A System Evaluation of the Multnomah County Library OPAC

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Abstract

Multnomah County Library launched its new website in February, 2013. With the new website, the library recognized the need to mimic an online search engine as research has shown users have accepted such an interface for information seeking as the norm. This paper is an evaluation of the information retrieval system's performance and interface design. The library's information retrieval system is shown to provide highly relevant results for both sample searches and known-item searches. The interface design is determined to be outstanding. The combination of the two is a significant accomplishment and should serve as a model for other public libraries.

Keywords: Multnomah County Library, single-search, information retrieval system evaluation, BiblioCommons, search effectiveness, search precision, library OPAC, library website, website design

A System Evaluation of the Multnomah County Library OPAC

Background and system overview

The Multnomah County Library was established in 1864 by Portland citizens as a subscription library called the Library Association of Portland. The institution became tax-supported and open to the public in 1902, expanding its coverage to all of Multnomah County in 1903. The transfer of ownership from the Library Association of Portland to the people of Multnomah County occurred in 1990 (Multnomah County Library, n.d.). As of 2012, "among US libraries serving fewer than 1 million residents, Multnomah County Library ranks No. 1 in annual circulation of books and materials" (Multnomah County Board of Commissioners, 2012, p. 4). The library provides online or in-person service to approximately 35,000 people per day with a circulation of 23.9 million items in 2011 (Multnomah County Library, n.d). Despite a year in which funding[1] was reduced by 14% (Multnomah County Board of Commissioners, 2012, p. 4), the library prioritized the development of a new website and OPAC interface, which it launched in February 2013.

Multnomah County Library launched its new website on February 6, 2013 (www.multcolib.com). Per its Twitter page, the library built the website in-house using Drupal and the catalog interface using BiblioCommons (Multnomah County Lib, 2013). On first glance, it is obvious the library recognized the need to mimic an online search engine as research has shown users have accepted such an interface and process for information seeking as the norm (Koh, 2003; Yu & Young, 2004; Mi & Weng, 2008; Caplan, 2012; Kumar, 2012). Yu and Young are explicit: "The popularity of the Web appears to have influenced users' mental models

[1] Thankfully, the November 2012 election saw voter approval of a measure to ensure stable annual funding of the library through the creation of a permanent library district set to take effect in July 2013. Funding should increase accordingly. (Multnomah Country Library, n.d).

and thus their expectations and behavior when using a Web-based OPAC interface" (2004, p. 168). As Caplan notes, "librarian dissatisfaction with the vendor OPAC grew from a grumble to a rumble" (Caplan, 2012, p. 113), because the OPACs were not built based on how users actually searched; they were built based on how bibliographic catalog records were structured. Yu and Young's review of past OPAC research literature led them to state that, at the time of their 2004 study, OPAC interfaces were still fundamentally based on the cataloging rules related to MARC format, and that these rules and the structure they impose were not conducive to the key-word searches users actually want to employ (2004, p. 170). BiblioCommon's launch in 2009 gave libraries an alternative to ILS provided OPACs, one which was built on the idea of leveraging consumer interface design, like that of Google and Amazon, with social aspects of the web to create "the same kind of rich discovery and community connection experiences *online* [emphasis added] that the library has always delivered in its branches" (BiblioCommons, 2011).

Collection scale

The Multnomah County Library's collection is comprised of almost two million books and other materials, including eBooks, audio books, CDs, and DVDs (Multnomah County Library, 2012). The collection encompasses items held at the Central Library and 18 branch locations with additional items available through federated library sites like the Oregon Digital Library Consortium (Oregon Digital Library Consortium, n.d.). The library also provides access to other resources and research tools outside of its collection, including databases of electronic materials like JSTOR (Multnomah County Library, n.d.) and links to archives like the Oregonian Historical Archive (Multnomah County Library, n.d.). Because the single search is connected to the library's website, search results also return events, services, blog posts, reading lists, and other items from the website itself; results are not solely limited to the library's catalog.

Analysis of potential indexing mechanisms

As the catalog interface was built using BiblioCommons, it is assumed that the features of BiblioCore are present in the Multnomah County Library OPAC (BiblioCommons, 2011). BiblioCore allows for flexible mapping from the library's ILS MARC records and then presents a more user-friendly version of these records as results. The users can quickly tab between a Description, Full Record, and Contents (see Appendix A, Figure A1). While stemming and stop words are specifically noted as functionalities included in BiblioCore, the actual results in the Multnomah County Library searches vary depending on which search method and what search terms are utilized. The system offers three methods of searching: simple keyword search, simple specific-facet search, and advanced search. BiblioCore allows for natural and controlled vocabulary, and the Multnomah County Library site appears to interpret natural vocabulary reasonably well, though the interface only suggests controlled vocabulary or auto-completes search terms when a user has selected the author or subject facets to search on. BiblioCore is designed to interpret natural-language terms in terms of Boolean operators (e.g., applying the understood AND where appropriate). Though "the purpose of indexing and classification is to identify the topics of documents and to represent them using a controlled vocabulary" (Harter, 1992, p. 603), the Multnomah County Library site has acted in accord with user expectations and implemented an information retrieval system that interprets natural user input and correlates it to the indexed records instead of forcing (or training) users to use controlled vocabulary. Additionally, because the search includes the rest of the library's website, it actually performs searches on the full text documents that comprise those additional web pages (i.e., it does more than simply searching the document surrogates in the catalog).

Evaluation of search features and functions

The evaluation of search features, functions, and results presentation will be based on the issues and recommendations highlighted in research articles from Mi and Weng (2008) and Yu and Young (2004). A checklist of twelve items has been derived from these authors' works, and the evaluation proceeds through this list below.

1. Metasearch of all library assets through one search field

The Multnomah County Library interface does allow for a metasearch of all library assets through one search field. Search results returned are presented in two columns. The left shows results from the library's catalog and federated libraries' offerings; the right, results from the website itself including links to outside resources like the Oregon Blue Book and the Portland Business Journal (see Appendix A, Figure A2). A link at the bottom of the left column opens a new page showing all catalog results.

2. Automatic mapping of keywords to controlled vocabulary

The library's search does interpret natural vocabulary in light of controlled vocabulary of the catalog, the user can, however, discover controlled vocabulary if they investigate the filtering options in the left navigation menu of the detailed catalog results page (See Appendix A, Figure A3). "OPACs need to . . . allow natural-language searching capability" because users don't recognize the need to correlate their keyword with the controlled vocabulary of an OPAC. Users want their OPAC search to function like the search of a search engine (Yu & Young, 2004, p. 174).

3. Automatic suggestions for similar works based on author, title, subject, and call-number/shelf browsing

Similar works can be accessed directly from within an individual record. They appear on

the right side of the screen under *Subject Headings*, *Series*, *Lists*, *Tags*, *Similar Titles*, and the visually appealing *Browse the Shelf* option, which shows covers of other books 'shelved' in the same location as the selected record (see Appendix A, Figure A4).

4. Simple spell-checking or corrections

While the library's site does provide spelling corrections, it only does so on the detailed catalog results page via a *Did you mean* notice. It does not show the spelling correction on the initial results page. A user won't know he or she has misspelled, for example, an author's name unless he or she clicks the *Show all results* link at the bottom of the left column. This is a failure of the system; the suggestion of an alternate/correct spelling should appear on the first results page. Not knowing they've misspelled a word/name, users may assume the system simply doesn't contain what they are looking for.

