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CATALOG/CATALOGING CHANGES AND WEB 2.0 FUNCTIONALITY: NEW DIRECTIONS FOR SERIALS

By
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ABSTRACT. This article presents an overview of some of the important recent developments in cataloging theory and practice and online catalog design. Changes in cataloging theory and practice include the incorporation of the *Functional Requirements for Bibliographic Records* principles into catalogs, the new *Resource Description and Access* cataloging manual, and the new CONSER Standard Record. Web 2.0 functionalities and advances in search technology and results displays are influencing online catalog design. The paper ends with hypothetical scenarios in which a catalog, enhanced by the developments described, fulfills the tasks of finding serials articles and titles.

KEYWORDS: Web 2.0, serials cataloging, FRBR, RDA, catalog display, superwork

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Introduction

What makes serial titles and articles so difficult to find in library catalogs? A few examples come immediately to mind. A patron looking for an article cannot go straight to the library catalog to find what he needs, because serials are not indexed in the catalog but rather in abstracting and indexing products.[1] A patron conducting a general title search for the *New York Times* may retrieve many more hits than she wants, because, in addition to the newspaper titled *New York Times*, the catalog lists all the records that have an alternate title or uniform title including "New York times." Patrons looking for an entire run of a journal may have difficulty seeing the entire title history because of the way a single bibliographic record links only to the immediately preceding and succeeding titles. The list continues.

Many features of the online catalog as it exists today are vestiges of the era when the catalog was printed on sets of cards; a prime example is the concept of the main entry. With the evolution of the card catalog into the Online Public Access Catalog (OPAC, or "online catalog"), cataloging practice and design remained largely the same. The OPAC is now at a critical juncture, however, because of several major developments, conceptual and technological. Librarians have been thinking about these changes for some time; the listserv, "Next Generation Catalog for Libraries" (NCG4LIB), serves as a forum for librarians to debate the effects these changes could or should have on cataloging.[2]

This paper is a synthesis of many converging changes. Its goal is to interpret how these converging changes will affect the appearance of serial records in the OPAC. While this synthesis attempts to present a "big picture" view of what is coming, and in many cases what is already here, it does not attempt to be an exhaustive review of any given topic.

Several assumptions guide this paper, the first of which is that the online catalog will continue to be a useful tool for library patrons, whether inside or outside of the library, for the foreseeable future. The next assumption is that librarian-created metadata will still be used, although most likely in conjunction with computer- and/or vendor-created metadata. Lastly, it is assumed that library business models will remain close to what they have been up to this point (i.e., individual libraries will continue to create at least some original cataloging), although discussions of possible changes in library business models are valuable.[3]

The paper will be organized into four sections, the first of which will review recent changes in cataloging theory that have yet to be fully developed into cataloging practice, namely, the *Functional Requirements for Bibliographic Records* (FRBR). Introducing identifiers into serial records in accordance with FRBR entities will allow better collocation of like titles and differentiation between unlike titles. This section will conclude with a view of the potential serial "superwork record."

The second section of the paper will examine imminent changes in cataloging practice that will simplify new serials records. The new version of the *Anglo-American Cataloguing Rules* (AACR2), to be called *Resource Description and Access* (RDA), will simplify cataloging rules, as will the new Cooperative Online Serials (CONSER)

Standard Record. Outsourced and automatically generated metadata will also greatly aid in simplifying cataloging.

The third section will look at changes in catalog design and functionality, as they are closely related. Web 2.0, which has exerted its influence on so many other online applications, will influence the online catalog, as well. In addition, technological advances in searching and conceptual changes in the ways that results are displayed will also have a great effect on the appearance of serials in the catalog.

The last section of the paper will predict how the previously mentioned advances will affect typical serials search problems. It will show a possible view of how an OPAC taking advantage of all of the mentioned changes could simplify the search for journals and articles.

Cataloging theory changes: FRBR, Identifiers, and Super-Record Displays

The *Functional Requirements for Bibliographic Records* identify and define user tasks that have traditionally been aided by the library catalog: they are to "find, identify, select, and obtain" the appropriate material for the user's information need.[4] Applying these goals particularly to serials, Kristin Antelman writes that FRBR goals are "to assist the catalog user in identifying relevant relationships, holdings, and characteristics of serial editions."[5] The CONSER Task Force on FRBR and Serials states this additional goal for implementing FRBR in catalogs: "there is to be a clear indication of physical manifestations," which refers to the difference between the online and print versions of a title.[6]

In order to achieve the overarching goal of making the search experience easier for the user, FRBR describes entities and relationships that apply to information

resources. The FRBR entities "work," "expression," "manifestation" and "item" can be understood in the context of serials, but with a bit of difficulty. For example, when considering the FRBR work within a serials context, we can think of one article in a serial title as a work, or "a distinct intellectual or artistic creation," but we can also think of the whole issue as a work, or even an entire serial title as a work.[7] The issue and title are certainly distinguishable from other issues or other serials. The serial title appears to be a "superwork," a work comprised of many component works.[8] A serial work can maintain its identity across title changes, if the serial retains the same scope of its intellectual content.[9]

Different expressions of a serial superwork share the same underlying work identity, but there are variations between them that result from modification of the content of the work.[10] Kristin Antelman uses the example that one serial expression is the full text of the *New York Times*, including advertisements, as presented on both paper and microform, whereas another expression is comprised of selected articles from a newspaper and no advertisements, as presented through an online aggregator database.[11]

Within an expression of a serial, different editions of the same title constitute different manifestations.[12] The microform edition and the print edition of the *New York Times* are different manifestations. It is often the case, however, that a change in physical format constitutes a new expression rather than a new manifestation, because there is not a one-to-one correspondence between the content in the print and digital versions of the same title, as in Figure A.

