

Emily S. Horton. Enhanced Browsing of Digital Archival Collections: A Pilot Study. A Master's Paper for the M.S. in L.S. degree. November, 2011. 38 pages. Advisor: Helen R. Tibbo.

This is a pilot study investigating how users navigate a digital repository with enhanced search and browse functions. The paper explores user-interaction with the thematically structured, visually appealing browse interface of the Smithsonian's Ernst Herzfeld Papers digital collection, as well as use of the collection's faceted search engine and electronic finding aid. The findings support previous research on finding aid design, indicating the implications of "Ctrl F and Command F" use, and the presence of language and conceptual knowledge barriers as significant factors in accessing archival materials. The findings of this research will inform a future usability study structured to investigate how interface design impacts users of variable archival and Internet proficiencies to optimize user-experience and access.

Headings:

Use studies / Archives

Information systems / Design

Access to archives

Information Retrieval

ENHANCED BROWSING OF DIGITAL ARCHIVAL COLLECTIONS: A PILOT STUDY

By

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A Master's paper submitted to the faculty of the School of Information and Library Science of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Science in Library Science.

Chapel Hill, North Carolina

November 2011

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INTRODUCTION

As Christopher Prom stated, “In simple terms, archivists have moved finding aids from bookshelves and file cabinets to the Internet.”¹ Moving the primary archival access tool to the Web has led to many changes in archives practices. From the early 1980s, standards for encoding collection information emerged. From 1985 to the mid 1990s archivists adopted MARC-AMC² (MARC Format for Archival and Manuscripts Control), for producing records of their collections to go in library catalogs. In 1996 Encoded Archival Description (EAD)³ version 1.0 was released and pioneering archivists starting to use it to format archival finding aids for the online environment. Today many archives have all of their finding aids encoded in the EAD format and available on their websites. Many new tools are available to aid in making the actual content (not merely the finding aids) of digital collections available online, such as CONTENTdm⁴, DSPACE⁵, FedoraCommons⁶, and Duraspace⁷. With the increase of standards and tools to facilitate to the digital presence of archives, and the subsequent proliferation of archival material available online, it is increasingly important to understand information-seeking behaviors and needs of archives users.

¹ Christopher J. Prom, “User Interactions with Electronic Finding Aids in a Controlled Setting,” *American Archivist* 67, no. 2 (Spring 2004): 235.

² <http://www.archivists.org/catalog/stds99/chapter3.html>, 1985- mid 1990’s.

³ <http://www.archivists.org/saagroups/ead/aboutead.html>

⁴ <http://www.contentdm.org/>

⁵ <http://www.dspace.org/>

⁶ <http://fedora-commons.org/>

⁷ <http://www.duraspace.org/>

Attention to understanding the user in the electronic environment is evidenced in studies such as the POLARIS Project⁸, the earliest investigation of user interaction with an online finding aid. This has been followed by several articles⁹ on ‘Archives 2.0’, which have sought to increase user participation in archives description through commenting, tagging, and the use of other Web 2.0 tools. The Polar Bear Expedition Project¹⁰ has been the most notable of this barely-launched trend, but the social features were turned off in late 2010 due to technical problems.

Although few archives have implemented Web 2.0 features to enhance access, understanding information-seeking behavior of users remains a critical topic in archival literature. Research, such as Duff and Johnson’s¹¹, which defined four information-seeking activities, and Rieh and Hong¹², which investigated search strategies and queries, have laid the groundwork for subsequent user studies, many

⁸ Burt Altman and John R. Nemmers, “The Usability of On-line Archival Resources: The Polaris Project Finding Aid,” *American Archivist* 64 (Winter 2001): 121–31.

⁹ Kate Theimer, “Archives 2.0?,” *ArchivesNext*, 21 October 2008, <http://www.archivesnext.com/?p=203#more-203>. Accessed October 1, 2011. Max J. Evans, “Archives of the People, by the People, for the People,” *American Archivist* 70 (Fall/Winter 2007): 387–400. Isto Huvila, “Participatory Archive: Towards Centralised Curation, Radical User Orientation, and Broader Contextualization of Records Management,” *Archival Science* 8, no. 15 (2008): 15–35. Joy Palmer, “Archives2.0: If We Build It, Will They Come?” *Ariadne* 60 (July 2009), <http://www.ariadne.ac.uk/issue60/>, accessed 26 October 2011.

¹⁰ Magia Ghetu Krause and Elizabeth Yakel, “Interaction in Virtual Archives: The Polar Bear Expedition Digital Collections Next Generation Finding Aid,” *American Archivist* 70 (Fall/Winter 2007): 282–314.

¹¹ Wendy M. Duff and Catherine A. Johnson, “Accidentally Found on Purpose: Information-Seeking Behavior of Historians in Archives,” *Library Quarterly* 72, no. 4 (October 2002): 472–96.

¹² Soo Young Rieh and Hong (Iris) Xie, “Analysis of Multiple Query Reformulations on the Web: The Interactive Information Retrieval Context,” *Information Processing and Management* 42, no. 3 (2006): 751–68.

focused largely on navigation of electronic finding aids. These studies have investigated and informed navigational issues surrounding use of digital archival repositories, including the implications of archival and internet expertise on a user's ability to access information¹³, the significance of using "Ctrl F and Command F" ¹⁴ to search finding aids, and the impact of barriers, such as conceptual and language knowledge, on navigation¹⁵ and access.