5. Other user recommendations like that used by Amazon

The detailed catalog results page does include star ratings for all records that have been reviewed. Additional detailed comments are included in individual records as well.

6. Search terms and boxes retained on results page

Search term and box appear on both the initial and detailed catalog results pages.

7. Post-search limit function on results page

The initial results page does limit the number of results; only the top 10 are shown for both the catalog results (left column) and the website results (right column). Results are ranked by BiblioCommons' relevance-ranking algorithms, which rank based on the library's circulation patterns. (This is assumed to be a type of popularity ranking but specific details of what the algorithm includes are not provided). The user can determine how many results to show on the detailed catalog results page by selecting *10 per page* or *25 per page* from a dropdown menu.

8. Item status on results page

Item status is not included on the initial results page, but it is included on the detailed catalog results page. Color-coding further enhances status indication with green text indicating availability and red text indicating that all copies are in use.

9. Visual and value-added information included on results page

"A book cover image conveys an impression of a book that words cannot. It can also help a user recognize a book he or she has seen previously. In addition to cover images, libraries can provide value-added and contextual information by linking those images to tables of contents, summaries, sample passages of text, and reviews" (Mi & Weng, 2008, p. 10). The Multnomah County Library website allows for these visual and value-added information, much of which is actually made available through Amazon Web Services.

10. Easy to switch between individual result records and full results list

It is easy to switch between the initial results page and the detailed catalog results page by using the browser back button. Switching between individual records and the detailed catalog results lists can also be accomplished through the back button, however there is a *Back to Search* link that returns to the detailed catalog results list as well.

11. Clicked links should change color

Clicked links do not change color potentially creating user confusion about which individual records have been viewed. This is an issue that should be addressed.

12. Search keywords should be highlighted on results page

While search keywords are highlighted for the website and external resources results in the right column of the initial results page, they are not highlighted in the catalog results in the left column or the detailed catalog results page. This can be a significant problem if the results

appear off topic because the user is not aware of what keyword actually resulted in the results shown or which part of the record that keyword may have been found in. For example, when "Rome tv show" is entered as the search term, the left column catalog results show only one record and it is for a music CD by the band Genesis. It's difficult to know how the search term entered was interpreted by the system as associated with this music CD. It's easy to see how such a result would be very frustrating to a user who would not experience the same issue when using an internet search engine.

Assessment of search effectiveness

This section will evaluate search effectiveness for the catalog search only. Further, data will be pulled from the detailed catalog results page, not the initial results page, as results are same between the two pages though the detailed results page provides more information about each record. Website and external resources results (i.e. right column on initial results page) will not be tested in any way. Test searches were developed per the perspective of a typical public library user (i.e., an inexpert searcher). It is assumed that this user will evaluate relevance, and in the case of this paper, it is specifically the author who is determining whether or not a record is relevant. It is assumed that the user will begin with a simple keyword search from the homepage as "novice users [prefer] searching by keyword" (Mi & Weng, 2008, p. 7). Users do not use "complex query syntax" or Boolean operators, and they typically use two search terms per query (Yu & Young, 2004, p. 171). Even with this simple keyword search, the user will still have to learn (to some degree) how the system interprets his or her search terms and perform iterative searches as necessary to find what he or she is seeking. It is assumed that different users will expend more or less effort as their information needs dictate (i.e., more effort for critical information needs, like term papers or medical conditions, and less effort for casual information

needs, like a good science fiction book). As such, simple specific-facet searches and advanced searches have been tested in addition to the simple keyword search. Additionally, and in an attempt to mimic real user behavior, two types of searches are tested: a sample search for a general topic, and a known-item search for a specific entity. As Harter explains, the sample search is more of a quest for information "that will cause a change of some kind—information that will have an effect on [users] current cognitive state" (1992, p. 603). He continues, "Context is dynamic . . . . the initial context will evolve as the search progresses" (Harter, 1992, p. 606). This idea can be related to Bates' berry-picking model where "the query and the information need itself evolve as users interact with documents and search systems" (Morville, 2005, p. 59). While a known-item search may require iterative searches to find the exact entity sought in an appropriate format, the search terms typically do not semantically evolve over the course of the search. Syntax, however, may change as users learn the particularities of the information retrieval system.

In this evaluation, the metric for a successful search is defined as its precision score, that is, the percentage of relevant records returned from all records returned (Harter, 1992, p. 602; Morville, 2005, p. 49). To calculate the precision scores in these test searches, total records returned were limited to the top 20. As shown in Figure 1, the simple keyword search (i.e., the metasearch box accessible from the homepage) had a precision of 79%. The simple specific-facet search had the highest precision score of 86%. This simple specific-facet search was accessed through the results page of the simple keyword search. Basically, the user would have to try the easiest search, determine that it didn't quite work based on the results, and then perform an iterative search by selecting a specific facet other than keyword (i.e., title, author, subject, series, tag, list, user) and entering or editing the search term(s). Oddly, the advanced search had the

lowest average precision score of only 69%, however this percentage is perhaps artificially low due to the small number of test searches. Further, when comparing sample searches for a general topic against known-item searches, it is the sample searches that have a higher average precision rating (see Figure 2). When looking at the detailed data (see Appendix C), one can see that one of the four searches, the search for "Rome tv show", resulted in 0% and 20% precision, greatly decreasing the overall average precision for known-item searches. Figures 3 and 4 illustrate individual search precision and show that, overall, both known-item and sample searches were quite successful. Detailed notes for individual test searches can be found in Appendix C.

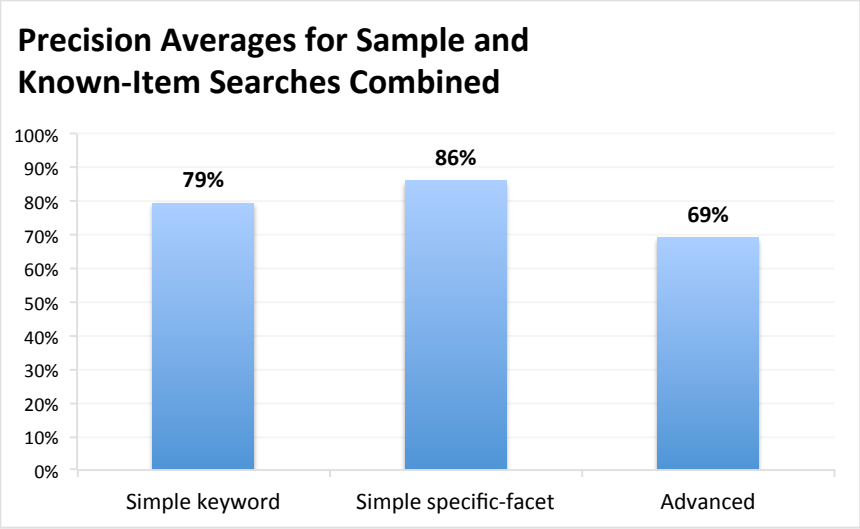


Figure 1: The simple specific-facet search had the highest precision rating.

