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415 – Essay 1 (FRBR)

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The Slippery Slope of Creating a Sensible Catalog: FRBR from Concept to Implementation

People commonly refer to Homer's *Odyssey* or Shakespeare's *Hamlet*, or even Douglas Adam's *Hitchhiker's Guide to the Galaxy*, but usually they are not speaking of a specific physical copy of the work or even a particular version or translation, but rather an abstract artistic creation of each of these authors. But a search for the title *Hamlet* by Shakespeare in WorldCat, even when limited to books, brings back almost three thousand items. If you just want to read the play, how would you choose one and how would you know that it was the work that people culturally reference?

The International Federation of Library Associations's (IFLA) Functional Requirement for Bibliographic Records (FRBR) proposal of 1997 attempts to make this easier. FRBR is an entity-relationship model for the cataloging of bibliographic items. Essentially, FRBR would collocate "all versions of a given work together using a high-level record that links to numerous lower-level records, thereby collapsing near-duplicate items into a single entry point."¹ It would give the searcher a list of works rather than a list of items and once the correct work is selected, the user can then be guided to select among the variations of that work, like translations, editions, or annotated versions, which in most current catalogs would show up as individual records in the result set. Ed O'Neill summed up this change by saying "This shift in cataloging focus requires not simply describing the item in hand but also describing how the item relates to other members of its bibliographic family."² While these concepts are not new, FRBR is the first to be taken seriously on an international level. IFLA's proposal is much more detailed and has much greater implications than just making searching easier, but it has a number of hurdles to overcome before even that can be realized.

In creating FRBR, IFLA first questioned long held traditions in cataloging and established thinking about library catalogs, and began instead with the belief that the bibliographic record exists to guide the user to the item they are looking for. It was immediately apparent that today's catalogs, while electronic, are only digital versions of the physical card catalogs that preceded them. Many of the cataloging practices bound by the physical restrictions of the cards had been carried over to the digital version, including the inability to create hierarchal relationships between related items. IFLA examined these unnecessary restrictions and developed FRBR to "at last bring the concept of the library catalog into the digital realm, moving from a digital version of the card catalog to a truly electronic entity."³

The FRBR proposal for a bibliographic record framework is comprised of three distinct groups, with a fourth that defines the user needs. The hierarchical entities in the first group are *work*, *expression*, *manifestation*, and *item*. The *work*, the highest level entity, is the artistic or intellectual achievement, an abstract concept that has no physical embodiment. The *expression* is a realization of this work, again not a physical object, but rather a particular version of the *work* such as a translation, audio rendering, or even just the original work itself. *Manifestation* is a physical (or digital) object that typifies and embodies a particular *expression* of the *work*, and finally, an *item* is a single copy of a *manifestation*.

The second group in FRBR defines those responsible for the creation of the works, expressions, and manifestations: *personal* and *corporate bodies*. The third group describes the subject of the work and includes *concept*, *object*, *event*, *place*, as well as all of the entities in the first two groups. The fourth and final group is in fact the basis for the other three groups: the needs of the user, which IFLA delineates as the need to *find*, *identify*, *select*, and *obtain* items. Without the need to find and distinguish between the items described, there would be no reason for records to exist. Therefore, the existence of the bibliographic record is inextricably linked with user needs.

FRBRizing the library catalog certainly has advantages, but there are disadvantages that go along with them. The most apparent advantage is the increased ease of searching for a work that has many expressions or manifestations. When the user is presented with only one or perhaps ten records for *Hamlet* instead of two or three thousand, the likelihood of locating the

item is dramatically easier and certainly less stressful. Navigating through the hierarchy from *work* to *item* makes logical sense to the user and presents manageable result lists. But the FRBR model will not apply to all records in the catalog. It assumes that there is more than one expression or manifestation of the work. In fact, most items in the catalog (eighty percent of the records in WorldCat⁴) have only one expression and one manifestation. If there is only one expression and one manifestation and perhaps even one item for a work, these same hierarchical levels can be a point of frustration for the user. Navigating through the tree is then just a senseless hurdle, though easy solutions to this problem seem possible; perhaps the tree will remain invisible unless there are a critical number of expressions or manifestations, thereby leaving the structure intact without trying the user's patience.

Another advantage to FRBRizing the catalog is that cataloging will require much less time. When a new edition of a work is added to the collection, much of the metadata can be inherited from the work and expression levels to the new manifestation, so the creation of a whole new record is no longer necessary. An additional advantage of this metadata inheritance is that records for various manifestations of the same work will remain consistent and decrease the likelihood of typos or other cataloging disparities; the upper level entities as well as the group two entities serve as a form of authority record. But converting the catalog to the FRBR model will require a significant investment of both time and money. The Library of Congress and Online Computer Library Center (OCLC) have both developed algorithms that can convert much of the information in a traditional record into a FRBRized one, though each record will need to be reviewed by a cataloger. In the Hegna and Murtomaa study of the Finnish-Norwegian national bibliographies, MARC fields were mapped to the FRBR model and it was found that if records were correctly coded in AACR2, the conversion was highly successful.⁵ In their "Humphry Clinker" study, OCLC found that in many cases the actual item being cataloged needed to be examined in depth to determine whether it was a new expression or manifestation⁶ (though this distinction was confounded by the hazy distinction between these two entities), and in the end abandoned the concept of *expression*. Several implementations of FRBR have dropped the expression entity altogether to avoid the work intensive cataloging step required to distinguish between new expressions or new manifestations.⁷

