

Final Report of the Working Group on Aggregates

September 12, 2011

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Formation: The Working Group on Aggregates was created by the FRBR Review Group at their meeting in Oslo (2005).

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Scope: Explore the treatment of aggregates in the FRBR model. Common aggregates to be considered include: (1) Collections, selections, and anthologies, (2) Augmentations (original text augmented with illustrations, notes, introductions, etc.), (3) Monographic series, (4) Serials, (5) Multi-part monographs and (6) Integrating resources.

Rationale: Aggregates are only briefly described in the original *Functional Requirements of Bibliographic Records (FRBR)* report. At the 2005 IFLA FRBR Workshop in Dublin, Ohio and at the FRBR Review Group meeting in Oslo, difficulties and inconsistencies in the applying the FRBR model to aggregates were identified as an impediment to FRBR implementation.

Meetings: The Working Group met at the IFLA World Library and Information Congresses in Seoul, Korea (2006), Durban, South Africa (2007), Québec, Canada (2008), Milan, Italy (2009), Gothenburg, Sweden (2010). The Working Group's final meeting was in San Juan, Puerto Rico (2011). The Working Group also exchanged numerous documents, examples, comments, and discussions by email and held its final meeting online.

Note: At the time this report is being submitted, the FRBR Review Group is concentrating its efforts towards preparing a consolidated statement of the FRBR family of conceptual models. It is therefore recommended that this report be considered as part of the consolidation process.

Introduction

The FRBR conceptual model described in *Functional Requirements for Bibliographic Records: Final Report*¹ (*FRBR Report*) provides a new way to view the bibliographic universe. We have resources that we describe, and we find it helpful to designate the entities that make up those resources or that are related to those resources, so that we can meet certain objectives of finding and collocating information. Being able to group all the works of a creator, all the expressions of a work (e.g., to show the translations or editions available), or all the manifestations of a particular expression of a work are essential to fulfilling specific user tasks.

The Working Group on Aggregates (WG) initially reviewed the literature and observed very little change in the treatment of aggregates since the IFLA FRBR Workshop². A number of different definitions of aggregates have been used along with different approaches to modeling aggregates. Difficulties and inconsistencies in the applying the FRBR model to aggregates remain an impediment to a consistent implementation of FRBR. Aggregates are an important and relatively common type of FRBR entity. Bennett et al.³ estimated that of all works with multiple expressions in OCLC's WorldCat, approximately 12% were aggregates.

Defining Aggregates

In defining aggregates, the general FRBR framework was a major consideration. Although *FRBR Report* does not "presume to be the last word on the issues it addresses"⁴, the WG believed that aggregates need to be defined and treated consistently with the general FRBR model. The key principles identified that relate, directly or indirectly, to aggregates include:

1. "The boundaries of the entity *expression* are defined, however, so as to exclude aspects of physical form, such as typeface and page layout, that are not integral to the intellectual or artistic realization of the *work* as such."⁵
2. "When an *expression* is accompanied by augmentations, such as illustrations, notes, glosses, etc. that are not integral to the intellectual or artistic realization of the *work*, such augmentations are considered to be separate *expressions* of their own separate *work(s)*."⁶
3. "We can also use the entity defined as *expression* to indicate that the intellectual or artistic content embodied in one *manifestation* is in fact the same, or substantially the same, as that embodied in another *manifestation*. If two *manifestations* embody the same or almost the same intellectual or artistic content, even though the physical embodiment may differ and differing attributes of the *manifestations* may obscure the fact that the content is similar in both, we can make the common link through the entity defined as *expression*."⁷

From the above statements, it can be assumed that works and expressions are unchanged when they are embodied in a manifestation. This principle is based on the concept that, since expressions are abstract entities, the properties of an expression are not derived from its manifestations. Expressions inherit properties from works and manifestations inherit properties from expressions, not vice versa. Therefore, the criteria for identifying expressions must be based solely on the properties of the expression and its parent work. If different manifestations embody the same or very similar content, then it follows that they embody the same expression. This holds even though the physical attributes of the manifestations may differ or the expression is combined with different other expressions.

The IFLA Working Group on the Expression Entity⁸ proposed amending the description of expressions. It had generally been accepted that when a work was augmented or supplemented with additional material, the result was a new expression of the work. However that practice proved to be problematic since a new expression was formed every time of a classic work was augmented with a different combination of notes, forwards, illustrations, etc. even when the expression of the classic itself was unchanged. In some cases this resulted in a large number of different expressions of the same work with no apparent differences.

The question of how augmented works should be treated was resolved in 2007 when the *FRBR Report* was amended by the IFLA Standing Committee of the Cataloguing Section. That revision specified that “When an expression is accompanied by augmentations ... that are not integral to the intellectual or artistic realization of the *work*, such augmentations are considered to be separate *expressions* of their own separate *work(s)*.”⁹

When viewed in the broader FRBR context, defining aggregates was a more straightforward task. When the WG looked at specific examples, there was general agreement whether a particular resource was or was not an aggregate entity. Based on the observed characteristics of the manifestations identified as aggregates, an *aggregate* is defined as a *manifestation embodying multiple distinct expressions*. This definition of aggregates does not include every possible combination or collection of FRBR entities. It's limited to Group 1 entities and, as such, excludes collections or groups of persons, corporate bodies, places, etc. It also excludes collections or groups of items that in some cases have been considered aggregates. The exclusion of collections of items does not imply that they don't exist or that they are unimportant, but simply that they represent a distinct combination of FRBR entities. The WG only briefly discussed how groups of items should be treated in FRBR and makes no recommendation in this regard other than that they are not aggregates as defined above.

Three distinct types of aggregates were identified for discussion: (1) aggregate collection of expressions, (2) aggregate resulting from augmentation, and (3) aggregate of parallel expressions. In the following paragraphs, these types are defined in the context of this report.

Aggregate Collection of Expressions

Collections are sets of multiple independently created expressions which are ‘published’ together in a single manifestation. Collections include selections, anthologies, monographic series, serials and other similar groups of resources. Examples include journals (aggregates of articles), multiple novels published together in a single volume, books with independently written chapters, CDs (aggregates of individual songs), and various collected/selected works. A distinctive characteristic of collections is that the individual works are usually similar in type and/or genre such as a collection of novels by a particular author, songs by a particular artist, or an anthology of a genre of poetry. However, in other cases, they also may be what appears to be a random collection of expressions.