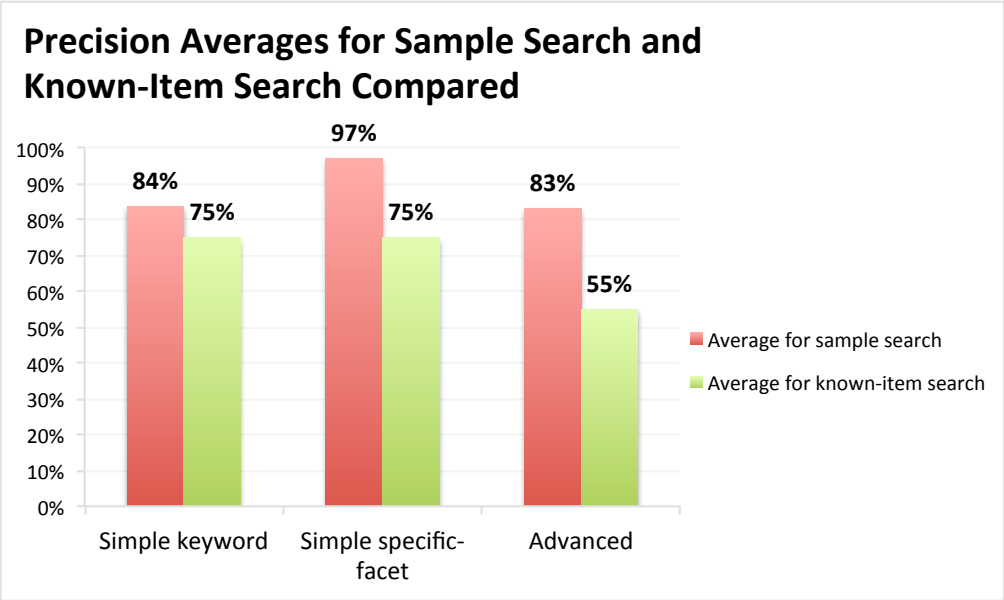


Figure 2: Sample searches had higher average precision ratings than known-item searches.

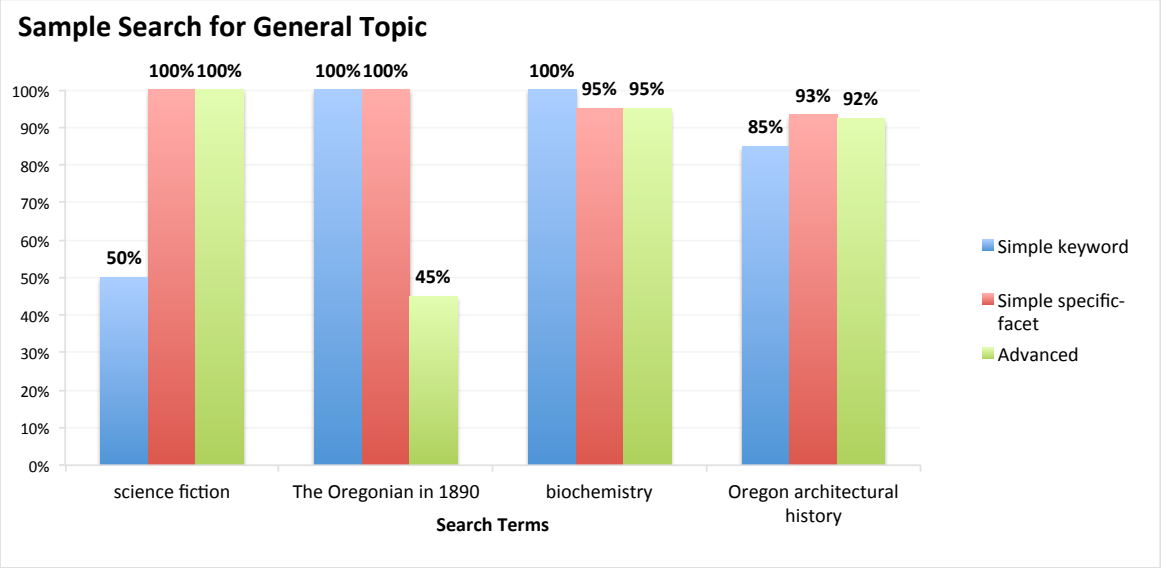


Figure 3: Sample searches for general topics were overall quite successful.

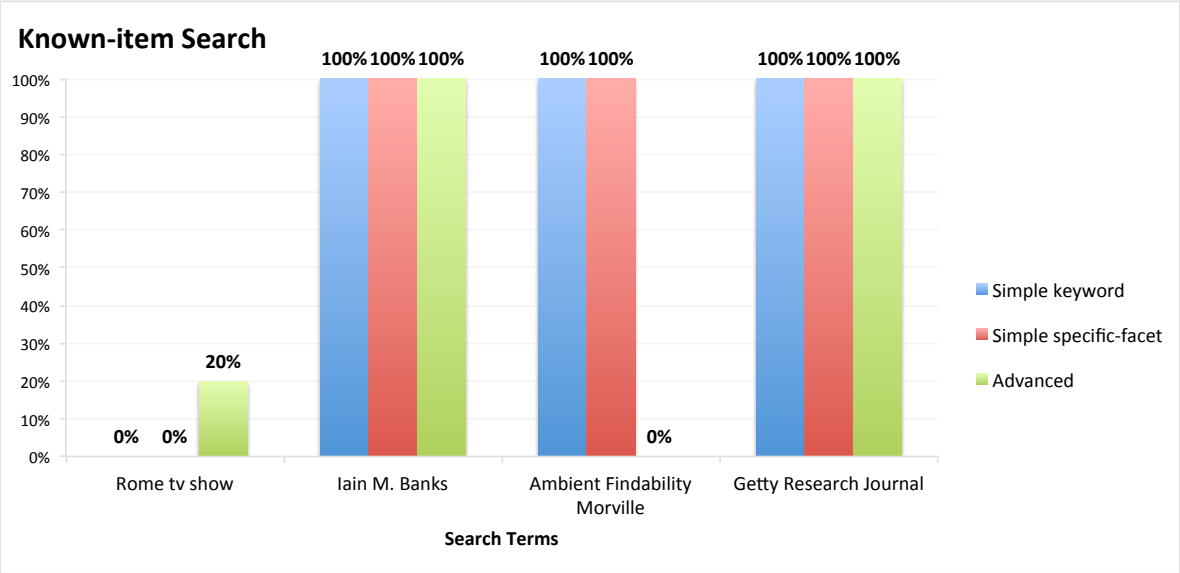


Figure 4: Know-item searches were most often very successful, but a few irrelevant results skewed the averages.

Recall was calculated using the highest total results returned across the three search types as the total number of relevant results contained in the database. This was a way to very roughly estimate the total number of relevant results in the database to perform calculations for this paper; it is highly unlikely to be accurate in reality. While average recall is relatively high (see Figure 5), it is also suspect. It is very difficult to determine recall without exhaustive knowledge of the database records and each record's relevance to any given search term.