Figure A.

Situation 1
Microform and print versions of the publication have the same, full-text content, whereas the online access only has selected content.

Work = Newspaper X
- Expression 1 = full text
  - Manifestation 1 = print version
  - Manifestation 2 = microform version
- Expression 2 = selected content
  - Manifestation 1 = electronic access through Aggregator A
  - Manifestation 2 = electronic access through Aggregator B

Situation 2
Print and electronic versions of a journal have different content in each; the print has the full text, while the online access only has selected content.

Work= Journal Y
- Expression 1 = full text
  - Manifestation 1 = print version of journal
- Expression 2 = selected content
  - Manifestation 1 = online version available from publisher's site

Finally, the FRBR entity "item" corresponds with an individual print journal issue that can be read at a library, or an online article that can be pulled up on a computer screen. Catalogs are typically very good at representing serial items in holdings records displayed in conjunction with bibliographic records, but they are not as good at indicating the different superworks, expressions, and manifestations that may be available.

In order to rectify the inability of catalogs to collocate serial works, Kristin Antelman recommends establishing a superwork-level identifier, a unique identifier that can bring together all the titles associated with a journal throughout its title history.[13] Building upon this idea, it could be possible to have expression-level and manifestation-level identifiers. As of yet, such identifiers do not exist. The International Standard Serial Number (ISSN), a traditional title identifier, is not suitable as a work-level identifier, because every time a serial title changes, it receives a new ISSN, regardless of

whether the title change constitutes a new work or a continuation of the old work. ISSN as it exists now is also not specific enough to serve as an expression or manifestation identifier, because different ISSN exist for different print and electronic versions of the same title, regardless of whether or not the different format represents a change in expression or manifestation.

ISSN-L, the new "linking ISSN" could serve as a manifestation/expression level identifier, although it also would not distinguish between the two. According to current practice, the online edition of a title is given a different ISSN from the print edition, and the microform edition has the same ISSN as print, if the microform is intended to serve as a substitute for the print item.[14] The new linking ISSN will collocate all physical formats of the same title, however. The ISSN International Centre will assign the print/microform and online formats their own ISSN, as before, but now, the first format's ISSN will also serve as its ISSN-L.[15] For each subsequent format that comes into being, the ISSN Centre will assign it its own new ISSN, but the same ISSN-L as the first format that came into being. For titles that have already been assigned ISSN but not yet ISSN-L, "the ISSN International Centre will also retrospectively designate an ISSN-L for every continuing resource in the ISSN Register."[16] When ISSN-L is published, likely within the first half of 2007, it will serve the useful purpose of collocating titles in their different physical formats, but unfortunately, it will not be able to serve as a FRBR entity identifier.[17]

The International Standard Text Code (ISTC), another ISO standard, shows promise as a work identifier, as it is intended to apply to all textual works.[18] An ISTC could even apply to an excerpt of an article, however.[19] If all works— excerpts, articles

and journals alike— are given an ISTC, then the ISTC alone will not be sufficient to identify serial superworks.[20]

Presuming that a new standard serial superwork identifier comes into existence, all of the bibliographic records that have the same identifier can be collocated in a superwork record. Frieda Rosenberg and Diane Hillman conceptualize a serials superwork record as either a bibliographic record or an authority record, complete with MARC fields 1XX for "supertitle," a title which can be the earliest title of the serial or some other uniform title, and 7XX fields that hold the component titles of the superwork and their dates of coverage.[21] Computer programming either within the integrated library system or supplementary to it could collect information from all of the component titles of a superwork to form a new superwork record. In other words, a program could harvest all of the 780 and 785 fields associated with each title in the superwork's title history and feed those titles into the 1XX and 7XX fields for the superwork record. Rosenberg and Hillman present the superwork record approach as a way to show the serial's "family tree," including title changes, mergers, and splits.[22] A graphical representation of the serials family tree is already in existence at the Washington State Library. A title search for the *Seattle Post-Intelligencer* retrieves several title records, all of which are linked to a diagram of the title history, which includes a merger and title changes.[23]

The desired result of introducing FRBR superwork-level identifiers (and perhaps expression-level and manifestation-level identifiers) into existing bibliographic records is increased ease in interpreting serial relationships. The serial superwork record will be a great advance, as the entire history of the serial will be apparent from a single display.

