Introduction

This isn't good or bad. It's just the way of things. Nothing stays the same.¹

What Is FRBR?

RBR (pronounced *fer-ber*) stands for "Functional Requirements for Bibliographic Records." In 1998, the International Federation of Library Associations (IFLA) issued FRBR as a "conceptual model of the bibliographic universe." What is a conceptual model? Basically, according to Matthew Beacom, it is:

... a useful toy that is made out of ideas. What does one do with a conceptual model? Play with it. Why play with it? For fun, of course, but as when we play with other toys—model airplane, building blocks, a telescope—we may learn something useful when we play with FRBR. Once we learn something from playing with FRBR we can apply it to the bibliographic universe we live and work within.2

FRBR is meant to be independent of any cataloging code or implementation. The 1998 FRBR document provides a description of the model (also called an "entityrelationship model," because it is built around entities, relationships, and attributes), a proposed national-level bibliographic record for all types of objects, and a set of user tasks that have since been adopted as key to the design and assessment of bibliographic tools, such as library catalogs and information-organization tools.

Basically, FRBR moves bibliographic organization away from the various forms in which works are expressed, to a higher-level grouping based on particular works that link to numerous lower-level records, thereby reducing near-duplicate items and formats of that item into a single entry point for the end user. Current cataloging rules are very unclear in vocabulary, and FRBR provides a clear definition and delineation of the terms within the model.

I have always found Patrick Le Bœuf's explanations of FRBR most understandable, because he is able to explain both what FRBR is and what it isn't, so the following points are taken from him:

What FRBR is:

- a model developed for IFLA . . .
- a reference model... [meaning a framework for commonly shared understanding, as stated in the FRBR Final Report.]
- an E-R model. FRBR is an entity-relationship model. It defines general classes of things ("entities") of things that are deemed relevant in the specific context of a library [catalog], a row of characteristics ("attributes") that pertain to these general classes, and the relationships that can exist between instances of these. [And then Le Bœuf goes into an extensive explanation of these entities, attributes, and relationships.]3

What FRBR is not:

- a data model [it does not state how to structure or display data elements]...
- an ISBD [for the same reasons above] ...
- a cataloguing code [it is not prescriptive, practical, or applicable for everyday use]...4

In my opinion pictures indeed are worth a thousand words, so I strongly encourage you to review a number of graphics that have been developed and made available by the Metadata Task Force at the University of Texas Libraries. These images (see screened box on following page for online location of graphics) were used in a fascinating presentation by Anita Sundaram Coleman of the University of Arizona.5

"A 21st Century Look at an Ancient Concept: Understanding FRBR," by Anita Sundaram Coleman

http://dlist.sir.arizona.edu/634/01/azla04asc.pdf

Individual Images Highlighted in Anita Coleman's "A 21st Century Look at an Ancient Concept: Understanding FRBR"

Group 1 Entities and Primary Relationships www.lib.utexas.edu/dls/dadg/metadata/graphics/frbr_full.gif

FRBR Model Applied to Margaret Mitchell's Gone with the Wind

www.lib.utexas.edu/dls/dadg/metadata/graphics/wind_example_full.gif

The FRBR Data Model of an Information Entity's Life Cycle

www.lib.utexas.edu/dls/dadg/metadata/graphics/ FRBR.03%20copy.gif

Integration of Relationship and Instantiation Entities for Developing a Metadata Data Model

www.lib.utexas.edu/dls/dadg/metadata/graphics/events_frbr_full.gif

Dr. Barbara Tillett's What Is FRBR?

"Family of Works" (see page 4) www.loc.gov/cds/downloads/FRBR.PDF

FRBR is divided into three "group" entities. Group 1 focuses on the terminology of the model and the four major relationships: work, expression, manifestation, and item. Group 2 entities focus on person and corporate bodies that are related to Group 1 entities. Group 3 entities are the subjects of works and can be related to any of the Group 1 or Group 2 entities. Emphasis thus far by FRBR working groups and implementers has been on the Group 1 model, although more movement in Group 2 and Group 3 developments are appearing (and will be discussed later).

The "Family of Works" graphic is from *What Is FRBR?* A Conceptual Model for the Bibliographic Universe by Dr. Barbara Tillett of the Library of Congress (see URL in screened box to access online PDF).⁶

After examining the images, one can see that FRBR relates closely to traditional cataloging practices, yet provides a new model for structuring and presenting search results more clearly to the end user. The four user tasks

of finding, identifying, selecting, and obtaining are now the basis of information organization classes in library science. The ability to **navigate** is also central to FRBR. The new AACR3, now known as *Resource Description and Access* or RDA, is heavily based on the FRBR model.

The rest of this report will follow the *FRBR Bibliography* that is continually updated and maintained by FRBR Review Group, Division IV, Cataloguing Section of IFLA.⁷ After a listing of general resources on FRBR in this issue, there will be a section of resources on FRBR's impact on current standards; resources related to FRBR applications on various types of formats and genres; resources pointing out prototype FRBR implementations and research projects; a section on FRBR's relationship to other models and topics; and finally other FRBResque abbreviations and acronyms related to Group 2 and Group 3 entities in the FRBR model.

General Resources

This section includes general FRBR resources. Each resource listing will include applicable URL (if available) as well as brief description about the resource listed. Unless otherwise noted, all URLs in the upcoming section were accessed on September 28, 2006.

FRBR Bibliography

http://infoserv.inist.fr/wwsympa.fcgi/d_read/frbr/FRBR bibliography.rtf

As mentioned previously, this resource contains the most up-to-date, important resources on FRBR. It is maintained by the FRBR Review Group, Division IV, Cataloguing Section of IFLA. There are eight main sections: theoretical aspects, impact on current standards, application studies, implementations and research projects, relationship to other models and topics, teaching, Web sites, and encyclopedias online.