Aggregate Resulting from Augmentation

Aggregates resulting from augmentation are distinct from collections in that they typically consist of a single independent work that has been supplemented with one or more dependent works. Such aggregates occur when an expression is supplemented with additional material that is not integral to the original work and does not significantly change the original expression. Forwards, introductions, illustrations, notes, etc. are examples of augmenting works.

The augmenting material “may or may not be considered significant enough to warrant distinct bibliographic identification.”¹⁰

Aggregate of Parallel Expressions

Manifestations may embody multiple, parallel expressions of the same work. A single manifestation containing the expressions of the work in multiple languages is a common form of this type of aggregate. They are commonly used to publish manuals and government documents for multilingual environments. Parallel expressions are also common on the Web where users are provided access to equivalent material in their choice of languages. Other examples include publishing a text in its original language with a translation. Parallel expressions, at least in the library environment, are less common than collections aggregates or aggregates resulting from augmentation and have received relatively little attention. They are not explicitly discussed in the *FRBR Report* nor have they received any significant attention in the literature.

Modeling Aggregates

Figure 3.1 in *FRBR Report*¹¹ explicitly permits manifestations to contain multiple expressions as indicated by the many-to-many relationship between expressions and manifestations as shown in figure 1.

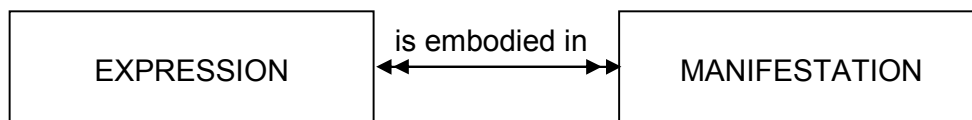


Figure 1. Many-to-many Relationship.

This is the only many-to-many relationship among the group 1 entities; the other relationships shown in Figure 3.1 are one-to-many. A manifestation can embody multiple expressions and an expression can be embodied in multiple manifestations. By contrast, an expression can only realize a single work and an item can only exemplify a single manifestation.

For example, two John Grisham’s novels, *The Testament* and *A Time to Kill* were republished in a single volume titled *The Testament: A Time to Kill*. The resulting aggregate manifestation embodies two expressions as shown in figure 2.

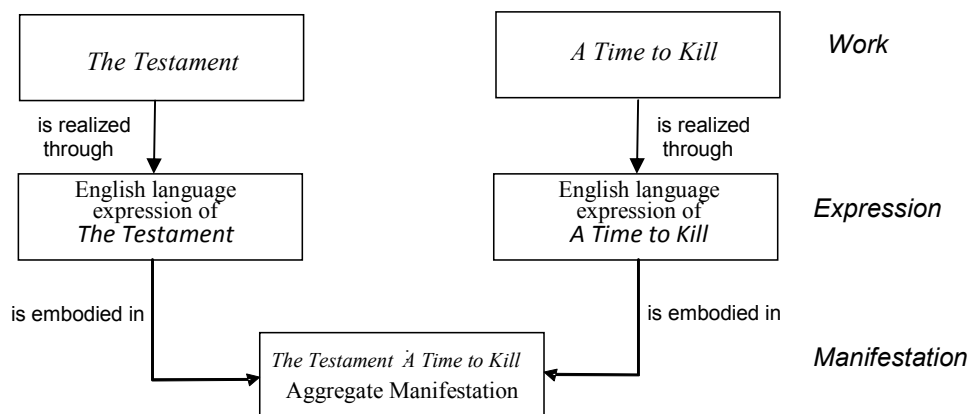


Figure 2. Aggregate Model for *The Testament: A Time to Kill*.

However, modeling an aggregate simply as an embodiment of discrete expressions may fail to recognize the creative effort of the aggregator or editor. The process of aggregating the expressions itself is an intellectual or artistic effort and therefore meets the criteria for a work. In the process of creating the aggregate manifestation, the aggregator produces an *aggregating work*. This type of work has also been referred to as the glue, binding, or the mortar that transforms a set of individual expressions into an aggregation. This effort may be relatively minor—two existing novels published together—or it may represent a major effort resulting in an aggregate that is significantly more than a sum of its parts (for example an anthology). An aggregating work is not a discrete section or even necessarily an identifiable part of the resulting manifestation and does not contain the aggregated works themselves.

The modeling of aggregates as a manifestation embodying multiple expressions is simple and straightforward; works and expressions are treated identically regardless of their form of publication or the physical manifestation in which they are embodied. An expression may be published alone or it may be embodied in a manifestation with other expressions. The general model for aggregates is shown in figure 3. A new entity is created for the aggregate manifestation which embodies n individual expressions. Any of these expressions may also be embodied individually in a non-aggregate manifestation.

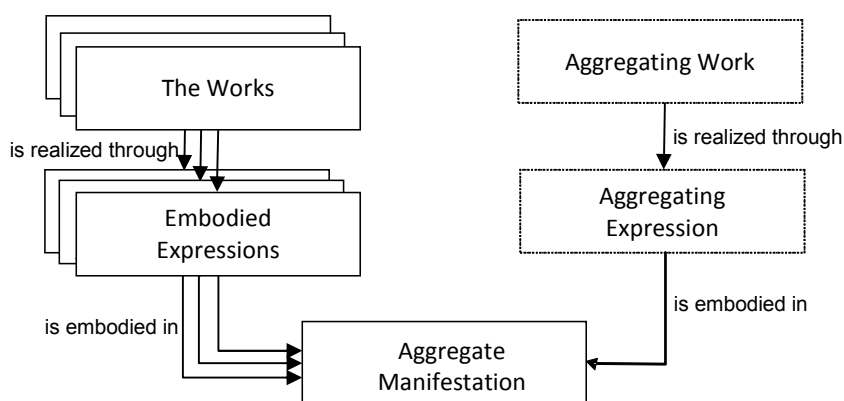


Figure 3. General Model for Aggregates.

Although every aggregate manifestation also embodies an aggregating expression of the aggregating work, these aggregating expressions may, or may not, be considered significant enough to warrant distinct bibliographic identification. In many cases, such as the Grisham novels, the aggregating work itself is unlikely to be considered sufficiently significant to warrant bibliographic identification or description. In other cases the aggregating work may be significant and warrant bibliographic identification. The model however is flexible permitting the aggregating work to be described at any time. If the aggregating work was not initially identified, it can be described later if appropriate.