Cataloging Practice Changes: Simplification of Complex Records

Although the adoption of FRBR concepts into cataloging will result in changes in cataloging practice, a work-level identifier is not yet ready for general use. Other developments, however, are closer to widespread application in cataloging practice. These developments are inspired by the greatest challenge to librarians who create metadata: the lack of resources to catalog all of the library's holdings at a sufficient degree of detail. Libraries can now have access to thousands upon thousands of journal titles in electronic format that the library could never hope to house within its walls. Since many of those journal titles will change as time progresses, the volume of cataloging necessary to keep the catalog accurate and up-to-date surpasses the capacity of current cataloging staff at most, if not all, institutions.

Indiana University librarians have posed the question, "To the extent that it might be necessary to make tradeoffs, would our users in general be better served by a greater amount of lower quality cataloging, or by a lesser amount of higher quality cataloging?"[24] In order to be able to maintain access to the vast array of information sources, some experts suggest simplifying cataloging practices, accepting vendor-created metadata, and automating cataloging whenever possible.

According to Karen Calhoun's Library of Congress-commissioned report, simplifying cataloging practices requires eliminating "special case law for every situation" and creating generalizable principles for items and processes in cataloging departments.[25] Calhoun also indicates that simplifying cataloging will "eliminate local practices and customized workflows in favor of best practices" that are agreed upon at a national or even international level.[26] Some of this standardization may come into being as a result of the publication of RDA.

RDA, the successor to AACR2, is still in production by the Joint Steering Committee for Revision of the Anglo-American Cataloguing Rules (JSC). One of the rationales for creating RDA, rather than just another revision of AACR2, was the realization that the nature of many information resources has changed greatly in recent years, but cataloging rules have not changed to accommodate the new format. AACR2 heavily emphasizes description of the carrier of information, but electronic resources don't have a physical carrier; rather, they have a network location. The JSC was charged with creating a flexible set of rules that will allow the content of a resource to be described without as much reference to the physical carrier of the resource as AACR2 required.[27] Another criticism of AACR2 was the complexity of the rules and proliferation of special cases, which RDA seeks to eliminate.[28]

RDA will also incorporate the FRBR tasks of identifying, distinguishing, and collocating works, expressions, manifestations, and items. RDA's Part A will prescribe rules not only for description but also for relationships between bibliographic entities. As of this writing, the draft of Chapter 6, currently available online, describes possible relationships between different works.[29]

RDA is far from a finished document; the iterative nature of the creation of RDA will allow many changes in the document between now and the expected publication date in 2009.[30] An electronic version of RDA, specifically created to adhere to good online design principles, should aid in making the rules easy for catalogers to find. The creators of RDA intend the new standard to be flexible enough to withstand changes in technology and in cataloging theory.

Not only will the rules of how to input information into MARC tags become simpler and easier to find, but the most detailed level of cataloging for serials will become less complicated. The CONSER Access Level Records for Serials Working Group was charged in 2006 with the mission to develop a bibliographic record standard of common elements that could apply to any serial title, print or online, with just one level of detail, rather than allowing several different levels. The new standard record would provide all the basic information necessary to allow users to differentiate between, collocate, or find desired titles. Faced with this charge, the Working Group developed what was first called the "access level record" and is now called the "CONSER Standard Record."[31]

The CONSER Standard Record has fewer required fields and takes less time to create than the old CONSER records.[32] The Working Group deemed some elements of the serials bibliographic record unnecessary, including uniform titles in many cases, statements of responsibility, and many note fields, including the 321, 580, 550, and 787 fields.[33] The new standard record will retain the title proper, variant titles, former and succeeding titles, place of publication, edition statement, and current frequency, among other elements judged to be most important. Although acceptance of the new standard was not universal among librarians who provided feedback on the pilot records, one librarian noted that it would be sufficient to use "in 99 out of 100 reference transactions."[34]

The Working Group provided its recommendations to CONSER members in July of 2006, and the Program for Cooperative Cataloging Policy Committee (PCC PC) approved the new standard record in November of 2006.[35] The standard record was

originally scheduled for a phased implementation to begin February 1, 2007. As of this writing, however, the PCC PC has decided to delay the implementation until some stakeholders' concerns have been alleviated. CONSER members are clarifying training materials and establishing more firmly the relationship between RDA and the standard record.[36] Whenever the standard is fully implemented, it should save time for serials catalogers and create a record that is easier to read.

RDA and the new CONSER standard are intended to help with in-house, librarian-created metadata. Another method of simplifying cataloging, however, is to outsource it. Accepting vendor-created metadata, especially brief records, in the catalog will allow catalogers to focus on original cataloging only for journal titles for which there are no bibliographic records already available.[37] Aggregator database providers and other vendors can sell MARC records either as part of their product or separately. This can reduce the amount of labor needed for copy or original cataloging when a new aggregator database or other large journal package is acquired.

