder et al.'s study, users were not asked to compare interfaces and were expected to use the finding aid as the primary discovery tool. However, the nature of how digital content is linked to UNC-CH's finding aids meant that users did, in fact, use two different interfaces; this was confusing to novice and some intermediate users, who noticed the differences without understanding why they existed. One novice user said of the CDM display, "It feels like I'm on a totally different page... like I left what I was originally doing." He clearly indicated that he preferred this interface, saying "this seems a lot more dynamic... This feels more familiar to me." Advanced users more familiar with the finding aids appeared to understand the differences between these two interfaces more clearly, but expressed a desire for them to more closely match in appearance. The experience of all users pointed to usability issues with CDM, particularly with the Advanced Search function and distinguishing which collections were being searched. While interesting, these issues are largely outside the scope of this study.

Novice users also expressed lingering confusion over the nature of the finding aid. Both novice users were very experienced internet users who tended to explore and click on links, but had definite pre-conceived notions about usability. As previously mentioned in the limitations section, this study may have inadvertently inhibited their orientation to finding aids, since both users were frustrated by their attempts to figure out the finding aid as they went along. Both indicated at the end of the study that they thought they had some understanding of the finding aid by that time, but they were still a bit uncertain.

While most users completed the majority of tasks correctly, advanced users showed the greatest ease with and willingness to use the finding aid to search for and find items. Intermediate and novice users showed a greater tendency to use CDM to find items and were less likely to draw any kind of distinction between what they found there and what was actually listed in the finding aid. In contrast, advanced users almost always made this distinction. As one novice user said, "Because there was so much stuff that was digitized, I expected everything to be digitized. So when I ran into this stuff that was like, yeah, this exists, I was like, well isn't that nice for it. I want to see it." The other novice user said, "I still came away from this not knowing if I saw everything I was trying to see."

On the other hand, the intermediate user who never used Ctrl+F, was unable to see the digital content, and had only used WSCL's finding aids three or four times, was able to able to perform many tasks quite rapidly due to her familiarity with finding aids from other institutions. She successfully completed tasks more often than not, in spite of being hampered by scrolling through extremely large collections, material arrangement that was not intuitive to her, and the inability to use the search feature within CDM. She said in the post-test interview, "In general, I'm usually able to find what I'm looking for... fairly quickly, albeit with some stops and starts. You know, sometimes you just
assume it’s going to be one place, and then you click on the other place and are like, oh. But that’s part of the fun and serendipity of it all."

This reiterates DeRidder et al.'s findings and, coupled with the experience of novice users, begs the question of how much the finding aid is responsible for educating users about itself and its most effective use. While novice users were able to self-educate, it is unclear whether they would have done so had they not been motivated by their participation in the study, and it appears that experience is the best educator. So will novice users who are not required to use a finding aid ever use enough to become advanced users?

Walters, in her examination of finding aid usability studies, discussed the fact that participants were usually able to adapt to and learn how to use finding aids, and DeRidder suggests conducting a longitudinal study to test how users learn to use the finding aid over time. The success of all users in the majority of tasks in this study also demonstrates that users can learn to use finding aids, but questions remain about how to improve their experience doing so. A user's conceptualization of archives and an archival collection has an impact on their experience with finding aids, demonstrated in this study by participants who did not appear to make a distinction between digital content and the archival collection described in the finding aid. Users claiming more experience with archives demonstrated better understanding and greater ease of use. So how much can the finding aid do to make a user quickly gain a conceptualization of an archival collection? Finding aids may not be intuitive things at all. As one processing archivist mused to this researcher, “Because it’s on the web, does it have to be intuitive to everybody?"

Usability literature emphasizes that the usability of a particular object is determined by the users for whom it is intended; that usability is in fact “context dependent,” a concept with which archivists should be quite familiar. Alison Head discusses how usability involves the expectations users bring to a tool as well as how it allows them to use it, which means that the finding aid, in trying to be usable to user groups who use it for many different purposes and who approach it with many different expectations, is required to accomplish a great deal. Chapman found two years ago that certain help features, well-designed and easily available, can assist novice users in learning what a finding aid is and how to use it. Recent studies have suggested that novice users are not particularly interested in learning about the finding aid. Yet practical considerations have led archivists such as Evans, Greene, and the teams at UA and UNC-CH to realize that the best, most efficient, and most informative way to present the digitized materials (that everyone can agree are wanted), is via the finding aid. So how can these ideas be merged into a successful user experience?

These questions obviously cannot be answered here anymore than they have been definitively answered in the literature, but it is the opinion of this researcher that greater attempts must be made to make archival collections more accessible to novice users. If the finding aid is truly a document that exists to describe the contents of a collection in such a way that a researcher may find complex subject matter, the results of this study may indicate that it is not also the best vehicle to accomplish more universal accessibility.
UNC-CH appears to have found a finding aid design that works well for advanced users and allows intermediate users to get their work done. For inexperienced users of archives, however, perhaps the finding aid cannot be both a description of an archival collection and a completely intuitive tool of discovery. If this is the case, other methods must be explored for increased usability and access.

Conclusion

This study examined the integration of digital content to the finding aids in WSCL at UNC-CH, in an attempt to add to the growing body of literature suggesting this as desirable. This study also attempted to add to this institution’s understanding of the usability of its finding aids as established by a usability study conducted two years ago. Results indicated that the presence of digital content was largely intuitive but could be improved upon by the use of a more immediately visible indication of its presence or absence that is not delayed by browser loading. It was found that users are able to understand the finding aid but may not always differentiate between it and the digitized content present in CDM. Those who are more familiar with finding aids and using archival collections indicated greater levels of comfort with using the finding aid and making use of the digital content within it, while users less or not at all familiar with finding aids demonstrated a preference for the CDM interface. Most users wanted to be able to use keyword searching, both within the finding aid and within the digital collection. The researcher concluded that novice users should either be presented with an introduction to finding aids, if they are expected to use them as sole access to digital content, or be provided with a quick way to directly navigate to digital content, since that was top priority. As all users indicated and one novice user expressed: “I want to see it.”

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NOTES

2. Laura Clark Brown, Interview 9 June 2011.
5. Brown interview.
8. Timothy Shearer, Interview 6 July 2011.
9. Shearer interview.
11. Shearer interview.
18. Yakel, 75.
20. Schier, 76.
23. Walters, 34-35.
27. Sharp, et. al., Krug, and Head are all proponents of this school of thought.
29. See, in particular, Helen Tibbo, “Primarily history: historians and the search for primary source materials,” The American Archivist 66.1 (2003), Elizabeth Yakel and


31. Chapman’s paper was also later published as ‘Observing Users: An Empirical Analysis of User Interaction with Online Finding Aids,’ *Journal of Archival Organization*, 8:1, 4-30.


35. Evans, 391.

36. Greene, 194.


38. Allison-Bunnell et. al., 2-3.


42. Morae is usability software including screen-capture and audio and video recordings. More information about this software can be found on their website, http://www.techsmith.com/morae.asp.

43. See for example studies by Scheir, Yakel, Walters.

44. More information on EBSCOhost can be found on their website, http://www.ebscohost.com/; More information on Aeon Special Collections management software can be found on their website, http://www.atlas-sys.com/products/aeon/.


47. DeRidder et. al., Allison-Bunnell et. al, and this current work.