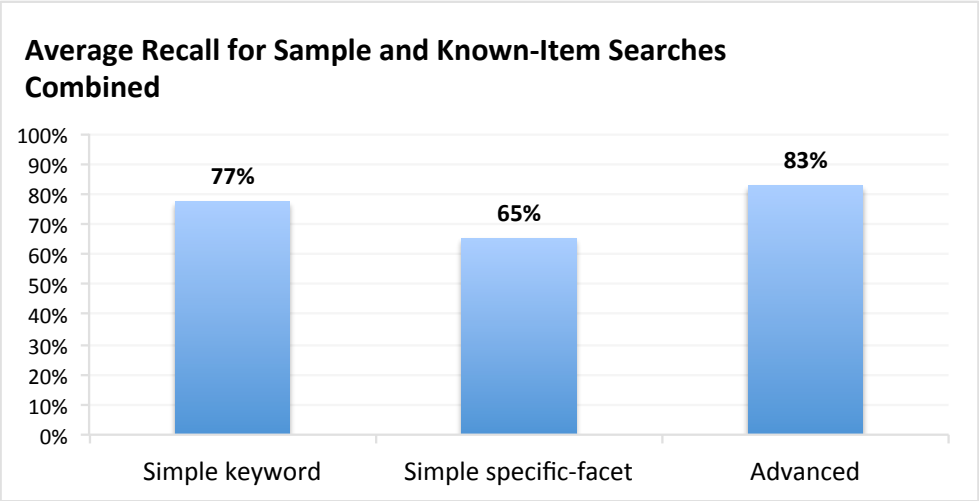


Figure 5: Average recall for searches was relatively high, though suspect.

Quality of interface design

People most often come to the public library website to find something. Whether it is a book, magazine, or DVD, they are typically seeking information in the form of a physical or digital object. As Yu and Young explain, "successful screen designs should focus on presenting the quick-searching options employed by the majority of users first" (2004, p. 169). Realizing this, the Multnomah County Library gave users what they want: a homepage with the search box front and center. The search box itself contains the simplest of instructions for the user, "Find anything at the library. Start here." The search box and its placement also echo Google's homepage design, and it certainly doesn't hurt to emulate a successful design that users are familiar with. The homepage is cleanly designed and quickly directs visitors to one of three sections: the search box, the top menu bar, or the bottom topic highlights. Users instantly know what to do when they open this homepage. The design is exceptional (see Appendix A, Figure A5). It in no way overwhelms visitors as does, for example, the Chicago Public Library website (see Appendix A, Figure A6). Instead, it quickly and visually explains what information can be found on the site, from the arresting red of the search box to the traditional information in the top menu to the popular topic highlights at the bottom of the screen. Koh's research revealed "the importance of website design. Eighty-eight percent of respondents valued easy website navigation, making it one of the most important characteristics of services the library offers" (Koh, 2003, p. 190). It is safe to assume that visitors to the Multnomah County Library website feel similarly, and they will not be disappointed or confused by their library's website.

Search results both on the initial search page (see Appendix A, Figure A2) and on the detailed catalog results page (see Appendix A, Figure A3) are equally well designed. From the initial search page, the user can clearly see two main options: catalog search results on the left,

website and external resource results on the right. Equally, from this initial results screen, they can click directly into an individual catalog record or webpage on the site. Just two clicks to desired information—better even than the ideal three clicks recommended for efficient and effective web design. The detailed catalog results pages are equally well designed; the left column provides a host of intuitive filtering options while the results appear neatly in the center column with sufficient white space to delineate one from the other. The in-house team at Multnomah County Library did a truly, superb job with the interface design.

Conclusion

The Multnomah County Library website and catalog interface is based on user expectations, not library catalog structure, and there is no need for extensive user training because the user already knows how to employ such an interface. While one can't expect a single-search interface to alleviate the issues of ambiguity in searches, reducing layers of complexity can only be helpful. No longer can "the classification systems commonly used in library catalogues . . . impose a particular view of the world, which the user is obliged to accept in order to optimise the communication process" (Wells, 2007, p. 392). The Multnomah County Library search interface has reduced complexity by not requiring users to learn a new search model. While search result relevance can vary quite a bit depending on the particulars of the search term/phrase, overall, the library's information retrieval system is effective. "Google is superior for both coverage and accessibility. The library systems are superior for quality of results" (Kumar, 2012, p. 58). The Multnomah County Library's information retrieval system goes far to strike a balance between these two poles and should be considered a model for public libraries across the country.

References

BiblioCommons. (2011). A far better online catalog is just the beginning. Retrieved from http://www.bibliocommons.com/about/about-us

BiblioCommons. (2011). Search that is as intuitive as it is intelligent. Retrieved from http://www.bibliocommons.com/products/bibliocore/for-users/search

Caplan, P. (2012). On discovery tools, OPACs and the motion of library language. *Library Hi Tech, 30*(1), 108-115. doi: 10.1108/07378831211213247

Harter, S. P. (1992). Psychological relevance and information science. *Journal of American Society for Information Science, 43* (9), 602-615. Retrieved from http://www.asis.org/jasist.html

Koh, C. (2003). Reconsidering services for the postmodern student. *Australian Academic and Research Libraries, 34*(30), 184-193. Retrieved from http://alia.org.au/publishing/aarl/index.html

Kumar, S. (2012). Impact of internet search engines on OPAC users: A study of Punjabi University, Patiala (India). *Program: Electronic Library and Information Systems*, 46(1), 56-70. Retrieved from http://www.emeraldinsight.com/journals.htm?issn=0033-0337

Mi, J., & Weng, C. (2008). Revitalizing the library OPAC: Interface, searching, and display challenges. *Information Technology and Libraries, 27*(1), 5-22. Retrieved from http://ejournals.bc.edu/ojs/index.php/ital/index

Multnomah County Board of Commissioners. (2012). Exhibit B: Voter's pamphlet explanatory statement. Retrieved from http://multnomah.granicus.com/MetaViewer.php?meta_id=28863&view=&showpdf=1

Multnomah County Lib. (2013, February 7). #mymcl response to @kenhowardpdx [Tweet].

Retrieved from https://twitter.com/search?q=%23mymcl&src=hash

Multnomah County Library. (2012). JSTOR. Retrieved from https://multcolib.org/resource/jstor

Multnomah County Library. (2012). Library fact sheet. Retrieved from https://multcolib.org/newsroom/library-fact-sheet

Multnomah County Library. (n.d.). Library funding. Retrieved from https://multcolib.org/about/library-funding

Multnomah County Library. (n.d.). Multnomah County Library history. Retrieved from https://multcolib.org/about/multnomah-county-library-history

Multnomah County Library. (n.d.). Oregonian historical archive. Retrieved from https://multcolib.org/resource/oregonian-historical-archive

Oregon Digital Library Consortium. (n.d.). Participating libraries. Retrieved from http://library2go.lib.overdrive.com/4E4764D0-4AA3-4A7B-8713-915E403C372F/40/20/en/libraries.htm

Wells, D. (2007). What is a library OPAC? *The Electronic Library, 25*(4), 386-394. Retrieved from http://www.emeraldinsight.com/journals.htm?issn=0264-0473

Yu, H., & Young, M. (2004). The impact of web search engines on subject searching in OPAC. *Information Technology and Libraries, 23*(4), 168-180. Retrieved from http://ejournals.bc.edu/ojs/index.php/ital/issue/current