Proposed FRBR Amendment

The primary change necessary to clarify how aggregates should be viewed in the FRBR model is to replace section 3.3 (page 29) of the *FRBR Report* with these two new sections:

3.3 Aggregate Entities

The examples used in sections 3.2.1 through 3.2.4 to illustrate the entities *work*, *expression*, *manifestation*, and *item* showed *manifestations* that embodied a single *expression*. The structure of the model also permits us to represent *manifestations* with multiple *expressions* as an aggregate entity. Figure 3.1 and the accompanying text explicitly permits *manifestations* to contain multiple *expressions*. This is the only many-to-many relationship between the group 1 entities: an *expression* can only realize a single *work*, an *item* can only exemplify a single *manifestation* but a *manifestation* can embody *multiple expressions*. An *aggregate* entity is a *manifestation* embodying two or more distinct *expressions*.

The boundaries of *expressions* exclude the aspects of physical form including its embodiment in a *manifestation* with other *expressions*. The boundaries of expressions embodied in an aggregate are the same as for those individually embodied. Unless revised or modified, the resulting *expression* is not considered to be a new *expression* even when it is embodied with other *expressions*. The original English text of Shakespeare's *Romeo and Juliet* is the same *expression* whether published individually or as part of a collection of Shakespeare's works.

There are a variety of different types of aggregates, but the most common types are: (1) an aggregate collection of expressions, (2) an aggregate resulting from augmentation, and (3) an aggregate of parallel expressions. Collections are aggregates of independently created *expressions* published together in a single *manifestation* such as journals (aggregates of articles), multiple novels published in a single volume, books with independently written chapters, musical CDs (aggregates of individual songs), anthologies, etc. Augmentations typically consist of a single independent *work* combined with one or more dependent *works* that were not an integral part of the original *work*. Augmentation are created when an *expression* is supplemented with additional material such as forwards, introductions, illustrations, notes, glosses, etc. Parallels are *aggregates* of different *expressions* of the same *work* such as product manuals, government documents, and websites designed for multilingual environments.

The intellectual effort of creating *aggregates*, such as selection and arrangement decisions, is a distinct intellectual or artistic creation and therefore is itself a *work*; a special type of *work* identified as an *aggregating work*. *Aggregating works* can be thought of as the frame, glue, binding, or the mortar that transforms the set of individual *expressions* into an *aggregate*. Since some intellectual effort is involved to form any *aggregate*, an aggregating work is created whenever *aggregate* is formed. This effort may be relative minor—two novels are republished in a single volume or it may represent a major effort which results in an *aggregate* that is more than

simply a collection of *expressions*. For textual materials it may include determining the topics to be covered, selection of the contributors, and review and editing of the contributions. The *aggregating work* may, or may not, be deemed important enough to be recorded.

3.4 Components

The structure of the model also permits Group1 entities to have components or parts. A *work* may consist of intellectually or artistically discrete components, such as a chapter of a report, a segment of a map, a table from a report, etc. For the purposes of the model, entities at the component level operate in the same way as entities at the integral unit level; they are defined in the same terms, they share the same characteristics, and they are related to one another in the same way as entities at the integral unit level. Section 5.3.1.1 provides additional information about component entities in the context of whole/part relationships.

While some additional editing in other sections would be helpful, the above change is sufficient to ensure aggregates are modeled consistently with the general principles of the FRBR model.

An alternate approach that was considered is described in Appendix B.

Conclusions

The approach advocated here is derived from the relationship between expressions and manifestations. Figure 3.1 in the *FRBR report* and the accompanying text explicitly permits manifestations to contain multiple expressions. This is the only many-to-many relationship between the group 1 entities: an expression can only realize a single work, an item can only exemplify a single manifestation but a manifestation can embody multiple expressions. Based on the many-to-many relationship between expressions and manifestations, an aggregate can be defined as a manifestation embodying two or more expressions. This definition of aggregates preserves the integrity of expressions which are defined to "exclude aspects of physical form, such as typeface and page layout, that are not integral to the intellectual or artistic realization of the work as such." New expressions are not formed in manufacturing process even if minor changes are introduced or an expression is combined with other expressions.

The proposed approach was tested and evaluated with a wide variety of different manifestations that were either aggregates or possibly could be consider aggregates. The conclusion was that the proposed approach: (1) preserves the integrity of expressions and works, (2) is relatively easy to understand and apply, and (3) is consistent with the FRBR model.

References

¹ *Functional Requirements for Bibliographic Records*. Final Report. Approved by the Standing Committee of the Cataloguing Section on September 1997 as amended and correct through February 2009. http://www.ifla.org/files/cataloguing/frbr/frbr_2008.pdf (Accessed July 10, 2011)

² *FRBR in 21st century catalogues*, Invitational Workshop, 2-4 May 2005, Dublin Ohio, USA, <http://www.oclc.org/research/activities/past/orprojects/frbr/frbr-workshop/program.htm> (accessed July 18, 2011).

³ Bennett, Rick, Brian F. Lavoie, Edward T. O'Neill. "The Concept of a Work in WorldCat: an Application of FRBR", *Library Collections, Acquisitions, & Technical Services*, Vol. 27, 2003.

⁴ *Functional Requirements for Bibliographic Records*. Final Report. Approved by the Standing Committee of the Cataloguing Section on September 1997 as amended and correct through February 2009. http://www.ifla.org/files/cataloguing/frbr/frbr_2008.pdf, p. 5. (Accessed July 10, 2011)

⁵ Ibid, p. 19.

⁶ Ibid, p. 19-20.

⁷ Ibid, p. 21.

⁸ IFLA Working Group on the Expression Entity. "Amendment 1998-1", 2007. <http://archive.ifla.org/VII/s13/frbr/amend-1998-1-clean.pdf> (Accessed 7-11-11)

⁹ *Functional Requirements for Bibliographic Records*. Final Report. Approved by the Standing Committee of the Cataloguing Section on September 1997 as amended and correct through February 2009. http://www.ifla.org/files/cataloguing/frbr/frbr_2008.pdf, p. 19-20. (Accessed July 10, 2011)

¹⁰ Ibid, p. 20.

¹¹ Ibid, p. 14.

Appendix A: Examples of Aggregates

Catalogers can only observe items and must infer the properties of the other Group 1 entities from the properties of the observable items. It is relatively straightforward to determine the attributes of a manifestation after examining one of its items. The resources described in the examples are items but the attributes identified generally also apply to their manifestation.