Not only should vendor records be encouraged as alternatives to locally created records, but also, very basic records can be populated by feeding information from title lists on vendor sites into MARC records. The University of California Libraries suggests that libraries "should accept skeletal records when available (e.g., titles lists from content aggregators), and enhance skeletal, or minimal, records..."[38] As an example of how this strategy can be used, the author's library is using its integrated library system's electronic resources management (ERM) module to load journal holdings into the catalog. When the ERM module tries to load holdings onto a title that does not have a bibliographic record, the ERM module generates a skeletal bibliographic record to which it can affix

holdings. At a later date, if librarians judge a title with a skeletal record to be important enough, that record can receive enhanced cataloging.

Automation of cataloging practices can also help with the area of authority control. Barbara Tillett suggests that integrated library systems can search the authority file and, if a match is not found, create basic authority records. Tillett also notes that when a new bibliographic record enters the system, the ILS can search for other instances of that title and author to try to establish the relationship between the newly created record and older records in the system.[39] The ILS could be programmed to look for different manifestations, expressions, and works, which could be aided by additional identifiers, as mentioned in the first section of the paper.

The movement toward creating simpler serials records has the potential to make catalog displays more understandable to users, and simplifying cataloging practices will allow catalogers to improve their efficiency.

Catalog Design and Functionality Changes: Web 2.0 and Advances in Searching and Displaying Results

Web 2.0

Many changes in the catalog will be influenced by a new conception of the way users interact with the web, dubbed "Web 2.0." Tim O'Reilly defines Web 2.0 in this way: "Web 2.0 is the network as platform, spanning all connected devices." In other words, rather than using client-driven software such as the Microsoft products, the web is the host for applications. O'Reilly explains further that functions of Web 2.0 applications are "delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including

individual users… [and] creating network effects through an 'architecture of participation'…"[40] An exemplar of this definition is the familiar MySpace, which offers users a blogging platform, a place to store photos, audio files, and movies, and allows users to interact with other users either in real time via instant messaging or by e-mail.[41] The latter part of this section will delve more deeply into specific features of Web 2.0 tools that are of particular use to library catalogs.

Before investigating Web 2.0 features, it would be useful to answer the question, "Why should online catalogs take advantage of these features?" Proponents of Web 2.0 applications tout their abilities to meet the information needs of today's patrons, who include the much publicized "Millennial generation." The Millennials, undergraduate-aged library patrons among us today, grew up using computers and the Internet. An Indiana University cataloging white paper reports the Millennials' information preferences and expectations: "(1) a wide variety of choices; (2) continuous improvement in products and services; (3) the ability to customize and personalize their library services; and (4) instant gratification."[42] These four expectations have become typical now in people outside the Millennial age set, as noted by Karen Calhoun: even faculty and graduate students "use information that they know to be of poor quality and less reliable – so long as it requires little effort to find—rather than using information they know to be of high quality and reliable, though harder to find."[43]

Librarians have begun to take into account these expectations when they recommend or institute new services for the catalog. Many recent papers have put forth lists of Web 2.0-inspired tools that would be useful to library users, and these extra tools can be conceived within the framework of a central concept of Web 2.0, the "mash-up."

A "mash-up" is an application that can remix information taken from many original sources to create something new.[44] The catalog could become a mash-up of different tools and different types of metadata, including metadata from sources outside the library. Libraries that use Syndetic Solutions, a vendor dedicated to bringing extra content to the catalog, already can incorporate such tools into their catalogs as book reviews, cover art, first chapters and excerpts, among others.[45]

Vendors are just one outside source of metadata to the catalog, however; users may become the primary group of outside contributors. User-created metadata has become a hallmark of the Web 2.0 movement: sites such as Flickr, a photo-sharing site, and Del.icio.us, a social bookmarking site, allow users to dictate their own vocabulary for collocating like items.[46] Users associate subject keywords, or tags, with an item they wish to share with others. Other users searching for that tag will recover all the tagged items. This so-called "folksonomy" created by users could be used in conjunction with traditional library-created metadata to allow users to collocate items that were previously not able to be collocated.

Users can also affect the catalog by personalizing or customizing the search experience: they can decide which databases to search during a catalog session.[47] Personalization also means allowing patrons to set up and run preferred searches, a functionality already available in some catalogs. A personalized account could also allow users to take advantage of a recommender feature similar to that used by Amazon.com, whereby a patron could see that patrons who looked at the record for Book X (or checked out Book X) also looked at the record for (or checked out) Book Y.[48] Users can also submit reviews of particular works.[49] User reviews are a popular feature

of sites such as Amazon.com and the Internet Movie Database.[50] Registered users may submit their opinions on a given title by choosing a certain number of stars to recommend a work, in addition to a posting a narrative review. An example of a catalog that allows user input is WPOpac, designed by Casey Bisson. The blogging software WordPress serves as the platform for the WPOpac online catalog.[51] The front page of the OPAC shows recently added materials as well as items that have recently received user comments. User-created tags are part of the title's display, in addition to reviews and cover images.

Users can export material, too, in the form of citations for citation management software, or in the format of bibliographic records that they wish to e-mail to themselves or another user. This functionality is also currently available from many online catalogs.

The result of adding extra tools to the catalog is the catalog's ability to provide users with more and different kinds of metadata than they currently see. A patron searching for the *Journal of Differential Geometry* can view images of the cover, see the table of contents of a particular issue, and even see what other patrons have to say about a particular issue or article and its relevance to their research. All of this information adds value for the user.