Ultimately, these studies have raised questions about the future for digital access of archival materials. What do users of diverse backgrounds and experience need in order to optimally access digital materials? Are electronic finding aids sufficient for providing access to large amounts of digitized materials? How can the interface design of electronic finding aids be improved to aid in successful user navigation? Would users benefit from faceted, thematic, and/or interactive browsing? Would users benefit from a search engine with more options such as filters and Boolean search functions? Would these additional tools overwhelm users? Which type of user would these tools support the most? Largely, these questions focus on how interface design of digital archival collections can be improved in order to optimize user experience and search ability. This study aims to build on the previous research on

¹³ Elizabeth Yakel and Deborah Torres, "AI: Archival Intelligence and User Expertise," *American Archivist* 66 (Spring/Summer, 2003): 51-78.

¹⁴ Christopher J. Prom, "User Interactions with Electronic Finding Aids in a Controlled Setting."

¹⁵ Elizabeth Yakel, "Encoded Archival Description: Are Finding Aids Boundary Spanners or Barriers for Users?" *Journal of Archival Organization* 2, no. 1/2 (January 2004): 73.

the usability of electronic finding aids to inform more innovative, user-friendly interface design of digital archival collections.

LITERATURE REVIEW

The increase in the number of digitized collections and remote access to archival systems has generated a need for understanding how different users access information in an electronic environment. This literature review begins with an overview of Yakel and Torres's¹⁶ article on archival intelligence, a fundamental study for understanding user navigation and expertise in the subsequent literature presented in this review. This discussion is followed by a review of several user-behavior studies that investigate how users of different levels of expertise navigate electronic finding aids.

In 2003, Yakel and Torres¹⁷ provided a model describing three factors signifying archival intelligence: knowledge of archival theory, practices, and procedures; strategies for reducing uncertainty and ambiguity; and intellect skills. Specifically, findings suggest that archival language abilities, a conceptual understanding of archives, and search skills are significant factors in denoting archival expertise.

While this article focuses on analog finding aids, it planted a seed for discussions and a foundation for other studies attempting to understand barriers that hinder users from successfully navigating digital finding aids, the crux of the present study. In a later

¹⁶ Yakel and Torres.

¹⁷ Yakel and Torres.

article by Yakel¹⁸, she explains, “In a physical repository, a reference archivist can visually spot someone mulling over finding aids in confusion. In the online environment, users having problems with finding aids can be masked.” Although there are barriers and skills unique to working in the digital environment, most of Yakel and Torres’ findings have remained influential in studies of access to online finding aids and collections.

Prom’s¹⁹ 2004 study was one of the first to investigate user-interaction with descriptive metadata in electronic finding aids. This research sought to better understand the implications of archival intelligence by investigating how novice and expert (internet and archive) users interact with various formats of electronic finding aids, including: non-searchable PDF, EAD, HTML, and searchable-EAD. Substantiated in several investigations since, Prom found that most advanced participants opted to use the browser’s find function ‘Ctrl F and Command F’, indicating the need for improved search functions and displays. Findings corroborated Yakel and Torres’ archival intelligence model, indicating that archival jargon and hierarchical structure of finding aids hindered novice users’ success, recommending that structured browsing would improve search efficiency.

Prom’s attention to evolving formats of access and improved interface design is indicative of the continued importance of understanding various users in the

¹⁸ Elizabeth Yakel, “Encoded Archival Description: Are Finding Aids Boundary Spanners or Barriers for Users.”

¹⁹ Christopher J. Prom, “User Interactions with Electronic Finding Aids in a Controlled Setting.”

constantly changing information landscape. These are critical concepts to the present study, as it investigates use of a traditional electronic finding aid in addition to alternative modes of access and user services.

Since Prom's article, finding aids have largely remained in the four formats investigated in his research, and while there is little evidence of wide implementation of more complex access systems, a few studies have investigated the presence of finding aids

supplemented with additional user-services, such as Web 2.0 features. Chapman²⁰ augments her user-behavior study, which examines how novice and expert users search an electronic finding aid, with an analysis of user opinions about the integration of Web 2.0 features. She found that enthusiasm for participatory features, such as commenting, is low, as evidenced in the rare implementation among archives. Instead, users expressed interest in features that aid in personalizing navigation and organization of digital materials. Although the conclusions from Chapman's survey-based study are limited, a usability study on the impact of such features on navigational success would be insightful for informing improved interface design.

Chapman also presents specific data that facilitates a deeper understanding of concepts presented by Yakei & Torres and Prom. Chapman corroborates Prom's original finding that users prefer the use of "Ctrl F and Command F", and that this

²⁰ Joyce Chapman. "Observing Users: An Empirical Analysis of User Interaction with Online Finding Aids," *Journal of Archival Organization* 8, no. 1 (January 1, 2010):4-30.

typically results in more successful searches; however, only 58% of participants were aware of this capability, indicating the need for improved search functionality.

Chapman observes that novices “chose to ignore the sections of the finding aid labeled with unfamiliar terminology” (p. 18), especially prominent in navigating unfamiliar series titles. Chapman’s recommendation that series titles should convey “aboutness” (p. 10) of material merges language ability and conceptual archival proficiency previously discussed as barriers to successful navigation in this literature review. This is one of the first studies to imply that restructuring the system interface to improve search functionality and contextualizing the presentation of the finding aid may improve users’ ability to access information.

Daniel and Yakel’s²¹ 2010 usability study also examines the use of enhanced features in an electronic finding aid, focusing on search behaviors and the impact of improved search functionality. Similar to previous findings presented in this review, Daniel and Yakel found that ‘Ctrl F’ and ‘Command F’ was particularly beneficial, and heavily employed by advanced users when navigating large blocks of texts; this supports the need for improved search functionality concluded by Chapman. A unique component of this research is the examination of expert and novice use of Boolean search techniques and query reformulation. The authors found that the presence of Boolean terms in a drop-down format on the interface resulted in a much higher use of the search strategy, resulting in improved success rates. This is a significant finding because in the interface without the drop-down Boolean operators, only a few, mostly

²¹ M. Daniels and E. Yakel, “Seek and You May Find: Successful Search in Online Finding Aid Systems,” *American Archivist* 73, no. 2 (Winter 2010):535-568.

advanced users, utilized Boolean search technique; this indicates that interface design can decrease the success gap between novice and expert users.