In the process of trying to understand aggregates, the WG analyzed in detail over a dozen different examples and found the process to be very helpful. The examples identified aspects where the WG shared a common view and where it didn't. They helped identify the strengths and weaknesses of the various approaches and allowed the WG to refine the model.

Four of the more illustrative examples the WG examined are included here. Each of these examples exemplifies a different type of aggregate. While by no means do these examples represent every type of aggregate, they do represent common aggregate types and illustrate how aggregates would be modeled under the proposed approach. In the diagrams accompanying the examples, works are shown in white boxes and expressions are shown in gray boxes

The four examples included are:

1. *Bridge Over Troubled Water*—an aggregate collection of expressions without a significant aggregating work.
2. *Understanding FRBR*—an aggregate collection of expressions with a significant aggregating work.
3. *Expedition of Humphry Clinker*—An aggregate resulting from augmentation
4. DVD Player Owner's Manual —An aggregate of parallel expressions of the same work.

Example 1.

Bridge Over Troubled Water.

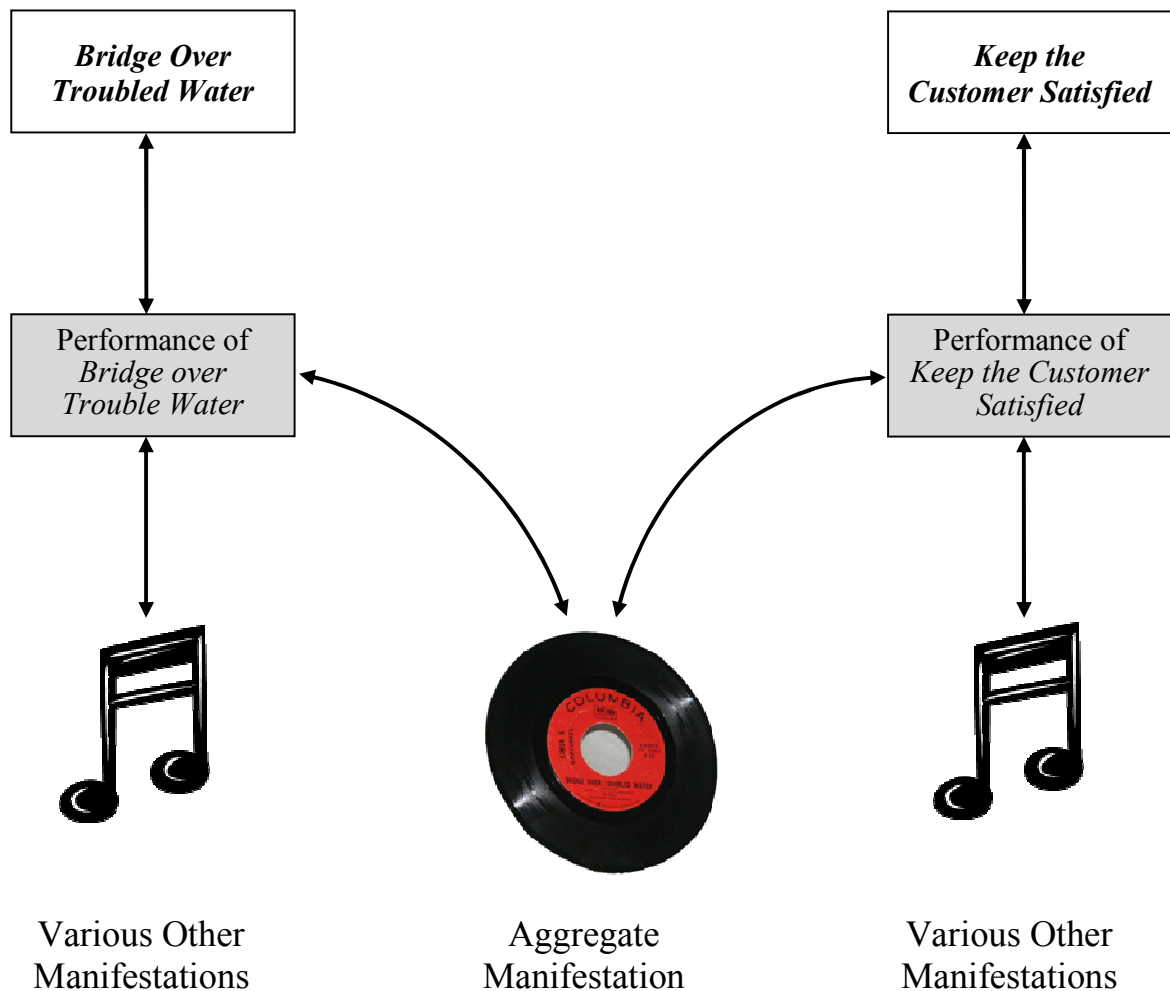
(A compilation of *Bridge Over Troubled Water* and *Keep the Customer Satisfied*)



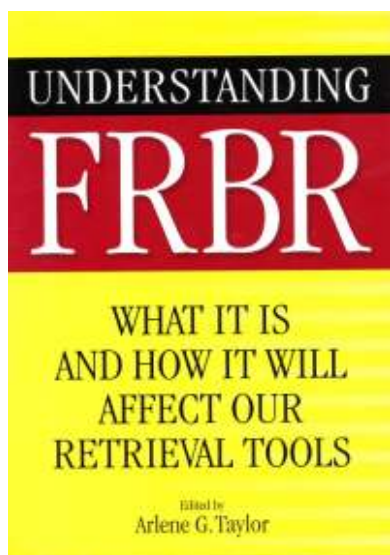
This 'Single' was released January 26, 1970; the B-side was *Keep the Customer Satisfied*. *Bridge Over Troubled Water* won the Grammy Award for Song of the Year and both of these recordings were included in the *Bridge Over Troubled Water* album. The album was initially released as a vinyl LP but was later also released on cassette, 8-track, CD, and most recently as a Blu-spec CD. In 2001, a CD was reissued with two bonus tracks including a different recording of *Bridge Over Troubled Water*. The *Bridge Over Troubled Water* has also been included on several of Simon & Garfunkel's greatest hits albums. Some of the greatest hits included both *Bridge Over Troubled Water* and *Keep the Customer Satisfied* while others such as *Simon &*

Garfunkel – Greatest Hits did not include *Keep the Customer Satisfied*. The individual songs are now also available online from sources such as Amazon and iTunes. Prior to being available online, neither song had been released individually.

