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OPAC

# Utility of a faceted catalog for scholarly research

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## Abstract

**Purpose** – The purpose of this paper is to determine whether a faceted OPAC interface offers improvements to information discovery in scholarly research.

**Design/methodology/approach** – The 5.2 million records of an entire library catalog were loaded into a faceted navigation interface and an attractive search term suggestion tool. Humanities PhD students at the dissertation level and familiar with this collection were observed while using this interface to continue their research into the literature on their dissertation topic.

**Findings** – From a group of 12 subjects, nine reported finding materials that they had not found in their previous use of the traditional catalog interface.

**Research limitations/implications** – No attempt is made to isolate the effects of relevance ranking on discovery from those of faceted navigation or the search term suggestions. The differences between the circumstances of scholars who did and did not find previously undiscovered materials are not examined.

**Practical implications** – Faceted interface and search term suggestion in a library catalog may enable those scholars who are highly dependent on library materials to find materials that would remain hidden in a traditional library catalog.

**Originality/value** – This article considers whether faceted navigation increases the range of relevant materials that scholars discover, and is of interest to libraries which are considering adding faceted navigation and other features to their catalog interface.

**Keywords** Information retrieval, Online catalogues, United States of America

**Paper type** Research paper

## Introduction

Allowing better discovery of Library materials has been a strategic goal of the University of Chicago Library. Results of the LibQUAL + survey in Spring 2004, coupled with a wealth of anecdotal evidence, has led the library to believe that our existing discovery tools are effectively hiding significant portions of our collections.

The Library has been engaged in a space-planning project to relieve crowded bookstacks, and will build a high density storage facility. This raises particular concerns of diminished access among faculty and graduate students who value browsing open bookstacks. While journal use is increasingly electronic, non-journal use continues to see increases in both print and electronic formats, so discovery and access to the print collection remains a priority (Abbott, 2006).

The heaviest use of the print collection is from a core of 500-1,000 individuals in the Humanities Division, Social Sciences Division, and Divinity School who are the heaviest users of collection. The library is considered to be a laboratory for these scholars (Abbott, 2006). Moving portions of this collection into a high density facility



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raises concerns about the ability of this core group of scholars to discover these materials, especially given the value they place on serendipitous discovery through browsing open bookstacks.

In January 2006, the North Carolina State University Libraries unveiled their Endeca-based catalog, [www.lib.ncsu.edu/catalog/](http://www.lib.ncsu.edu/catalog/). This project layered Endeca's search engine on top of their traditional Unicorn OPAC, improving the keyword search through better keyword performance, relevance ranking, and faceted navigation (Antelman *et al.*, 2006).

Once faceted navigation was applied to a library collection, it was quickly recognized as a possible way to help our users more reliably discover resources held by the Library. We expected that a faceted navigation interface would do a better job of exposing the controlled vocabularies in our bibliographic records, so there would be less guesswork in discovering, for example, LCSH subject terms. The user types in the keyword terms of their choice, and are shown not only results, but the controlled vocabulary terms associated with those specific results.

There was also thought to be some parallel with the Long Tail (Anderson, 2004) and the use of scholarly resources. "The Long Tail" is the idea in commerce that, rather than focusing on a few best-selling items, each with a broad audience, one can turn more profit by offering a larger number of lower-demand items and matching those items to individuals who are specifically interested in them. Dempsey (2006) has written about applying this idea of matching supply to demand in libraries. Thinking specifically of academic research, while there are classics ("bestsellers") in every scholarly field, each scholar's specific research area represents a narrow audience for research materials. If faceted navigation can better match consumers to the goods that they specifically are interested, perhaps libraries can expect similar results in matching scholars to the research materials that best fit their specific needs.

Thus there was an expectation that faceted navigation could be of great benefit to our researchers, and result in more in-depth use of our collections. But before committing to the time and expense of such a project, we wanted evidence of actual benefits.

