

# FRBR

## Coming Soon to Your Library?

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*The Functional Requirements for Bibliographic Records (FRBR) data model holds great potential for improving access to library resources, but may not affect all libraries in the same way. The Joint Steering Committee for Revision of AACR, assisted by the work of its Format Variation Working Group, is exploring ways to incorporate FRBR into the next edition of the Anglo-American Cataloguing Rules to facilitate collocation at the level of the FRBR entity expression. Several library system vendors are also adding FRBR-based functionality to their systems. A combination of these two approaches to FRBR can provide significant benefits to users. Most FRBR entities and attributes are already present in library catalog records, and the influence of FRBR can also be seen in existing library activities. FRBR is thus not something totally foreign, but a fresh, more rigorous way of thinking about what libraries already do that provides a basis for designing new ways to improve users' access to library resources.*

Recent discussions in the library community about the Functional Requirements for Bibliographic Records (FRBR) data model have generated many questions that do not seem to have easy answers.<sup>1</sup> How is the FRBR model likely to affect most libraries . . . and when? Should cataloging managers be preparing to retrain their departments in something entirely new? Do other library staff members need to be concerned with FRBR, or is it just a cataloging thing? How can a library prepare for something that is not a new standard (and thus has no firm date of implementation) and that will not affect all libraries in the same way? Some librarians are becoming so apprehensive about FRBR that the term “FRBRphobia” comes to mind.

While the FRBR model offers great potential for influencing the way that we think about bibliographic data, we must first understand the components of the model itself well enough to make that possible. Unfortunately, discussions of FRBR sometimes make this difficult by focusing on how the most complicated bibliographic situations fit (or do not seem to fit) into FRBR's entity/attribute structure. This can give the misleading impression that the model is complex and difficult to learn. The theoretical nature of the FRBR model, which does not relate directly to any familiar data content or tagging standard, may make the possible effects of FRBR on individual libraries or library applications difficult to predict and understand. FRBR can seem very remote from daily library activities, and thus may appear to be of limited value except to cataloging theorists.

To address these concerns about FRBR, understanding some of the specific processes through which FRBR will begin to affect libraries is important. This paper will address some of these processes by first examining the effect of FRBR on cataloging through efforts to incorporate portions of the FRBR model into the Anglo American Cataloguing Rules (AACR), next by exploring the possible impact of FRBR on the development of online library systems and

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how libraries can respond to and participate in this effort, and, finally, by exploring possibilities for relating FRBR to other library projects.<sup>2</sup> Through the discussions in this paper, libraries will begin to be able to address the following questions:

- What do we need to know about FRBR in order to recognize it when it arrives?
- To prepare for its arrival, what questions should we be asking about FRBR, and to whom?
- What are some simple and effective ways to introduce the FRBR model to others in the library community?

### **Incorporating FRBR into AACR: The JSC Format Variation Working Group**

The Joint Steering Committee for Revision of AACR (JSC) is engaged in various efforts to incorporate aspects of the FRBR model within AACR. Beginning in 2001, the JSC commissioned a wholesale analysis of terminology within AACR2.<sup>3</sup> The JSC also embarked on an effort to examine one specific aspect of the FRBR model: the FRBR Group 1 entity expression.<sup>4</sup> JSC charged a special group to study and make recommendations for how this entity could be incorporated into AACR2. The JSC's Format Variation Working Group (FVWG) was active from 2001–2004 and, when it was first charged, included members from all of the JSC's constituent countries (the United States, Canada, the United Kingdom, and Australia).<sup>5</sup> While the group had several different terms of reference requesting that it undertake various specific tasks for the JSC, all of these tasks had the common element of dealing with the FRBR entity expression.<sup>6</sup> Much of the group's efforts focused on proposing actual revisions to AACR2, but the group also developed a strong role in forging relationships with system vendors who are interested in implementing the FRBR data model.

#### **Cataloging an Expression?**

FVWG's first terms of reference asked the group to investigate the feasibility of creating catalog records at the level of the FRBR Group 1 entity expression, rather than at the level of the entity manifestation, as is the current practice for most library cataloging.<sup>7</sup> In order to assess the practicality of such a dramatic change to current cataloging practice, the working group undertook an experiment to create catalog records for expressions that exist in multiple manifestations.<sup>8</sup>

Because the working group chose cataloging examples for the experiment that were sets of manifestations, each

known to represent the same expression, the group's experiment did not completely simulate the experience that a library catalog department would encounter if cataloging expressions. Most libraries do not catalog a group of manifestations of the same expression all at the same time, but instead acquire one manifestation at a time. Therefore, a cataloger would not necessarily have access to all bibliographic data related to a particular expression when cataloging a manifestation. In creating a catalog record for an expression, the cataloger in a typical library catalog department also would need to determine the relationships between manifestations at the time that the first manifestation is acquired, perhaps without having access to additional manifestations or to all relevant bibliographic data about the expression. Participants in the working group's controlled experiment did not have to be concerned with this situation.

While FVWG's experiment considerably simplified what would be the real-life experience for a typical catalog department in cataloging expressions, many members of the group were still unsure where to start to create a bibliographic record for an expression. For example, what should be used as the title of the expression: the title of the earliest manifestation or of the first manifestation cataloged? Or perhaps the uniform title for the work? What should be considered the date of the expression? One member described a blurring between expression and manifestation in many elements of current catalog records, as general notes and variant titles also could not automatically be assumed to belong to either the expression or to the manifestation.<sup>9</sup>

Most FVWG members found the group's attempt to catalog an expression more difficult than first expected, except in some specific situations. When cataloging reproductions, creating a catalog record for an expression worked well when the bibliographic description of the reproduction did not vary from that of the original. However, participants in the experiment still questioned whether or not bibliographic data related to the original manifestation (such as the statement of responsibility) belonged to the expression, the original manifestation, or both.