Daniel and Yakel delve deeper into the topic of contextualization of material, previously presented by Chapman, noting that thematic representations of material and the recommendation of related search terms would improve user navigation. This research provides further insight into how user-services, notably search-specific tools, could improve current interface design to aid both novice and expert users in effectively accessing archival material.

Electronic finding aids will likely maintain a presence in digital archives far into the future; however, with the increased volume of digitized content, more attention should be given to examining how user-centered tools and interface design could optimize access and improve the user experience. Prom's²² most recent article presents findings from a study seeking to understand how users interact with such tools, building on the recommendations from previous literature for user-interaction with descriptive meta data. The investigation utilizes a business web analytics tool to collect data on user navigation at the collection level, the series-level descriptions, the PDF finding aid, and use of the email link. Particularly important for continuing discussions on user-centered interface design, the study found that augmenting digital content with description increased use of electronic material by keeping it within a

²² Christopher Prom, "Using Web Analytics to Improve Online Access to Archival Resources," *American Archivist*. 74, no. 1 (Summer 2011) :158-184.

couple of clicks of its metadata. Further, this study has brought to light an innovative technique for evaluating and improving archival access systems to facilitate better access to electronic records.

In evaluating several prominent user-studies focused on novice and expert users' interactions with electronic finding aids, it is clear that interface design can aid in overcoming some barriers novice users face in successfully accessing archival collections. The literature presented in this review provides a foundation for informing decisions about improving interface design. However, with the exception of Prom's most recent study, the current literature focuses largely on user interaction with descriptive information in electronic findings aids, and only recently have archives started to implement the recommendations from these studies. This is an ongoing, evolving environment and there is a need for further user-interaction studies to investigate the implications of improved design interfaces of archival access systems.

PURPOSE

This is a pilot study to inform methodology for a future user-study of The Ernst Herzfeld Papers. The purpose of this study is to prepare for future research aimed at investigating how users of various levels of expertise navigate an online archival collection that provides multiple points of access, including: an EAD finding aid, a thematic browse interface, and a sophisticated search engine. In particular, it would seek to shed light on information-seeking behaviors of archives users when provided additional modes of access to a digital finding aid.

Previous user studies have sought primarily to understand user navigation of electronic finding aids, many of which make recommendations for improving interface design of finding aids of the digital archival repositories. Such recommendations include augmenting description with digital content, contextualizing material through structured browsing, and addressing archival language and knowledge barriers. This study explores the idea that providing additional modes of non-hierarchical access to a collection will increase access and optimize user experience and performance. Since thematic and interactive access points have not been widely implemented across digital archives, a major goal of this pilot study is to design a larger study that will inform and improve interface design of such archival access systems and generate discussion about improving current systems.

An additional goal of this study is to contribute to the interface design of the Ernst Herzfeld Papers, which is a project that is approximately 50% complete; there have been no previous user studies on this collection.

METHODOLOGY

The Ernst Herzfeld Papers²³, a digital collection within the Smithsonian's Freer Gallery of Art was identified as an ideal collection to use in conducting the study because it implements many of the suggested recommendations of previous studies. The interface is designed to encourage browsing and searching through structured organization of catalog records, while striving to maintain a visually appealing and intuitive interface.

²³ <http://sirismm.si.edu/siris/sackler/Herzfeld/HerzfeldTop.htm>

Participants were recruited by emailing professors and administrators in the History departments at UNC, Duke, and NCSU and the Asian Studies Department at UNC and Duke, asking for attached flyers to be administered to doctoral, undergraduate, and graduate students. Archivists were directly solicited at UNC, Duke, and NCSU via email. The attempt to recruit a diverse sample of users was important to the study, as it is assumed that users from various backgrounds would likely access a public digital collection.

The study was administered in-person using common methodology of a user-study, including a demographic questionnaire, observation of task completion, and a final interview. Task completion was recorded using Camtasia²⁴, software that records navigation and audio; the final interview was recorded using Audacity²⁵. Notes on individual navigation, search strategies, dictation of comments and reactions, and overall patterns in search strategies were taken.

Participants were first required to complete the questionnaire, which asked them to self-identify basic demographic information, educational background, and any previous experience using digital and analog archives, as well Internet proficiency. (See Appendix 1)

After completing the questionnaire, participants were given 10 tasks to complete using the highly faceted search engine, the EAD Finding Aid, or the faceted visual browsing of the Ernst Herzfeld Papers digital collection. (See Appendix 2) The faceted visual browsing encompasses five separate thematically structured points of

²⁴ <http://www.techsmith.com/camtasia/>

²⁵ <http://audacity.sourceforge.net/>

entry, presented separately from the finding aid, including: 'Collection/Series', 'Subject Terms', 'Forms and Genres', 'Geographical Locations', and Archeological Sites'. (See Figure 1 below) Five of the tasks were designed to examine the general information-seeking behaviors during use of the collection when participants were given no specified point of entry; three of the tasks asked participants to use only the finding aid; and two of the tasks asked participants to use only Geographical Locations and/or Archeological Sites. This project is one of the first to pilot providing access to archival material through an interactive map, such as the one in Geographical Locations. As an innovative and unique component to digital archives, it is of high interest to this study. Task design allowed for examination of subjects' natural search behaviors within such a collection, as well as a comparative analysis of how users navigated specific features. Participants were divided randomly into two groups; each group was given tasks in a different order to minimize a learning effect in the data.