### **Related work**

There appears to be little published on the empirical effects of faceted navigation in the OPAC on advanced scholarly research. La Barre (2007) notes that in the case of North American research on faceted systems, most of the recent research has been commercial and proprietary and remains unpublished.

Tang (2005) investigated "the usability of a faceted classification display and how effective it might be in helping query formulation in different search situations" (p. 37). A novel interface was developed to help users formulate queries to PubMed using Medical Subject Headings (MeSH). The approximately 22,000 headings (at the time) in the MeSH thesaurus are organized into 15 top-level categories, some categories are a flat facet while the headings in some facets have a hierarchical tree structure. The interface combined searching and browsing; it allowed queries from user input only, from selected terms only, or a combination of the user input and selected terms. The interface offered both a single line search form and a multiple box form that the user can type directly into for each of the top-level categories. The interface also allowed the user to browse the thesaurus, selecting any top-level category and browsing the linear

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list or tree of headings. The user could select terms in the browse listings to be added to their query. The usual PubMed limits, such as age group, gender and human vs. animal studies, publication date, etc. were also available. Subjects were asked to do background searching, comprehensive searching, or quick fact checking in topic areas that could be familiar or unfamiliar to them. MeSH browsing produced the longest queries, and longer queries are generally considered desirable for information retrieval. Familiarity with the subject influenced whether MeSH browsing was used. Subjects typically input their own terms when searching familiar topics or for single facts, but frequently used MeSH browsing when searching unfamiliar topics (20.5 percent of background searches, 25 percent of comprehensive searches). In comprehensive searching for familiar topics, 27.8 percent of searches combined user input with selected terms. Similarly, the specificity of the question affected the choice of input method. The more specific the question, the less frequently MeSH browsing was used, but browsing and selecting was the most frequent input method for non-specific questions. User satisfaction was highest with MeSH browsing when searching for unfamiliar topics, but was poor for familiar topics. Most users found the classification display easy to use. There were two main complaints. Some users found it difficult to locate appropriate terms by browsing the thesaurus. This is attributed to the size of the MeSH vocabulary and to some semantically ambiguous labels. The other complaint was that some subjects at times could not find a sufficiently specific term in the MeSH vocabulary.

Antelman *et al.* (2006) report on the assessment of the NCSU Endeca catalog. Log analysis shows that users are taking advantage of the new features. There has been a tremendous increase in the use of keyword searching over traditional browsing, though it is impossible to tell what portion of that increase is because keyword searching is now the first option on the page. Progressive refinements through facets account for 45 percent of the keyword searches; 15 percent of the keyword searches represent “true browse”, or faceted navigation of the collection with no initial keyword. Usability testing comparing the Endeca catalog to their traditional catalog showed significant improvements in task completion times, task success rates, and perceived ease of use.

### Study

In July 2006, the University of Chicago Library convened a group to “produce a user study that assesses the utility and usability of guided navigation for scholarly research.” The Faceted Browser Study Group consisted of Tod Olson (chair), and volunteers Greg Fleming, Beth Bidlack, Bill Schwesig and Nancy Spiegel. Colleen Mullarkey served as Recorder for several sessions. To fit the Library’s intended schedule, this study was planned and conducted in the Summer of 2006.

#### *Test environment*

To gain some early insight into how faceted navigation would affect our core users, library staff had, in the Spring, informally showed the NCSU catalog to a PhD student in the Humanities who was in the final stages of dissertation writing. The student initially focused on keyword searches that he found useful in Chicago’s catalog, and had difficulty evaluating the NCSU catalog for his own research because of the differences in the holdings between the two institutions. Clearly we could not expect to

empirically judge the utility of faceted navigation for our core users based on the NCSU catalog, because the materials in the NCSU catalog would not be a good match for our core users' research.

In Spring 2006, Chicago made some very preliminary inquiries of a few vendors. In response to questions of scalability, The Library Corporation (TLC) arranged with Medialab to load 5.2 million of our bibliographic records into AquaBrowser in a very rough demo. We received permission to use this rough demo as our test environment. This environment had three features not present in typical library catalogs: relevance ranking of results, faceted navigation, and a graphical word cloud (see Figure 1). The facets were configured to mimic those available at the time at NCSU.