Appendix A – Screen Shots

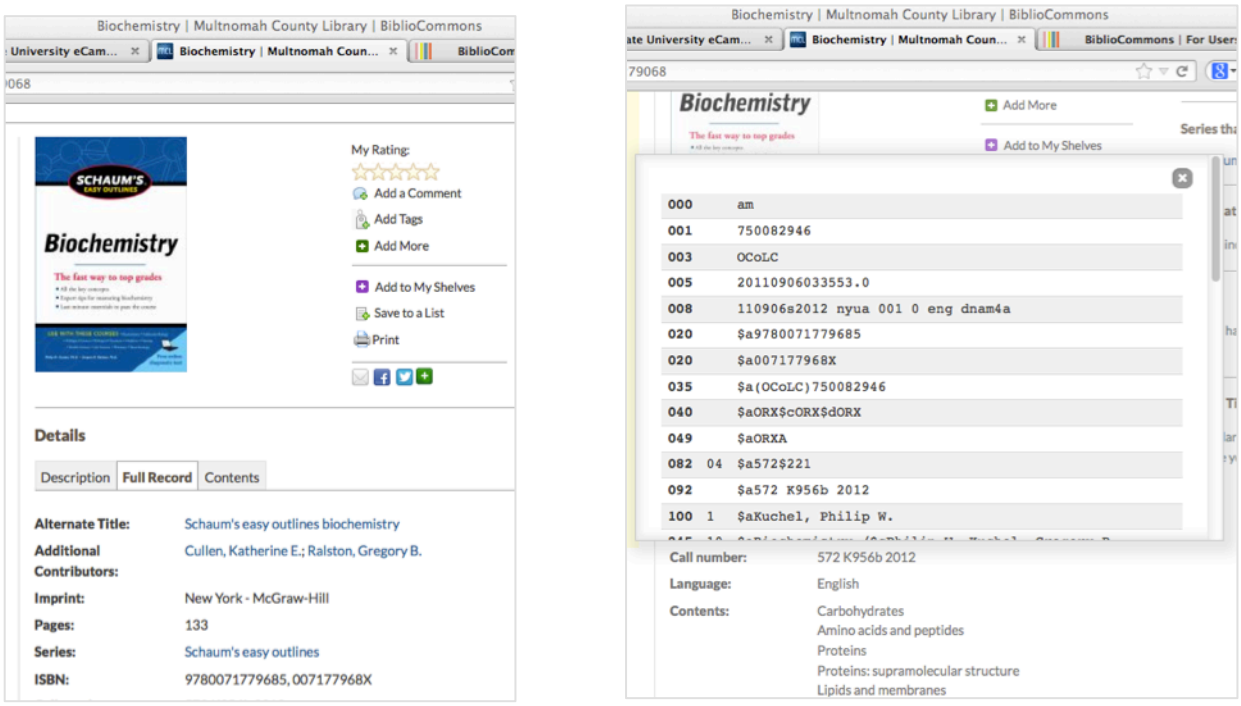


Figure A1: User-friendly records (left) based on MARC records (right). MARC record is linked from within the record screen for easy access.

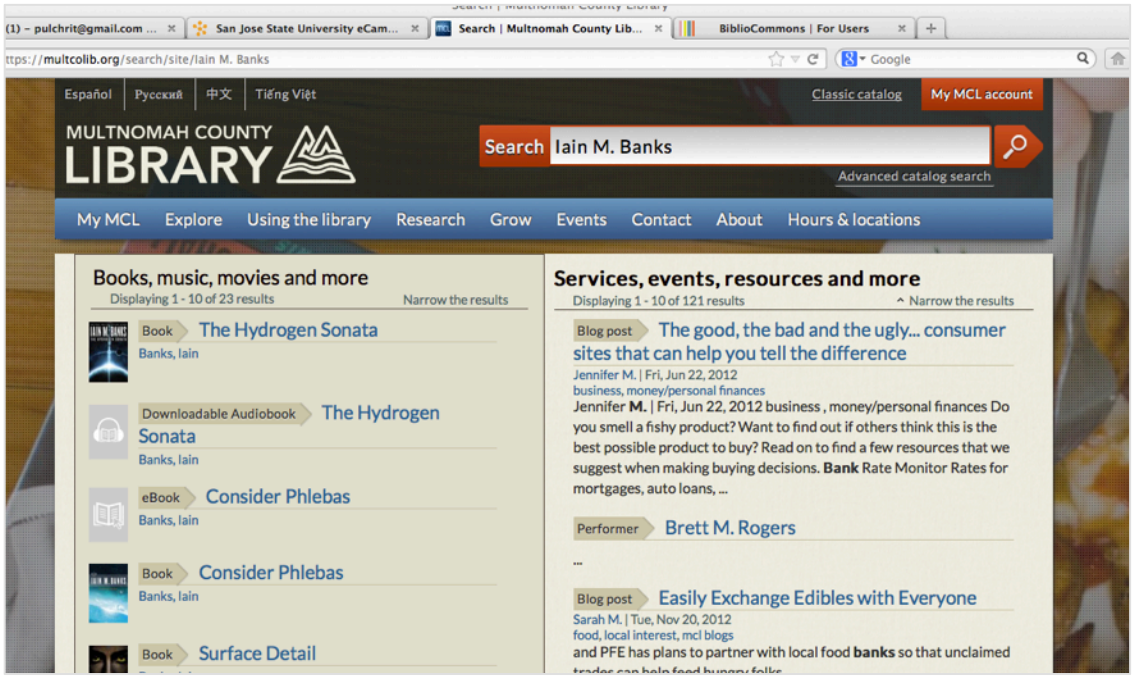


Figure A2: Results from metasearch of all library assets and linked resources. Catalog results appear on the left, and website and linked resource results appear on the right.

