

Faceted browse study

3 October 2006

1 Introduction

In July 2006, Tod Olson was asked by Sem Sutter, Jim Mouw and Frances McNamara 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.

2 Methodology

A demo site was used for this study, which had a full copy of The University of Chicago Library's bibliographic database loaded into the Aquabrowser search environment, available at <http://uchicago.medialab.nl/>. This environment has three features not present in typical library catalogs: relevance ranking of results, faceted navigation, and a graphical word cloud. See Figure 1.

The screenshot shows the AquaBrowser Library search interface for The University of Chicago. The search term is "prague". On the left, there is a word cloud with "prague" as the largest word, surrounded by other related terms like "prag", "praga", "Infant Jesus of Prague (Sculpture)", "circle", "macromolecules", "bohemia", "printemps", "coup", "spring", "republic", "kafka", "vienna", "Prague", "czechoslovakia", "Pragae", "gallery", "ghetto", "plague", "budapest", "castle", "huss", "mozart", "Prague, Battle of, Prague, Czech Republic, 1945", and "Czechoslovak Spartakiade, Prague, Czech Rep". A legend at the bottom left identifies colors for Associations (black), Translations (green), Discovery trail (blue), Spelling variants (orange), and Thesaurus terms (pink). The main search results area shows "Results 1 - 10 of about 2,000 for prague, sorted by: relevance". It includes a subject focus section with categories like A - General works (9), B - Philosophy, psychology, ... (59), C - Auxiliary sciences of history (10), D - History (general) (296), E - History: America (3), F - History: America (1), G - Geography, anthropology, ... (28), H - Social sciences (49), J - Political science (12), K - Law (7), L - Education (24), lccI (1), M - Music, books on music (106), and N - Fine arts (116). Below this, there are three result entries: "Praha" by Mairs Geographischer Verlag (Year: 2001, Found: Prague (5), Series: Marco Polo, Subject: local transit), "Histoire de Prague" by Bernard Michel (Year: 1998, Found: Prague (3), Series: Histoire des grandes villes du monde), and "Bibliographical survey of Jewish Prague" by the Jewish State Museum of Prague and Otto Muneles (Call number: 015, Year: 1952, Found: Prague (6), Series: Jewish monuments in Bohemia and Moravia, Subject: jews). On the right side, there are filters for "Select Location" (All locations), "Refine" (Format: book (2035), serial (139), sheet music (102), 5 more...), "Publication Date" (2003 (60), 2002 (62), 2001 (64), 2000 (75), 1996 (63), 189 more...), and "Topics" (Jews (71), Theater (37), World War, 1939-1945 (33), Music (33), Architecture (27), 1446 more...).

Figure 1: Sample search in demo interface

Students were met at the Ask A Librarian desk by two group members, a facilitator and a recorder, and escorted to a workstation in the RBIC offices. They were told that we wanted to observe their interaction with a test browser, and how they would use the technology 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. See Appendix I, page 7, for the complete script.

3 Participants

Participants were recruited from advanced graduate students in the humanities and social sciences (See Appendix 2, page 10, for the roster of subjects.) We wanted to interview experienced library users who were familiar with their subject areas, and who could offer insights into the utility of the interface for undergraduate teaching. Arno Bosse sent an email announcement to 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. We had two no-shows, and one of our subjects turned out to be an undergraduate in the Sciences. We then conducted 3 additional sessions with advanced graduate students drawn from lists compiled by members of the study group.

4 Summary of Findings

We asked study participants to focus on three features not present in typical library catalogs: relevance ranking of results, faceted navigation, and a graphical word cloud. Of the 12 subjects at the Ph. D. level who are writing their dissertations or at least in the proposal process, 9 identified relevant materials that they had not previously found in the library catalog. All 9 were in the Humanities and working on multidisciplinary topics.

While all three search features contributed to finding new materials, at least 4 subjects found new materials through faceted browsing, and at least 6 through the word cloud. It is difficult to tell how much of a role relevance played; unlike facets or the word cloud, subjects do not click on "relevance."

The word cloud elicited the most mixed responses. Although several subjects used the word cloud to eventually identify new materials, few felt they understood how it worked. Despite finding it confusing, some subjects found it 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, holding the user's interest in these alternate possibilities may be important.

Overall, subjects understood that facets are a refinement tool, and the comments were overwhelmingly positive. 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 already knew their controlled

vocabulary; one advanced graduate student stated explicitly that she almost never does keyword searching.

5 Findings

Facets

Response to the facets was generally positive. “This is wonderful,” said one subject, reacting to the categories displayed on the results page. “This helps get to the good stuff faster.” Subjects quickly grasped that clicking on a facet would refine the current result set, and clicking another facet would further refine the set. “[This is] definitely helpful,” another subject commented. “It’s hard to find things which are related in HIP.” Several subjects found the facets to be useful for narrowing a result set, including a linguist who observed, “...you can really narrow it down to a group of topics. Oh wow, this is pretty cool for building a bibliography.”

