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The Ship Has Sailed and We Aren't On It : How Catalogers Could Support User Tasks and Why We Won't

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Abstract

The article begins by describing the possible characteristics of a catalog interface built to leverage a

future FRBR bibliographic framework, and discussing the viability of a FRBR-ized catalog interface. The

author then examines current trends in interface design, which leverage conventional cataloging data

structures. This survey of the literature is followed by recommendations for adapting cataloging

practices to enhance the efficacy of current interface designs. The author concludes by proposing that

catalogers have a choice to make about the direction of functional cataloging initiatives.

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How Catalogers Could Support User Tasks and Why We Won't

Introduction

Functional cataloging supports the generic user tasks of finding, identifying, selecting, and obtaining

relevant library resources. How a person approaches these tasks is controlled by the interface available

for conducting a search of a library's catalog. Cataloging that helps the seeker achieve success with that

interface is functional.

Catalogers have long been discussing how we can reorder the bibliographic universe to inspire

better catalog interface designs. In the meantime, interface designers have developed new ways to

manipulate the bibliographic descriptions currently available. These innovations would be even more

effective if as catalogers we revised some of our cataloging ideals to support the emerging interface

functionality. However, doing so would undermine the FRBR (Functional Requirements for Bibliographic

Records) ideal that has been central to the cataloging discussion for well over a decade.

In this paper, I begin by describing the FRBR cataloging philosophy and the possible

characteristics of a catalog interface built to leverage a future FRBR bibliographic framework. I also

discuss the viability of a FRBR-ized catalog interface. Next I examine current trends in interface design,

which leverage conventional cataloging data structures, followed by recommendations for adapting

cataloging practices to enhance the efficacy of current interface designs. Finally I propose that

catalogers have a choice to make about the direction of functional cataloging initiatives.

I have adopted the generic user tasks of finding, identifying, selecting, and obtaining relevant

resources as the basis for functional cataloging. These tasks are described by the IFLA Study Group in the

September 1998 *Functional Requirements for Bibliographic Records: Final Report* (p. 7-8) as follows:

- using the data to **find** materials that correspond to the user's stated search criteria (e.g., in the context of a search for all documents on a given subject, or a search for a recording issued under a particular title);

- using the data retrieved to **identify** an entity (e.g., to confirm that the document described in a record corresponds to the document sought by the user, or to distinguish between two texts or recordings that have the same title);

- using the data to **select** an entity that is appropriate to the user's needs (e.g., to select a text in a language the user understands, or to choose a version of a computer program that is compatible with the hardware and operating system available to the user);

- using the data in order to **acquire** or **obtain** access to the entity described (e.g., to place a purchase order for a publication, to submit a request for the loan of a copy of a book in a library's collection, or to access online an electronic document stored on a remote computer).

For the rest of this article, I will concentrate my discussion on the first three tasks of finding, identifying, and selecting, since these are the tasks most affected by cataloging practices.

The FRBR Ideal

The FRBR Philosophy

FRBR is a structural framework for cataloging developed by IFLA and described in the 1998 *Functional Requirements for Bibliographic Records: Final Report* (IFLA Study Group). The intent is to support the user tasks of finding, identifying, selecting, and obtaining resources.

FRBR uses a relational database approach to organize data into attributes about entities and relate the entities to each other. IFLA defines three groups of entities. Group 1 entities are *work*, *expression*, *manifestation*, and *item*. These entities recognize that an intellectual creation may be

realized or perceived in different ways, which in turn may be embodied and transmitted using different modes and technologies. Group 2 entities are *person* and *corporate body*. These represent the creators of and contributors to a resource, or possibly the subject of a resource. The Group 3 entities further organize subject data into *concept*, *object*, *event*, and *place*. The Group 1 entities, known colloquially as WEMI (the acronym formed by their initials), are the focus of the following exposition.