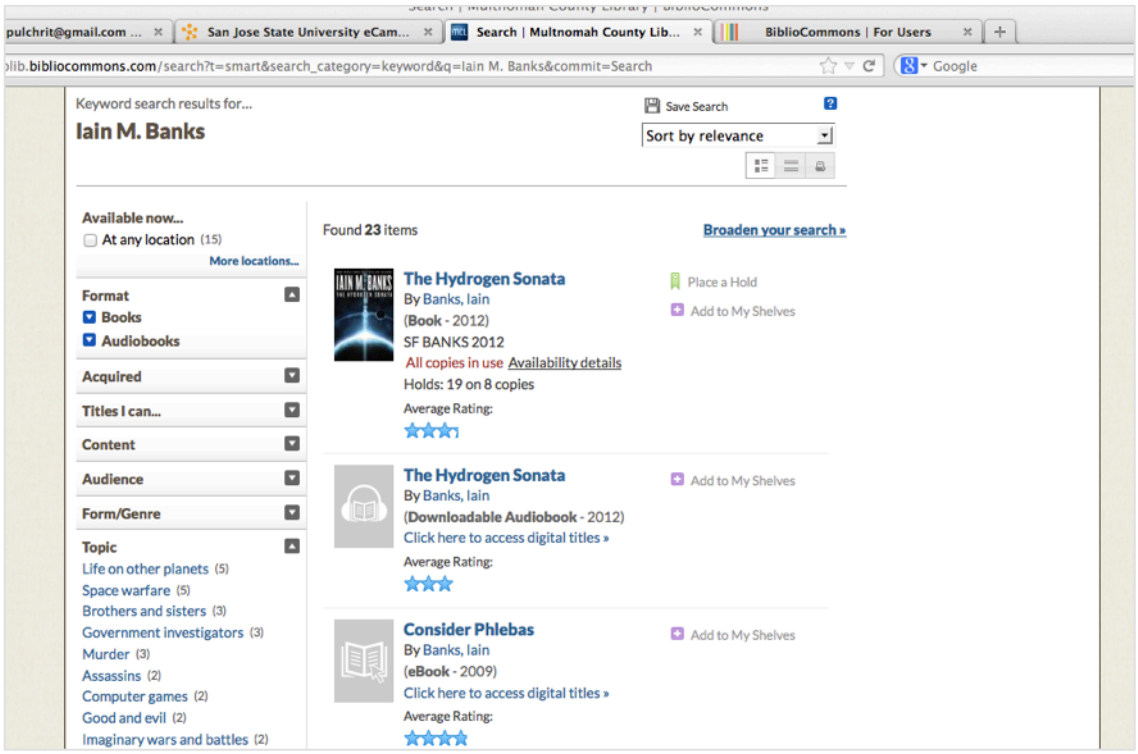


Figure A3: Controlled vocabulary appears under Topic in the left navigation/filters.

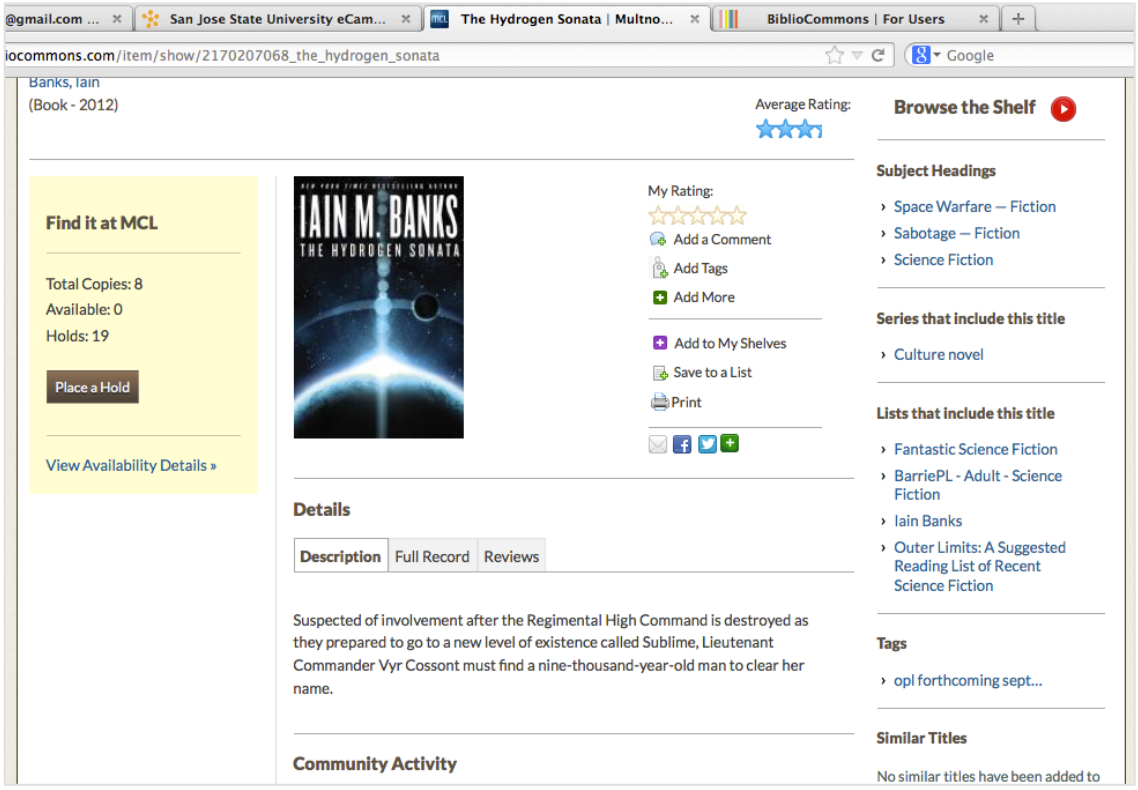


Figure A4: Similar works appear in the right navigation menu.

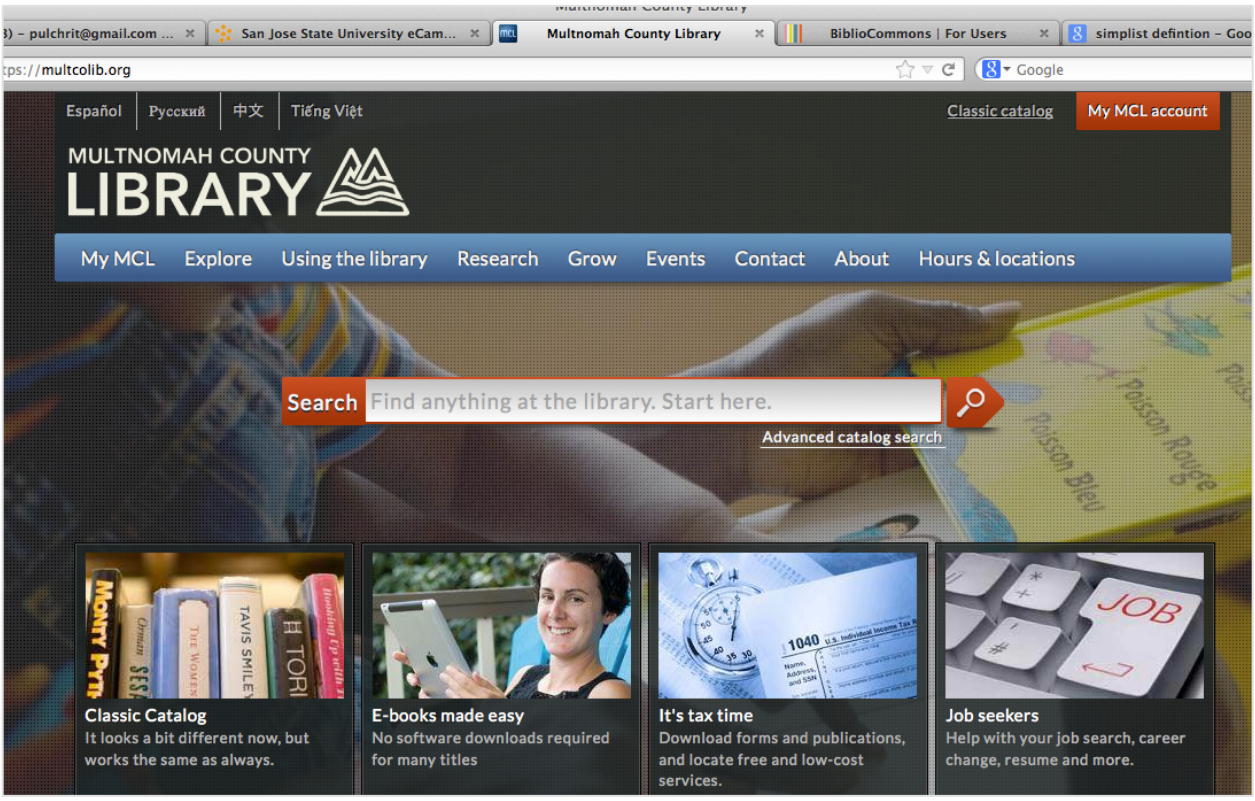


Figure A5: The homepage of the Multnomah County Library is cleanly designed and directs visitors quickly to one of three sections: the search box, top menu bar, or bottom topic highlights.