One facet of particular note was the Library of Congress Classification, labeled "Subject." The NCSU catalog implements this as a way of browsing the collection via the classification scheme, allowing users to drill down three levels into the LCC hierarchy. In the demo available to us, only the top-level distinction (selecting the first letter of the classification) was present.

The most visually obvious feature of the AquaBrowser interface is a graphical word cloud. When a keyword search is performed, a set of statistically relevant terms from the result set are used as suggestions. The original search terms are displayed in the center of a cloud with the suggestions in a random configuration around them. The deployment of the suggestions is animated, they radiate out from the center until coming to rest is a final configuration. Clicking on a term in the word cloud launches a

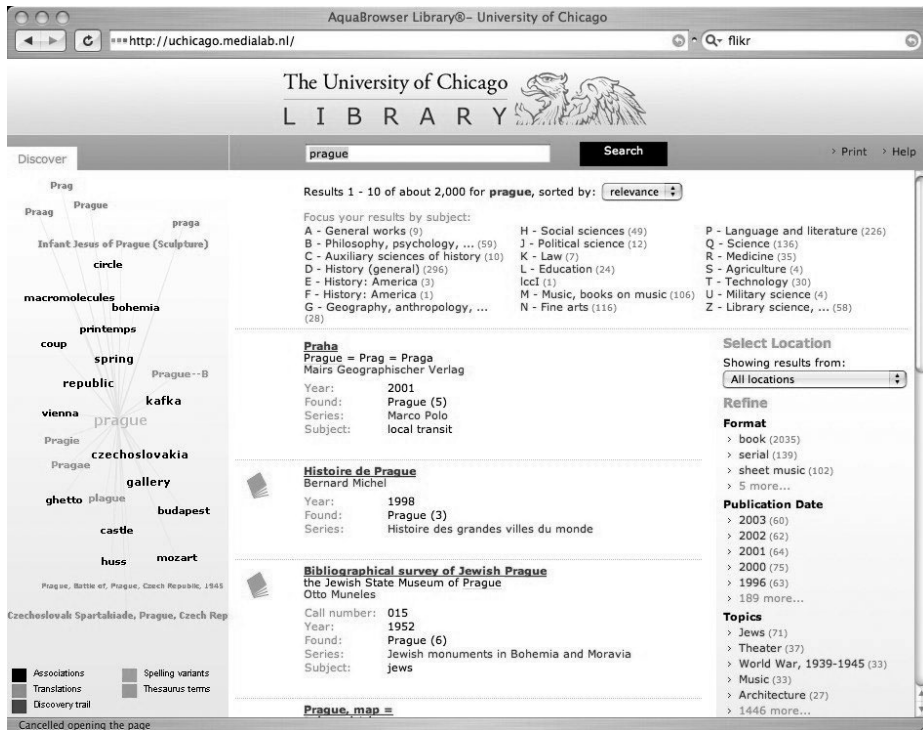


Figure 1. Sample search in demo interface

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new keyword search. The new word cloud display shows both new suggestions and the discovery trail of previously clicked terms. The relevancy algorithm takes into account the terms in the discovery trail.

*Design and execution*

The goal of the study was to investigate the effect that a faceted browse interface would have on the scholarly research of our core users. It was important that the subjects continue their research on a collection they were already familiar with, so we could have confidence that any novel experiences they reported were the result of the new search interface.

Sessions were moderated by one member of the study team while a second member acted as recorder, taking notes.

Subjects were met in a public area by a moderator and a recorder, and escorted to a workstation in staff offices. Subjects were asked if we could observe their interaction with a test search interface, to learn how they would use the search interface in their research. Students were then presented with the interface and asked to perform a research task of their own choosing. The facilitator asked the subjects to comment on various parts of the results screen and intervened when subjects became confused or needed coaxing.