In an exception to the overall difficulty of the experiment, the sound archivist on the working group reported that creating catalog records for an expression was very logical and intuitive for resources in a sound archive. He reported that his institution was already creating catalog records for expressions and linking all manifestations to that expression successfully. For sound recordings, a specific performance or event is considered an expression, so that in the sound archive all recordings of the same performance or event represent manifestations of that same expression.<sup>10</sup>

Based upon the results of its cataloging experiment, FVWG suggested that the process of cataloging an expres-

sion fits very logically with the way that an archivist may work with related resources within a collection and may be appealing in other situations, as well. However, the group expressed significant concern about the possibility of making expression-level cataloging the norm for all library materials. In a real situation where a library acquires one manifestation at a time, records for expressions might require frequent revision and maintenance as more information about an expression becomes available over time. The group concluded, on a practical level, that this lack of information about the expression at the time of cataloging the first manifestation has the potential to greatly complicate the process of cataloging.<sup>11</sup>

On a theoretical level, FVWG pointed out the incongruity between the FRBR data model and the practicality of cataloging:

FRBR is organized in such a way that the entities of work, expression, manifestation and item each derive logically from the entry that precedes it, in a progression from the abstract to the concrete. This is the reverse of the way that cataloging is actually carried out. Where actual day-to-day cataloging is concerned, manifestation and item-level information are essential to the use of the material, and work and expression level information should derive logically from it, rather than the other way around.<sup>12</sup>

As a result of its experiment, the group recommended in its first report that, for the most part, libraries should continue their current practice of cataloging manifestations. On the other hand, the group also reaffirmed the need to provide access to expressions within catalogs, but recommended that this be achieved instead through an exploration of expression-based collocation, rather than expression-based cataloging.<sup>13</sup> Such an approach could target those records within a library catalog that would most benefit from being grouped according to expressions, without totally changing the way that libraries catalog.

Collocation at the work and expression level will enable a catalog to show the relationships between different expressions and manifestations of the same work when that work exists in multiple expressions and manifestations. This is frequently the case in the humanities. However, not all bibliographic records will benefit from this collocation: access to works and expressions that exist in only a single manifestation may not be significantly improved through using expression-level collocation. And, single-manifestation works represent by far the majority of the materials in library catalogs. According to research conducted by OCLC, the 47 million manifestations in the OCLC WorldCat database represent 32 million different works,

making an average of only 1.5 manifestations per work. Ninety-nine percent of all works in WorldCat have seven manifestations or less.<sup>14</sup> Thus, the benefits of FRBR collocation apply to only a small segment of records a library catalog, but, according to OCLC, to the most important segment—that is, to works that are the most widely held in library catalogs.<sup>15</sup> The results of OCLC's research reaffirms the validity of the FVWG's recommendation to retain the status quo of basing catalog records at the manifestation level, rather than dramatically changing all cataloging in order to provide better collocation for only a small percentage of all library resources.

After concluding its initial experiment to catalog expressions, FVWG, under JSC's direction, shifted its work to studying two different methods for achieving expression-level collocation within a catalog for those materials that will benefit from it. The first method, cataloger-created collocation, refers to the assignment of specific headings for each expression by the cataloger; the second, system-created collocation, refers to an online system providing additional collocation of search results using bibliographic data already present in bibliographic records. Both of these methods will be described below.

### **Headings for Expressions in AACR: Why?**

In order to allow catalogers to create headings to explicitly identify and differentiate expressions, the JSC requested that FVWG propose new rules for AACR2 for constructing headings for expressions.<sup>16</sup> JSC envisioned headings for expressions to be extensions of headings for works that now exist as uniform titles or as a name/uniform title headings. A cataloger would create an expression-level heading by adding expression-level attributes or other identifiers for the expression to a uniform title for a work.<sup>17</sup> If incorporated into the current edition of the code, new general rules for expression-level headings would logically be placed after the general rules for constructing uniform titles for works within chapter 25 of AACR2.

The addition of rules for creating expression-level headings to the cataloging code would help to further JSC's strategic goal to include the function of the catalog within the scope of a new edition of AACR.<sup>18</sup> Cataloger-assigned headings for expressions would illuminate the relationship between resources described in a catalog; thus, adding rules for creating these headings to AACR would be an important step toward moving AACR beyond describing primarily the content of individual bibliographic records as well as toward defining how a catalog should function. The presence of rules for constructing expression-level headings within AACR would affirm that collocation at the expression level, as well as at the work level, is essential to the functionality of a catalog.

With many libraries not currently even assigning uniform titles for works, why add rules to AACR that would require even more effort by catalogers to apply, and perhaps further complicate the cataloging process? Libraries may want to consider constructing headings for expressions for those subsets of their collections that would most benefit from FRBR. Headings for expressions may be particularly useful when a library owns extensive materials in a specific area, especially when the collection contains many expressions of the same work or many manifestations of the same expression. For example, when a library develops a rich collection of related materials in response to local research interests, an extra level of collocation may draw attention to this collection and increase its accessibility to users. Expression-level headings also could be used in subject headings and in related-work headings to more finely relate resources to each other at the expression level rather than at the work level.

A library would be unlikely to routinely assign headings for expressions to more than small, discrete portions of its collection. Many libraries would not use expression-level headings at all. However, the presence of rules for the creation of such headings in AACR would provide a valuable tool that catalogers could be drawn upon when needed.

### Writing Rules for Expression-Level Headings

FVWG, in what was to be its final report to JSC, proposed a revision to the general rules for chapter 25 of AACR2 to accommodate headings for expressions.<sup>19</sup> After discussing the group's report, JSC decided, at its meeting in April 2004, to fold the proposals from the group into the overall development of the new edition of the code (AACR3), and to forward the report to the soon-to-be appointed editor of AACR3.<sup>20</sup> FVWG's report was not made available publicly via JSC's Web site at that time. While the fate of individual proposals for chapter 25 in the group's report remains uncertain at this point, the general issues identified by the group surrounding the creation of rules for expression-level headings still merits discussion.

In addition to proposing new rules for the construction of expression-level headings, FVWG proposed revisions for the general rules for constructing uniform titles within chapter 25 of AACR2, with the goals of clarifying the general rules, making them easier to use, and making them more consistent with the FRBR data model. The group attempted to make as many of the new rules as compatible with existing headings as possible to minimize the number of heading changes that would be necessary should the revised rules be implemented. This was not always possible, however, especially in cases where existing headings use expression-level elements (such as language) interspersed with work-level elements.<sup>21</sup>

One recommendation made by FVWG, in an attempt to provide more clarity to the rules, was to drop the use of the ambiguous term "uniform title" in chapter 25, because the term currently has several different meanings in the glossary of AACR2. The group recommended replacing the term "uniform title" with the more neutral and more descriptive term, "constructed title."<sup>22</sup>

The new rules for establishing headings for expressions proposed by FVWG used a model that adds elements to a uniform title for a work to further identify and differentiate an expression. This model would allow a cataloger to add one or more elements to the heading for a work to the point of fully identifying and differentiating a specific expression, or, depending upon the needs and policies of a particular library, a cataloger could add fewer elements to the heading (maintaining the specified order of additions) to organize the headings in the catalog under a particular attribute of the expression, such as language or mode of expression. This may be an attractive solution when a library wants additional collocation for many expressions of the same work, but does not need full expression-level headings for each one.<sup>23</sup>

The current rules in chapter 25 of AACR2 contain an important precedent for this type of partial-expression heading: Rules 25.5C and 25.5D call for the addition of language (an attribute of the expression) to the end of a uniform title for a work. Therefore, current uniform titles that include language go beyond functioning as uniform titles for works. However, they may not fully identify an expression either, if more than one expression of a work exists in the same language. They function at a level in between the two, and serve to differentiate one group of expressions from another group of expressions. Such headings, which contain an attribute of an expression such as language or mode of expression as their final element, would serve the function of guide-cards within the catalog.<sup>24</sup>

Determining the best order of elements within an expression-level heading, and thus determining the best order for the new rules themselves, proved a challenge for FVWG. The group decided to organize its proposed rules according to the type of situation that may result in a new expression: translations, revisions and abridgements, and differences in mode of expression.<sup>25</sup> Figure 1 provides examples for what expression-level headings might look like for each of these situations, according to the rules proposed by FVWG. These examples are based on proposed new rules, so that headings constructed using the actual rules as they are incorporated into AACR3 may vary considerably from these examples regarding the selection of elements, order of elements, and punctuation.