Under the proposed approach, this 'single' is viewed as a manifestation embodying two distinct expressions, one expression is for a performance of *Bridge Over Troubled Water* and a second expression is a performance of *Keep the Customer Satisfied*. This view is illustrated in the below. Neither of these expressions nor the works they realize are aggregates. These same expressions have also been embodied in a number of other aggregate manifestations. In principle, this manifestation also contains an aggregating work. In this case the aggregating work isn't considered significant enough to warrant distinct bibliographic identification.



Example 2.
Understanding FRBR.



Taylor's *Understanding FRBR: What It Is and How it Will Affect Our Retrieval Tools* is a compilation of thirteen independently written chapters. Although all of the chapters share a common theme, the chapters were written by different authors. As editor, Taylor identified the chapter topics, solicited the authors, provided editorial guidance, and wrote an introduction, but each of the chapters is an independent work.

Contents

Introduction

Chapter 1—An Introduction to Functional Requirements for Bibliographic Records (FRBR) *Arlene G. Taylor*

Chapter 2—An Introduction to Functional Requirements for Authority Data (FRAD) *Glenn E. Patton*

Chapter 3—Understanding the Relationship between FRBR and FRAD *Glenn E. Patton*

Chapter 4—FRBR and the History of Cataloging *William Denton*

Chapter 5—The impact of Research on the Development of FRBR *Edward T. O'Neill*

Chapter 6—Bibliographic Families and Superworks *Richard P. Smiraglia*

Chapter 7—FRBR and RDA: Resource Description and Access *Barbara B. Tillett*

Chapter 8—FRBR and Archival Materials: Collections and Contest, not Works and Content *Alexander C. Thurman*

Chapter 9—FRBR and Works of Art, Architecture, and Material Culture *Murtha Baca and Sherman Clarke*

Chapter 10—FRBR and Cartographic Materials: Mapping Out FRBR *Mary Lynette Larsgaard*

Chapter 11—FRBR and Moving Image Materials: Content (Work and Expression) versus Carrier (Manifestation) *Martha M. Yee*

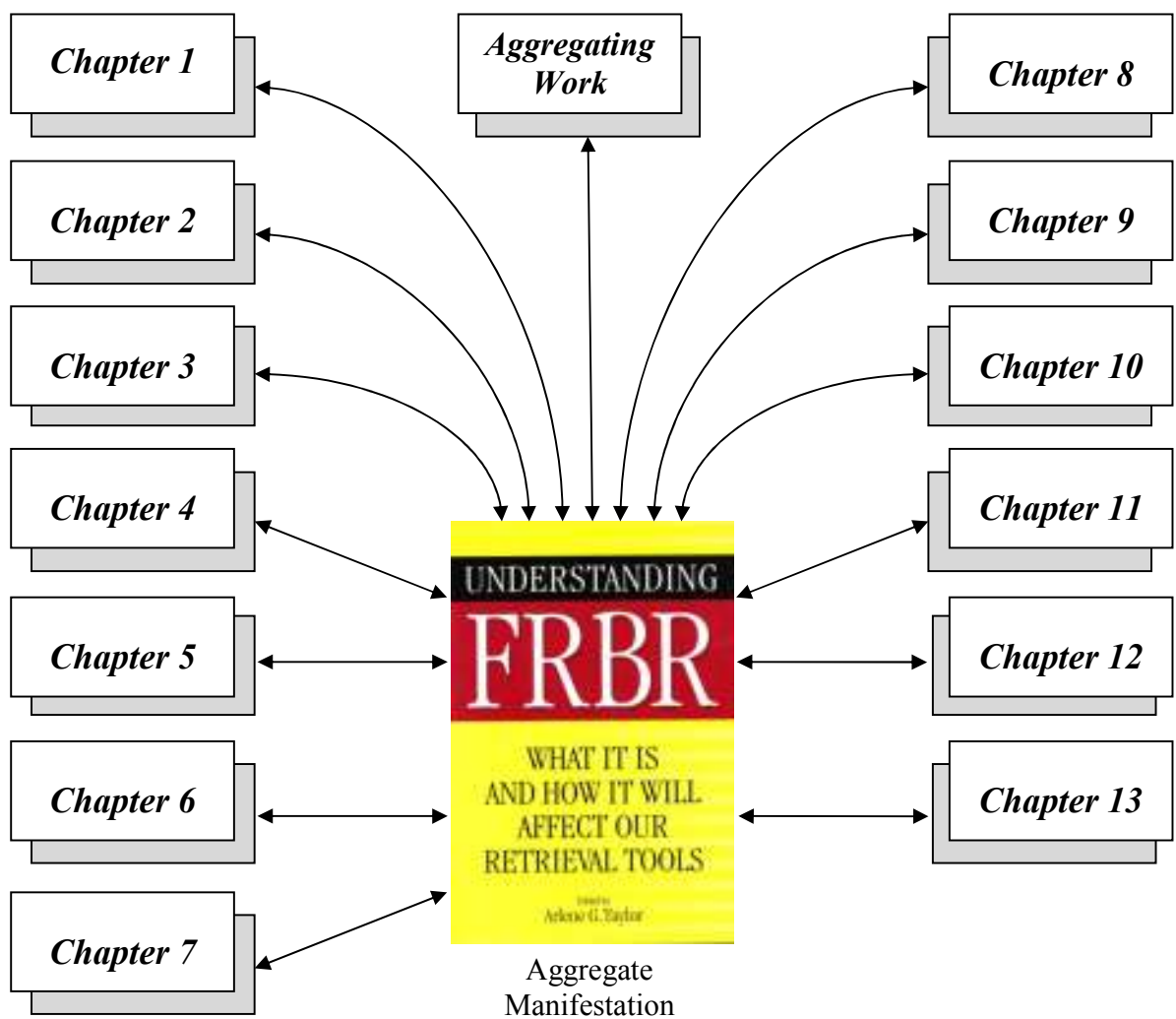
Chapter 12—FRBR and Music *Sherry L. Vellucci*