*Participants*

The population of interest was graduate students in the humanities and social sciences who were in the process of becoming familiar with the literature in their area of research, specifically those who were either writing their dissertations or dissertation proposals. We felt this would best emulate those core researchers who were using the catalog for discovery. We did a pilot with three such students who were employed by the library. An e-mail announcement was sent via the Humanities Division soliciting volunteers, indicating that the study would take less than one hour, and that each participant would receive a \$15 gift certificate from the University Bookstore. Due to time constraints, we were not able to reach the Social Sciences Division with a direct mailing, and thus were unable to achieve a balanced representation of the two divisions among our subjects. We received 30 responses and scheduled 12 interviews for the week of August 18, 2006. Two were no-shows. Due to over-eager distribution of the announcement and problems with screening, some participants turned out not to be in the desired population (undergraduates or not yet in the dissertation process). We then conducted three additional sessions with advanced graduate students drawn from lists compiled by members of the study group. After eliminating screening errors, nine subjects were in the desired population. The results from the three pilot subjects were substantially the same as the later nine subjects, so we present the results for all 12 subjects in the aggregate (see Table I for the roster of subjects).

The table shows a summary of each session, including basic information on each subject, and whether the subject discovered materials that they were previously unaware. New discoveries were marked only when the subject commented on making a new find. Observers recorded if a new discovery could be specifically attributed to the use of facets or the word cloud, either category may be underreported. No attempt was made to distinguish the role of relevance in discovering new materials

No.	Division/department	Notes	New discoveries		
			ND	F	WC
1	Hum./Art History	PhD, 5th year	✓		
2	Hum./Linguistics	PhD, writing dissertation.	✓		✓
3	Hum./Art History	PhD, dissertation background research	✓		
4	Hum./English	PhD, writing dissertation	✓	✓	
5	Hum./Music	PhD, proposal stage	✓	✓	✓
6	Hum./S.A. Lang. and Civ.	PhD, proposal stage			
7	Hum./Music	PhD, proposal stage	✓		✓
8	Hum./Music	PhD, 4th year, submitting proposal	✓		✓
9	Hum./English	PhD, 4th year.	✓	✓	✓
	Hum./Linguistics	PhD, writing dissertation. Similar to Soc. Sci.: relies heavily on own field research			
10					
11	Hum./Art History	PhD, writing dissertation			
12	Hum./Comparative Lit.	PhD, writing dissertation	✓	✓	✓

**Notes:** ND = new materials were discovered; F = facets; WC = word cloud

**Table I.**  
Summary of sessions

### Findings

Our findings were in the discovery of new materials and in the usability of the facets and the word cloud.

### Discovery of new material

We asked study participants to do catalog research on the topic of their choice. As expected, our population of PhD students in the dissertation process chose to research their dissertation topics. The primary finding is that, of the 12 subjects, nine identified relevant materials that they had not previously found in the library catalog. All nine were in the Humanities and working on multidisciplinary topics. It is significant that so many subjects, already involved in the dissertation process, found materials relevant to their topics in our collection which they were previously unaware of. These subjects have already been doing extensive catalog research in our collection, and using the demo interface allowed them to discover works that were previously hidden to them. An extreme example: “I’ve been doing research on my topic and have only found 2 books. Now look at how many we have, more like 10.”

Both facets and the word cloud were used to find new materials, with relevance acting silently at all times. Because of the way subjects would move freely between the word cloud and facets, and with relevance ranking always in operation, it is difficult to attribute any discovery of new materials to a specific technology (relevance, facets, or word cloud). We recorded when we were confident that a specific discovery could be attributed primarily to one factor or another, and some subject had more than one incident of new discoveries. At least four subjects found new materials through faceted browsing, and at least six through the word cloud. We made no attempt to measure the role played by relevance. See Table I for details.

### Facets

Overall, subjects understood that facets are a refinement tool, and the comments were overwhelmingly positive. Subjects quickly grasped that clicking on a facet would

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refine the current result set, and clicking another facet would further refine the set. Typical comments included “this helps get to the good stuff faster,” and that the facets are “definitely helpful [because] it’s hard to find things which are related in [the current OPAC].” Several subjects found the facets to be useful for narrowing a result set, including a linguist who commented “this is pretty cool for building a bibliography.”