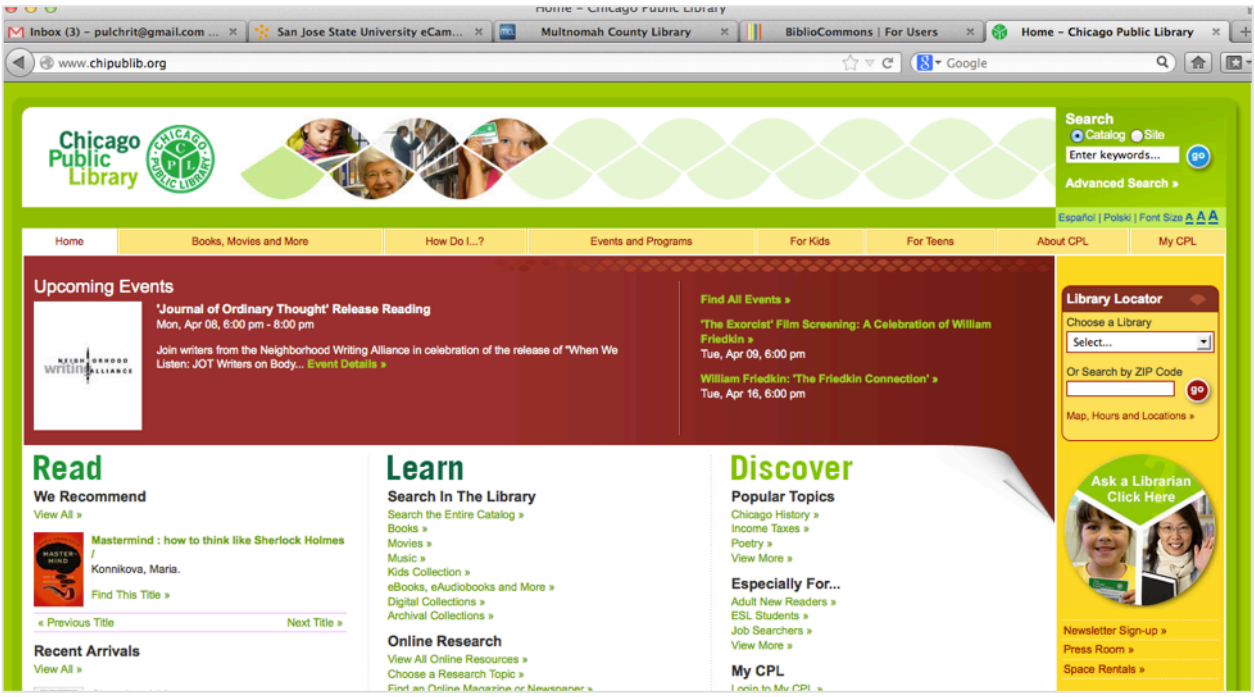


Figure A6: The design of the Chicago Public Library homepage is crowded with many options competing for the user's attention.

Appendix B – Sample Search Results

Simple keyword search for general topic "science fiction"

Found **10,425** items

Broaden your search »

Science Fiction The 101 Best Novels, 1985-2010 By Broderick, Damien (**Book** - 2012) 823.0876209 B8646s 2012 All copies in use Availability details Holds: 1 on 1 copy Average Rating: 2.5 stars out of 5.

Science Fiction A Very Short Introduction By Seed, David (**Book** - 2010) 809.38762 S4514s 2010 Available in some Locations

Science Fiction By Roberts, Adam (**eBook** - 2000) Click here for full text »

Science Fiction The Best of the Year 2006 (**Downloadable Audiobook** - 2006) Click here to access digital titles »

Science Fiction By Roberts, Adam (**Book** - 2000) 809.3876 R643s 2000 Available in some Locations

Science Fiction The Best of the Year (**Book** - 2006) SF SCIENCE Available in some Locations

Science Fiction The Best of the Year (**Book** - 2007) SF SCIENCE 2007 Available in some Locations Average Rating: 3 stars out of 5.

Science Fiction By Hardy, Phil (**Book** - 1984) R- 791.4309 H271s In-library use only in some Locations

Science Fiction A Collection of Critical Essays (**Book** - 1976) 808.3 S416 Available in some Locations

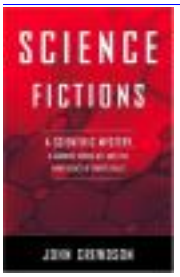
Science Fiction The Illustrated Encyclopedia By Clute, John (**Book** - 1995) R- 809.3876 C649s 1995 In-library use only in some Locations

Science Fiction The 100 Best Novels By Pringle, David (**Book** - 1985) 809.3876 P957s Available in some Locations Average Rating: 1.5 stars out of 5.

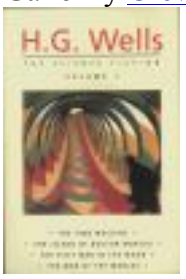
Science Fiction 101, Robert Silverberg's Worlds of Wonder (**Book** - 2001) 813.0876 S416 2001 All copies in use Availability details

Science-fiction The Gernsback Years : A Complete Coverage of the Genre Magazines ... from 1926 through 1936 By Bleiler, Everett Franklin (**Book** - 1998) R- 808.8387 B646sg 1998 In-library use only in some Locations

Science Fiction Ten Explorations By Manlove, C. N. (**Book** - 1986) 809.3876 M279s Available in some Locations



Science Fictions A Scientific Mystery, A Massive Coverup, and the Dark Legacy of Robert Gallo By Crewdson, John (**Book** - 2002) 616.9792 C927s 2002 Available in some Locations



The Science Fiction By Wells, H. G. (**Book** - 2002) SF WELLS Available in some Locations

Science is fiction 23 films by Jean Painlevé (**DVD** - 2009 - French) DVD 791.433 SCIENCE All copies in use Availability details Average Rating: 3.5 stars out of 5.

The Overlook Film Encyclopedia Science Fiction (**Book** - 1994) 791.43615 O96 In-library use only in some Locations

Science Fiction, Horror & Fantasy Film and Television Credits By Lentz, Harris M. (**Book** - 2001) R- 791.4309 L574s In-library use only in some Locations

Psyence Fiction By UNKLE (Musical group) (**Music CD** - 1998) CD Popular UNKLE Available in some Locations Average Rating: 3.5 stars out of 5.