FRBR Blog

www.frbr.org

This blog has become the "official" conduit of information related to FRBR. It is maintained by William Denton, a major contributor of FRBR-related presentations. Although the list postings are rather sparse, it is considered, along with the FRBR bibliography given above, as a major source of information related to FRBR. The Reference section is especially applicable for anyone looking for information related to FRBR. Those who contribute to and participate in this blog, and regularly attend ALA events, often get together informally during ALA meetings to share information and invite presentations and updates from well-known FRBR experts and implementers.

IFLA's FRBR Discussion Group

http://infoserv.inist.fr/wwsympa.fcgi/info/frbr

This is IFLA's electronic-discussion list on FRBRrelated activities, which is open to anyone.

Functional Requirements for Bibliographic Records (FRBR): Hype or Cure-All?

www.catalogingandclassificationquarterly.com/ccq39nr 3-4.html (abstracts of chapters)

A book edited by Patrick Le Bœuf, which features eighteen chapters by such contributors as Tom Delsey, Stefan Gradmann, Olivia M. A. Madison, Glenn E. Patton, and Barbara B. Tillett.8

Review of FRBR: Hype or Cure-All? (Project Muse, portal: "Reviews")

http://muse.jhu.edu/journals/portal_libraries_and the academy/v006/6.2denton.pdf

William Denton's review begins, "This collection is not the first thing one should read about Functional Requirements for Bibliographic Records (FRBR), nor the second, but it is a good third." This article provides a short and excellent review by the moderator of the FRBR blog.

What Is FRBR: A Conceptual Model for the Bibliographic Universe

www.loc.gov/cds/FRBR.html

Barbara Tillett's short pamphlet, based on an article originally published in the September/October 2003 issue of Technicalities (25:5), provides a succinct overview of FRBR by one of its leading proponents and supporters.¹⁰

"What Is FRBR?"

http://libraryjournal.com/article/CA515803.html

In this Library Journal article, Linda Gonzalez provides another short, quick explanation of what FRBR is and will hopefully do in relation to information searching and navigation in the future.¹¹

"Understanding FRBR: The New Bibliographic Model"

www.oclc.org/news/publications/newsletters/oclc/ 2003/262/frbr.htm

OCLC staff member Tom Storey provides an early (2003) explanation of FRBR.¹² The article identifies major Web sites for more information and includes a listing of what OCLC Research is working on in relation to FRBRizing WorldCat. Many of these implementations will be discussed later in this issue.

FRBR and XTM

http://kpeer.wim.uni-koeln.de/~sigel/Projects/FRBR and XTM.html

This Web site provides an interesting listing of FRBR and visualization examples, many of which I was unable to launch or access. This resource is specifically in relation to topic maps, with some RDF examples.

FRBR and Fundamental Cataloging Rules

www.miskatonic.org/library/frbr.html

In this electronic publication, William Denton provides a very nice history of the cataloging rules, in relation to FRBR, as well as a broader discussion of its impact on cataloging processes. 13 This is an excellent bibliography with numerous URLs linking to various FRBR resources.

"FRBR; or How I Learned to Stop Worrying and Love the Model"

www.dlib.indiana.edu/~jenlrile/presentations/bbfall04/ frbr/frbrBB.pdf

Jenn Riley is the Metadata Librarian at the University of Indiana Digital Library Program. This is her presentation from Fall 2004 at the ALCTS (Association for Library Collections & Technical Services) FRBR preconference. She provides some nice, simple statements about understanding FRBR. For instance, her remarks from Glenn Patton's presentation on "Why FRBR?" include: clearer understanding of why we do what we do; better collocation and navigation; clearer, more useful relationships; and more controlled, authoritative information for productivity.

"Before You Attend the Workshop: FRBR Future"

www.olc.org/pdf/TechKNOWMarch2004.pdf

In the March 2004 issue of the Ohio Library Council's "TechKNOW" ("A Quarterly Review of Bright Ideas for the Technical Services Division") Margaret Beecher Maurer offers another nice discussion of FRBR's importance related to library systems design and future directions. 14

OCLC Research Projects on FRBR

www.oclc.org/research/projects/frbr/default.htm

This is a compilation of OCLC Research projects incorporating FRBR, including Curiouser, FictionFinder, xISBN, FRBR algorithm, and Humphrey Clinker record FRBRization. More on each of these is available in the "Implementations" section.

"FRBR: What Is It, Where It's at, and Why You Should Care"

www.frbr.org/files/denton-frbr-talk-slides.pdf

This document is another excellent, simple presentation on FRBR by William Denton. It includes the statements of relationships among the four major categories of Group 1 entities:

- A work is *realized* through an expression
- An expression is *embodied* in a manifestation
- A manifestation is exemplified in an item

Association for Library Collections & Technical Services (ALCTS) FRBR Web Page

www.ala.org/ala/alctscontent/alctspubsbucket/ webpublications/cataloging/researchtopics/frbr04.htm

This Web page has lots of good content and an excellent bibliography with URLs.

FRBR in the 21st Century Catalogues: An Invitational

www.oclc.org/research/events/frbr-workshop/program

www.oclc.org/research/events/frbr-workshop/report .htm

This invitation-only workshop, held May 2-4, 2005, focused on various implementation and systems perspectives related to FRBR in online public access catalogs. The first link goes to the program schedule with URLs to the presentations, while the second link is a useful report of all the presentations and discussions. The presentations and presenters are listed below.