Once the order of the proposed rules was established, however, each of the situations represented in figure 1 presented a further challenge: in each case, several possible



bibliographic elements could be added to the heading to identify an expression. For example, a translation may be identified by the language of the translation, the name of the translator, or the date of translation; a revised edition may be identified by the edition statement (2nd edition and so on), the name of the editor, or the date of the revision; a performance of a work intended for performance may be identified by the names of the performers, the date of performance, or by the mode of expression.<sup>26</sup> How should the cataloging rules provide guidance for selecting what element to add to a heading when, even in similar situations, different catalogers may have different bibliographic data available to them? This question will need to be carefully considered during the preparation of new rules for AACR3.

In addition to the practical concerns discussed above regarding making the rules for expression-level headings easy to use, FVWG also had a general concern about the inherent limitations of using a precoordinated string of terms within a heading for access to expressions. Whatever order of elements is selected for use in the rules will collocate by one attribute of the expression at the expense of the other attributes.<sup>27</sup> This may or may not be useful to a particular user of the catalog. For example, if the mode of expression is an element of the heading string, then the headings will sort by this element (sound, text, and so on) and perhaps obscure other relationships between expressions (such as language) or between expressions that may have been derived from each other.<sup>28</sup> Because of concerns about the inflexibility of precoordinated headings for expressions, the group recommended in its report that, when such headings are implemented, the AACR community should insist upon separate online coding for each element in the heading to provide for the greatest possible flexibility in displaying these elements within online systems.<sup>29</sup>

### Preparing for Expression-Level Headings

Cataloging rules for the construction of expression-level headings are still in the proposal stage and are unlikely to appear in AACR3 until 2007 at the earliest.<sup>30</sup> Thus, catalogers may wonder how best to prepare for what may come once rules that cover these headings are included within AACR3. One way to do this is to engage in discussions among various groups of experts who are working to make operational the FRBR entities of work and expression. Discussions within FVWG, on the International Federation of Library Associations (IFLA) FRBR Review Group's discussion list and in other venues, show that many gray areas

will need further discussion (for example, is a Braille edition of a book a new expression, or a new manifestation?).<sup>31</sup>

Librarians (especially catalogers) should begin to discuss the application of the theoretical FRBR model to real-life cataloging situations. However, becoming too immersed in the potential complexities of specific examples may be counterproductive because it may obscure the real value of the FRBR model. To retain a sense of perspective in these discussions, catalogers are advised to weigh rigorous adherence to the FRBR model against a concern for what will best help users to understand the relationships that exist within a catalog. Instead of debating whether or not two resources represent the same expression or the same work, consider instead whether or not catalog users would benefit from having those resources grouped together under the same heading in the catalog. One of the underlying goals of FRBR's creators was to address the needs of catalog users, and these needs may outweigh the value of strictly adhering to the details of the FRBR model.<sup>32</sup>

Even though full headings for expressions are not currently defined and cannot be used legally in catalog records at this time, catalogers can still begin to consider potential uses for these headings within their own library catalogs, and also to think about how the functionality of library systems can contribute to collocation at both the work and the expression levels. When headings for expressions begin to appear in catalog records, library systems must be able to extend their current functionality for collocating headings containing uniform titles to a new level of specificity in order to accommodate these headings.

## FRBR and System Vendors

While cataloger-constructed headings for expressions hold much potential for improving collocation in online catalogs, they obviously will be useful only in those cases where a cataloger has assigned them within a bibliographic record. Because such headings will be applied only in certain situations, catalogers also must look at what additional collocation at the work and expression level library systems

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#### Heading for a Translation:

Homer. *Illiad*. English (Pope)

#### Heading for a Revision:

Melville, Herman. *Moby Dick*. Abridged ed.

#### Heading for an Expression in a Different Medium than the Original:

Berlioz, Hector, 1803-1869. *Symphonic fantastique*. Sound (Solti)

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**Figure 1.** Examples of headings for expressions.

can do, or should be able to do, using the bibliographic data already present within the library's bibliographic and authority databases.

As one of its early tasks, FVWG was charged to pursue the creation of an experimental database to test the feasibility of system-based expression-level collocation.<sup>33</sup> The group considered the ability to test expression-level collocation in a live database a high priority throughout its work. Instead of creating its own database, however, the group collaborated with system vendors who were currently implementing elements of FRBR collocation in order to learn from their experiences. FVWG posted a call for system liaisons on December 9, 2002, to various library automation-focused discussion lists to invite system vendors to establish liaisons with the group and discuss issues related to the implementation of FRBR.<sup>34</sup> As of spring 2004, the group had established relationships with eleven system vendors.<sup>35</sup>

In 2002, OCLC began hosting meetings during American Library Association (ALA) conferences for interested "FRBR Implementers" that were to be attended by system vendors as well as by representatives from the Library of Congress and from FVWG. Agendas at meetings of this ad hoc FRBR Implementers' Group consist of verbal reports, occasional demonstrations, and discussion about progress toward implementing FRBR in an online environment. During the past two years, attendees at meetings of this group have demonstrated a wide range of commitment levels regarding implementing FRBR in their systems. Some vendors have already implemented many elements of FRBR, others have been planning to do so or are just getting started, and still others are still considering whether or not to implement FRBR.<sup>36</sup>

FVWG members used the FRBR Implementers' Group meetings as an opportunity to keep system vendors informed about plans to implement headings for expressions, answered questions from various vendors about how to implement collocation using existing bibliographic and authority data, and, in general, encouraged system vendors to keep pursuing this effort.<sup>37</sup> Now that FVWG has finished its work, OCLC will take over coordination of this informal group of FRBR implementers. JSC will continue to maintain a liaison relationship with the group.<sup>38</sup>