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Appendix C – Search Results Data

Search Term	Precision scores for top 20 records (retrieved and relevant/20 retrieved)			Total results retrieved for three searches	Simple all-facet notes	Simple specific-facet notes	Advanced notes
	Simple all-facet	Simple specific-facet	Advanced				
Sample search/general topic							
science fiction	50%	100%	100%	10425 9436 5749	The intent was to browse for science fiction genre books. While this is not exactly possibly through the search box, results can be filtered in the left navigation by genre. Results shown appear to sort relevance by title, publication date, and possibly popularity (based on a review of the top result). Relevance is tricky to determine with this sample search. To make a precision calcualtion, books will be considered relevant if they provide a list of science fiction books or are anthologies of science fiction stories. Books about the science fiction genre itself will be considered irrelevant.	The specific facet chosen was Subject. The system responded with much more relevant records, though the ranking (again appearing to be based on a combination of publication date and popularity) is decided skewed towards the juvenile audience, which makes sense given the genre and considering that this is a public library which most likely has a large teenage audience.	For advanced search, the keyword was designated for the facet genre, format was designated as book, and language was designated as English. However, with just a few differences in search parameters, quite a different set of top 20 books results. Granted there is some overlap between this search and the simple specific-facet search (about 25%), but for the most part these books are classics that were recently re-released and much more widely popular (i.e., for both adults and youth).
The Oregonian in 1890	100%	100%	45%	12 9 66	The initial results page showed zero results, but suggested refining the search in the catalog. Clicking through brought up the suggstion "Did you mean the oregonian index?" Clicking on the suggestion returned 12 results, 11 of which were books and one of which was an online newspaper database. However, there was no result for the Oregonian Historical Archive which is an online database specifically for the newspaper. This results DOES however appear in the external resources results in the right column of the initial results page, so the catalog results are not as good as the precision score indicates.	The specific facet chose was Subject. The results were relevant, but 55% were different than those returned in the simple all-facet search. Critically, no online sources were returned at all. As in the simple all-facet searc, the Oregonian Historial Archive database was not returned.	Several attempts were made before any results were returned using advanced search, and no suggestions were offered for alternate search terms. The keyword was designated as title and entered as "the oregonian'. A second keyword of "1890" was designated for any facet. Language was English. A relatively small percentage (maybe 40%) of results matched those of the simple searches. Links to online databases were included, however, there was again no link to the Oregonian Historical Archive.
biochemistry	100%	95%	95%	252 171 168	For this simple single term search a good variety of books, online journal databases, indexes, and test-prep materials were returned. With these results and the filering options, the user has several solid directions in which he or she can proceed. Most results contained the word "biochemistry" in the title.	Changing to a faceted search on Subject, a very different list of results is returned. It appears to include recently published works related to biochemistry. The range of records is stunning--everything from the relatively general *Biophysics*, to the very specific *Late Transition Metal-Carboryne Complexes.* Though equally high in terms of precision score, these results seem to less helpful for the average searcher interested in the general topic of biochemistry.	The advanced search used "biochemistry" as the search term for Subject. Limited results to English, books, CD, DVDs, magazines or periodicals, and online magazines or periodicals. The results returned were virtually identical to those returned for the specific-facet search. Again, relatively high precision score, but the results seem to be less helpful for the average searcher interested in the general topic of biochemistry.
Oregon architectural history	85%	93%	92%	29 15 13	This rather complex three-term phrase was interpreted effectively by the system. The results are a good mix of general books on Oregon architectural history, along with books on specific buildings, arcthitects, and styles. Searchers would have a good foundation search to work from.	Searching on the subject facet, we see the number of results reduced by almost half, however the results are virtually identical to the simple all-facet search. There are a few new items at the end of the results list. These results provide a decent starting place for additional iterations of the search.	The advanced search used "oregon architectural history" as the Subject search term. Results were limted to English, books, ebooks, CDs, DVDs, and online and print periodicals. Results were virtually identical to those in the simple all-facet and simple specific-facet searches.

Search Term	Precision scores for top 20 records (retrieved and relevant/20 retrieved) Simple all-facet	Simple specific-facet	Advanced	Total results retrieved for three searches	Simple all-facet notes	Simple specific-facet notes	Advanced notes
Known-item search							
Rome tv show	0%	0%	20%	1 1 or 0 58	A simple all-facet search for "Rome tv show" returned one completely irrelevant result.	A faceted search on Subject and Title both returned the same irrevelant result, and other searches on Author and Series returned no results. A search on List returned results related to tv shows generally, but not the series Rome specifically.	The advanced search was most successful. The Title facet was searched for the keyword "Rome" with results limited to English DVDs or CD/DVD Roms. The first two records were exact matches. The next 10 records were relevant in that they were television shows that had something to do with Rome. After about 10 records relevance fell off quickly.
Iain M. Banks	100%	100%	100%	23 22 22	The simple search returned 22 of 23 relevant records (i.e. all books by Iain M. Banks).	A faceted search on Author returned 22 relevant results.	An advanced search using "Iain M Banks" for the author/contributor facet and limited results to English, all books, ebooks, and various audiobook formats resulted in the same 22 results of the simple specific-facet search, and 22 of the 23 results of the simple all-facet search.
Ambient Findability Morville	100%	100%	0%	1 1 1	The simple all-facet search returned one exactly relevant record.	A simple specific-facet search on Keyword using "Ambient Findability Morville" also returned one exactly relevant record.	Oddly, the advanced search completely failed to provide the correct record. The following parameters were used: Author=Morville; Title=Ambient Findability; Language=English; Format =Audiobook, book, ebook. The record returned was *The Twitter Book* by Tim O'Reilly instead of *Ambient Findability* by Peter Morville.
Getty Research Journal	100%	100%	100%	1 1 1	The simple all-facet search returned one exactly relevant record.	A simple specific-facet search on Title using "Getty Research Journal" also returned one exactly relevant record.	The advanced search returned exactly one relevant record. Parameters used were "Getty research journal" for Title, English for Language, online periodical or article and periodical or magazine for format.

	Simple all-facet	Simple specific-facet	Advanced
Precision Averages for Sample a	79%	86%	69%
Average for sample search	84%	97%	83%
Average for known-item search	75%	75%	55%

Search Term	Recall Scores (assumes largest number retireved = total relevant in database) Simple keyword	Simple specific-facet	Advanced	Total results retrieved for three searches	Notes
Sample search/general topic					
science fiction	100%	91%	55%	10425 9436 5749	We do potentially see the inverse correlation between recall and precision with these results as we assume the more advanced searches are providing more relevant results, therefore higher precision and lower recall.
The Oregonian in 1890	18%	14%	100%	12 9 66	
biochemistry	100%	68%	67%	252 171 168	
Oregon architectural history	100%	52%	45%	29 15 13	

Search Term	Recall Scores (assumes largest number retireved = total relevant in database) Simple keyword	Simple specific-facet	Advanced	Total results retrieved for three searches	Notes
Known-item search					
Rome tv show	2%	2%	100%	1 1 or 0 58	
Iain M. Banks	100%	96%	96%	23 22 22	
Ambient Findability Morville	100%	100%	100%	1 1 1	
Getty Research Journal	100%	100%	100%	1 1 1	

	Simple keyword	Simple specific-facet	Advanced
Average recall for known-item a	77%	65%	83%
Average recall sample search	80%	56%	67%
Average recall known-item	75%	74%	99%