After task completion, participants were given a final interview. (See Appendix 3) The interview was designed to provide general feedback about using this interface, including structural questions, likes and dislikes, and recommendations for improvements.

Gallery Homepage

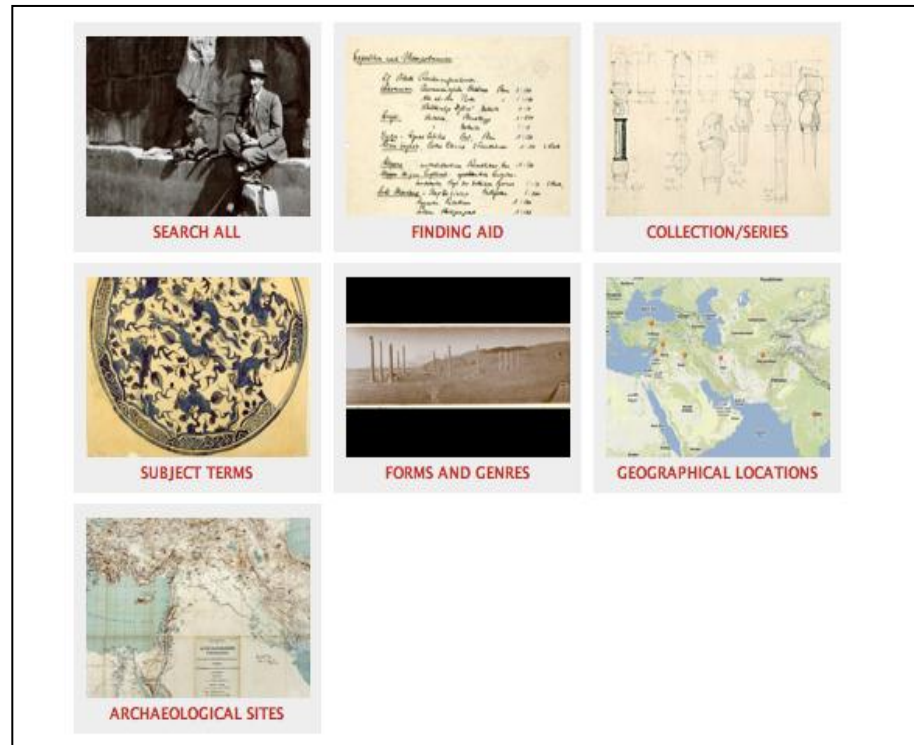


Figure 1

FINDINGS

The participants included three graduate students, three undergraduate students, one professor, and three archivists. The archivists and professors estimated having used archives over 100 times; the graduate students estimated previous archives use between 1-10 times; and none of the undergraduates had used archives. All of the subjects self-identified as using the Internet in both personal and work tasks daily; nine out of ten participants self-rated as a three or a four on a scale of one to five in confidence of searching and browsing the Internet. One participant, an Electrical &

Computer Engineering major, ranked himself as a five on the scale, and is an experienced programmer. Although the sample is not large enough to make generalizations about groups of users, it is composed of users with various levels of Internet proficiency and archival expertise.

Five out of the ten tasks given allowed participants to access the collection without a mandated point of entry. These five tasks provide the foundation for the study because they evidenced the likely choices and navigational decisions users would make naturally. Table 1 below shows the overall usage, rate of success, and average time of successful task completion of these five tasks.

General Tasks

Point of Access	Use * Percentage of questions when access point was primary use	Rate of Success	Average time of task completion (minutes)
SEARCH ALL	34%	82%	3.6
FORMS AND GENRES	26%	92%	2.4
FINDING AID	16%	75%	2.5
COLLECTION/SERIES	9%	50%	3.0
SUBJECT TERMS	5%	100%	2.0
ARCHEOLOGICAL SITES	4%	0%	--
GEOGRAPHIC LOCATIONS	4%	100%	4.5

Table 1

Before discussing the findings, it should be noted that ‘Subject Terms’, ‘Archeological Sites’, and ‘Geographic Locations’ were each used $\leq 5\%$ of the time.

This is important to consider when evaluating the implications of the success rates, as it would require further research to make an accurate comparison with the more highly used features. It should also be considered that although data collection accounted for a learning effect by randomizing tasks, participants did return to access points that they felt most confident using. There is a strong positive correlation between the high use, notable in ‘Search All’, ‘Forms and Genres’, and the Finding Aid, and a high success rate. A further analysis of the order of the questions given to participants’ indicates that subjects returned to points of access that resulted in previous successful searches. Most participants were inclined to primarily use ‘Search All’, which was effective with an 82% success rate. ‘Forms and Genres’ had an even higher rate of success at 92% and a lower average time of task completion by 1.2 minutes, but only 44% of participants used this point of entry.

This leaves the question: why did only 44% of participants use this access point when it was clearly an efficient option? Only one participant in the study asked to take time to do a preliminary overview of the website. During searching for these tasks, the participant noted, “ I don’t really know what ‘Forms and Genres’ means, but it looked straightforward when I was looking at it before, so I think I’ll start there”. Many other participants indicated unfamiliarity with this category as well, as evidenced in the comments below:

- One archivist said that ‘Forms and Genres’ is “not for the general public” but for “area experts and curators”
- An self-identified intermediate archives user said, “ I didn’t click on ‘Forms and Genres’ until one of the final questions, but wish I had known about it earlier- it

would have been very helpful....didn't click on it because I don't know what forms is and when I think of genres I think of literature. They should change the title of category."

- Another participant with experience in web design and programming liked 'Forms and Genres' but didn't 'get the title', suggesting that a screen shot of 'Forms and Genres' home screen should be the icon rather than an image. (See Figure 2 below) The participant explained that the images chosen for the entry point icons "don't indicate the type of information available," and asked "what do the titles even mean?"