Separating attributes of a bibliographic description into four separate WEMI components represents a dramatic change in how catalogers think. Catalogers are accustomed to dealing with an individual resource – an *item*. For illustrative purposes, suppose the item I'm holding is a book called *Undersea Pottery* by Dilbert Cousteau, published by Hillsboro Press in 2000. I recognize that the bibliographic description of this item represents multitudes of essentially identical items other people in other libraries are holding in their hands just as accurately as it describes the particular item I happen to be holding. The entity "the book *Undersea Pottery* by Dilbert Cousteau published by Hillsboro Press in 2000 that is held at several libraries" is a *manifestation*. In essence, the bibliographic records created by catalogers usually describe manifestations.

The book *Undersea Pottery* by Dilbert Cousteau published by Hopscotch Press in 1973 is a different manifestation of the same *work*. A work is defined by the creator(s) and the content. The electronic version of Cousteau's book published by Vincent Online Press in 2012 is another manifestation, just employing a different mode of transmission. But if I digitally record myself reading the book cover-to-cover and then post it on YouTube, the result constitutes a different *expression* of the same work. The quality of expression can be thought of as the medium of perception, in this case sound versus text. The content and creator is the same, so it is the same work. Language is another perceptual element that constitutes a different expression.

One problem with the WEMI reduction is that it isn't always clear what constitutes a new work. For example, if someone translates Cousteau's book to French but in the process changes some of the

cultural references to better resonate with French readers, is the content really still the same? Or has the translator become an additional creator, making the result a new work instead of simply a new expression of the original work? If in my YouTube recording I summarize the boring chapters instead of reading them completely through, is this abridged version just a different expression of the original work, or is it a different work? If the Hillsboro Press edition has some annotations by Cousteau's grandson, is it a manifestation of the original work, or a new work?

It's important to make these distinctions between work, expression, and manifestation in order for FRBR to be an effective cataloging framework. Some attributes of a catalog description belong to the work, some to the expression, others to the manifestation, and others to the item. For a given library acquisition, the cataloger records the manifestation attributes: title, publisher, date of publication, edition, etc. In conventional cataloging, the cataloger also records the work-level and expression-level attributes in the same bibliographic record. But in a FRBR-based catalog, the work-level attributes would probably be imported from a separately created work record. This record could include the author, uniform title, classification, subjects, and the original creation date. The same work attributes thus would be connected automatically and consistently to all of the manifestations of a work. From a cataloging perspective, a cataloger would no longer describe an item top-to-bottom, back-to-front. Instead he would first determine whether it is a manifestation of a previously identified work or expression. Also, if it is a new work in some derivative way (e.g., an abridgement), he would note that this new work is closely related to the original work and would make the nature of that relationship explicit in his cataloging.

Characteristics of a FRBR-ized Catalog Interface

The hypothetical FRBR-ized interface organizes this information in a hierarchical display for the user. Fritz and Fields (2011) provide an illustration of what this display looks like. In their depiction, the

creator is at the top of the hierarchy; individual works are listed below. Each work can be expanded to

show expressions in normalized groupings: "Text, English," "Text, German," "Audio." Each of these

groups can be expanded to reveal the manifestations. Two different publications of the English text

version of *Madeline* by Ludwig Bemelmans, one published in 1939 by Simon and Schuster and one in

1993 by Puffin Books, are represented in their example. At the bottom of the list of works, the user can

expand an option labeled "Related works" to see descriptions of movies and television programs based

on the book *Madeline*.

The advantages of a FRBR-ized interface are obvious. Instead of today's bewildering list of

disparate manifestations of various expressions ordered only by some obscure "relevancy" algorithm,

the catalog searcher would receive a results list in which manifestations are collocated by work. This

approach supports the user's ability to identify and distinguish between similar manifestations (e.g.,

print books with different publishers and dates of publication). It also helps her to select a manifestation

by mode of transmission (e.g., electronic versus print) or an expression by medium of perception (e.g.,

sound versus text).

The disadvantages are also obvious. The hypothetical FRBR-ized display requires several clicks to

view a bibliographic description. But what if the user is searching for a known item? Should she have to

drill down through works and expressions to find it? Also, many works – some estimates are as high as

80% – only have one manifestation (Tillet, 2003). If that estimate is accurate, then is creating a WEMI

structure worth the tremendous effort required to reorder the bibliographic universe?