Subjects had a clear idea of which categories of facets would and would not be useful to them. This varied by test subject: chronology might be useful to one, but useless to another; several cited the format facet, particularly “videos,” “music,” or “microfilm,” as time-savers. A few subjects suggested improvements to the refinement options offered by the interface, such as the ability to limit to multiple languages at one time (e.g. books in Chinese or German), or to specify a date range rather than a single date, a choice many felt was too specific to be useful.

Some subjects took longer to adapt to the facets, or were otherwise ambivalent, saying that it might be more useful for people with less library knowledge or for undergraduates. Others complained that they expected the facets to be sorted “in order” or that the facets with the most frequent hits are not the ones they wanted. There was also some confusion about why certain facet terms would appear in different places, such as “music” as a format and “Music” under “Topics”. Similarly, there was some confusion expressed about the relationship between “subjects” (LC Classification) and “Topics” (LCSH).

Only two subjects felt the test environment was not an improvement over the current catalog. These subjects tended to work from bibliographies and footnotes, to rely on the subject browse index, or had already settled on specific search terms; one advanced graduate student stated explicitly that she almost never does keyword searching.

The demo implementation was insufficient for evaluating the use of LC Classification as a facet. Because the LC classification facet, labeled “Subject,” was implemented only at the top level in this demo, the test subjects lacked the ability to drill down further through the LC classification hierarchy, as in the NCSU catalog.

### Word cloud

The word cloud generated the most attention. This is not a surprise, as it is both visually active and is in the left-hand column of the page, a “hot” area according to eye-tracking studies (Nielsen, 2006). Some subjects understood that the word cloud could be used to discover new terms to use in searching, and found it useful:

[A] brain storm type of thing . . . I like how you can get to remotely related things. It’s easy to get narrow minded and forget what else is out there.

Oh, this is interesting. It has a lot of things I wouldn’t have thought of myself. . . . like Google – some books are totally unrelated. . . . not giving me what I would look for myself.

The [word cloud] did a pretty good job of narrowing my topic, seven pages down to four pages.

It is clear what this is doing – it can take you more narrow, or can take you outside of your original search. Seems intuitive.

This doesn’t exactly get me to what I want, but it could be good as part of historiography.

Still others found it yielded too many false hits, or was too distracting, to help with their work:

When you have to do more work [that is, come up with your own synonyms or related terms,] you learn to think more creatively.

[The word cloud has] false associations. It's frustrating because I don't know how to use it. I'm unsure why terms appear.

I don't know what to do with it. I would probably never use this thing.

This is visually cool, but really confusing. Somebody else is free associating for me, [these] are not necessarily related to my work.

Several (six) subjects used the word cloud to identify new materials, but few felt they understood how it worked. Despite finding it confusing, several subjects found the word cloud compelling enough to want to continue to experiment with it. Our study indicates that the suggestion of related terms to users can help them find new materials, and that if not all terms in the word cloud were relevant, a visually interesting display may be enough reward for the user to continue to interact with the word cloud.

## Discussion

The motivation for this study was to inform a business decision: before engaging in a costly project, we wanted some evidence of whether a faceted catalog interface would provide significant benefits to our core of advanced researchers in the Humanities and Social Sciences. The Library expected this would be the case, but this study provided evidence allowing the Library to proceed with confidence and respond to critics who would dismiss a faceted interface as having no value for serious research.

Because advanced researchers in this study made new discoveries with this interface and generally considered it to be an improvement over the traditional catalog, Chicago is proceeding with its own project to put a faceted interface in front of the catalog. At article submission time, we were concluding an RFP process that considered several vendors. We will be working through Fall 2007 to implement a faceted catalog interface.