Employing better search technology and new results displays

Perhaps the most exciting advances in catalog architecture are new ways of conducting computerized searches. These advances can be broken down into two major groups: searching advances and results display advances.

Relevance ranking, the famous method of determining which results show up at the top of the list, is being introduced into library catalogs. If it is not already part of the

catalog, forward-thinking librarians encourage its incorporation.[52] Relevance ranking has the power to take into account metadata in many different tags, whether MARC fields or not, while weighting the information in some tags more heavily than others. For example, MARC 245 fields, 650 fields, and user-created subject tags could bear more weight than a note about a change of publication pattern.

A natural companion to relevance ranking is a feature that would let users choose between a known-item search and an unknown-item search. In the case that a user knows that he is looking for the *Journal of Technology, Learning, and Assessment*, he would not need to see results that do not begin with those particular words. The relevance ranking algorithm could take this parameter into account when it searches for results, as in the "search begins with" feature. This feature eliminates results that do not begin with the required set of words; it may become a standard in catalogs for known-item searching.[53]

A great aid to searchers will be the retrieval of the "best match" for a particular search, rather than receiving no hits at all.[54] "Best match" results can be based on relevance ranking. Seeing a best match would greatly aid users who might not know how to proceed if their search terms are not successful and who might hesitate to ask for help.

Several sources point to metasearch as an important development in the catalog, although there is a concern that metasearch technology is not mature enough.[55] Marshall Breeding points out that relevancy ranking across different kinds of metadata is difficult.[56] In addition, a metasearch will most likely not take full advantage of the range of Boolean operators and proximity searching that are available in many databases, limiting the kinds of results presented. Another problem is that libraries may not currently be including a wide enough range of information sources in their metasearches;

for example, the metasearch may not be pointing to the course management system.[57] Metasearch will undergo continued development, however. An example of an existing metasearch is hosted by the University of Illinois at Urbana Champaign's Grainger Engineering Library.[58] Choosing "Look for articles, papers, books on a topic" allows users to select the types of resources they wish to search (journal articles, books, the Internet) and presents results in a neatly organized manner.

Natural language searching is another method of searching that is expected to improve with time.[59] The more that computers can parse questions as they are phrased, the easier it will be for users to input their searches.

Once the search is performed, it is desirable for results to be grouped into subsets to allow users to narrow down a very large group of results to the one specifically desired item. "Faceted browsing" puts results into groups "based on the most appropriate information in the records. Some of the subsets most commonly used for faceting include date, language, format, subject headings, name headings, [and] availability…"[60] Faceting attempts to anticipate a user's needs; the programmers determine what the most frequently desired subgroupings are, and they design the facets accordingly. Several catalogs now employ faceted browsing of their results sets: the new North Carolina State University Endeca-powered catalog, Worldcat.org, and the AquaBrowser-powered catalog at Queens Library are examples.[61]

A related method of grouping results is clustering. Clustering uses an algorithm that brings results into categories according to their common terms. Rather than seeing a long initial list of results, users see a shorter list with the common elements of results, and then they can pick the desired category.[62] Clustering can be used in conjunction with

faceted browsing, so that users can see both broad categories of results (clusters) and also different attributes of results, such as physical format, date of publication, etc. (facets).

Vendors have recognized that the added functionality and sophisticated programming of the Web 2.0 applications are desirable to libraries. Ex Libris is developing Primo, an ILS that will let users tag and rate materials, among other features.[63] Innovative Interfaces is designing the Encore ILS with the help of at least fourteen development partner libraries, and it will have "community features" and "contextual resource suggestions."[64] With these and other products joining the market, as well as open source applications, more standardization will emerge in catalog enhancements.

Catalog 2.0 Possibilities for Serials

How will these new catalog solutions affect the problems presented in the introduction of this paper? This section will show a potential view of how cataloging advances can aid the user searching the online catalog for serials titles or articles.[65]

Task 1: finding an unknown article on a topic

In the first situation mentioned as a difficult information-seeking task, a patron is looking for an unknown article on a certain topic. The patron can type her search terms into a metasearch box on the library's webpage, and she can choose from a list of resources that she would like to search: indexing and abstracting or full-text content databases, the catalog, etc. She does not choose the "search begins with" option, so her natural language search terms return relevance-ranked articles that can have different subject terms from the terms she has input. The first list of results, presented within the catalog's metasearch, is organized by facets, including by database, by date of

publication, and by journal. The user selects one of these facets, and she is forwarded to the database. She then interacts with the database's user interface. If she views a citation in an indexing and abstracting database, there is a link to the library's catalog to see whether the library has the journal in print, microform, or online. If the format of the journal is online, the user will be forwarded directly to the article, via OpenURL technology. If the format of the journal is print, however, the user sees the print bibliographic record. For a mock-up of the bibliographic record display, see Figures B and C.[66] The mock-up presents one potential way that bibliographic information could be displayed.