Viability of a FRBR-ized Catalog Interface

I believe this is a moot question, because I am convinced that the time has passed in which holding out

for a FRBR-based catalog was a viable option. If the new Resource Description and Access (RDA)

cataloging guidelines, developed to replace the conventional AACR2 (Anglo-American Cataloging Rules,

2nd edition), had proven to be a robust framework for implementing FRBR, there might have been a way to steer interface design in a FRBR direction. But as released in 2010, twelve years after the IFLA Study Group's report, RDA is viewed by many as a disappointment. Although it uses FRBR vocabulary and a WEMI organization to discuss bibliographic data, RDA perpetuates the conventional cataloging tradition of providing work/expression attributes in work/expression identifiers only as needed to identify a work as unique, not to fully describe the creator(s) and content of the work (Joint Steering Committee, 2010). As previously discussed, attaching descriptive attributes at the appropriate levels is vital to any FRBR-based catalog and its presentation via a FRBR-ized interface.

In addition, RDA has usability issues, prompting the Library of Congress (LC) and the other national libraries to delay its implementation until it is extensively revised (U.S. RDA Test Coordinating Committee, 2011). At this writing, LC has identified a target implementation date of March 31, 2013 (Library of Congress, 2012). LC has also given a vote of no-confidence to MARC as an encoding format for RDA/FRBR (Library of Congress, 2011). This means that even after RDA is improved, catalogers will need to wait for a MARC replacement before FRBR-based cataloging can be implemented in a way that enables a FRBR-ized catalog interface. The reality is that the philosophical and logical frameworks for realizing a FRBR-ized interface are many years away.

In the meantime, catalog interface developers have been designing new interface functionality that leverages the conventional cataloging AACR2 and MARC data structures. These designs are very different from the hypothetical interface based on the FRBR data structure model. The next section identifies some of the current trends in catalog interface design.

Current Interface Design Trends: A Review of the Recent Literature

Wynne and Hanscom (2011) list several trends in the design of public interfaces for library catalogs, often described in the literature as "next generation catalogs." Developments such as automatic spell-

checking and word variant searching, relevance ranking of search results, and "more like this" suggestions help users find useful information. Thomas (2000) states that relevance ranking is particularly helpful for users with lower logical reasoning skills. The ability to narrow results by subject facets, and enhancements like book cover images and reviews, help users differentiate between similar resources and identify which resources are most interesting to them. Naun (2010) observes that newer interfaces often allow users to restrict search results to items that are available, which is among the user-identified characteristics of helpful interface features summarized by Thomas and Buck (2010). Along with a display of delivery options, this component helps users obtain items of interest. Displays that incorporate format icons to represent books, sound recordings, video recordings, electronic resources, and other forms help users select the resource format that is best suited to their needs. Clickable facets for narrowing results to a particular format further support the user task of selection.

Interfaces are also trending toward a brief default display rather than a full display of catalog data, although there is no consensus on which fields to display and which to omit. Does this facilitate or impede user tasks? Thomas (2000) asserts that fuller displays help users identify which resources are not relevant to their information need. However, Thomas also found that users typically perceive only a couple of data fields as being important to them. One conclusion from his study was that more subject data in a brief display helped users make decisions about relevancy without having to view the fuller display. Yee (2006a, *Applying FRBR*) asserts that users need the full record display for the user task of identifying and distinguishing between similar resources.

In interface design, the post-search ability to narrow a retrieved record set by subject or topic is generally achieved by parsing pre-coordinated Library of Congress subject heading (LCSH) strings into a list of clickable facets reflecting topic, region, and era. The list is often ordered according to the number of items retrieved in the initial search that correspond to the facet. Naun (2010) observes that this combines the power of keyword searching with controlled vocabulary: users are led to the controlled

vocabulary through their keyword search. However, it must be remembered that the act of narrowing a search by clicking on a facet in the list executes a second search *within* the retrieved set; it doesn't repeat the original search with the preferred authorized term. In other words, records omitted from the initial set because they lack the keyword search term remain outside the results set, even if they contain the subsequently clicked controlled vocabulary synonym facet. Naun also notes that subject or topic faceting based on classification is offered in some current interfaces. He observes that classification-based subject access helpfully offers the user a smaller set of subject area variables to review compared to the typically lengthy set of LCSH facets. This works well in a search like "stonehenge" that crosses disparate subject areas (e.g., technology, world history, fine arts, etc.), for users intending to approach the topic from a particular perspective. In some interfaces this is the only manner in which the system leverages classification data, beyond merely displaying it.