Subjects also had a clear idea of which categories of facets would and would not be useful to them. This varied by test subject and by discipline: 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 also suggested their own refinements to the 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:

It might be more intuitive to people with less technical library knowledge.

[Best for undergraduates] coming in without any background.

I expected [facets] in order but they don't appear to be sorted in a discernible way.

The right column is summing up my most important or most frequent hits. It's not telling me what I'm searching for.

At this point in my research, this is a bewildering amount of information.

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).

LC Classification 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. This facet drew only a few specific comments. One subject suggested that this would be good for interdisciplinary work; another said that it would be good only if one were "stuck," but not if “you know what you want.” After two subjects limited to the Ps and to "Science," they pronounced it too

broad to be useful. The demo implementation was insufficient for evaluating the use of LC Classification as a facet.

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.¹

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.

Relevance ranking

Results in the demo were relevance ranked by default, though other sort orders (year, title, and author) were available through a drop-down menu. There were few comments about the relevance ranking. One subject thought results are more relevant than the regular catalog. A science major found it inconvenient that the results were not sorted by publication date, with the most current titles appearing first. Since relevance ranking works silently, it is impossible from this study to be certain how much it affected the ability to find books. There is no evidence that it creates a major problem, though we suspect it might generally be helpful.

¹ See http://www.useit.com/alertbox/reading_pattern.html.

Use in Teaching

A few subjects offered that this interface would be useful for teaching undergraduates how to search. One suggested that faceted browse in an incentive to use the catalog, a way to "find what they need faster using library resources." Another subject reflected:

This would be helpful for undergraduates. Being an undergrad here is similar to being a graduate student. [The word cloud] would be good for selecting a paper topic. Good for guided searching, could give a student a search path to follow. Could ask students about what search paths are useful, or which are not useful and can be eliminated.

Discovering new material

Using the demo catalog, 9 of 12 advanced PhD students (i.e. writing dissertation or working on thesis proposal) found books relevant to their topics in our collection which they were previously unaware of. All subjects whose research was interdisciplinary found new materials. This is significant because 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.

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). A few quotes:

I've been doing research on my topic and have only found 2 books. Now look at how many we have, more like 10.

Oh wow, yeah, it is turning up things I don't know about.

I could have used that book when I was teaching that class. Why didn't you preview this earlier?

Other comment of interest

When asked if this technology would increase her efficiency, one student responded, "sorta,...could you do a meta search of articles, worldcat, etc.? It's somewhat time-saving, but you have to go separately to find chapters and articles"

Tagging and Reviews

Subjects were asked their views on allowing catalog users to add tags or reviews to entries in the catalog. Most subjects were not experienced using these features in their research, so their responses were entirely hypothetical. Subjects thought that there may be some benefits, but many expressed concern about the potential for abuse of these features, and a need to present the authority or credentials of the user who supplied any tags or reviews.

A typical view was expressed by one subject, who said that such features could be incredibly helpful but immediately added conditions that she felt should be imposed: access must be limited to the UofC community and that department and class

standing/faculty status must be included. She felt that it would be useful when other reviews do not exist but wondered whether people would take the time to contribute. Another subject said:

If [the review is from] is one of the journals I trust, fine; if it is just Amazon-type reviews, I would find it kind of dangerous. Reliable sources from faculty would be good.

The most bluntly opposed comments came from one subject who said:

[It would be] annoying. I hate blogs too. I find it to be kind of dangerous. Students can't differentiate between authoritative versus edited or visceral reactions.

Only two subjects had concrete experience with reviews and tagging. One subject relied on book reviews by colleagues mounted on Chalk while studying for qualifying exams, and would appreciate reading reviews. Another subject has used Flickr² in a teaching context, and said one "could use tags to build lists for classes or students."

6 Conclusion

A 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 Ph. D. level who are writing their dissertations or at least in the proposal process, 9 identified relevant materials that they had not previously found in the library catalog. All 9 were in the Humanities and working on multidisciplinary topics. 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. Given the overwhelmingly positive feedback overall, the group recommends that we continue to pursue faceted navigation.

² <http://www.flickr.com/>

Appendix I. Script

Notes to those doing the interview are in *italics*. The actual “script” is in regular type.

1. Give background on the study.

First, thank you for participating in this study. My name is _____ and this is _____ who will be recording some notes on our conversation. Let me give you a little background on the purpose of this interview.

The Library is studying the potential uses of a new technology in scholarly research. We’ve asked you to help us evaluate this technology by looking at an early version of the software, which may have some rough edges. You may notice a few oddities when searching like seeing an icon for a “movie preview” of a book title. Also, you may get an occasional error message.