As part of this project, we plan to pull together records from different discovery tools into the faceted interface, focusing first on bringing together the traditional catalog records with some of our digital collections. The idea, which has appeared frequently in recent discussions of the future of the library catalog, is that there are currently too many places that researcher must look for different kinds of materials, and that a more consolidated catalog will provide a better service to our users (Calhoun, 2006; Dempsey, 2006).

This study used a small number of subjects. We believe that our results are an empirical indicator that a faceted OPAC interface offers some benefits to advanced researchers over traditional OPACS. The results from our small sample do not support predicting how many advanced researchers in a population would benefit. Such quantitative conclusions could be made only after a larger, more rigorous study.

One perceived advantage of a faceted system is that the end-user can perform a very general search, and quickly narrow to precise results through simple navigation. It is well-documented that domain experts tend to avoid topical searches in their area, but

rather use more specific strategies based on objective information, such as looking for known authors or titles, consulting specific journals, or chasing citations. These are strategies which yield highly precise results which the researchers then evaluate, looking for the most promising candidates (Markey, 2007). One might expect that our subjects, PhD-level graduate students who are necessarily becoming domain experts, would tend to avoid the more general searches where faceting is most useful. Even so, several subjects reported new discoveries while using the facets. More broadly, our subjects were generally willing to experiment in this new interface with less precise searches and narrow by facets, or to try suggestions offered by the word cloud.

It is interesting to consider why our subjects seemed more willing to perform less precise searches than previous research would suggest. It may be that the test environment was sufficiently artificial that they did not perform their catalog research as usual. Possibly the novelty of exploring a new interface was a factor. More speculatively, we are now seeing a generation of scholars whose search behaviors were first formulated on the web. It will be interesting to see whether future research on domain experts reveals a generational change in search strategies, and whether any change can be attributed to the changes in search environments. Do web-based searching and faceted environments make less precise strategies acceptable to domain experts, or otherwise change their expectations of search engines?

One unanswered question is under what conditions faceted interfaces or search term suggestions are likely to expose materials that would remain hidden without such interface features. One prior result is that when performing research on an unfamiliar topic or comprehensive research in a large database that employs a large thesaurus, a faceted interface will often be chosen and provide greater user satisfaction than the familiar search interface that relies solely on terms typed by the user (Tang, 2005).

Markey (2007) points out several indicators that end-users could benefit from a direct intervention by the search systems. One well-documented indicator is the choice of initial search terms. End-users tend to use the terms that occur to them rather than the controlled vocabulary, resulting in poor precision. When the results are too unwieldy, more non-controlled terms are added in an attempt to narrow the results, or users “flip-flop” between broad concepts and narrow terms. Markey suggests that systems should “covertly teach people about online searching as they use the system to conduct their business.” In a similar vein, Bates (1988) has called for user-oriented thesauri to be available within search interfaces. Such a thesaurus would contain those heading actually used by the system, even uncontrolled terms that are used, and expose the syndetic relationships between the terms. The thesaurus would assist end-users in formulating queries.

It seems that a faceted interface may be a partial answer to the sorts of system intervention suggested by both Markey and Bates. One appeal of faceted systems is that the end-user is presented the ability to slice an over-large result set down to size by using the controlled vocabulary terms present in the result set. The system allows end-users to perform postcoordinate Boolean operations via a navigational metaphor, and offers only those terms which will continue to have results. Thus the user is exposed to the controlled vocabulary at the time of need, and any application of the controlled vocabulary is guaranteed to return results.

One unexpected result of this study was that the word cloud was of use to some subjects. This feature had been dismissed by some as being of no value to serious

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researchers; the fact that as many subjects used the word cloud to make new discoveries as used the facets has caused this view to be reconsidered.