The relationships with system vendors established during meetings of the FRBR Implementers' Group provided an opportunity for FVWG to engage more directly in the actual online implementation of FRBR. Both OCLC and VTLS requested that members of the group look at and provide feedback on their FRBR-based system interfaces. Group members viewed a demonstration of an early system prototype for FRBRizing the OCLC WorldCat system.<sup>39</sup> They were also asked to participate in a review group related to the redesign of WorldCat for Resource Discovery.<sup>40</sup> Some mem-

bers also reviewed VTLS's FRBR-based Virtua system.<sup>41</sup> Finally, with the assistance of members of the Music Library Association, FVWG looked at a version of the Library of Congress music files that were FRBRized by VTLS.<sup>42</sup>

In an attempt to get the broader library automation community thinking about how FRBR might be implemented in a MARC21-based environment, FVWG submitted a discussion paper on this topic to ALA's Machine-Readable Bibliographic Information Committee (MARBI) in 2002.<sup>43</sup> This paper contained a discussion of several possible methods of implementing FRBR, including the possibility of creating headings for expressions and controlling these headings through the use of authority records for expressions. While the discussion paper was written early in FVWG's work and so did not present the group's full proposal for constructing expression-level headings, it accomplished the group's objective of encouraging system implementers to start discussing the possible need for additional content designation in order to implement FRBR.

### Talking with System Vendors about FRBR

As of August 2004, several library system vendors have working FRBR-based systems available to their customers. Therefore, this is now an opportune time for libraries that would like to take advantage of FRBR collocation to begin talking to their vendors about their plans to implement FRBR. However, talking about FRBR is not always easy, and some libraries may not know what questions to ask of their vendors. Libraries also may have difficulty assessing the answers they receive to their questions, because methods for implementing the theoretical FRBR model vary greatly from one system to another.

The emphasis on collocation within the FRBR model makes a system's user interface a likely focus for FRBR implementation. If a vendor says that they are implementing FRBR in their system, libraries should ask what their FRBR interface would look like to users. Will users be aware that they are looking at a FRBR-like record structure (for example, does the interface itself include such FRBR terms as "work" and "expression"), or will that structure be hidden behind the interface? How will users navigate through search results? Can they browse results at both the work and expression level? Is the vendor performing usability testing on its FRBR user interface, and, if so, how, and on what users?

Libraries may want to take their questioning of their system vendor about FRBR to another level by also asking about the internal workings of the FRBR-based system. Does the system store the records in a FRBR-based record structure (in work records, expression records, and so on) or in a more standard format, such as MARC21? If the data is stored in a FRBR-based structure, can it still be extracted in a standard format, such as MARC21? How does the sys-

tem link such records, and how are the links maintained? How does the implementation of FRBR affect the cataloging interface? Will staff operations (cataloging, acquisitions, circulation) benefit from the implementation of FRBR, or will it only affect the online catalog?

While more and more library system vendors are implementing at least some elements of FRBR into their systems, other vendors are not. Because FRBR is a data model developed by library professionals, some vendors still question whether library users really want or need the improvements that FRBR may offer. Unfortunately, very little usability data is available publicly that demonstrates that a FRBR-based catalog interface makes library catalogs easier to use and understand, although a few vendors may have done such testing on their own systems for their internal use. Until such hard data is available, pressure from customers—and in particular from potential customers—may be the most effective way to convince a vendor that implementing FRBR is worth the associated development costs. Libraries that attempt to lobby their current system vendor may want to compile lists of known problems with the system that implementing FRBR would help to solve, or to restate unfulfilled enhancement requests in terms of FRBR.

### **Do-It-Yourself FRBR**

As pointed out by various experts on FRBR, the potential benefits of implementing the FRBR data model in an online catalog are many, including better collocation, more efficient navigation of search results, and better bibliographic control in a global environment.<sup>44</sup> Unfortunately, because FRBR is not a standard for resource description, content designation, or data structure, the benefits of FRBR are unlikely to find their way uniformly into all library catalogs and databases. And, efforts to incorporate FRBR into AACR3, and possibly also into MARC21, are years away. What can libraries do in the meantime, besides lobbying their system vendors? Libraries can look for opportunities to implement some aspects of the FRBR model within other activities that are more under the library's immediate control. Such opportunities may come in new Web site design, database creation, project proposals, and policy decisions that libraries make now regarding metadata content that will position the library to implement FRBR in the future. And, finally, opportunities may come simply by finding ways to engage in discussions of FRBR with colleagues and helping them to visualize its impact.

#### **FRBR at the University of Rochester**

At the University of Rochester (UR) in Rochester, New York, FRBR has already arrived as a fundamental compo-

nent of two Web projects that were designed to provide easier access to particular segments of UR's River Campus Libraries' (RCL) collections. Based on a user-centered design, these Web projects use bibliographic data already present in the libraries' MARC records to provide simple alternatives to cumbersome online catalog searches. Creating these Web sites allowed library staff to respond directly to specific needs of the UR community.

RCL maintain two collections of nonprint materials that are intended not only to support the university's academic programs, but also for recreational use by students and faculty. The first, a collection of around 7,500 videos and DVDs, supports the Film and Media Studies program at UR's River Campus, and also provides an alternative to a video rental store for the UR community. The second collection, of about 1,000 music CDs, supports course reserves for music classes at the River Campus as well as recreational listening.<sup>45</sup> While all of the items in both collections are cataloged in the university's online catalog, users cannot browse these collections through the catalog.<sup>46</sup> To search either collection using the catalog, a user must limit his or her search by location or format (or both) and then key in an appropriate search term. The libraries had no easy way to allow users to quickly just see what they have.

To respond to this user need, staff in the Art and Music Library and Multimedia Center asked RCL's systems staff to design interfaces to these collections that would bypass the library catalog. In particular, they wanted to be able to show library users dynamically generated lists of all movie directors represented in the video and DVD collection and of all performers on musical sound recordings. To accomplish these tasks, one of the libraries' systems analysts, Jeff Suszczynski, designed Web sites making use of designations of function in the form of MARC relator codes (USMARC subfield 4) that, for the most part, were already present in the library's bibliographic records.<sup>47</sup> In FRBR terms, relator codes in headings show the relationship between the person or corporate body (FRBR Group 2 entity) and the resource being cataloged.<sup>48</sup> Such codes are often the only way to identify these relationships in a predictable place in the catalog record, thus allowing systems to automatically use them to provide additional collocation in results displays.

Using MARC relator codes in UR's bibliographic records, the library's systems analyst created dynamically generated Web pages for each of the two multimedia collections. The Web sites are generated using the following process: a Structured Query Language (SQL)-based script written in Perl, an open source programming language, queries the library's MARC-based online catalog to extract relevant bibliographic data both from the system's Oracle tables and directly from the system's MARC records. The library's ColdFusion server then populates an SQL table from the text files created during the previous process,

and then queries the SQL table to retrieve relevant bibliographic data based upon the criteria selected by the library user on the Web site.<sup>49</sup>

For videos and DVDs, the site allows users to view a dropdown list of all movie directors represented in the collection and then, with one click, to initiate a search of the online catalog to view all movies by a particular director. For music CDs, another page allows the same browsing capability for either performers or composers.<sup>50</sup> See figures 2 through 5.