During this interview, I’ll ask you a few questions about yourself. Then, I’ll show you a search screen and ask you to perform a simple search. Essentially, we would like to observe and record as much of your research process as possible using this particular technology. We would also like to record any reactions you may have. When you see something on the screen, talk about what you think it is or does. Does anything stand out to you? Please try to think aloud, since this gives us a better understanding of how the technology does or does not serve you. This “thinking aloud” process is very important to us.

Do you have any questions at this point?

2. Gather information on participant.

Before we look at the technology, I’d like to find out what program/department you are in. ... Also, could you tell me what year you are in or the point you’re at in your program (e.g., finished with course work, exams, getting ready to start your dissertation). ... Up to this point in your work, how would you describe your use of the Library? This could include how often you use library resources (both online and in-house), and what resources you use.

3. “Coax” into research process. Open a window with <http://uchicago.medialab.nl> Please note that I tried accessing this page on Tuesday morning and kept getting an error message when I searched for “religion and politics.” I did get results for other searches including “religion politics.”

With Aquabrowser open: As I mentioned, essentially, we would like to observe how you interact with this technology and how you would use it to do research. This particular test version contains records from our library catalog. Please feel free to experiment and explore using the browser to find resources on your particular area of interest or expertise.

If participant needs a search term to enter, prompt her/him: To get you started, please enter a search for “religion and politics,” but please leave out the word “and” since it seems to generate an error message. I’d like you to respond to what you see after entering this search.

If needed, ask for reactions to various parts of the results screen. See “checklist” on next page.

Strategies to get participant to navigate beyond the initial search results screen:

It looks like xxx is a very broad topic, how would you go about narrowing it?
Please be sure to talk about what you’re doing as you narrow your topic.

Try not to volunteer options too soon. If participant needs more assistance getting beyond initial search results screen:

If it helps, think about how you would come up with 3-5 paper topics to assign to an undergraduate seminar. Another way to approach it would be to think about how you would narrow your focus to compile a bibliography on a particular aspect of this topic.

If time permits, show <http://www.lib.ncsu.edu/catalog/> and follow same process.

There is one other demo site I’d like you to see if you have time. This other site doesn’t contain our catalog, but is the catalog for North Carolina State University. Could you enter the same search as you did for the first demo site?

Question to our group: Should we ask if participant would use/value “add-on” features like tagging, adding reviews, etc.?

4. Other comments.

Would you like to make any other comments on this technology or on this interview process?

Again, we’d like to thank you for your time. As a token of our appreciation, please accept this gift certificate to the U of C Bookstore.

“Checklist” for gathering/organizing information gathered from interviews

Record any comments participant makes about the following “facets” or any ways you observe the participant using them:

“Facet”	Remarks	Observations
LC classification schedule		
Item information about title (e.g., call number, availability)		
Word cloud (Aquabrowser)		
“Narrow result by” (NC State)/ “Refine” (Aquabrowser)		
“Sort by” pull-down menu		
“Bread crumbs” at top of screen (NC State)		
Time-saving features; greater efficiency		
Contributions to research process		
Ease of use; is the interface intuitive?		
Tabs on initial search screen (NC State)		
Spelling corrections		
Ability to save/export search results		
Other?		

Appendix II. Session Summaries

Table 1 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.

Table 1: Summary of sessions. ND = new materials were discovered, F = facets, WC = word cloud.

No.	Division/Department	Notes	New discoveries		
			ND	F	WC
1	Hum./Art History	PhD.5 th year	✓		
2	Hum./Linguistics	PhD, writing dissertation.	✓		✓
3	Hum./Art History	PhD, dissertation background research	✓		
4	Divinity School	MA, entering PhD.			
5	Hum./English	PhD, writing dissertation	✓	✓	
6	Hum./Music	PhD., proposal stage	✓	✓	✓
7	Soc. Sci./History	PhD, 2 nd yr.			
8	Hum./MAPH	Entering MA program			
9	Hum./S.A. Langs. and Civ.	PhD., proposal stage			
10	Hum./Music	PhD., proposal stage	✓		✓
11	Hum./Music	Entering PhD.			
12	Hum./Music	PhD, 4 th year, submitting proposal	✓		✓
13	Hum./English	PhD, 4 th yr.	✓	✓	✓
14	College/PoliSci	Beginning 3 rd yr.			
15	Hum./Linguistics	PhD, writing dissertation. Similar to Soc. Sci.: relies heavily on own field research.			
16	College/Physics	4 th yr.			
17	Hum./Art History	PhD, writing dissertation			
18	Hum./Comparative Lit.	PhD, writing dissertation	✓	✓	✓