Interfaces seem to be trending away from utilizing authority records. This dramatically disables the user looking for resources by a creator who is known by more than one name. In the past, users searching for names were forced to access the name authority file first and then click on a choice within it to retrieve bibliographic records. Yee (2005) envisions a system that searches authority record cross-references for a user's author search term and then displays the bibliographic records containing the corresponding authorized forms. This would result in retrieval sets that aren't transparent to the user, since the user's search term would not necessarily appear in the retrieved bibliographic records. To borrow Yee's example, a user searching for "Samuel Clemens" would retrieve everything in the library written by Mark Twain, but she wouldn't know why. In another article, Yee (2006b, *Beyond the OPAC*) imagines an interface in which the user's author keyword search activates a search of name authority records instead of bibliographic records. This is a return to an earlier catalog interface model – a forced intervening assessment of name authorities instead of immediate access to bibliographic descriptions – with the twist that it is a keyword search rather than a browse search and the user is liberated from a

left-anchored last-name-first mode. It seems unlikely that modern interface design will retreat from a Google-driven tempo between search and final result to incorporate this type of intermediary step. Yee proposes the same model for subject keyword searches. Naun (2010) observes that the latter would be overwhelming for novice users and ineffective in a case where the search word is a ubiquitous term like "history."

Implicit to interfaces designed to rigorously manipulate MARC coding in order to create faceted displays is the need to create bibliographic records that are consistent and include all of the relevant metadata. Wynne and Hanscom (2011) note that inaccurate, inconsistent, and missing data are exposed to a greater extent in these interfaces than they were in previous interfaces. The authors report that data cleanup projects and their automation become higher cataloging priorities in this environment.

Proposed Cataloging Adaptations in Response to Selected Trends

As previously noted, current interfaces are based upon conventional cataloging structures rather than a FRBR framework for cataloging data, which is several years away from feasible implementation. I submit that conventional cataloging can and should advance to maximize the performance of new interface features while retaining the AACR2 and MARC structures. The first step is to identify and implement simple changes in cataloging practice that will make current interface functionality more effective.

Keyword Searching

Keyword searching across fields or within a field has replaced browse searching entirely in many current interfaces; where it is still offered, browse searching is de-emphasized and has to be intentionally selected by the user as a search mode. Interfaces that mimic Google functionality employ a default Boolean "AND" between search terms. To maximize the helpfulness of this trend for users, I recommend focusing cataloging efforts on enhancing keyword access in effective and non-redundant ways.

My first recommendation is to provide formatted contents notes (i.e. contents notes coded to identify data as title or contributor data) whenever this information is meaningful. Specific instances include: individual songs included in musical sound recordings, with composers and performers (except in the case of "classical music" recordings, which I will address subsequently); individual essays or chapters in anthologies, including authors when the anthology includes multiple contributors; and individual works of short fiction in anthologies whether by a single contributor or multiple contributors, including contributor names in the latter case. In current cataloging practice, contents notes are required for musical sound recordings but are left to the cataloger's judgment in the remaining scenarios. In all of the cases, the title and contributor formatting is currently optional.

I do not recommend supplying analytical uniform title or name-title added entries (i.e. added entries for each included song or story in normalized, LC-authorized forms) when formatted contents notes are provided, except when the resulting keywords vary materially from the contents note. This means that the bibliographic description of a book of twenty short stories might contain name-title added entries for only three of the included stories. Also, at some libraries it is local practice to include uncontrolled title added entries (740 fields) when the corresponding formatted contents note element begins with an article: This practice, which is done to support browse searching, should be discontinued.