The word cloud is a term suggestion device, to help the user with query reformulation. It is well-understood that end-users often begin searching with terms that do not necessarily perform well, and it has been suggested that systems should intervene (Markey, 2007). The word cloud proposes new terms to the end-user based on their query terms and word co-occurrences in the database, and leaves it to the user to evaluate the terms and decide which, if any, to use. Speaking of his own research comparing a term suggestion device, which employed users' relevance feedback, to automatic query reformulation, Belkin concludes that:

It seems that user control over system recommendation for query reformulation is important to users with respect to their main task – a good query reformulation. But control (and, therefore, better understanding) of what terms are actually suggested – a subsidiary task – is not very important. Rather, having to engage in the subsidiary task distracts them from what they actually need to do. These conclusions must be understood with several caveats, however. First, it does seem to be necessary that users have some understanding of how the suggested terms are determined in order to be comfortable and effective in using them. Also, the terms suggested need to be perceived as related to the context of the search. Strange or unexpected terms made the subjects uncomfortable, and distracted them from query reformulation, and from the search task. These conditions mean that in order to accept and use the system recommendations effectively, the users need to have some trust in the system with respect to the suggested terms. They also need to exert control over the system with respect to the terms they thought would be useful. Trust with respect to the task not perceived as salient allowed the users to accept the recommendation without question. But with respect to the task that is clearly salient, the users were not willing to give up their autonomy to the system. These results have clear implications for how recommender systems should operate in general (Belkin, 2000).

In the present study, user response to the word cloud echoes Belkin's conclusions. Users appreciated suggestions that made sense to them, but were made uncomfortable when they did not understand why certain terms appeared. With respect to Belkin's observations about end-user trust and control of a recommender system, the word cloud certainly leaves the user in total control of choosing which terms would be useful. The problem for some users seems to be trusting the system when it suggests terms that they do not understand. This may be improved through system tuning.

One consideration for libraries considering faceted interfaces will be how to build facets on existing controlled vocabularies. For North American libraries, Library of Congress Subjects Headings (LCSH) is the largest controlled vocabulary. LSCH was not designed for use with faceted systems, so normalizing headings and designing facets based on MARC-encoded LCSH data is an issue. There are at least two schemes for converting LSCH into a faceted controlled vocabulary (Anderson and Hofmann, 2006; Dean, 2004; O'Neill and Chan, 2003). One issue raised by Anderson and Hoffman is that there are precoordinate LCSH subject headings, such as "Homosexuality and literature". "Homosexuality" and "Literature" are headings in their own right, but a work indexed under the precoordinate heading would not appear in a result set refined according to either more general heading. Thus the precoordinate headings impair the postcoordinate strength of the faceted interface. Anderson and Hoffman recommend splitting the precoordinate headings into their constituent parts for use in faceting.

Another consideration will be the presence of different controlled vocabularies in the faceted interface. It is already fairly common to see both LCSH and MeSH headings in the same catalog. MeSH is much more granular in medical topics, LCSH in other topics. Identical terms in different controlled vocabularies may have different semantics. Such mismatches may create retrieval issues in a faceted environment. As more resources are added to a faceted catalog, we can expect to see more controlled vocabularies and uncontrolled terms added to the data pool. How should these be handled?

Records with minimal cataloging pose another, distinct challenge. It is not uncommon for libraries to have some materials with minimal cataloging, even some without subject headings. To the extent that faceted catalogs encourage the end-user to make broad searches and refine by topical and other facets, the faceted system makes our cataloging work harder for the end-user. We should not expect materials with minimal cataloging or no subject headings to benefit from this environment, they may remain as hidden as ever; if we think that refining search results by topic will become commonplace, perhaps more so. Libraries considering faceted systems will want to understand the portions of their collections with minimal cataloging and consider strategies to deal with them. The existing cataloging could be supplemented with subject terms automatically generated from an item's classification. Works for which full text is available, perhaps through mass digitization projects, could possibly have supplemental subject terms assigned by comparison with full text of fully cataloged materials.

### **Conclusion**

The most compelling finding of this study is that many advanced researchers found relevant library materials that they had not found before. Of the 12 subjects at the PhD level who are writing their dissertations or at least in the proposal process, nine identified relevant materials that they had not previously found in the library catalog. The new materials were discovered both using the facets and the suggestions given by the world cloud. Subjects understood that facets are a refinement tool, and the comments were generally quite favorable. Only two subjects felt the test environment was not an improvement over the current catalog interface. This suggests that a faceted browse system with an engaging suggestion feature would be of utility to those researchers who rely heavily on library materials and are getting to know an unfamiliar topic area.