Figure B. Screen view of a sample bibliographic record display; underlined text is hyperlinked

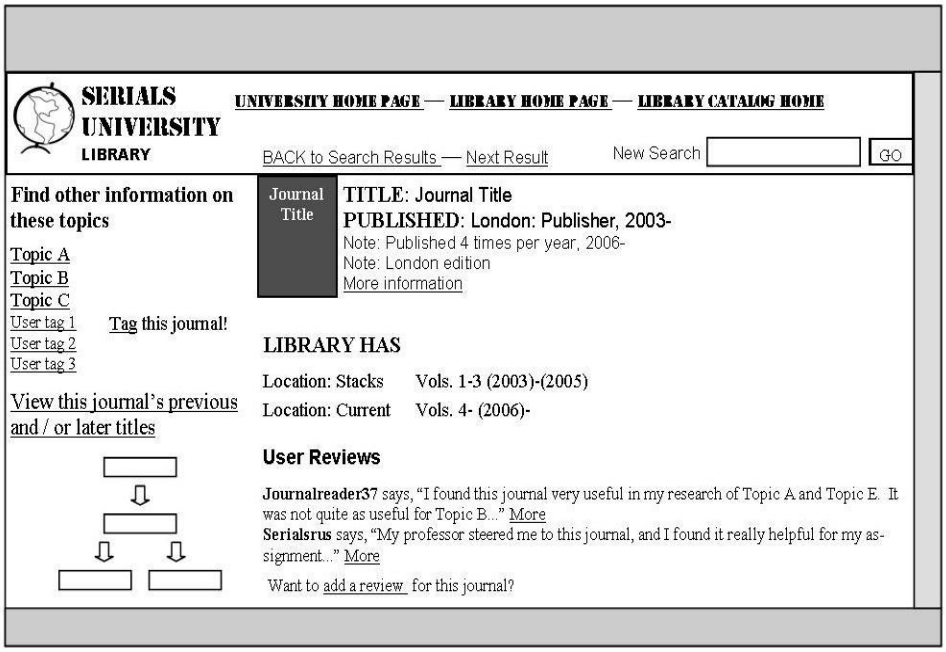
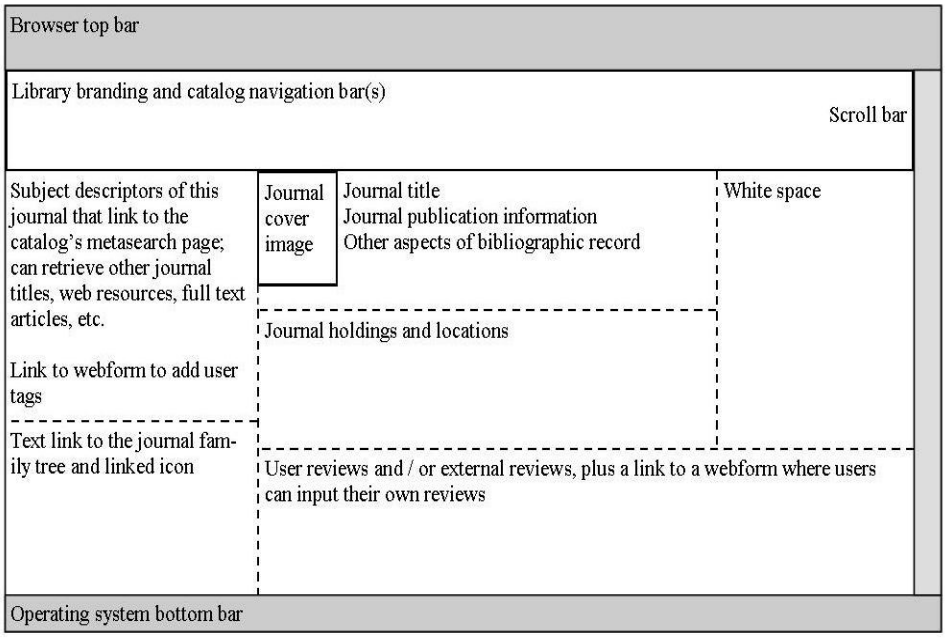


Figure C. Screen view of a sample bibliographic record display: template of locations for information items



The print bibliographic record is a simplified record, according to the new CONSER standard. The user can see the holdings and location for those holdings, which will lead her to the article she needs. She can also see an image of the journal cover and user reviews and comments about this journal. Additionally, if she wishes to look for similar items, she can click on links on the left side of the screen that represent both Library of Congress subject headings and user tags. If the patron clicks on one of the topic links or tag links, she will see metasearch results from a search on that topic or tag; these results can include more catalog records, full text articles, and websites. From the bibliographic record screen, the patron also has the option to add her own tag for this journal. Finally, if she wishes to see the serial title history, she can click on the title history icon or text link on the bottom left-hand corner and view the title history (see Figures D and E). There will be further discussion of the title history in a later task.