- Ed O'Neill: "Relational Models for Aggregates"
- Maja Zumer: "Modeling Augmentations"
- Judith A. Kuhagen: "Modeling Continuing Resources in FRBR (and More . . .)"
- Carol van Nuys and Ketil Albertsen: "Modelling Web Resources"
- Allyson Carlyle: "FRBR: Challenges for Implementation in AACR2, with Some Attention to Non-Book Materials"
- Barbara B. Tillett: "Relationships in FRBR"
- Maja Zumer: "Some Outcomes of the CRM/FRBR Harmonization: The Definition of Manifestation and Review Attributes"
- Glenn Patton: "FRAR: Extending FRBR Concepts to Authority Data"
- Marcia Lei Zeng and Athena Salaba: "Toward an International Sharing and Use of Subject Authority Data"
- Diana Vizine-Goetz: "Subjects in Fiction: The Experience with WorldCat"
- Maria Nasilowska: "Precoordination in Subject Indexing and Systems and FRBR Model"
- Trond Aalberg: "Formats and FRBR Catalogues-Where's Our Focus?"
- Ketil Albertsen: What Do We Want to Identify?-FRBR and Identifier Semantics"
- Patrick Le Bœuf: "Identifying Textual 'Works': ISTC Controversy and Potential"
- Thomas B. Hickey: "Exchanging FRBR Information"
- Barbara Tillett: "FRBR and Cataloguing Rules: Impact on IFLA's Statement of Principles and AACR/RDA"
- Patrick Le Bœuf: "Convergence Is the Goal': Activity Report of the IFLA FRBR/CIDOC CRM Harmonization Group"

Godfrey Rust: "Thoughts from a Different Planet (Only Slightly Different)"

"Hierarchical Catalog Records: Implementing a FRBR Catalog"

www.dlib.org/dlib/october05/crane/10crane.html

This article by David Mimno, Gregory Crane, and Alison Jones in *D-Lib Magazine* describes how FRBR can be used in the creation of catalog records. 15 The article specifically discusses how the Metadata Object Description Schema (MODS) and the Metadata Authority Description Schema (MADS) have been incorporated into a prototype digital catalog. The authors discuss how the Perseus Digital Library has implemented this new catalog, which includes many works with multiple versions, and how FRBR has been employed to explore implications for searching, browsing, and record creation.

Review of "Hierarchical Catalog Records: Implementing a FRBR Catalog"

www.thepaganagenda.com/2006/03/21/hierarchical -catalog-records-article-review

This is a review of the "Hierarchical Catalog Records: Implementing a FRBR Catalog" (posted on The Pagan Agenda site) article by a library science student named Mike Rot. It is well constructed and provides additional explanation and perspective by someone new to the field.

"What Is FRBR?"

www.oclc.org/research/presentations/childress/2005 0721-coasis&t.ppt

This PowerPoint file was used by Eric Childress when he presented at the COASIS&T (Central Ohio American Society for Information Science & Technology) conference, July 21, 2005. It is an excellent presentation that gives the history, purpose, and applications of FRBR. It goes more in-depth into Group 2 and Group 3 entities than most FRBR presentations and it has some entertaining graphics as well!

"FRBR" on the TechEssence Info. Blog

http://techessence.info/frbr

This post, dated May 8, 2006, by Jenn Riley, provides a good introductory essay on FRBR and examines misconceptions and misunderstandings regarding the topic as well as how to use FRBR and who will use it. It includes a helpful bibliography listing and URLs.

"Carolina on My Mind," It's All Good Blog

http://scanblog.blogspot.com/2006/04/carolina-on-my -mind.html

Eric Childress's post discusses a recent (April 2006) work trip he took to North Carolina, during which he gave several presentations. He notes:

Jane Greenberg, Associate Professor, UNC [University of North Carolina] SILS [School of Library and Information Science], invited me to address a SILS "Organizing Materials" class (plus such fellow faculty members and members of the UNC Libraries staff as wished to attend) in a session sponsored by the Metadata Research Center. My presentation [PowerPoint presentation, available at www.oclc.org/research/pres entations/childress/20060410-uncch-sils .ppt] covered FRBR (Functional Requirements of Bibliographic Records) basics and some brief information about the following OCLC activities that are leveraging FRBR:

- Audience Level (OCLC Research)—A service that returns an approximate "audience level" using a combination of FRBR and either harvested target audience information or inferred "audience level" information calculated from WorldCat holdings
- FictionFinder (OCLC Research)-A search interface to works of fiction cataloged in WorldCat
- Dewey Browser (OCLC Research)-A DDC-inspired, visual interface to various files
- Live Search (OCLC Research)-A search interface that leverages FRBR, WorldCat holdings, and DDC (in a slightly clandestine manner) to offer a very fast, one-search-box discovery experience
- FirstSearch WorldCat FRBR pilot (OCLC FirstSearch) -A FRBR-inspired view of WorldCat on the OCLC FirstSearch platform currently in pilot and slated to be released later in 2006.16

Childress's post includes several links (for example to the Metadata Research Center), which provide access to some very insightful presentations related to OCLC's research and prototypes based on FRBR models as well as many of the OCLC FRBR prototypes, such as Fiction Finder and Live Search. Another of Childress's PowerPoint presentations on FRBR and OCLC ("Retrieval That Works: FRBR and OCLC') is available at www.oclc.org/research/ presentations/childress/20060408-seaall.ppt.

"Metadata, FRBR, and New Challenges"

www.pitt.edu/~agtaylor/presentations/FRBR-handout .pdf

Arlene G. Taylor's October 28, 2004, presentation for the Missouri Library Association is a very detailed and in-depth overview of FRBR. Taylor describes the details of each of the Group 1, 2, and 3 entities, with extensive graphics, and explains how the Semantic Web would benefit from FRBR.