Chapter 13—FRBR and Serials : One Serialist's Analysis *Steven C. Shadle*

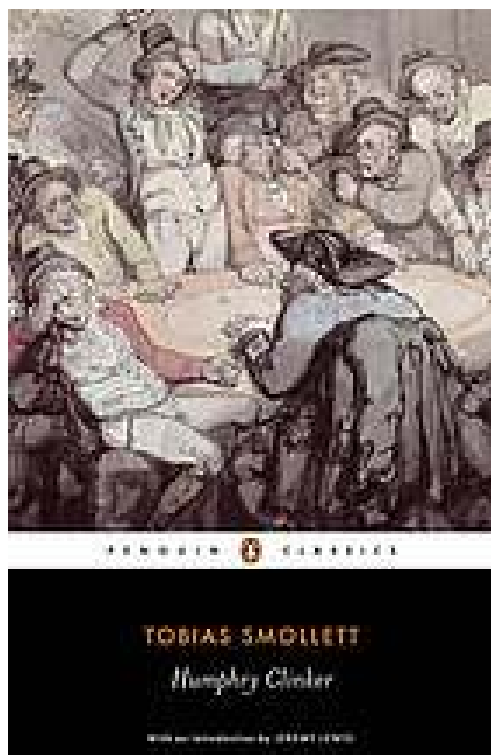
Index

About the Editor and Contributors

In *Understanding FRBR: What It Is and How it Will Affect Our Retrieval Tools*, each of the thirteen chapters is a distinct work with its own distinct expressions. The aggregating work is also significant representing the intellectual contribution of the editor. The aggregating work encompasses all of the intellectual effort required to identify the topics to be covered, solicit the authors, edit the manuscripts, write the introduction, compile the index and other related activities. Although in addition to being responsible for the aggregating work, the editor also authored chapter 1, those two contributions are separate and distinct works. Unlike the first example, this aggregating work is significant and warrants distinct bibliographic identification.



Example 3.
Expedition of Humphry Clinker.



Contents

Introduction by Jeremy Lewis	vii
Chronology	xxviii
Further Reading	xxxi
A Note on the Text	xxxv
HUMPHRY CLINKER	7
VOLUME ONE	9
VOLUME TWO	133
VOLUME THREE	257
Notes	393

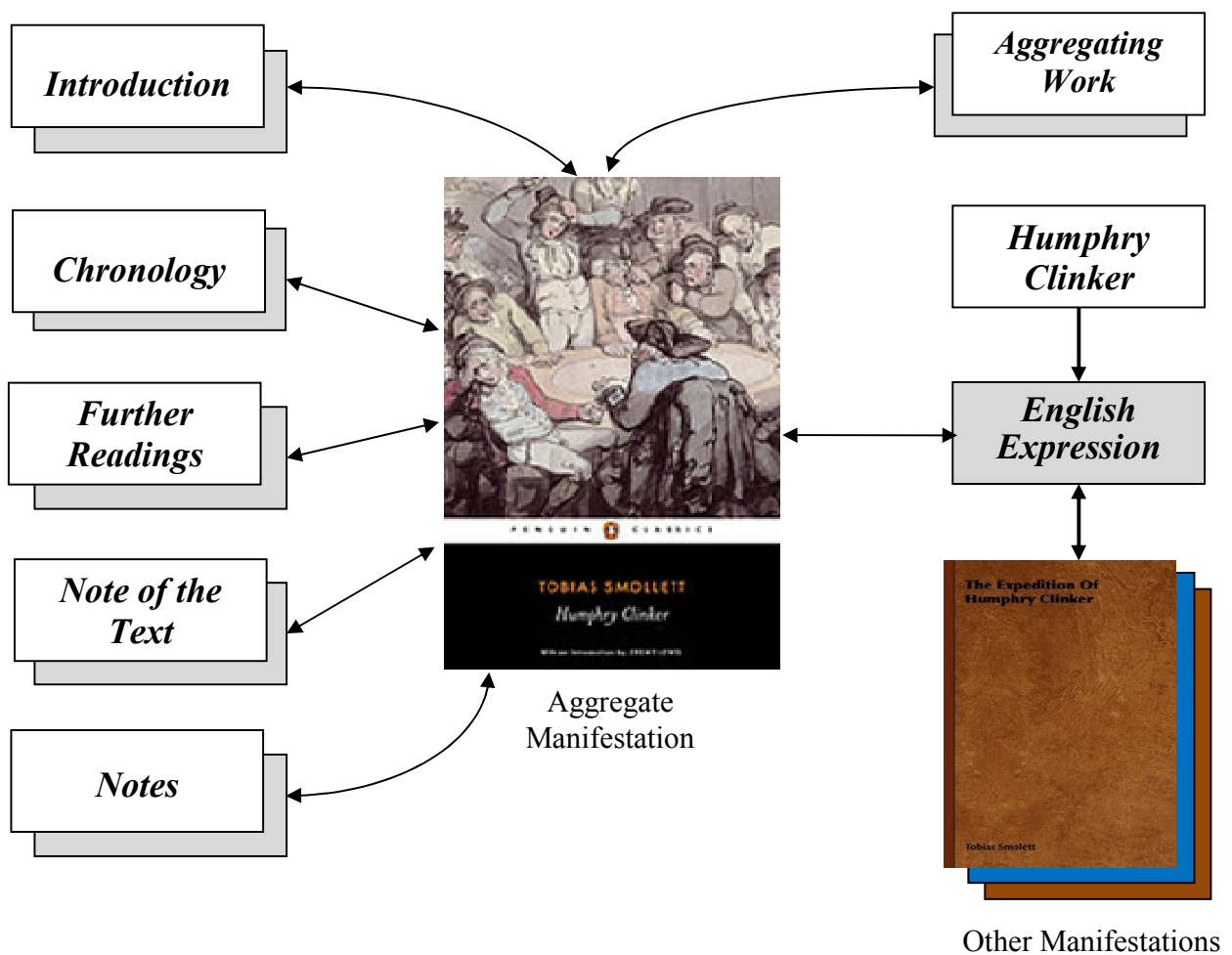
The Expedition of Humphry Clinker, originally published in 1771, was Tobias Smollett's last novel and generally considered to be his finest. This novel has been extensively republished and over 200 different manifestations have been identified. This work has also been extensively analyzed in the FRBR context¹. Except for translations, the text hasn't changed significantly since it was originally published. Although this Penguin edition is not illustrated, it is otherwise fairly typical of augmented editions of this work.