Forms and Genre Home Page

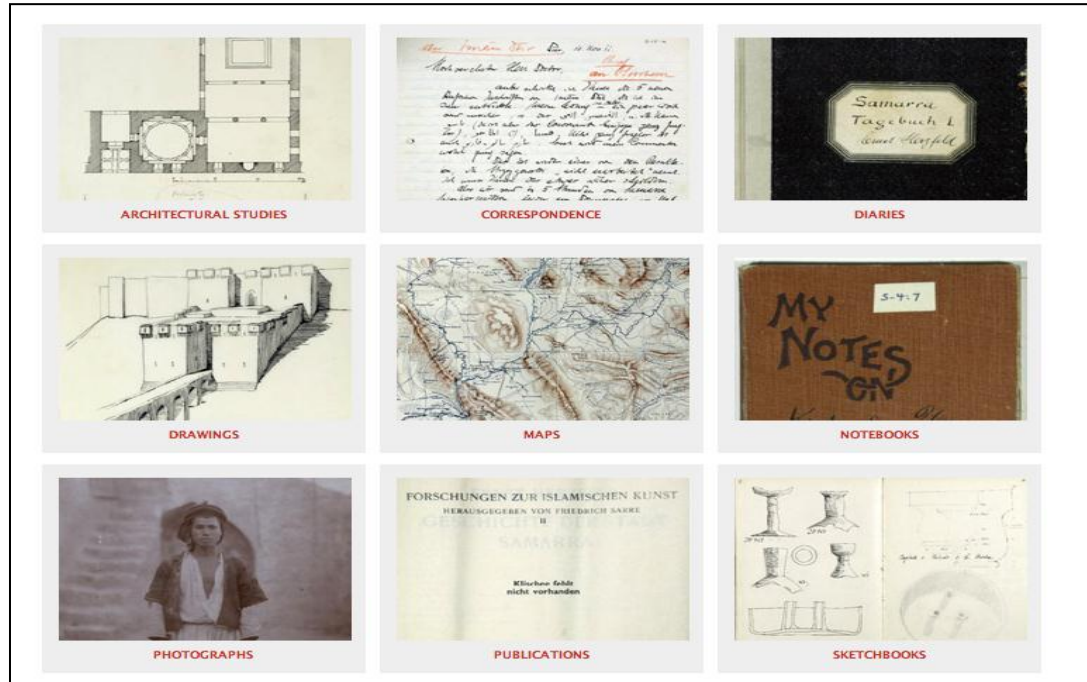


Figure 2

Many participants indicated that the SEARCH ALL function was a natural place to begin, because it is a search approach with which most users are familiar. However, while the search function had many limiter options, the structure of the search was confusing to many. The two major complaints in searching were related to the limiters and search results. Two of the three archivists neutrally pointed out that the limiters were highly faceted, which actually posed problems for the majority of subjects. Many did not understand what “frequency” meant, and one participant was “looking for checkboxes like most searches have”. Further, many were confused about the search results: “Is it giving me results for the entire Smithsonian or just this project”; “is there a way to search within these results”; “what about an advanced search option?” (See Figure 3)

Smithsonian Institution Search Interface

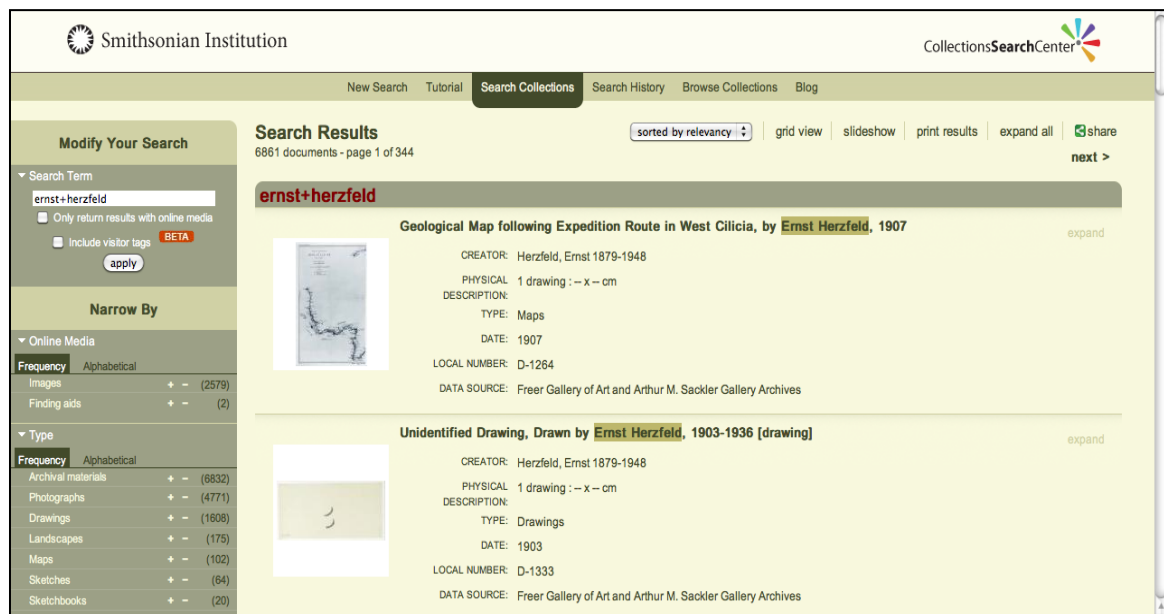


Figure 3

In the final interview, over half of the participants recommended that the overall interface include better descriptive information about each of the entry points and how to better use the ‘Search All’ function. An archivist said, “users need to know what to expect” and right now “this is not designed for use by the general public but archivists and people familiar with the Middle East”. Furthermore, many participants felt that the interface was very busy, and suggest that some of the entry points be combined.