Task 2: Finding a known article (from a citation)

If a patron is looking for a known article from a citation, he will begin on the metasearch page, just as the first patron did. He will choose the "Search begins with" option, however, to eliminate extraneous results in the relevance-ranked set. Presumably his result list will be very small, because of the exact nature of his search. He should then be able to follow the same path as the first patron, either seeing the full text quickly as a result of OpenURL linking, or being forwarded to the bibliographic record in the catalog, where he can then find print or microform holdings.

Task 3: Finding a known title

In the third situation, a patron is looking for a known title, the *New York Times*, to discover where the print copies of the newspaper are located. Again, the patron chooses

"Search begins with" to eliminate unwanted results. The results returned are collocated by the superwork identifier for the *New York Times*, which should reduce the number of initial results. The results are also faceted by physical format, publisher, language, and subject. The user chooses the print version of the newspaper, and he sees the bibliographic record display, as described above. He is able to see the library holdings and find the newspaper on the shelf.

Task 4: Finding a complete journal run

In this situation, a patron wants to look at various issues across the whole run of the journal *Proceedings of the Royal Society of London*. He chooses the "Search begins with" and enters "Proceedings of the Royal Society of London." His initial results are grouped according to superwork identifier, and he clicks on the title. He then sees the bibliographic record display, as in Figure B. In order to see the entire title history, he clicks on the title history display, which links to the serial superwork display (Figure D). This display shows all of the previous and succeeding titles of the journal, and it also links to the library's holdings. (Alternatively, for a less cluttered display, the superwork page could show just the titles and publication information. It could link each title to its own bibliographic record, as in Figure E.) The patron is then able to see what titles he needs to view in order to see sample articles across the title history.

Figure D. Partial view of the serials superwork catalog display with library holdings included. Underlined text represents a hyperlink.