The FRBR model has been used in discreet projects up until now, which alleviates many of the issues that lie down the road as it is used in more and more catalogs which will require greater interoperability. Little mention has been made of how records will be exchanged between libraries. If the distinctions between levels remains somewhat ambiguous, or if different libraries take different approaches toward each of these entities, record exchange between libraries would create havoc in the catalogs. Entities within a work may overlap if they are imported individually, or worse, may be missing crucial information if gaps exist between the imported entity and the ones already in the catalog. This also begs the question of which entities would be exchanged. As new items are received by the library, there would need to be a way for the cataloger to import only the entities needed and a way to link the imported records to the entities already in the catalog. The danger of entire hierarchies being created or imported for the same work would exponentially compound the current problem of duplicate records.

Some mediums are better served by FRBRization than others. Serial, digital, and music librarians and libraries have all proposed changes and amendments to the FRBR model to better suit their medium, but their recommendations are often in conflict. Many of the current problems with cataloging of serials (and other items in which a part of the physical object could also be interpreted to be a work) will still be issues in the FRBR model: Does the journal as a whole constitute the work, or only the individual articles within it? How will title changes over time be represented or linked? Oliver⁸, Antelman⁹, and Taniguchi¹⁰ discussed these issues in depth and proposed changes to the FRBR model. Music librarians rely heavily on the expression entity, which many generalist implementations have dropped. Digital formats may have trouble as well; what constitutes an item or a manifestation in a digital environment is difficult to establish: are a PDF, an html, and a text download of the same information considered different items or different manifestations? What if the pdf contains layout differences and the html includes hyperlinks, while the text includes neither? How will dynamically created pages be represented? The Paradigma project in Norway addresses some of these issues.¹¹ And it is not only mediums that are better served by the model than others. For example, the concept of *work* and of the creator responsible for its existence in Asia is vastly different than that of the West. As FRBR's influence spreads, these types of issues will need to be addressed.

Searching issues will also arise. A user wishing to see all manifestations of a work regardless of expression would either be unable to do so or be forced to look through even more records than in current catalogs because of the hierarchical structure. A way to bypass this would need to be a part of the OPAC. Similarly, if a user searches for conflicting work-expression-manifestation elements, what would the result be? Le Boeuf raises this issue asking,

What is to happen if a user combines two queries, each of which being matched in records corresponding to two entities that will not belong to the same level (in FRBR's 4-level model) but that will be linked by a structural relationship (for instance, if this user searches works by Edgar A. Poe translated (expressions) into French by Charles Baudelaire)? Will "something" match the query? How will it be displayed?¹²

Many of these issues may have simple solutions, but will need to be addressed before FRBR can be implemented on a large scale. Many of the important library organizations around the world are participating in the FRBR development, including the Library of Congress, OCLC, IFLA, National Library of Canada, the Australian government, just to name a few, so it is likely that these issues will be resolved, or at least have significant effort to find solutions put towards the problems.

Despite these questions and issues, FRBR implementations are increasing in number and scope around the world. The AustLit project is an example of a completely FRBRized catalog, though they also incorporated several changes¹³ to the FRBR model, including the concept of the *superwork* which resides above the *work* in the entity relationship, as well as event modeling, which includes dates marking the *creation* of a work, *realization* of an expression, and *embodiment* of a manifestation. They also developed the second group of entities more fully. RLG collapsed the four FRBR entities to two, *work* and *manifestation*, for their redlightgreen project,¹⁴ dropping *expression* (the redlightgreen site directs the user to a library catalog where the *items* can be found).

To date, only one vendor, VTLS, has incorporated FRBR into their OPAC products. Their Virtua system is fully FRBRized and is capable of holding both traditional bibliographic records

and FRBRized ones. OCLC has pioneered several projects to test the FRBR model and automated conversion, including their FictionFinder project, which successfully tested the FRBR model on WorldCat's fiction collection, the Humphry Clinker study, the xISBN project (which aims to retrieve all editions and printings of the work associated with the ISBN entered into the search using FRBR information), and the FRBR conversion algorithm. The Library of Congress has created a FRBR tool to help with record conversion and provides examples of a FRBR record display on their site. Several projects across Europe have incorporated the FRBR entities as well.