Three of the ten tasks asked participants to only use the finding aid to complete the task. Not surprisingly, a subject’s ability to use the browser’s search function positively correlates with increased search performance. (See Table 2 below) The ability to search the finding aid increased the rate of success significantly, yet little over half of the participants were aware of this function.

‘Ctrl F and Command F’ Use in Finding Aid Tasks

	% Participants	% Questions	Success Rate
Used Browser’s Search Function ‘Ctrl F and Command F’	60%	47%	100%
No use of Browser’s Search Function ‘Ctrl F and Command F’	40%	53%	56%

Table 2

Analysis of this data shows that 60% of participants knew about the search function, but only used it 47% of the time. Two facets emerge from the observation notes and participant comments. Regardless of question order, participants used the search

function for the first of the finding aid questions. However, the finding aid did not paginate out according to each series, and therefore left the participants scrolling through many results. With the subsequent finding aid tasks, the majority of participants began by using the navigation bar on the left, which listed the series. (See Figure 4 below) They scanned, and then performed a search as a last resort. One of the participants became so frustrated scrolling through search results, he searched the site using a Google search strategy, and found the answer within 20 seconds. An archivist said she liked the browser's search function for "precision searching and refining" but that scrolling through this much description was challenging.

Ernst Herzfeld Papers Finding Aid


TABLE OF CONTENTS Descriptive Summary Biography Scope and Content Note Arrangement of Papers Search Terms Detailed Description of the Collection Series 1: Travel Journals, 1905–1928 Series 2: Sketchbooks, 1923–1931, n.d. Series 3: Notebooks 1904–1946, 1957, n.d. Series 4: Photographic Files, 1903–1947 Series 5: Drawings and Maps, [1903–1947] Series VI: Paper Squeezes of Inscriptions Series 7: Records of Samarra Expeditions, 1906–1945	<div data-bbox="980 953 997 974" style="text-align: center;">  </div> <div data-bbox="915 1003 1062 1033" style="text-align: center;"> Ernst Herzfeld </div> <div data-bbox="623 1058 1354 1087" style="text-align: center;"> An Inventory of His Papers at the Freer Gallery of Art and Arthur M. Sackler Gallery Archives </div> <div data-bbox="565 1150 961 1281"> Contact Information Freer Gallery of Art and Arthur M. Sackler Gallery Archives Smithsonian Institution Washington, D.C. 20560 Tel: 202-633-0533 Email: AVRreference@asia.si.edu </div> <hr/> <div data-bbox="529 1318 695 1348"> Descriptive Summary </div> <div data-bbox="574 1369 1451 1591"> <table> <tr> <td>Creator:</td><td>Herzfeld, Ernst, 1879–1948</td></tr> <tr> <td>Title:</td><td>Ernst Herzfeld Papers</td></tr> <tr> <td>Dates:</td><td>[1903–1947]</td></tr> <tr> <td>Quantity:</td><td>150 linear feet (ca. 30,000 items)</td></tr> <tr> <td>Abstract:</td><td>An outstanding scholar in the field of Iranian studies, Ernst Herzfeld (1879–1948) explored all phases of Near Eastern culture from the prehistoric period to Islamic times. This collection documents Herzfeld's excavations at Samarra, Persepolis, Pasargadae, and Aleppo and includes correspondence; field notebooks; drawings; sketchbooks; inventories of objects; "squeeze" copies of architectural details; and photographs.</td></tr> <tr> <td>Identification:</td><td>A.5</td></tr> </table> </div> <hr/> <div data-bbox="529 1621 610 1650"> Biography </div>	Creator:	Herzfeld, Ernst, 1879–1948	Title:	Ernst Herzfeld Papers	Dates:	[1903–1947]	Quantity:	150 linear feet (ca. 30,000 items)	Abstract:	An outstanding scholar in the field of Iranian studies, Ernst Herzfeld (1879–1948) explored all phases of Near Eastern culture from the prehistoric period to Islamic times. This collection documents Herzfeld's excavations at Samarra, Persepolis, Pasargadae, and Aleppo and includes correspondence; field notebooks; drawings; sketchbooks; inventories of objects; "squeeze" copies of architectural details; and photographs.	Identification:	A.5
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Identification:	A.5												

Figure 4

Another finding from this set of tasks shows that users wanted descriptive metadata to be augmented with the digital content.

- One subject, who has used digital archives a handful of times, felt like she was “running in circles” in using this finding aid compared to the other points of access because the “digitized images aren’t linked to the finding aid- I like to scan both the description and digital images... they have been digitized, why not linked?”
- Another subject said when looking for the ring, “It would be much easier to scan through all of this material if the images were included, especially since I know what I’m looking for. At this rate, it will take a long time to scan through all of this text and I think it will be very easy to miss things...”

In two of the ten tasks, participants were asked to only use the ‘Geographical Locations’ or ‘Archeological Sites’ to complete the tasks. (See Figure 5 below) In 59% of the questions, participants went to ‘Archeological Sites’ first and immediately backed out because the participant wasn’t familiar with geographic terminology of the archeological site names. Only 5% of the questions were answered via the ‘Archeological Sites’ access point, and the other 95% were answered using ‘Geographical Locations’. The overall success rate was 89%.