"FRBR (Functional Requirements for Bibliographic Records): A Brief Introduction"

http://yorkbibblog.blogspot.com/2006/02/frbr-func tional-requirements-for.html

This post (February 5, 2006) by S. Allison-Cassin, on the York Libraries Bib blog, provides a succinct explanation of FRBR.

"Why Our Catalogs Don't Work"

http://outgoing.typepad.com/outgoing/2005/09/why our catalog.html

This post (September 16, 2005) by Thom Hickey, OCLC chief scientist, presents the opinion—of "Why Our Catalogs Don't Work"-of one of OCLC's most forwardlooking thinkers. Hickey explains what librarianship needs to do to make them better. FRBR is mentioned briefly in the post.

"FRBRization: A Method for Turning Online Public Finding Lists into Online Public Catalogs"

http://repositories.cdlib.org/postprints/715

Not only does Martha Yee's article provide excellent examples of how AACR2R and MARC 21 records can be FRBRized to allow users to better find and access information in current OPACS, but this article also is a positive model for the importance of open and persistent access for research in institutional repositories (due to the fact it has become one of the most downloaded postprints in the University of California's eScholarship repository). Yee is well known in the library community for her indepth knowledge and expertise in the display and user problems with current OPAC presentations. This article was one of the first to illustrate concrete uses and applications of FRBR in the OPAC.17

"A 21st Century Look at an Ancient Concept: **Understanding FRBR**"

http://dlist.sir.arizona.edu/634/01/azla04asc.pdf

Anita Sundaram Coleman's presentation (December 2, 2004) at the Arizona Library Association is an insightful and graphics-rich presentation on FRBR. In her presentation slides, Coleman discusses FRBR's history and applications and includes some very good illustrations showing the application of the FRBR model on Margaret Mitchell's Gone with the Wind.

"Using FRBR to Measure the Quality of Bibliographic Records"

www.cilip.org.uk/groups/cig/ppt/umbrella2003/ thurstanyoung.ppt

This interesting analysis, delivered in a PowerPoint presentation by Thurstan Young, of FRBR (as a tool to measure the quality of bibliographic records, using British Library MARC records and assessing MARC field usefulness related to the four user tasks identified in FRBR) attempts to show the practical and applicable tools as well as assessment features that FRBR can bring to the OPAC environment. In the conclusion, Young is quite open about the pros and cons related to FRBR measurement of quality in MARC records.

"The Relevance of Cataloguing Principles to the Online Environment: An Historical and Analytical Study"

http://web.um.ac.ir/~fattahi/thesis1.htm

This doctoral thesis by Rahmatollah Fattahi provides an examination and analysis of the FRBR model in the online environment and on OPACs (online public access catalogs). ¹⁸ His examination committee included Barbara Tillett and Michael Carpenter.

"FRBR: A New Way to Have Access to the Intellectual Content in the Bibliographic Universe"

www.ffos.hr/lida/lida2003/presentations/frbr2.ppt

Presented as part of a post-conference workshop after the Libraries in the Digital Age Conference (May 26–30, 2003, Dubrovnik and Mljet, Crotia), this PowerPoint presentation by Eeva Murtomaa has lots of interesting graphics, which attempt to show how the Finnish and Norwegian catalogs can be FRBRized.

"Structuring the Catalogue According to FRBR User Tasks: Collocation and Linking"

www.kaapeli.fi/~fla/frbr05/jepsenFRBR2120805.pdf

Erik Thorlund Jepsen, the library authority officer for the Danish National Library Authority, presents the application and an explanation of the FRBR model on Danish Union Catalog.

"What's New in Cataloguing"

www.lianza.org.nz/events/conference2004/papers/todd.pdf

Part three of this document (see page 6) by Chris Todd (available via the papers at the LIANZA [Library and Information Association of New Zealand Aotearoa] 2004 Conference) provides an explanation of FRBR and includes numerous bibliographic links.

"FRBR as [a] Users' Model"

www.kaapeli.fi/~fla/frbr05/zumerFRBR2005.pdf

This document by Maja Zumer (University of Ljubljiana) provides details about a pilot study of user requests related to FRBR in a public library. On page 14 of the PDF file, Zumer notes that six out of forty-two users never use the OPAC.

Zumer's presentation was part of the content line up at "Bibliotheca Universalis: How to Organize Chaos?" (August 11–12, 2005), the Satellite Meeting to the 71st World Library and Information Congress. Conference organizers included the International Federation of Library Associations (IFLA); the Finnish Library Association; the Finnish Research Library Association; the Helsinki University Library-National Library of Finland; Library

of Parliament, Finland; and the Finnish-Swedish Library Association (see www.kaapeli.fi/~fla/frbr05/index.htm).

The meeting "Bibliotheca Universalis: How to Organize Chaos?" also featured additional papers related to FRBR (www.kaapeli.fi/~fla/frbr05/prgr.htm, see the following five resources).

"Metadata in Relation to FRBR"

www.kaapeli.fi/~fla/frbr05/MaglianoPresnet.pdf

In this paper (presented August 11, 2005), Cristina Magliano highlights many of the current metadata standards in relation to FRBR. Magliano then shows how the Servizio Bibliotecario Nazionale (SBN) of Italy (at www.internetculturale.it) will integrate with the FRBR model. (Presented at "Bibliotheca Universalis: How to Organize Chaos?": the Satellite Meeting to the 71st World Library and Information Congress, August 11–12, 2005.)