Each site also provides other browsing capabilities frequently requested by library users and staff that also have a relationship to FRBR. Users can browse all movies in the collection by the film's primary language. In FRBR terms, this provides a level of collocation analogous to partial expression-level headings that include language, as discussed earlier in this paper. The Web sites also allow both collections to be browsed by genre (which, in the FRBR model, is analogous to the work-level attribute form).<sup>51</sup> For videos and DVDs, the libraries use primarily a selection of the Library of Congress moving image genre terms with local additions.<sup>52</sup> For audio CDs, the libraries created a special local list of very broad musical genres (jazz, classical, and so on) that mimic the categories found in record stores.

While theoretically the UR libraries should have been able to implement the Web pages described above simply by querying the existing bibliographic records in the database, in reality the existing records needed some maintenance to make the data more consistent. The libraries have a policy of using relator codes for headings on audio recordings and videos, but the codes had not been applied consistently through

the years. This is not surprising. Because the UR's current online catalog makes no use of relator terms, the libraries had no compelling reason to devote staff time to maintaining codes that previously had no immediate value to the library.

Because cataloging staff suspected that some records would need bibliographic maintenance, the libraries' systems department generated reports from the library catalog to allow catalogers to assess the extent of the problem. Both collections being queried for the Web sites are of manageable size (about 7,500 videos and 1,000 CDs), so cataloging staff determined that the maintenance necessary to add the missing relator codes was manageable. With the assistance of a cataloging intern, the data was cleaned up over the course of a summer.

The systems analyst encountered an additional problem during the coding of the Web sites caused by the library's practice of not using the relator term "cmp" for composers on sound recordings, in accordance with Library of Congress practice.<sup>53</sup> In order to correctly identify composers for the Web sites, the systems analyst used the following criteria to identify an entry for a composer on a sound recording:

- A main entry (100 or 110 field) that either contains a subfield 4 "cmp" or no subfield 4 at all.
- A personal name added entry (700 or 710 field) that either contains a subfield 4 "cmp" or a uniform title (determined by the presence of a subfield t) or which lacks both a subfield 4 and a uniform title.<sup>54</sup>

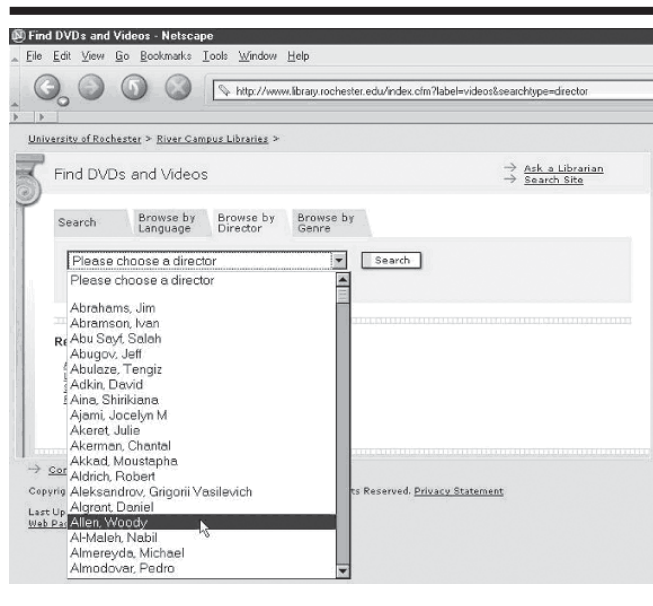


Figure 2. Dropdown list that allows browsing of all directors within "Find DVDs and Videos."

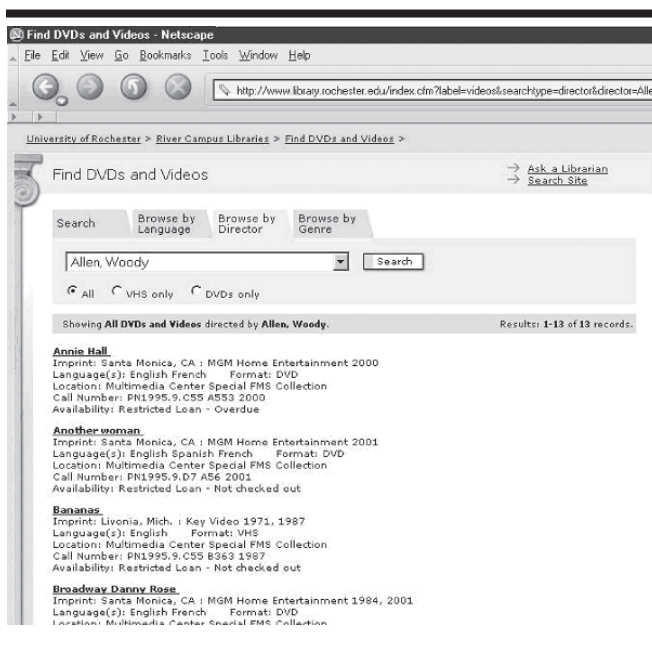


Figure 3. Result of selecting Woody Allen from list of directors within "Find DVDs and Videos."



Even using these criteria, some errors appeared when the bibliographic records were queried for the Web site, which necessitated some additional record cleanup before the composer browse feature of the sound recordings Web site could be implemented.

The UR libraries learned some important lessons from these small projects to show FRBR relationships using existing MARC data. The projects demonstrated the value of using designations of function (in the UR's case, in the form of relator terms) and, particularly, the value of using them in a consistent manner throughout the database. Evidence shows that current cataloging policies that limit the use of relator codes are counter-productive to a system-based approach to implementing FRBR.<sup>55</sup> While using designations of function consistently in bibliographic headings results in a cost in terms of cataloging staff time, the broader cataloging community should still reconsider the appropriateness of existing restrictions on the use of these designations in light of new ways that libraries can use the designations in FRBR-related projects. To address these restrictions, ALA's Committee on Cataloging: Description and Access initiated a rule revision proposal to JSC that would begin the process of easing restrictions on designation of function in Rule 21.0D in AACR2 to allow them to be used more broadly.<sup>56</sup>