Geographical Locations and Archeological Site Tasks



Figure 5

In comparison with the other access points, it took users slightly longer to complete tasks using these functions with the average time of task completion at about 4.5 minutes, which may be accounted for due to the terminology, structure, and technical problems of the map, which proved to be a barrier for many participants. Below are several comments on this during observation of participants:

- “What does ‘See Next Level’ on map mean?”
- “Map search bubble is unclear, the first map that we see should show all the pins, it’s misleading”
- “In this bubble [the one that pops up when you click on a point of the map], I don’t know what any of these options mean so I’m just going to click on the first one”

- “Should I go back? Did it describe what this stuff means on the page before?”
- Only 1 participant used the zoom function, and none used the bottom ‘hide’ options. When asked about this at the end, most participants said they didn’t see these options.

Despite problems, the participants liked the ‘Geographical Locations’ access feature, making comments that included:

- [Geographical Locations] “is the most useful because everyone knows Google Maps”
- “I’m a visual learner so I like it the best”
- “The interactivity is better than the boring finding aid”
- Two of the archivists noted how the map allows users to drill down into the collection quickly beginning broad and then focusing the search using the catalog records

It is important to consider why the map was not heavily used in the general task search results. (See Table 1) Users often went to ‘Geographical Locations’ initially in most searches, but returned to the gallery homepage after realizing that it was not helpful with tasks unrelated to geography. Even with all of the technological problem of the map, the majority of users tendency’s led them to use the Geographical Locations as an initial entry point, many indicating that it was a way to understand and access the collection without domain knowledge of art history, Middle Eastern geography, or anthropology, evidencing that it may be the most useful tool for novice and expert users alike.

The final interview questions were composed of both direct and open-ended questions. One of the most interesting results of the concluding interview is that nine out of ten participants indicated that ‘Geographical Locations’ was the most beneficial feature of the site, most often cited along with ‘Search All’ as an additional beneficial feature; one person cited ‘Forms and Genres’ as the most beneficial feature.

This is particularly interesting because the use and success rates do not substantially support the overwhelming interest in ‘Geographical Locations’. The tasks and map structure may have a heavy impact on the low numbers of use and success statistics, while users’ confidence in using a familiar feature, the Google Map, may increase a participant’s opinion of the feature.

The final interview also sheds light on users’ opinions and reactions to using the finding aid versus the other modes of access.

- When asked about preference of finding aid versus other points of entry, 60% of participants said other access points, 30% said it depended on the question, and 10% preferred the finding aid. Below are some reasons why participants liked the alternative modes of access:
 - One participant said, “at one point I really wanted to use the ‘Geographical Locations’, but couldn’t remember if it linked to the finding aid, which I wanted to avoid at all costs, so I had to check it out first..”

- The historian noted that the thematic structure of the other entry points provided an alternative to the finding aid that is more transparent, with an archivist reflecting less “ of his or her own way of thinking” in this structure

The majority of participants felt more comfortable using the contextualized and thematic structure of the other entry points, making comments such as “It is great that the search results show the image and text information...and I liked the option of using the Gridview when I just wanted the images.” Some participants, however, did see the usefulness of the finding aid:

- One participant, who had never previously used a finding aid took time to gain an understanding of the finding aid- looking at the series on the side navigation bar, scanning through the description of each series. This participant said the finding aid initially was “intimidating” but was “more direct” than the other search features once he understood the structure, and would be more helpful in looking for very specific items.
 - Four of the ten participants acknowledged that if conducting a very specific search, the finding aid may be an easier point of access.

Many of the experienced archives and internet users felt that the Gallery Home screen offered too many points of access, and should be scaled down, as it was “a bit confusing about which way to go”.

DISCUSSION

Limitations

While the above findings are interesting, there are important limitations that preclude any generalizability of the investigation's findings and make this a pilot study only. The sample size is small at ten participants. While the participants are intentionally diverse, including scholars of varying levels of archives experience and Internet proficiency, the subsets within the sample are not large enough to make assumptions about targeted groups. The study sought to understand how the general public would use such a source, and future research should be conducted to gain a better understanding of how individual subsets of people would use it. Further, the tasks were timed, and therefore may not reflect accurately the organic navigation a participant may take in his or her own research, an important consideration in evaluating the data presented in this study.

Results

The main purpose of this pilot study was to examine user navigation of a system with faceted entry points, additional to the finding aid, in order to inform a future study of interface design practices. However, this work also builds on previous studies to make recommendations for the finding aid interface as well. This study supports Prom's²⁶ finding that users with Internet proficiency and archival experience demonstrated the greatest search efficacy, and archival experience did not necessarily generate quicker results. Further, this study corroborates previous research by both

²⁶ Christopher J. Prom, "User Interactions with Electronic Finding Aids in a Controlled Setting."

Prom and Chapman²⁷ that the ability to use the browsers search function ‘Ctrl F and Command F’ increases the ability to perform a successful and quick search. As suggested in the above studies, it would be helpful to make this function available to all by including a search bar within the finding aid.

The findings of this study further suggest that it is recommended to have both a printable PDF option of the full finding aid, in addition to a paginated option to make each series searchable separately using ‘Ctrl F and Command F’. It is evident that using the browser’s search function is helpful in increasing search efficacy, however, subjects were not willing to scroll through hundreds of entries to find the information, and instead often preferred to use the side bar navigation, which was more challenging and time consuming. Further, it is recommended that augmenting the digital content with the descriptive metadata would be useful in searching and browsing the materials.

Many previous studies, most notably Yaker’s²⁸ discussion of archival intelligence and Prom and Chapman’s user studies, indicate that archival jargon and conceptual knowledge of archives are often barriers in successful use of archives. Chapman found that users would completely ignore sections of the finding aid with unfamiliar terminology, which is supported in participant’s use of visual access points within the collection in this study. Users were unfamiliar with the ‘Forms and Genres’ category title, although it provided the most direct route to a successful search for those who

²⁷ Chapman.

²⁸ Yaker and Torres.

did use it. Therefore, it is recommended that terminology be user-friendly in the faceted browsing setting, as well as the finding aid.