Many *Humphry Clinker* manifestations include introductions, forwards, illustrations, notes, etc. At least nine different illustrators are known to have contributed to various manifestations and over twenty different editors have added introduction, forwards, and notes. This 2008 Penguin Oxford Classics edition illustrates many aspects of an augmented edition. The original text of Smollett's novel has been augmented with (1) an introduction by Jeremy Lewis, (2) a chronology by Jeremy Lewis, (3) further reading by Jeremy Lewis and Shaun Regan, (4) a note of the text by Angus Ross, and (5) notes by Shaun Regan. Each of these five augmentations has been individually copyrighted. No evidence was found to indicate that either

¹ O'Neill, Edward T., "FRBR: Functional Requirements for Bibliographic Records: Application of the Entity-Relationship Model to *Humphry Clinker*", *Library Resources & Technical Services*, 2002, Vol. 46, No. 4, p. 150-159.

the Lewis or Regan augmentations had been previously published but Angus Ross's notes on the text have appeared in several of the previous editions.

Considering the FRBR revisions for expressions, each of these five augmentations is considered a separate work with their own separate expressions. Shaun Regan is also identified as the editor and as editor is assumed to have made contribution beyond the notes and further readings thus creating an aggregating work. As a result, this aggregate is a collection of seven expressions; the expression of the novel itself (*Humphry Clinker*), five expressions of the augmenting works, and an expression of the aggregating work. However, not all of these expressions may be sufficiently significant to warrant bibliographic description.

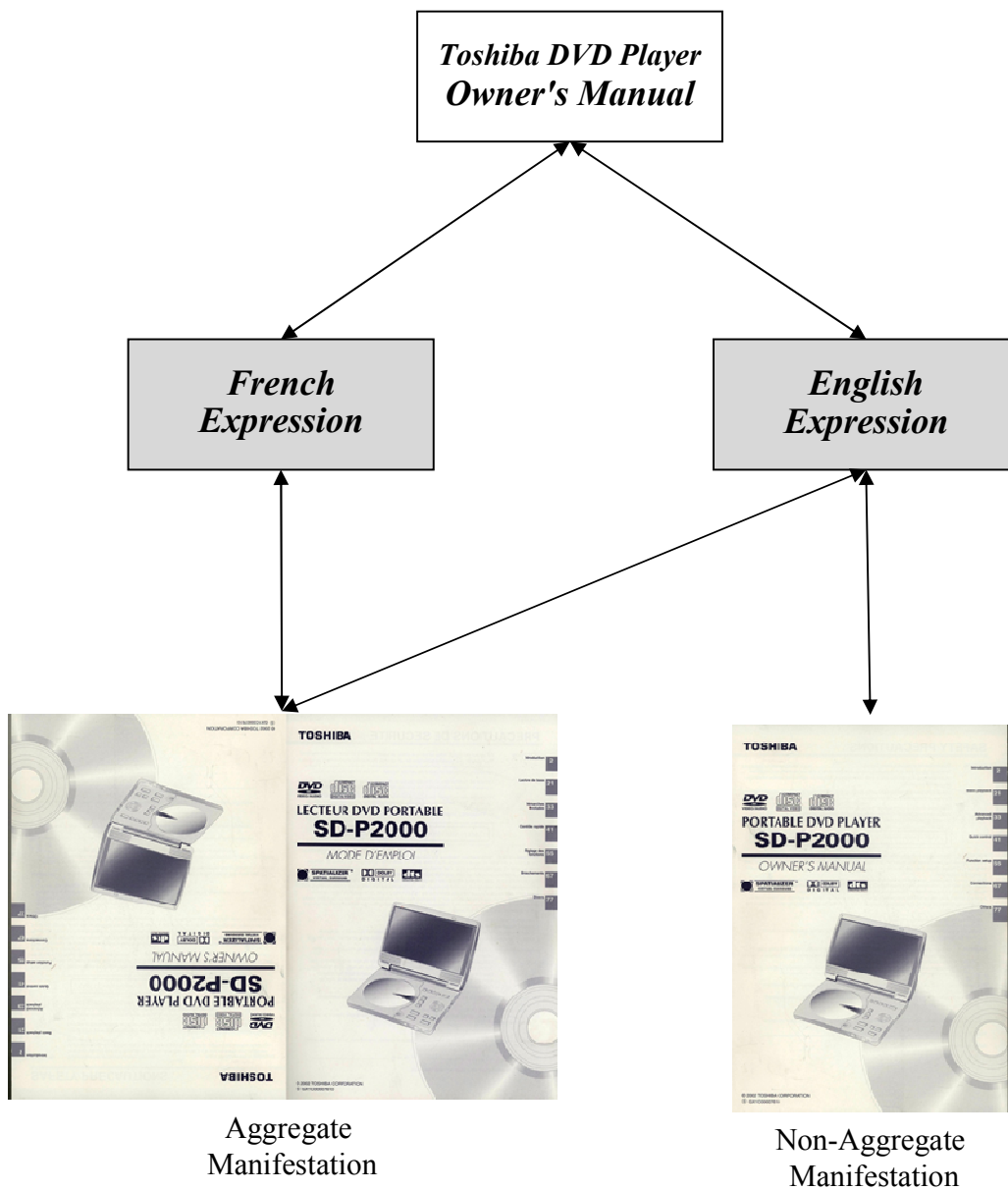


Example 4.
DVD Player Owner's Manual.



The manual for the Toshiba DVD player consists of a single physical volume with two complete manuals; one in English and the other in French. It's a single volume with two covers. There is complete parallelism between the English and French; each is 82 pages in length and, except for language, the two expressions appear to be equivalent. An exact copy of the English language manual is also available as a separate document on Toshiba's website and it is possible that the manual has also been published in additional languages.

In this example, two expressions (an English language expression and a French language expression) of the same work are embodied in the same manifestation.



Appendix B

During its deliberations, the Working Group on Aggregates considered a number of definitions for aggregates and reviewed a variety of approaches to modeling aggregates. This appendix describes one of those alternative approaches.

Alternative Approach

The term “aggregate” is getting a lot of attention lately in the context of putting content together for mash-ups and for the Semantic Web’s linked data capabilities. FRBR and its next generation conceptual model of the bibliographic universe must be flexible enough to encompass the traditional and future views of what an aggregate is.

Traditional cataloging following IFLA’s International Standard for Bibliographic Description (ISBD), used particular conventions for the bibliographic description of aggregates and components: to describe the “whole” and indicate the relationship to the “parts” through additions to an extent statement (especially for accompanying works) or through a contents note; or to describe the “parts” (analytics), indicating the relationship to the “whole” through a series statement, through an “in analytics” note, and many cataloging codes covering access points, included the possibility of including an added entry for the “whole”. The scope for the whole and its parts was left vague, so it could refer to the intellectual or artistic content or a particular physical carrier or whatever collective of things was being described.