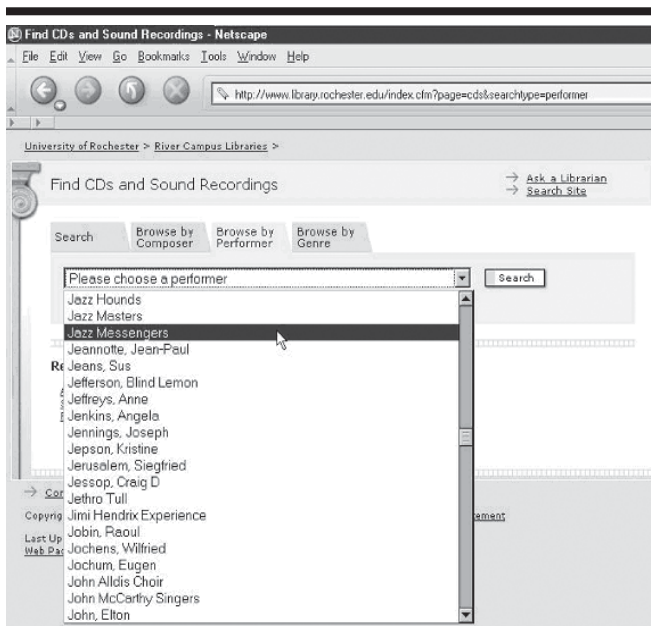
Another important lesson learned is that the success of projects to FRBRize existing MARC records depends upon the quality of the data being used. If data cleanup is required, the cost of this cleanup must be weighed carefully

against the potential benefit of the FRBR implementation, with consideration given to the size of the collection that needs cleanup. Fortunately, because only a small percentage of records in most collections will benefit from FRBRized displays, libraries can focus on cleaning up just these portions of their collections.<sup>57</sup>

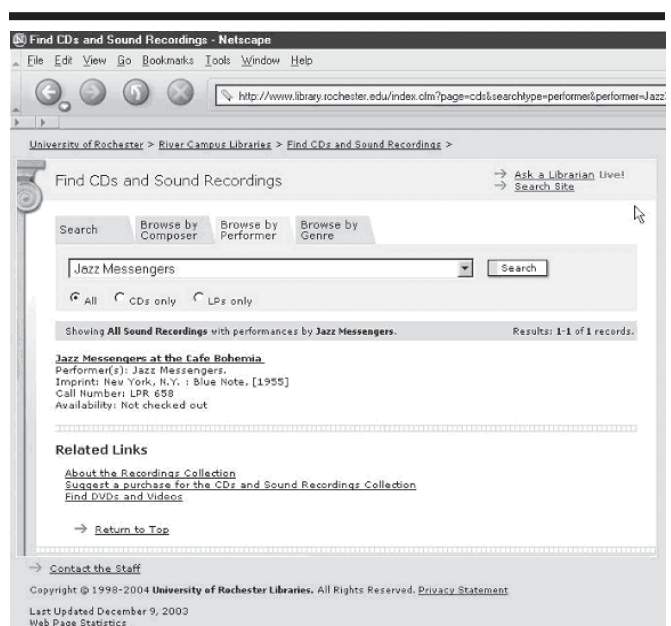
The potential of independent FRBR projects such as those undertaken at UR suggests possible future actions to facilitate data cleanup of existing bibliographic records associated with the implementation of FRBR. Batch cleanup of records to add missing data may provide a cost-effective way to prepare a database for FRBR. A library may accomplish this using its own staff, perhaps using a combination of batch cleanup and maintenance of individual records. Libraries implementing FRBR may want to form cooperative projects to share the cleanup of particular collections of records or, as an alternative, libraries may want to outsource data cleanup for FRBR to a vendor. Authority control vendors who already offer bibliographic cleanup services may want to consider expanding their services to include enriching bibliographic data needed for FRBR implementation.

### Visualizing FRBR

As discussed in this paper, understanding FRBR and how it will affect libraries can be difficult. Not all libraries will be affected in the same way, and the FRBR model itself may be difficult to comprehend without devoting some measure



**Figure 4.** Dropdown list that allows browsing of all performers within "Find CDs and Sound Recordings."



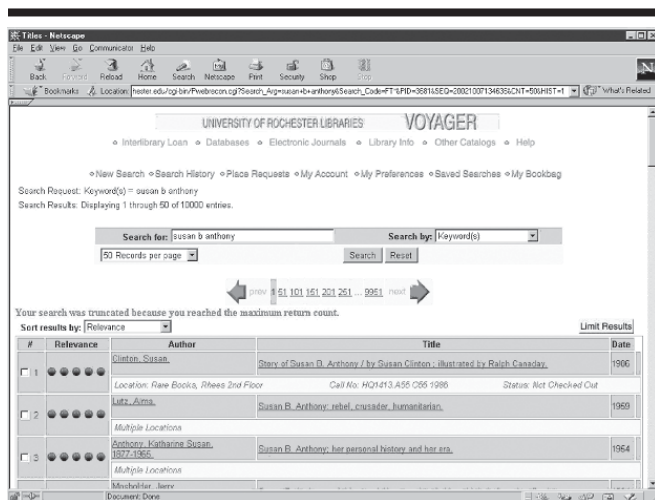
**Figure 5.** Result of selecting Jazz Messengers from list of performers within "Find CDs and Sound Recordings."

of time to it. To simplify this process, finding ways to visualize FRBR can be very helpful.

UR's Web site projects presented an opportunity to discuss an existing problem and its solution in terms of the FRBR model, thus giving staff at the UR a small taste of what FRBR's value could be. Other opportunities also exist for discussing current problems in terms of FRBR. For example, an acquisitions staff member may select a bibliographic record from a bibliographic utility for an item on order, and then the record is found to not match the actual item when it arrives in the library. This common situation could be described to staff in terms of the difficulty in choosing between many similar manifestations for the same expression in a particular bibliographic utility.

Finally, simple visual images can sometimes communicate more clearly than a wealth of charts and diagrams of entities, attributes, and relationships. With the assistance of the UR libraries' former graphic designer, Michael Donovan, the author created a series of mock-up images of results display screens for the libraries' online catalog and used them to introduce FRBR to a diverse group of library staff.<sup>58</sup> These simple screens show resources grouped according to the relationships between them, and are based on putting together some preexisting sorting capabilities of the UR's online system with new capabilities related to FRBR.

For comparison to the status quo, the series of screen-mockups is prefaced by an example showing the results of an actual keyword search (in this case a keyword search on "Susan B. Anthony" with a relevance sort) showing how the UR's online system currently groups results from keyword searches (see figure 6). Since a screen shot of the actual search results only shows the first few hits from the search, a chart summarizing the content of the highest-relevance



**Figure 6.** Result of a keyword search on "Susan B. Anthony" in UR's online catalog using a relevance sort.

results provides a broader context and demonstrates the lack of collocation provided by the current system (see figure 7).