"From MARC to FRBR: A Case Study in the Use of the FRBR Model on the BIBSYS Database"

www.kaapeli.fi/~fla/frbr05/aalberg2BIBSYSfrbrized.pdf

Trond Aalberg provides a specific case study of FRBR implementation on the Norwegian bibliographic database BIBSYS, which contains almost four million records. This study discusses specific problems and strategies for trying to move a large MARC database to the FRBR model. (Presented at "Bibliotheca Universalis: How to Organize Chaos?": the Satellite Meeting to the 71st World Library and Information Congress, August 11–12, 2005.)

"MARC21 Meets FRBR"

www.kaapeli.fi/~fla/frbr05/McCallumHelsinki_frbr marc layout rev9-05.pdf

In this document, Sally McCallum of the United States Library of Congress (LC) presents information on mapping MARC21 to FRBR experiments and projects at the LC. (Presented at "Bibliotheca Universalis: How to Organize Chaos?": the Satellite Meeting to the 71st World Library and Information Congress, August 11–12, 2005.)

"LC's MARC/FRBR Experimentation Tool"

www.kaapeli.fi/~fla/frbr05/McCallumHelsinki_frbrtool.pdf

McCallum's explanation of the MARC21 FRBR tool, which LC has developed. Discussion of challenges to applying FRBR to MARC21 bibliographic records. (Presented at "Bibliotheca Universalis: How to Organize Chaos?": the Satellite Meeting to the 71st World Library and Information Congress, August 11–12, 2005.)

"FRBR Activities at OCLC"

www.kaapeli.fi/~fla/frbr05/patton%20oclc%20frbr%2020

Glenn Patton's presentation on OCLC's many activities related to FRBR implementation and experimentation.

Many of the implementations will be discussed later in this issue. (Presented at "Bibliotheca Universalis: How to Organize Chaos?": the Satellite Meeting to the 71st World Library and Information Congress, August 11–12, 2005.)

"Utilizing the FRBR Framework in Designing User-Focused Digital Content and Access Systems"

In this article in the January 2006 issue of Library Resources & Technical Services, the author, Olivia M. A. Madison, focuses on the rapidly emerging electronic environment and how libraries need to partner with new research and teaching communities in meeting the four user tasks identified by FRBR, which will result in expanded content and access systems.¹⁹

"The FRBR Model as Applied Continuing Resources"

Another article in Library Resources & Technical Services (October 2005), this piece by Ed Jones describes the application of the FRBR model to continuing resources. There are a number of difficulties in FRBRizing these resources, which the author goes into in great detail.²⁰

Reply by Ed Jones to Piece in LRTS "Letters to the Editor" by Barbara Tillett

Ed Jones's response to Barbara Tillett's letter to the editor of *LRTS* (see Preface, note 14) regarding Tillett's assertions about numerous errors, misstatements, and incorrect conclusions in Mr. Jones's article in the previous entry ("The FRBR Model as Applied to Continuing Resources").21

"Mapping MARC21 Linking Entry Fields to FRBR and Tillett's Taxonomy of Bibliographic Relationships"

In this April 2004 article in Library Resources & Technical Services, Pat Riva examines linking entry fields in MARC21 as a major mechanism for expressing relationships between bibliographic records. A number of taxonomies have been proposed, which the author examines. A detailed bio-directional mapping of the MARC21 linking fields to Tillett's and FRBR's taxonomy is presented, and application of the findings to future MARC system functionality and format development is provided.²²

"FRBR: Functional Requirements for Bibliographic Records: Application of the Entity-Relationship Model to Humphrey Clinker"

Edward T. O'Neill's article in Library Resources & Technical Services examines a single work, The Expedition of Humphrey Clinker, as an experimentation of benefits and challenges associated with creating the entity-relationship model of FRBR. Identifying expressions of this work was problematic, and the conclusion indicates that an enhanced manifestation record might be a viable solution for applying FRBR in the future.²³

Mapping ISBD Elements to FRBR Entity Attributes and Relationships

www.ifla.org/VII/s13/pubs/ISBD-FRBR-mappingFinal .pdf

The International Federation of Library Associations (IFLA) developed both the series of ISBDs and the FRBR entity-relationship model, and this mapping is meant to support the inter-relatedness and consistency of use of these standards.²⁴ IFLA encountered difficulties doing this, in that FRBR's terminology was conceived at a higher level of abstraction than the ISBD specifications permit. As a result, a table detailing the relationship of each of the elements specified in the ISBDs to corresponding entity attributes or relationships in the FRBR model was developed. The construction of this table has allowed a number of crosswalks and related mappings to be combined with other standards, including MARC21, RDF, and OWL.

"Using FRBR"

http://library.cern.ch/HEPLW/10/papers/1

Knut Hegna's article in *High Energy Physics* Libraries Webzine posits a user interface based on bibliographic data entered using the FRBR model.²⁵ The logic is based on the old card catalog relations of see and see also references. Some nice graphics are included.

"Data Mining MARC to Find: FRBR?"

http://folk.uio.no/knuthe/dok/frbr/datamining.pdf (by Knut Hegna and Eeva Murtomaa)

http://folk.uio.no/knuthe/dok/frbr/userguide.pdf ("MarcStudy Tool User Guide," by Knut Hegna)

http://folk.uio.no/knuthe/dok/frbr/acronyms.pdf (Acronyms)

www.ifla.org/IV/ifla68/papers/053-133e.pdf (Summary of Report Findings, August 2002)

This large, early (2002) study looked at MARC data in two national bibliographies. The researchers/authors attempted to analyze this data in relation to the FRBR model. The conclusions state that MARC does contain attributes relevant for identifying parts of the FRBR model, including work, expression, and manifestation entities, but that current software programs cannot handle accuracy and formal syntax problems. The authors suggest that one of the benefits of implementing the FRBR model will be better "hit" results for OPACs, and they provide two suggestions for moving in this direction.