For this report, we have focused on the aggregate and component entities for works, expressions, manifestations, and items (Group 1 entities), and further restricted our discussion to those types of aggregates covered in the inherent relationships between expressions and manifestations, namely multiple expressions embodied in a manifestation, as was the scope of the charge to this Working Group. However, this Appendix is a reminder that there exist more aggregates and components in FRBR and in the bibliographic universe that FRBR represents. It should be recognized, when the family of FRBR conceptual models are consolidated, that aggregate entities can apply to the other entities as well, for example, an aggregate family may be viewed as multiple families that merge (a whole with its parts); a ‘person’ (or persona) may actually be an aggregate of two or more other persons in situations like joint pseudonyms; a corporate body may be an aggregate of other corporate bodies that have merged; there may be places that are viewed as aggregates of component places; there are concepts that may be viewed as having component parts, and similarly for objects and events. All of these variations should be allowed in the FRBR abstract model. So this Appendix offers the perspective of half of the Working Group members to not limit aggregates to just the inherent expression-manifestation relationships of our charge, but to remember there are also many other types of aggregates and components. In particular, some of us do not agree with the proposed FRBR amendment.

Defining Aggregate Entities in the Conceptual Model

The terms chosen in FRBR for “integral units,” “aggregate entity,” and “component entity,” are meant to follow regular use of those terms in English, not special jargon. So, an “aggregate entity” in FRBR is intended to include any collective set of units, and those units are the “component entities”. A general operational definition is that

an **aggregate entity** is the “whole” in a “whole/part” relationship with two or more components (parts).

The whole and its parts are connected through a “contains/contained by” relationship, which could also be expressed as “has part/is part of.” So when you are considering an aggregate entity, you have 1) a whole (aggregate), 2) its parts (components), and 3) the whole/part relationship between them.

What is considered a “component” is subjective, relative to the policies or point of view of the describing institution. If an institution wishes to recognize the specific components that form an aggregate and to describe them separately, then the FRBR model needs to accommodate that point of view. Likewise, if an institution wishes to ignore individual components and treat a resource as an integral unit, then the FRBR model needs to accommodate that point of view, as well.

A major point to remember is that the FRBR conceptual model must be flexible enough to accommodate these many points of view.

As noted in the main body of this report, a useful categorization could be made for types of aggregates around the content of resources: 1) different content collected together (collections of expressions), 2) a main expression augmented with other dependent parts (an expression accompanied by augmentations), and 3) the situation where the content is translated into one or more languages and packaged together (parallel expressions). However, it was clear these categories are not exhaustive when we explored examples.

In order to stay within the scope of the Working Group’s charge, the main body of this report restricts the definition of aggregate to manifestations that embody multiple expressions. However, we also recognized that aggregates could occur for any entity. For example, in our explorations of the examples for items, we saw that items can be bound together to form a new item, demonstrating the existence of aggregate items, which the FRBR diagrams currently omit (mostly due to the fact that FRBR focused on the cataloguing of national bibliographic agencies that typically do not need to do much at the item level). Similarly, some examples could be viewed as works of works (such as archival fonds or serials that contain articles that are works of various authors, etc), and some works of works have their own collective title. A work of works (but not item of items) was recognized by the FRBR Study Group but omitted from the diagram in the final report. It is hoped in the consolidated version of the FRBR Family of models, this omission can be addressed.

FRBR Coverage for Aggregates

FRBR is a theoretical, conceptual model of the bibliographic universe and can be used to develop data models for systems based on this model. The entities, relationships, and attributes in this model can be viewed in terms of surrogates for this bibliographic universe that libraries provide through descriptions for actual things (resources, agents, concepts, etc.) and their connections (relationships). FRBR-based applications are expected to build on this model to fit a specific domain that is being described.

FRBR explicitly discusses aggregate and component entities in Sections 3.2.2, 3.3, 5.3.1.1, 5.3.2.1, 5.3.4.1, and 5.3.6.1. *FRBR* section 3.3 (p. 29 of the 2009 version of *FRBR*) explains:

“...entities at the aggregate or component level operate in the same way as entities at the integral unit level; they are defined in the same terms, they share the same characteristics, and they are related to one another in the same way as entities at the integral unit level. Sections 5.3.1.1, 5.3.2.1, 5.3.4.1, and 5.3.6.1 provide additional information on aggregate and component entities in the context of whole/part relationships.”

This is intentionally general to apply to any entity in the model. It also points out that such entities do not behave any differently than other entities as to their identifying characteristics and relationships.

The whole/part relationships in Section 5 of *FRBR* apply to works (5.3.1.1), expressions (5.3.2.1), manifestations (5.3.4.1), and items (5.3.6.1). We also see whole/part relationships in *Functional Requirements for Authority Data (FRAD)*, specifically for *works*, but potentially in a conceptual model whole/part relationships could apply to any entity as noted above.

A conceptual model should allow for the existence of such aggregate entities and show the commonalities among aggregate entities and among component entities in terms of their attributes and relationships. Specific applications can add business rules for specific collections as needed.

As for the Group 1 entities, libraries for many years have recognized aggregates of content and aggregates of physical carriers. We know these aggregates through the specific items we collect for our libraries, just as we know the works and expressions through the manifestations and specific items that embody those works and expressions. However, sometimes a library may choose to treat an aggregate entity as an integral unit and ignore the individual components in the bibliographic description. The *FRBR* conceptual model allows for these different treatments. Specific applications of *FRBR* for specific systems or business rules may choose to either declare/identify/describe the specific component entities or ignore them.

In other words, we may choose to recognize a whole entity as an integral unit (e.g., a work treated as one unit although it may consist of the collaborative work of several creators), or we may choose to recognize the whole entity and its component parts (e.g., an aggregate work/whole, such as a trilogy of stories, with the parts being the component works, that is, each of the individual stories in the trilogy) in a whole/part relationship. In applications we may choose to specifically identify the component entities (with such devices as separate bibliographic records or analytics of individual works/expressions or listings of the components in a contents note or analytical added entries), or not (such as not specifically identifying the illustrations to a text or a preface or index components, which are commonly ignored in bibliographic description, unless they have particular usefulness or meaning to a given institution for which the cataloging is done). Regardless of which way an application chooses to treat aggregate entities and component entities, they are modeled in *FRBR* and can be used as needed.

The *FRBR* conceptual model gives us a way to view the bibliographic universe of the things that libraries collect. It is just one view, but one that resonates with the library community and others (such as Dublin Core and the Semantic Web).