The screen mockups (see figures 8–14) contrast vividly with the relevance sort by grouping results according to the relationships of the resources to the term searched; for example, resources either *by* or *about* Susan B. Anthony. Figures 8–11 show how a user would navigate through search results by first viewing works, then expressions, then manifestations *by* Susan B. Anthony. Finally, figures 12–14 show a comparable navigation through subject headings and subdivisions (resources *about* Susan B. Anthony), aided, in figure 14, by the option to sort according to expression-level attributes in an approach similar to the guide card concept discussed above.<sup>59</sup> This approach communicates the value of FRBR very effectively to colleagues who have no understanding of, or patience for, anything that resembles cataloging theory.

### What's Next

The success of the UR's FRBR-based projects has inspired additional discussions in RCL about what else can be done locally to draw upon the experience gained designing Web sites and creating screen prototypes. Usability testing by

- 
1. Biography
  2. Biography
  3. Biography
  4. Susan B. Anthony Preservation District
  5. Her Writings
  6. Biography
  7. Biography
  8. Biography
  9. Correspondence
  10. Virgil Thomson opera recording
  11. Biography
  12. Proceedings of her Trial
  13. Virgil Thomson opera recording
  14. Music from the Ken Burns film
  15. The Ken Burns film
  16. Biography
  17. Biography
  18. Analysis of her writings
  19. Women's Studies Newsletter
  20. Her papers
  21. Biography
- 

**Figure 7.** Susan B. Anthony keyword search in UR's Online Catalog

library staff of the entire library Web site has revealed that users, especially undergraduates, have considerable difficulty using the online catalog and databases. In response to this, the libraries have created a project, named Results Navigator, to design a new interface to library materials that even beginning searchers can use to find comprehensive, high-quality resources. This interface will allow users to organize results according to relationships defined in FRBR and will provide a vehicle for testing the FRBR

model from a usability perspective to identify those aspects of the model that are most valuable to users. The project will ultimately result in the development of open source software that will be easily transferable to other libraries.

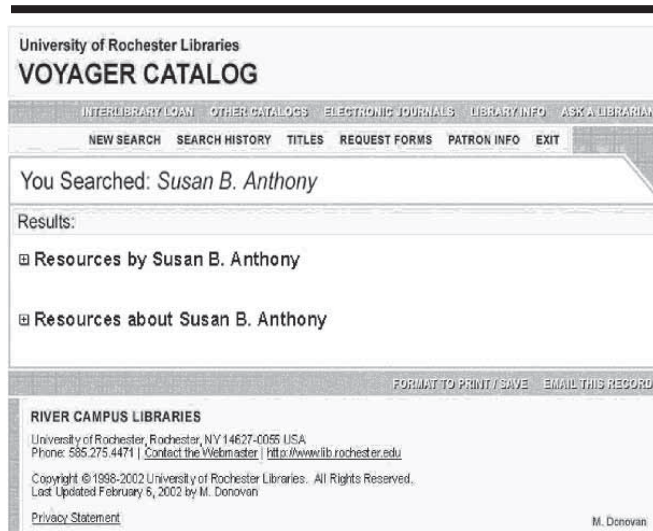


Figure 8. Search results grouped according to the relationships between the search terms and the resources retrieved in a hypothetical FRBR-based online catalog.

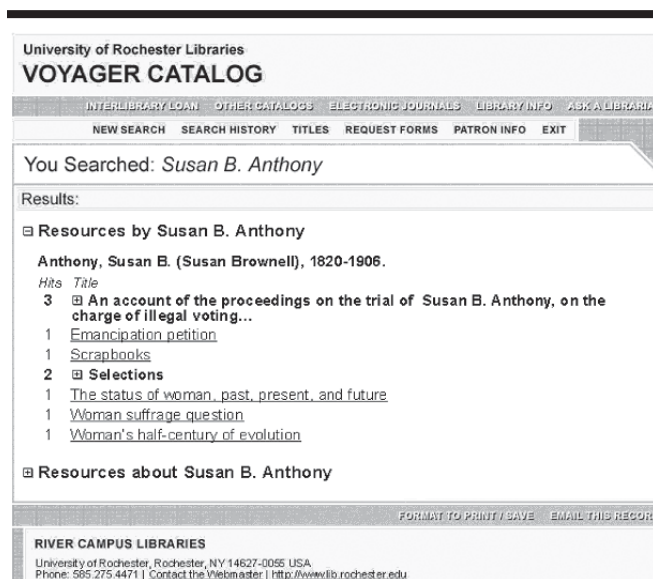


Figure 9. Expansion of hit list under "Resources by Susan B. Anthony" from figure 8, showing FRBR work-level results display.

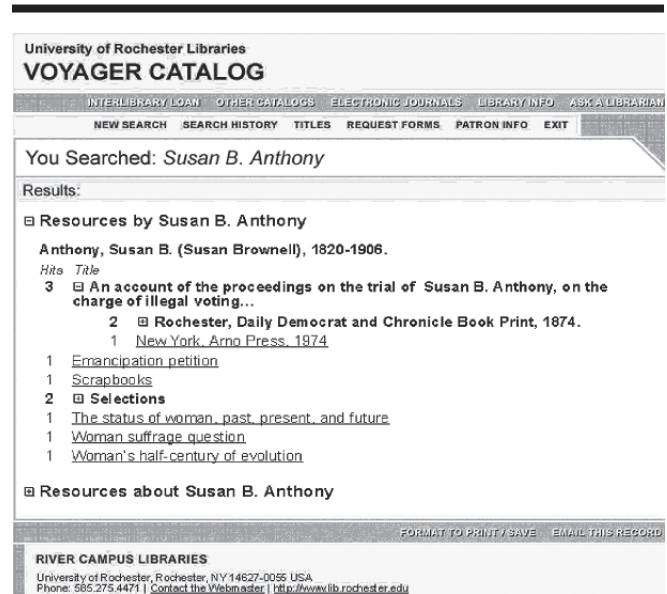


Figure 10. Expansion of hit list under "An account of the proceedings on the trial of Susan B. Anthony" from figure 9, showing FRBR expression-level results display.