Acting on these findings, the University of Chicago Library entered a selection process for faceted navigation software to enhance the traditional OPAC. At this writing, the University of Chicago Library has concluded the selection process, and will be working through Fall 2007 to bring such a discovery tool into production. The scope of the project has increased to include in the new discovery tool materials that are not traditionally in the OPAC.

### **References**

- Abbott, A. (2006), "The university library", available at: [www.lib.uchicago.edu/staffweb/groups/space/abbott-report.html](http://www.lib.uchicago.edu/staffweb/groups/space/abbott-report.html); [www.lib.uchicago.edu/staffweb/groups/space/abbott-appendix.html](http://www.lib.uchicago.edu/staffweb/groups/space/abbott-appendix.html)
- Anderson, C. (2004), "The Long Tail", available at: [www.wired.com/wired/archive/12.10/tail.html](http://www.wired.com/wired/archive/12.10/tail.html)

- 
- Anderson, J.D. and Hofmann, M.A. (2006), "A fully faceted syntax for Library of Congress subject headings", *Cataloging & Classification Quarterly*, Vol. 43 No. 1, pp. 7-38.
- Antelman, K., Lynema, E. and Pace, A.K. (2006), "Towards a twenty-first century library catalog", *Information Technology and Libraries*, Vol. 25 No. 3, pp. 128-39.
- Bates, M.J. (1988), "How to use controlled vocabularies more effectively in online searching", *Online*, Vol. 12 No. 6, pp. 45-6.
- Belkin, N.J. (2000), "Helping people find what they don't know", *Communications of the ACM*, Vol. 43 No. 8, pp. 58-61, (DOI:10.1145/345124.345143).
- Calhoun, K. (2006), "The changing nature of the catalog and its integration with other discovery tools", final report, prepared for the Library of Congress, available at: [www.loc.gov/catdir/calhoun-report-final.pdf](http://www.loc.gov/catdir/calhoun-report-final.pdf)
- Dean, R.J. (2004), "FAST: development of simplified headings for metadata", *Cataloging & Classification Quarterly*, Vol. 39 No. 1, pp. 331-51, (DOI:10.1300/J104v39n01\_03).
- Dempsey, L. (2006), "Libraries and the Long Tail", *D-Lib Magazine*, Vol. 12 No. 4, p. [www.dlib.org/dlib/april06/dempsey/04dempseyhtml101045/a](http://www.dlib.org/dlib/april06/dempsey/04dempseyhtml101045/a), available at: [www.dlib.org/dlib/april06/dempsey/04dempsey.html10.1045/april2006-dempsey](http://www.dlib.org/dlib/april06/dempsey/04dempsey.html10.1045/april2006-dempsey)
- La Barre, K. (2007), "The heritage of early FC in document reference retrieval systems, 1920-1969", *Library History*, Vol. 23 No. 2, pp. 129-49, (DOI:10.1179/174581607x205653).
- Markey, K. (2007), "Twenty-five years of end-user searching, part 2: future research directions", *Journal of the American Society for Information Science & Technology*, Vol. 58 No. 8, pp. 1123-30.
- Nielsen, J. (2006), "F-Shaped pattern for reading web content", available at: [www.useit.com/alertbox/reading\\_pattern.html](http://www.useit.com/alertbox/reading_pattern.html)
- O'Neill, E.T. and Chan, L.M. (2003), "FAST (Faceted Application of Subject Terminology): a simplified vocabulary based on the Library of Congress subject headings", *IFLA Journal*, Vol. 29 No. 4, pp. 336-42.
- Tang, M. (2005), *Browsing and Searching in a Faceted Information Space: A Longitudinal Study of PubMed Users' Interactions with a Novel Display Tool*, Rutgers: The State University of New Jersey, New Brunswick, NJ.

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