"Experiments with the IFLA Functional Requirements for Bibliographic Records (FRBR)"

www.dlib.org/dlib/september02/hickey/09hickey.html

This 2002 D-Lib article by Thomas B. Hickey, Edward T. O'Neill, and Jenny Troves discusses early experiments by OCLC in implementing a FRBR model in the WorldCat database, using subsets of records as well as the entire database.26

The FRBR Model (Functional Requirements for Bibliographic Records)

www.libraries.psu.edu/tas/jca/ccda/docs/frbr-intro.ppt

This is Dr. Barbara B. Tillett's PowerPoint presentation on FRBR-to the Cataloging and Classification Section's (CCS) Committee on Cataloging: Description & Access (CC: DA) of the Association for Library Collections & Technical Services (ALCTS)-at the 2002 ALA Annual Conference in Atlanta. In the note section of the first slide of the presentation, Tillett wrote: "I am very pleased to have this opportunity to share with you the conceptual model presented in the Functional Requirements for Bibliographic Recordsthe entities, relationships, and attributes from that model and to describe how it is currently affecting work on the Anglo-American Cataloguing Rules and the extension of the model into the area of authority control. I was a consultant along with Tom Delsey, Elaine Svenonius, and later Beth Dulabahn of the Library of Congress in developing the conceptual model within IFLA, the International Federation of Library Associations and Institutions."

eALCTS Program Presentation Handouts 2004 (Back to the Future: Understanding the Functional Requirements of Bibliographic Records Model [FRBR] and its Impact on Users, OPACS, and Knowledge Organization, Preconference on FRBR)

www.ala.org/ala/alcts/alctsconted/presentations/presentations.htm

The presentations of a 2004 ALCTS preconference that focused on FRBR provides are listed below with the presenter names and the URLs to the e-versions of the presentations.

- FRBR: Coming Soon to Your Library? (www.ala.org/ala/alcts/alctsconted/presentations/Bowen.pdf),
 by Jennifer Bowen, University of Rochester
- FRBR and the Bibliographic Universe, or, How to Read FRBR as a Model (www.ala.org/ala/alcts/ alctsconted/presentations/Carlyle.pdf), by Allyson Carlyle, Information School, University of Washington
- Differentiating Libraries through Enriched User Searching; FRBR as the Next Dimension in Meaningful Information Retrieval (www.ala.org/ ala/alcts/alctsconted/presentations/Chachra.pdf), by Vinod Chachra, Chairman & CEO, VTLS Inc., and John Espley, Director of Design, VTLS Inc.
- Stepping Back Looking Forward: FRBR and the Evolution of the Catalogue (www.ala.org/ala/alcts/ alctsconted/presentations/Delsey.pdf), by Thomas J. Delsey, Consultant
- RedLightGreen—FRBR between a Rock and a Hard Place (www.ala.org/ala/alcts/alctsconted/presenta tions/Proffitt.pdf), by Merrilee Proffitt, Program Officer, Research Libraries Group (RLG)

- What Is FRBR? (www.ala.org/ala/alcts/alctsconted/ presentations/Tillett.pdf), by Dr. Barbara B. Tillett, Library of Congress
- FictionFinder: A FRBR Works-Based Prototype (www.ala.org/ala/alcts/alctsconted/presentations/ VizineGoetz.pdf), by Diane Vizine-Goetz, OCLC Research

MARC and FRBR

www.loc.gov/marc/marc-functional-analysis/frbr.html

This Library of Congress Web portal is devoted to experiments and tools relating to MARC (machine-readable catalog record) and FRBR. It includes a functional analysis of the MARC21 Bibliographic and Holdings Formats, displays for multiple versions from MARC21 to FRBR, and the JSC Format Variation Working Group update to MARBI.

In addition, the FRBR Display Tool developed in 2001 is available here. It is an XSLT program that transforms MARC files into meaningful FRBR entities. It is free and is available to everyone for use and experimentation.

Two Criticisms of FRBR

"Cain: FRBR Is a Set of Leaky Containers," www.frbr.org/2006/02/13/rda-l-frbr-is-a-set-of-leaky-containers "Some Reservations about FRBR," www.emeraldinsight.com/Insight/viewContentItem.do?contentType=Article &contentId=1545407 (link to purchase article request)

"FRBR Is a Leaky Set of Containers" is the first of two short criticisms of FRBR, and one of only two I had found up until finishing work for this report (September 2006).²⁷ It is a February 13, 2006, blog post on the FRBR blog by William Denton that briefly summarizes an electronic mailing-list conversation from messages posted to RDA-L (an electronic forum for the discussion of RDA [Resource Description and Access], www.collectionscan ada.ca/jsc/rdadiscuss.html) by Diane Hillmann, "a major figure in the Dublin Core and metadata world (she wrote Using Dublin Core, for example)," and "Hal Cain of the Joint Theological Library in Australia."

The second short criticism comes from Jeffrey Beall in a recent article in *Library Hi Tech News*. ²⁸ In "Some Reservations about FRBR," Beall is especially critical and states, "The unwarranted enthusiasm for the model, its complexity and ambiguity, its irrelevance to most libraries, its lack of proven success, and the potential negative impact it will have on the crosswalking of library metadata are all good reasons for taking a second look at FRBR and re-evaluating whether it should be adopted so unquestioningly."