From recommends that structured browsing would aid in breaking barriers of conceptual knowledge, while Chapman suggests that improved search functions would also benefit users without these skills. This study strongly supports faceted, highly visual, browsing, as evidenced in successful use of 'Forms and Genres' and participant enthusiasm for 'Geographical Locations'. Additionally, the study strongly supports the use of a faceted search engine; although participants were often confused about search techniques to use and the meaning of limiters, 'Search All' was the most heavily used, and rated among the most successful; therefore, it is highly recommended for other digital repositories.

Interface Design Recommendations

Subjects largely felt that the interface was too busy, and that some of the access points should be combined. The data collected on use and success rates, analyzed in conjunction with feedback from the final interview would suggest that 'Geographical Locations', 'Search All', the Finding Aid, 'Archeological Sites', and 'Forms and Genres' would be sufficient in providing structured browsing without confusing website visitors.

On a similar note, when implementing faceted browsing in a digital repository interface, even when represented visually and/or interactively, entry points should be clearly described on the homepage. Many of the subjects in this study, even experienced archives users, were unsure of the nature of each entry point. Ideally,

these terms would not be archival in nature, to increase accessibility to the novice user.

Impact & Future Research

In addition to testing several of the features recommended in previous research, this investigation aimed to begin a conversation about interface design that enables faceted browsing and a complex search engine. Primarily, it is a pilot investigation for future similar research. This study also seeks to inform ongoing changes of the Ernst Herzfeld Papers interface.

A final significant finding of the study is the overwhelming interest and support for ‘Geographical Locations’, which could be expanded into a future study. While nearly all the subjects had previously used a similar interactive map, the terminology and results were confusing to most participants, and therefore it would be beneficial to conduct a user-study on the interface design and technical components of such a map.

As mentioned previously, this is a pilot study for conducting future research with a large sample size, allowing for better understanding how specific users of different levels of archival expertise would navigate and use such a collection.

CONCLUSION

This study looked at how users navigated a digital repository with a faceted, thematic and visual interface of multiple access points, in addition to the hierarchical finding aid and a complex search engine. The study found that the need for a finding aid continues to be strong, especially for users with specific needs, but that users of all

experiences and background benefited from the option to access the collection through thematically and visually structured browsing. The study also found that there is high enthusiasm for an interactive map as a point of entry for archival materials, but that further user-studies are needed to optimize this experience.

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APPENDIX 1

Questionnaire

Demographic Information

1.1 Institution: ____ UNC ____ Duke ____ NC State

1.2 Which best describes you:

____ Student ____ Professor/Research ____ University Archivist

1.2.1 If a student, what degree are you currently pursuing?

____ Undergraduate ____ Graduate ____ Doctoral ____ Other
(Please Specify)

1.2.2 Major/Concentration

1.2.3 When do you expect to earn this degree? Semester _____ Year _____

1.3 Gender ____ Male ____ Female

1.4 Age _____ years

Archives Use:

2.1 ____ Estimated number of times you've used archives (digital or analog) for research. (If never, put 0)

2.2 In the past year, how often did you use analog archives?

- ☐ Daily
- ☐ Weekly
- ☐ A few times a month
- ☐ A few times a year
- ☐ Never

2.3 In the past year, how often did you use digital archives?

- ☐ Daily
- ☐ Weekly
- ☐ A few times a month
- ☐ A few times a year
- ☐ Never

2.4 ____ Estimated number of analog archives ever used

2.5 ____ Estimated number of digital archives ever used

2.6 ____ Estimated number of separate research projects done using archives

2.7 If relevant describe any previous experiences using a finding, including details about repository environment (digital or physical location):

Internet Proficiency:

3.1 How often do you use the internet?

- ☐ Daily
- ☐ Weekly
- ☐ A few times a month
- ☐ A few times a year
- ☐ Never

3.2 Describe your primary uses of the internet: (*ex: email, browsing, Excel, MS Word, programming, etc.*)

3.3 ____ Rate your confidence in searching and browsing for electronic information
(1 being the least confident, 5 the highest)

1 2 3 4 5

APPENDIX 2

Tasks

During these 5 tasks, subjects will not be given any restraints as to how they can search or browse the collection. These tasks are:

- 1- Find an image which represents the headgear worn by Khusro II.
- 2- Find the diary describing Herzfeld's excursion from Samarra to Asadabad.
- 3- Find a drawing of Afghanistan.
- 4- Find a photograph print of a body of water at Samarra.
- 5- Find a drawing a rock relief depicting a religious ceremony.

These three tasks will focus on navigation of the finding aid. Subjects will only be allowed to use the online finding aid to answer the following three tasks:

- 1- What is the record number for the Samarra fundjournal? What series is it in?
- 2- Find an ink copy of Damascus, Isfahan, and Brussa. What is the record number?
- 3- Find an Arabic inscription of the Tomb of Cyrus. What is the record number?

In these two questions, subjects will be asked to use the Geographical locations and Archeological site to complete the tasks.

- 1- Find the name of one of Herzfeld's archeological sites in Iran.
- 2- Find the local number for an object that was excavated in northern Iraq.

APPENDIX 3

Final Interview

Do you prefer using the online finding aid or the alternative modes of searching and browsing using the more advanced system interface?

Describe what you liked and disliked about the Smithsonian's Ernst Herzfeld Papers interface?

What did you like best about the system?

What did you like least?

What did you find most challenging in accessing the material?

Did you encounter any unfamiliar language?

Which functions of the systems were most beneficial?

What are some recommendations for improving this system?

Did you like the option to access materials based on a thematic structure?

How did you feel about the hierarchical structure of the finding aid vs. the thematic structure of the system interface?