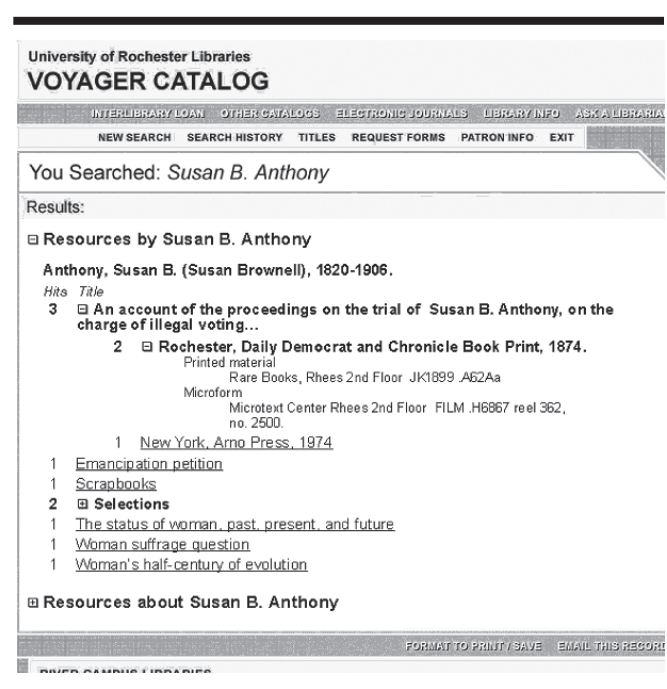


Figure 11. Expansion of hit list under "Rochester, Daily Democrat and Chronicle Book Print, 1874" from figure 10, showing FRBR manifestation-level results display.



RCL are currently designing a platform that can be used for the design of Results Navigator, and are seeking funding for the project.

### Summary

The FRBR data model holds great potential for improving user access to library resources, but may not affect all libraries in the same way. JSC, assisted by the work

of FVWG, is working to incorporate FRBR into the next edition of the Anglo American Cataloguing Rules to allow catalogers to create headings that are more easily collocated at the level of the FRBR entity expression. Several library system vendors also are working either to restructure their systems based on FRBR or to provide additional FRBR-inspired capabilities to enhance users' ability to view and navigate search results. A combination of these two approaches to FRBR can provide significant benefits to users of library catalogs.

Rather than thinking about FRBR as difficult to understand and uncertain in its possible implementation, library professionals should keep in mind that library catalog records already contain many of the entities and attributes defined in FRBR and, thus, library catalogs already incorporate some elements of FRBR. The influence of FRBR can also be seen in projects that are already underway in libraries. FRBR is thus not something new and foreign, but a fresh, more rigorous way of thinking about what libraries already do that provides a basis for designing new ways to improve users' access to library resources.

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2. Throughout this paper, the acronym AACR refers to the

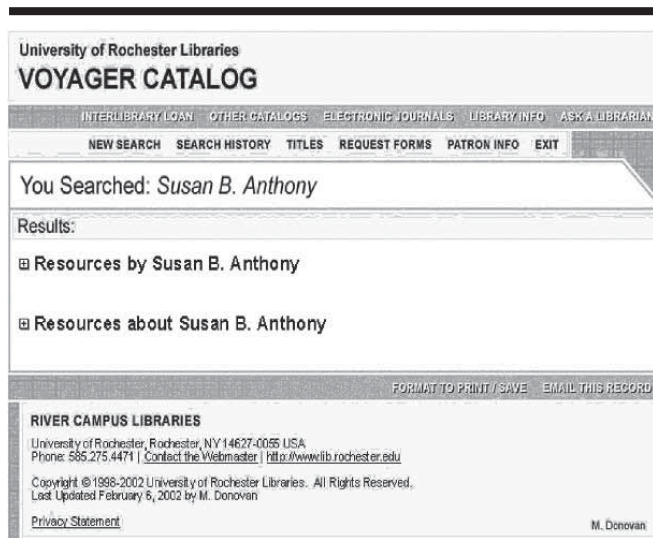


Figure 12. Return to initial search results display (same as figure 8).

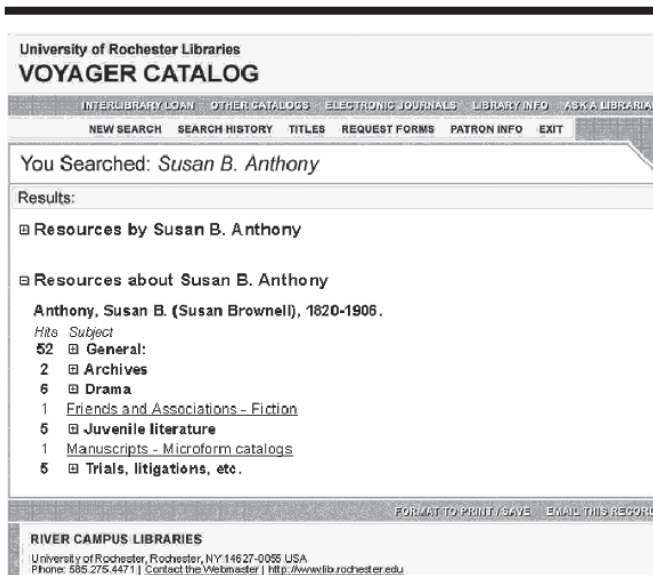


Figure 13. Expansion of hit list under "Resources about Susan B. Anthony" showing subject-based results display.

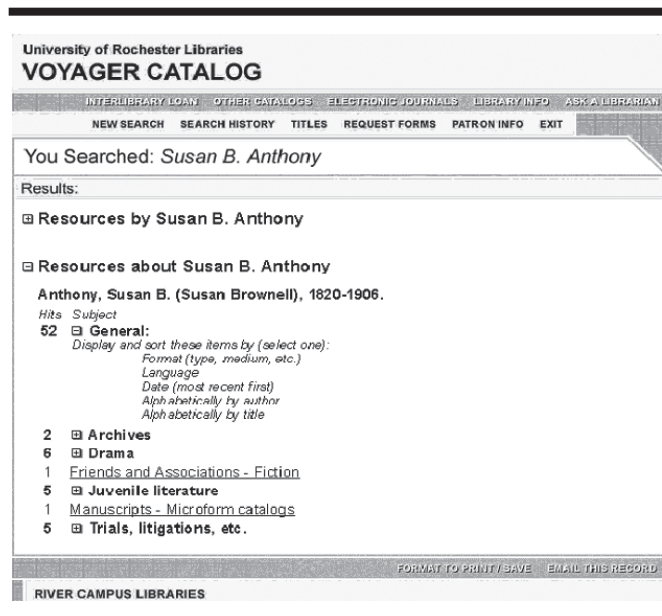


Figure 14. Expansion of hit list under "General" subjects (no subdivisions) showing sort options using expression-level attributes of the resources retrieved (format, language) as well as sort options by date, author, and title.



- cataloging code, Anglo-American Cataloguing Rules, in its broadest sense. The acronym AACR2 refers specifically to *Anglo-American Cataloguing Rules*, 2d ed., 2002 rev. (Chicago: ALA, 2003). The acronym AACR3 refers to the new edition of the rules in preparation at the time of this writing. The new edition, with the working title *AACR3: Resource Description and Access*, is described on the Web site of the Joint Steering Committee for Revision of Anglo-American Cataloguing Rules. Accessed Aug. 19, 2004, [www.collectionscanada.ca/jsc/current.html](http://www.collectionscanada.ca/jsc/current.html).
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