"Towards Accessibility to Digital Cultural Materials: A FRBRized Approach"

This article in the journal *OCLC Systems & Services: International Digital Library Perspectives* by

Cathy Weng and Jia Mi examines the key components of building good digital collections and proposes a FRBR model to improve accessibility of digital cultural materials.²⁹ The authors studied a number of Digital Library Federation member Web sites to learn how digital collections were organized and delivered. They found seven different levels of bibliographic description and search capabilities. Possible standardization of digital catalogs using the FRBR model is presented. An excellent bibliography is included.

Using MARC21 with FRBR: Record Configurations www.loc.gov/marc/marbi/2005/2005-report02.pdf

This report by Sally McCallum attempts to clarify the differences between exchange records and internal record configurations in MARC21 and identifies changes that need to occur to the MARC21 format to support FRBRbased activities.³⁰ The author indicates that a fundamental decision needs to be made concerning placement of work/expression records in the MARC structure, irrespective of internal record configurations.

"Bibliographic Records in the Computer Age"

www.cilip.org.uk/publications/updatemagazine/ar chive/archive2003/september/update0309d.htm

This short article by discusses how FRBR will enhance bibliographic records.31

"Brave New FRBR World"

www.ddb.de/standardisierung/pdf/papers_leboeuf.pdf www.loc.gov/loc/ifla/imeicc/pdf/papers_leboeuf-eng .pdf (version 3, revised by Barbara Tillett, LOC; delivered in Cairo by Elena Escolano Rodríguez, Biblioteca nacional de España)

www.loc.gov/loc/ifla/imeicc/pdf/frbr-05hndout.pdf (PowerPoint version)

The above-listed URLs include versions and revisions of an introductory presentation on FRBR by Patrick Le Bœuf (of the Bibliothèque nationale de France), one of FRBR's major advocates.

"The Concept of a Work in WorldCat: An Application of FRBR"

www.oclc.org/research/publications/archive/2003/ lavoie_frbr.pdf (e-print version)

This article by three members of OCLC's Office of Research, Rick Bennett, Brian F. Lavoie, and Edward T. O'Neill, appeared in the spring 2003 issue of Library Collections, Acquisitions, and Technical Services. 32 (The e-print version of it is available at the URL indicated under the article's title). The abstract states: "This [article] explores the concept of a work in WorldCat, the OCLC Online Union Catalog, using the hierarchy of bibliographic entities defined in the Functional Requirements for Bibliographic Records (FRBR) report."

Seminario su FRBR (Functional Requirements for **Bibliographic Records**)

www.aib.it/aib/sezioni/toscana/conf/cfrbr.htm

Although this conference was in Italy (Associazione Italian biblioteche, Sezione Toscana, 2000), some of the presentations have English versions, including the introduction by Mauro Guerrini, www.aib.it/aib/sezioni/ toscana/conf/frbr/intro-e.htm; the presentation by John Byrum and Olivia Madison, "Reflections on the Goals, Concepts, and Recommendations of the IFLA Study on the Functional Requirements for Bibliographic Records," www.aib.it/aib/sezioni/toscana/conf/frbr/byrmadis .htm; and Susanna Peruginelli's presentation, "FRBR: Some Comments by ELAG (European Library Automation Group)" www.aib.it/aib/sezioni/toscana/conf/frbr/ perug-e.htm.

"Is FRBR in Our Future?"

www.nelinet.net/edserv/conf/ill/2003/baden.ppt

This 2003 PowerPoint presentation by Diane Baden of NELINET (which is "a member-owned, membergoverned cooperative of more than 600 academic, public, and special libraries in the six New England states.") uses examples from the VTLS/FRBR implementation to show FRBR's influence on OPAC displays as well as benefits for users and catalogers.

"Document Ontologies in Library and Information Science: An Introduction and Critical Analysis"

www.knowledgetechnologies.net/proceedings/presen tations/carlyle/allysoncarlyle.ppt

This PowerPoint presentation by Allyson Carlyle (iSchool, University of Washington, Seattle, WA, presented at the Knowledge Technologies Conference 2002) provides a FRBR model analysis in relation to current library and information-science perspectives.

"Functional Requirements for Bibliographic Records: User Tasks and Cataloguing Data"

www.cilip.org.uk/groups/cig/ppt/umbrella2003/biblio graphic_records.ppt

This PowerPoint presentation was presented at a CIG (Cataloging and Indexing Group) committee meeting in London in July 2003. Based in London, CIG is a group of the CILIP (Chartered Institute of Library and Information Professionals). This presentation examines electronic resources in relation to the FRBR user tasks.

"What Benefits Do We Expect from a FRBR-Based **Automated Catalog?**"

www.stk.cz/elag2001/Workshop/ws10.doc (background paper)

www.stk.cz/elag2001/Workshop/Reports/Ws10/Ws10 .html (PowerPoint presentation)

The above-listed URLs are links to resources from an

ELAG (European Library Automation Group) 2001 workshop that provide an examination of implementation and staffing issues related to applying FRBR to an automated public access catalog.

"Conceptual Models: Museums & Libraries: Towards an Object-Oriented Formulation of FRBR Aligned with the CIDOC CRM Ontology"

http://elagreports.cimec.ro/papers/Papers/Zumer&LeBoeuf-ELAG-2006-Paper.pdf

A brief write-up by Maja Zumer and Patrick Le Bœuf for ELAG 2006 meeting (New Tools and Library Practices, Bucharest, Romania, 2006.) This write-up discusses the application of FRBR to the Comite International pour la DOCumentation—Conceptual Reference Model (CIDOC CRM) ontology within the European community.