Work continues on realizing the FRBR concepts. Though much has been done on group one entities, there is still much to be done to clarify them. Work on the second group is being done in the form of Functional Requirements and Numbering of Authority Records (FRANAR) which will extend the FRBR work to name authority records (including personal, family, and corporate names), as well as uniform titles and series titles. The working group will create standards, including a possible International Standard Authority Data Number (ISADN) and an international name authority file.¹⁵ A new collaboration between the International Committee for Documentation (CIDOC) and the IFLA-FRBR working group is mapping the CIDOC Conceptual Reference Model (CRM) to the FRBR model so that "all of its implicit semantics can be explicated"¹⁶ and FRBRized library catalogs can become part of the semantic web, when or if it comes into existence.

FRBR is a great leap forward in the thinking about bibliographic records and the library catalog and despite the obstacles that lay in its path, some if not all of its proposals will certainly be incorporated into the cataloging of bibliographic records as well as their storage and retrieval in the future. But FRBR is only a start on a massive paradigm shift in the approach to library information and services. Karen Coyle, in her article "Future Considerations: the functional systems record,"¹⁷ takes an even broader view in evaluating the current library systems and how they are integrated into the library's missions and objectives as we move into a new digital era. MARC evaluated the fields in a bibliographic record without addressing the surrounding systems (albeit that MARC was a brilliant system that took advantage of the technology available then); FRBR evaluated the bibliographic structure, a broader view than MARC but still limited; Coyle proposes that we examine the entire library system and evaluate

the best way to incorporate all of its functions and coordinate them into a synchronized whole. Great changes will need to come about for libraries to become a visible and essential part of the internet and to be able to provide service to the vast amount of users without the skills or patience to navigate the current structures.

Despite the increasing visibility of the concepts put forth in the 1997 FRBR proposal, much of its success will depend on how much of it is incorporated into the upcoming AACR3 and whether international support for the model continues. Issues surrounding the entities in FRBR will be challenged, but will hopefully adapt to the various needs of cultures around the world, paving the way for an international interoperability and information exchange. Many interesting questions remain and most likely difficult choices lie within the answers, but certainly FRBR is a step in the right direction and most who have addressed its shortcomings in print are among its supporters. FRBR is an essential part of the future of bibliographic record systems.

¹ Storey, Tom, "Understanding FRBR: The New Bibliographic Model," *OCLC Newsletter* (Oct-Dec 2003), 11.

² O'Neill, Edward T., "FRBR: Functional Requirements for Bibliographic Records; Application of the Entity-Relationship Model to *Humphry Clinker*," *Library Resources & Technical Services* 46 no4 (Oct 2002), 1.

³ LeBoeuf, Patrick, "FRBR and Further," *Cataloging & Classification Quarterly* 32 no4 (2001), 3.

⁴ Bennett, Rick, Brian F. Lavoie, & Edward T. O'Neill, "The Concept of a Work in WorldCat: An Application of FRBR," *Library Collections, Acquisitions, and Technical Services* 27 no1 (Spring 2003), 10.

⁵ Hegna, Knut and Eeva Murtooma, "Data Mining to Find: FRBR?" *International Cataloging and Bibliographic Control* 32 no3 (2003), 2.

⁶ O'Neill, "FRBR: Functional Requirements," 10.

⁷ See the AustLit project <<http://www.austlit.edu.au/>>, OCLC's FictionFinder project <<http://fictionfinder.oclc.org/>>, and RLG's redlightgreen project <<http://www.redlightgreen.com/>>.

⁸ Oliver, Chris, "FRBR is Everywhere, But What Happened to the Format Variation Issue? Content versus Carrier in FRBR," *The Serials Librarian* 45 no4 (2004).

⁹ Antelman, Kristin, "Identifying the Serial Work as a Bibliographic Entity," *Library Resources & Technical Services* 48 no4 (Oct 2004).

¹⁰ Taniguchi, Shoichi, "Conceptual Modeling of Component Parts of Bibliographic Resources in Cataloging," *Journal of Documentation* 59 no6 (2003), 692-708.

¹¹ Albertsen, Ketil and Carol van Nuys, "Paradigma: FRBR and Digital Documents," *Cataloging & Classification Quarterly* 39 no3/4 (2005), 125-149.

¹² LeBoeuf, "FRBR and Further," 3.

¹³ Ayres, Marie-Louise, Kerry Kilner, Kent Fitch, and Annette Scarvell, "Report on the Successful AustLit: Australian Literature Gateway Implementation of the FRBR and INDECS Event Models, and Implications for other FRBR Implementations" *International Cataloguing and Bibliographic Control* 32 no1 (Jan-Mar 2003).

¹⁴ RLG, "Under the Hood: RLG's RedLightGreen."

¹⁵ Patton, Glenn E., "FRANAR: A Conceptual Model for Authority Data," *Proceedings International Conference Authority Control: Definition and International Experiences*, Florence (2003).

¹⁶ Le Boeuf, Patrick, "FRBR: Hype or Cure-All?" *Cataloging & Classification Quarterly* 39 no3/4 (2005), 7.

¹⁷ Coyle, Karen, "Future Considerations: the functional systems record," *Library Hi Tech* 22 no2 (2004), pp. 166-174.