My next recommendation, for scores and sound recordings that are compilations of individual "classical music" works, takes the opposite approach. For these resources, I recommend supplying uniform name-title added entries in lieu of detailed contents notes. Many current interfaces offer the ability to narrow retrieval by title facet, which could be configured to display uniform titles. This would greatly enhance the common music user task of selecting multiple recordings of the same work or versions of the same score. In cases where keyword access would be meaningfully enhanced by including variant titles found on the item or known from another source, these should be supplied in a note.

For example, the bibliographic description of a sound recording including Beethoven's piano

sonatas numbers 5 through 8 would include corresponding uniform name-title entries in the form of

"Beethoven, Ludwig van, 1770-1827. Sonatas, piano, no. 5, op. 10, no. 1, C minor." It would also contain

a note to the effect of: "Includes the Pathétique sonata and three other piano sonatas." Doing this

would represent a change in current cataloging practice, which requires all added access points to be

explicitly justified elsewhere in the catalog record. Similarly, I recommend eliminating the credits notes

(508 and 511 fields) from video recording records in favor of providing normalized personal name added

entries with relater terms (for example: 700 1_ Eastwood, Clint, $d 1930- $e director).

Refinement of Retrieval Set Using Subject/Topic Facets

Subject facets are generated in current interfaces in two ways: through subject headings and through

classification. In the former case, post-coordinated LC subject headings composed of a main heading

modified by a subdivision or multiple subdivisions are broken apart into specific geographic, topic,

period, and/or form facets. An example of a post-coordinated LC subject heading exhibiting all of these

types of subdivisions in the order listed is Women—China—History—20th century—Maps. Perhaps this

would describe a resource depicting demographic information about Chinese women on separate maps

for each decade of the 20th century. In current catalog interfaces that offer the user the ability to narrow

a search by subject facet, each of these terms ("Women," "China," etc.) would be presented to the user

as a separate clickable facet if this resource was among those retrieved by the user's search. Similarly

parsed headings and subdivisions represented in other retrieved resources would also appear as facet

options for narrowing the search. For most searches, this results in a lengthy list of subject facet options.

My first recommendation regarding facets focuses on topical subdivisions. Topical subdivision

modifiers separated from the main heading are virtually meaningless. To use the above example,

consider the user who performs a keyword search for "china" and is presented with the facet option

"history." Clicking on it would generate a results set that includes the resource described above, and a book with the subject heading "China—History—221 B.C.-960 A.D.," and every other resource with a subject heading containing both the keyword "china" and the topical subdivision "history." It could include a novel about an American pioneer named "Samuel China." I therefore recommend discontinuing the use of topical subdivisions in bibliographic records.

However, I do not recommend omitting form subdivisions. Although some current interfaces don't display form subdivisions (650 $v subfields) as facet choices, they could easily be configured to conflate them with genre/form headings (655 fields), displaying them together as genre/form facets. I know this because interfaces currently conflate geographic subdivisions (650 $z subfields) with geographic subject headings (651 fields). Therefore my second recommendation is to retain the use of form subdivisions in bibliographic descriptions and configure interfaces to display them.

In the case of geographic subdivisions, the issue for catalogers is to ensure that the geographic heading appears one way or another in the bibliographic record when it is appropriate. Problems arise when a heading is inherently geographic. An example is the subject heading "Jazz," which is the Library of Congress authorized heading used instead of "Jazz—United States." By clicking on the "United States" facet, users will eliminate records with the heading "Jazz" from their retrieval set (unless the record also includes a different subject heading containing "United States"). Therefore my third recommendation is to add an explicit geographic heading (651 field) to records with subject headings in which the geographic term is implied. In the environment of facet-based interfaces that either don't offer or de-emphasize browse subject searches, it doesn't matter whether the phrase "United States" appears as a main subject or a geographic subdivision.