"FRBR Continued: Implementation Problems"

www.ifnet.it/elag2002/workshop.html

An update by Maja Zumer and Patrick Le Bœuf (presented at the ELAG 2002: Semantic Web and Libraries event, Rome, Italy) on FRBR implementation problems associated with the AustLit gateway and VisualCat in Denmark.

European Library Automation Group (ELAG) 2002: Semantic Web and Libraries

www.ifnet.it/elag2002/programme.html

Besides the presentations and papers already mentioned, visit the URL listed above to access a paper on "FRBR and Revision of Cataloging Rules" by Isa de Pinedo and Alberto Petrucciani of the Italian Committee on Revision of Cataloging Rules; a PowerPoint presentation on "DBC FRBR Work Match Activities" by Hans-Henrik Lund; and a PowerPoint presentation on "RDF and FRBR Applications" by Poul Henrik Jorgensen.

"FRBR (Continued)"

www.elag2003.ch/ws/ws_5.pdf

From ELAG 2003 (Cross Language Applications and the Web, Bern, Switzerland), this report covers various FRBR implementations by the ELAG consortium, including INWECA 6. framework Expression of Interest, OCLC research, VTLS application, IFLA FRBR group, and further development of FRANAR.

"Toward a Global Access to Bibliographic Information: Converging Patterns, New Paradigms"

www.cs.ucla.edu/Leap/zer/maribor.htm

This keynote presentation at the COBISS/SICRIS User Conference (Maribor, Slovenia, 2000) by Zorana Ercegovac is a detailed address covering the history of bibliographic information and how FRBR will change that model and present a new paradigm for information organization into the future.

"An Interpretation of the FRBR Model"

www.ucl.ac.uk/isko2004/sysweb/4bFrancu.ppt

This is an interesting PowerPoint presentation, by Victoria Francu, about the FRBR model, with nice graphics and case-study applications using bibliographic records. It was presented at the Eighth International ISKO (International Society for Knowledge Organization) Conference: Knowledge Organization and the Global Information Society in London, July 2004.

"FRBR: Toward Some Practical Experimentation in ELAG?"

www.stk.cz/elag2001/Papers/PatrickLe_Boeuf/PatrickLe_Boeuf.html (paper)

www.stk.cz/elag2001/Papers/PatrickLe_Boeuf/Show .html (PowerPoint presentation)

A very detailed and extensive report by Patrick Le Bœuf on FRBR experimentation for the European Library Automation Group (ELAG) for the 2001 conference in Prague.

"Knowing a Hawk from a Handsaw: FRBR Basics, AACR & the OPAC"

www.columbia.edu/~harcourt/FRBRnytsl.ppt

This is an excellent introduction to FRBR by Kate Harcourt from Columbia University Libraries, in which Harcourt discusses the FRBR relationship to AACR and the cataloging rules. (Presented at the NYTSL [New York Technical Services Librarians] Spring Dinner Meeting, May 7, 2004.)

"Top Trends in Cataloging and Metadata: IRs, FRBR, VIAF, Unicode"

www.wla.lib.wi.us/conferences/2003/postconf/miller_shapiro_wla2003.ppt

This is an interesting 2003 presentation by Steven J. Miller (University of Wisconsin–Milwaukee Libraries) on the status of cataloging rules and what the future holds for the library OPAC, with some discussion of the FRBR model. It was presented at the Wisconsin Library Association annual conference in October 2003.

"Showboating FRBR (and We Don't Mean Edna!)"

www.cla-net.org/included/docs/frbr.pdf

This colorful PowerPoint presentation (2004) from the Western Service Center of OCLC provides a quick look at the FRBR model applied to Edna Ferber's (FRBRs!) novel *Showboat*.

"FRBR (Functional Requirements for Bibliographic Records): What Is FRBR and Why Is It Important?"

www.collectionscanada.ca/obj/014005/f2/014005-228

This 2003 PowerPoint presentation by Chris Oliver is a very good introduction and description of what FRBR

is and its importance for access to information in the future.

"Retrieval that Works: Functional Requirements for Bibliographic Records (FRBR) and OCLC"

www.oclc.org/research/presentations/childress/200607 -aall.ppt

This presentation by Glenn Patton and Eric Childress was the most recent presentation on FRBR I found during my work on this issue. Presented at the Ninety-Ninth Annual American Association of Law Libraries (AALL) Meeting and Conference (July 2006), the lengthy presentation (seventy-one slides) features interesting graphics and a simple presentation style; it is an excellent introduction to FRBR for library staff.

"About the Use of 'Functional Requirements for Bibliographic Records' for Teaching Cataloging"

www.ifla.org/IV/ifla65/papers/108-131e.htm

This paper by Kirsten Strunck (Dept. of Information Studies, Royal School of Library and Information Science, Copenhagen, Denmark) was presented at the Sixtyfifth IFLA Council and General Conference, Bangkok, Thailand (August 1999). It provides an early description of FRBR and its application to teaching cataloging in library school.

"FRBR: Functional Requirements for Bibliographic Records (IFLA, 1998)"

http://libweb.princeton.edu/departments/tsd/ katmandu/policies/FRBR.ppt

This April 2005 PowerPoint presentation by Donald Thornbury (Dept. of Rare Books and Special Collections, Technical Services, at Princeton University Library) provides a quick introduction to FRBR for technical-services staff at Princeton University.

"FRBR (Functional Requirements for Bibliographic Records): A Tutorial"

www.vtlseug.ch/common files/FRBR EUG04 Jack.pdf This September 15, 2004, presentation by Gemma Ros and Jack Bazuzi was part of the program at the VTLS European Users' Group that year. It provides a basic introduction to FRBR and its impact on the VTLS/Virtua integrated library system.

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