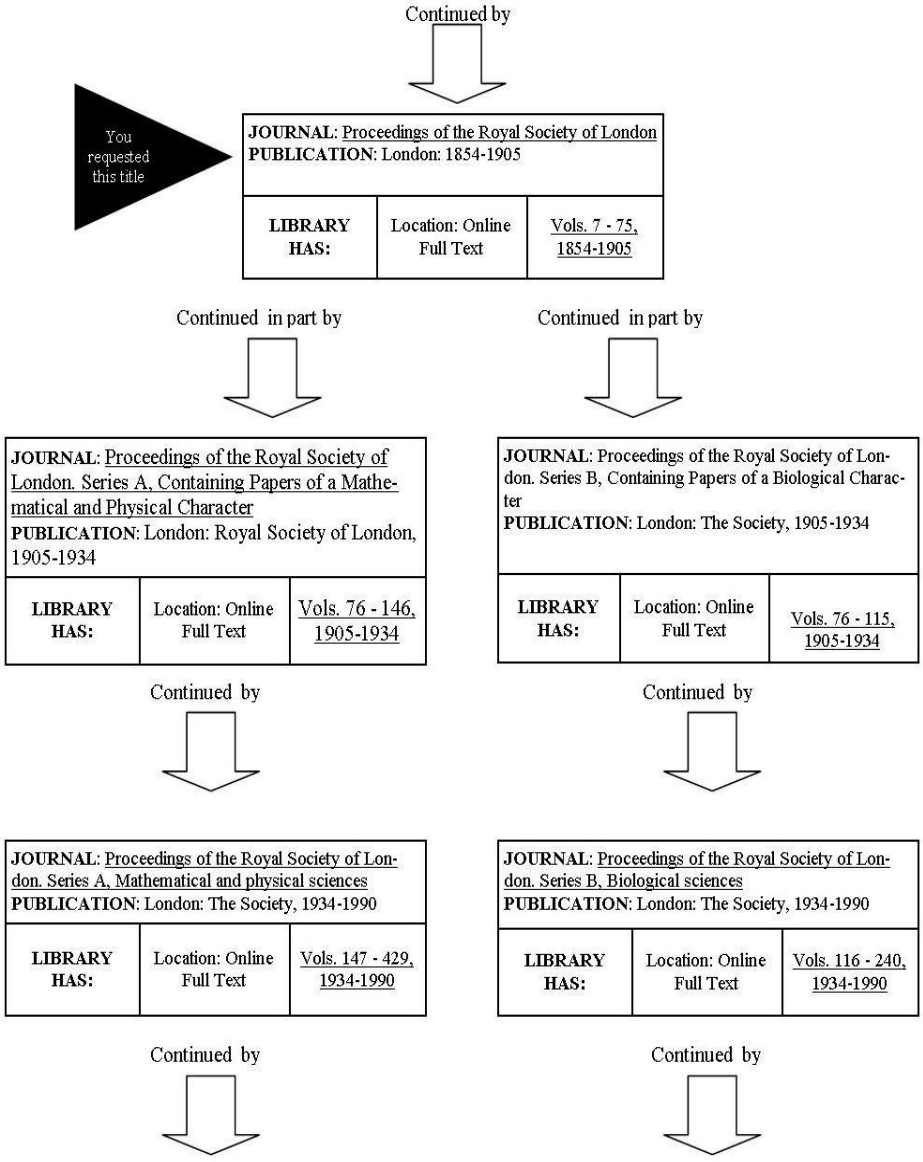
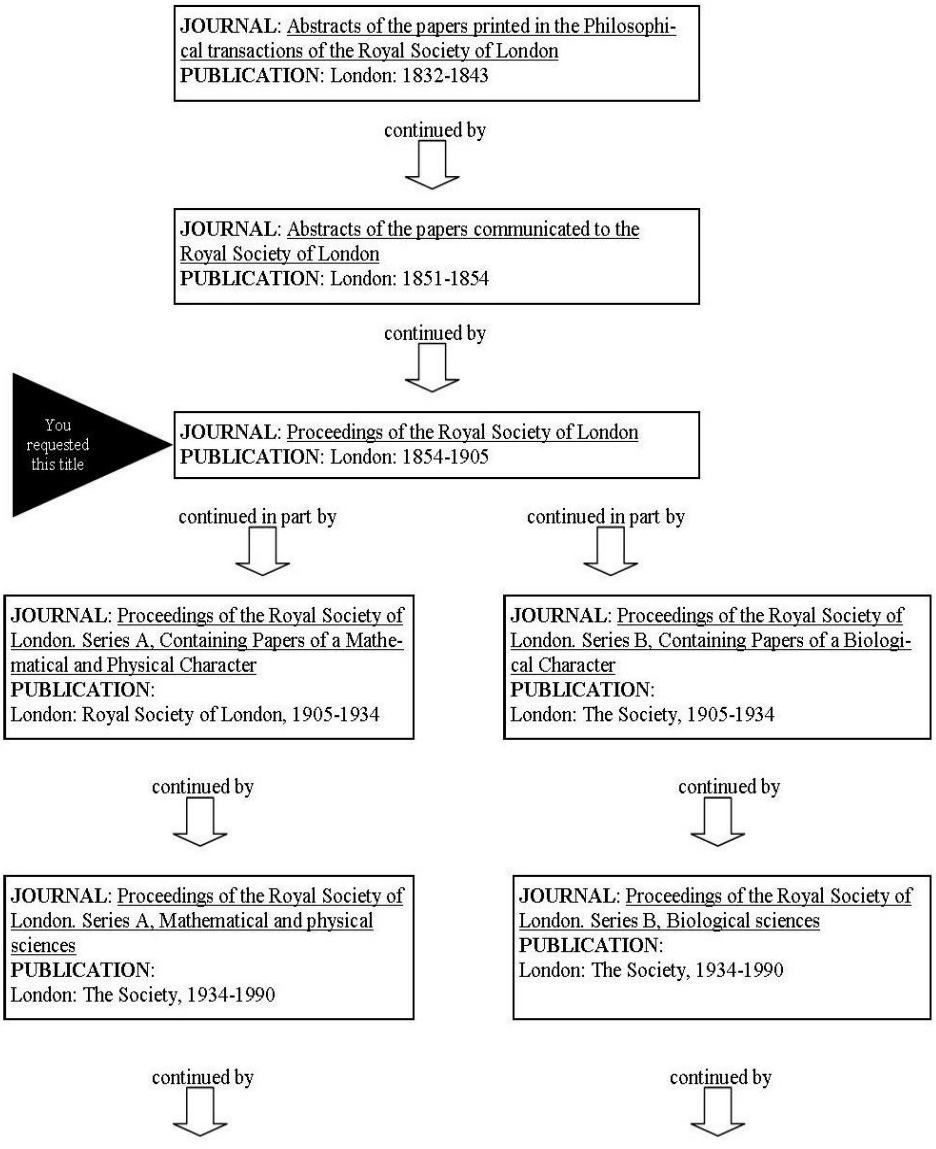


Figure E. Alternatively, a view of the superwork display without holdings; user can click on the desired hyperlinked title to go to the rest of the bibliographic record, including holdings.



Task 5: Finding unknown titles by topic

A patron wants to find well-respected journals on a particular topic. She enters her natural language search terms into the metasearch box, and the search retrieves several journals, because the relevance ranking algorithm pulls together journals with appropriate Library of Congress subjects and journals that previous users have tagged with the same or similar descriptive terms as the patron chose. The results are the superworks rather than individual manifestations, and relevant subject terms are displayed below each title, in addition to the facets of physical format, language, etc. When the patron chooses a particular version of the title, she sees the bibliographic record display. She can then see other library patrons' and potentially external reviewers' reviews of this journal.

Conclusion

Although these scenarios may not be possible at this moment, it is the author's belief that catalogs are moving in the direction of being able to accommodate the described user tasks in these ways. All of the recent advances in cataloging show an increased interest in user-centered design for catalogs. The central question underlying all these advances is, "What works well for users, and what works well for catalogers, given the fact that we all, users and catalogers alike, have limited resources?"[67] Now that we know what is possible, our challenge is to determine how libraries can partner with vendors, publishers, and users to create a maximally effective catalog for finding serials and any other information resource in the library's collection.

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[66] Note that the mock-up text is not to scale; a screen would be able to display more text with more white space. The underlined words represent hyperlinks. As this is just a mock-up, some of the information that libraries may want to display, or that integrated library systems have the option of displaying, is not present.

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