My final recommendation regarding topic facets deals with facets based on the LC class number assigned to a resource. Classification-based topic facets are generated by mapping class numbers to top-level topics in the classification outline. The topics are then displayed as subject area facets represented

by the retrieved resources. This subject breakdown results in a shorter list of more general topic groups

compared to the list based on subject headings. However, if a library doesn't classify certain types of

resources such as sound recordings, video recordings, or electronic resources, these resources will not

be represented in the classification-based facet display. I recommend providing a top-level classification

for these resources. For instance, bibliographic records for musical sound recordings that lack an LC call

number (090 or 050 field) should be supplied with an 090 field that looks like this: 090 __ $a M

Absence of Authority Control

The fact that many current interfaces fail to leverage authority control in interpreting searches is a

disservice to users. As previously discussed, Yee (2005; 2006b, *Beyond the OPAC*) in particular has

offered thorough delineations of how authority control could be integrated into interface design. I am

convinced that Yee's suggestions could be realized with current interface technology, but to my

knowledge this has not happened. The implication is that interface designers believe users simply will

not tolerate a return to a mode that involves any delay between search input and a "hit list." This is a

grim reality that makes transparent authority control impossible. I do not advocate authority control

without transparency.

What can catalogers do to maximize the searcher's ability to find, identify, and select resources

without the benefit of authority control? Although on the surface it sounds counter-intuitive, one way to

mitigate the damage is to make authority work a cataloging priority. The regular clean-up of names used

in bibliographic records to match authorized forms will enable users to utilize name facet displays

effectively, since works by authors will be collocated by the facet. This obviously doesn't solve the main

problem with variant name forms, exemplified by Yee's (2005) scenario of the person seeking works by

Samuel Clemens coming up empty-handed. We can only hope the unfortunate user will ask a librarian

why the library has nothing by this author. But diligent maintenance of access points will ensure that she

won't find a stray resource with a bibliographic record containing a personal name access point for

Clemens and walk away with a potentially dangerous false sense of accomplishment. Subject heading

clean-up is another priority for the same reason (i.e. the collocation of subject-related resources in a

facet option).

The Cataloging Journey

The cataloging journey I propose is more than reforming some cataloging rules: it is a radical paradigm

shift. As this paper demonstrates, it isn't possible for catalogers to catalog for a future FRBR-based

catalog and simultaneously modify cataloging practices to promote the effectiveness of current

interface design. The differences between the FRBR ideal and the current catalog interfaces are too

fundamental. The FRBR-ized interface concept is that the catalog's response to a search would be an

array of resource categories based on normalized relationships. The user would access bibliographic

descriptions only after selecting the category that matches her need. In contrast, current interfaces are

committed to immediately delivering bibliographic descriptions in response to a keyword search. The

descriptions are loosely organized; the interface relies on post-search refinement to transform the

retrieval into a relevant subset. The imagined FRBR-ized catalog interface would rely extensively on

manipulating "work records" that would essentially be enhanced author-title authority records. On the

opposite end of the spectrum, current interfaces don't employ any means of leveraging existing

authority control. The cataloging recommendations I have offered in this paper contradict the FRBR

philosophy by opposing the use of normalized access points that are redundant or meaningless in the

current interface design environment. My recommendations instead concentrate on supplying keywords

and access points that are useful, meaningful, and reliable in this environment.

The ship of current interface design is continuing to gain speed. The wind is in its sails. The

designers and users aboard will be just that much further along their current course ten years or so from

now, when everything is in place to design a FRBR-ized interface. At the moment the ship isn't too far

away. With some determined effort we could jump into john boats and paddle out to join it. How can

we redirect the ship's course in a FRBR direction without a vigorous RDA product and an alternative to

MARC? I submit that we cannot. But we can roll up our sleeves and pitch in to make the boat sail faster

and smarter in its current direction, by changing cataloging practices to optimize the effectiveness of the

catalog interfaces being developed. We can collaborate with interface designers to identify new ways of

leveraging the current cataloging data structures. But in many ways catalogers are idealists, so we are

not likely to do this as a group. We will likely remain on the shore building our FRBR sand castle,

expecting the ship to come back for us when we're finished.

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