

On the new conceptual model of the bibliographic universe: the FRBR Library Reference Model

by Pat Riva

Overview of FRBR-LRM

Made available for world-wide review in March and April of 2016, the FRBR-library reference model (FRBR-LRM)¹ is the fruit of five years of development by the IFLA FRBR Review Group. The world-wide review text of the model issued from the Consolidation Editorial Group which was constituted by the Review Group in 2013. The version of the model discussed in this article is a later draft than that described in 2015 at the IFLA conference in Cape Town, South Africa².

Simply stated, the goal is to produce a single conceptual model, remaining within the high-level entity relationship framework, that covers all aspects of the bibliographic universe, drawing together the separately produced models FRBR³, FRAD⁴ and FRSD⁵.

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Websites last accessed: March 28, 2016.

1 All references to FRBR-LRM in this paper are to the draft for world-wide review dated February 21, 2016, by Pat Riva, Patrick Le Bœuf and Maja Žumer (Consolidation Editorial Group of the IFLA FRBR Review Group), posted at: <<http://www.ifla.org/node/10280?og=587>>. The final adopted text of the model will differ from the draft by including modifications, corrections, additions or deletions resulting from comments received during the review.

2 Pat Riva; Maja Žumer, *Introducing the FRBR library reference model*. 2015, <<http://library.ifla.org/1084/1/207-riva-en.pdf>>.

3 International Federation of Library Associations and Institutions. Study Group on the Functional Requirements for Bibliographic Records, *Functional requirements for bibliographic records: final report*. München: Saur, 1998 (as amended and corrected through February 2009, available at: http://www.ifla.org/files/assets/cataloguing/frbr/frbr_2008.pdf).

4 International Federation of Library Associations and Institutions. Working Group on Functional Requirements and Numbering of Authority Records, *Functional requirements for authority data: a conceptual model*, edited by Glenn E. Patton. München: Saur, 2009 (as amended and corrected through July 2013, available at: <http://www.ifla.org/files/assets/cataloguing/frad/frad_2013.pdf>).

5 International Federation of Library Associations and Institutions, *Functional requirements for subject authority data: a conceptual model*, edited by Marcia Lei Zeng, Maja Žumer and Athena Salaba. München: Saur, 2011, <<http://www.ifla.org/files/assets/classification-and-indexing/functional-requirements-for-subject-authority-data/frsd-final-report.pdf>>.



This endeavour is not a simple editorial process of combining three documents. Since the three models were developed over many years by different working groups, differences in point of view and the evolution of thinking in the field led to decisions which were not entirely compatible when applied in combination. In all these cases solutions were needed that also took into account the lessons learnt from working with the models through implementations.

The context in which the model is to be used has also evolved since 1998. Linked data has become a part of the bibliographic landscape, requiring greater structure and clarity from our models if we hope to take advantage of semantic Web techniques to navigate our data. Using an entity-relationship modelling framework means that there are three model elements available, namely the entities, the relationships among them, and the attributes which can characterize entities. When implemented as RDF triples, both relationships and attributes are formulated as properties, starting with an entity as the subject of the triple. The significant difference is that in a relationship, the object of the triple is another entity (which can then serve as the subject of a further triple, creating a chain or network of relationships), while with an attribute, the object of the triple will be either a literal (a string of characters), or a value in a value vocabulary (a controlled vocabulary). Due to this functionality, in FRBR-LRM relationships were preferred to attributes wherever this was feasible without proliferating inessential entities. Two new entities, 'place' and 'time-span', were defined to take advantage of the greater flexibility of relationships compared to attributes. Many attributes in the existing models involve places and dates. In FRBR-LRM these attributes are all recast as relationships to the newly defined entities 'place' and 'time-span'.

FRBR-LRM includes the core entities, relationships and attributes needed to model the bibliographic universe, but does not present an exhaustive listing of every possible relationship and attribute. Depending on the needs of an implementation, the basic model can be expanded in several ways. The simplest method for expansion involves the addition of specific attributes appropriate for certain categories of resources, either as new attributes or by defining sub-types of the more general attributes. The same can be done with relationships, for example, by defining sub-relationships of the general relationships associating any entity with the new entities 'place' and 'time-span'. In almost all applications these non-specific relationships would not be enough and would be sub-typed appropriately for specific entities. For example, a 'person' could be linked to a 'place' of birth, 'place' of death, 'place' of residence, and also to a 'time-span' for each of these activities, by creating sub-types of the general relationships. These specific relationships can carry appropriate constraints that are stronger than those applying to the general relationship. So although the general relationship 'res' is-associated-with 'place' (LRM-R15) is many-to-many, a sub-relationship for 'place' of birth would logically be many-to-one (each 'person' is born in a single 'place', although many different 'persons' can be born in the same 'place').

Another mechanism for expansion involves the category attributes defined for many entities. A categorization scheme can be applied to an entity, thereby creating more specific sub-entities. These sub-entities (or types) can, in turn, be used in specialized sub-relationships and have specific attributes defined for them.

Structure of entities

Compared with the preceding models, FRBR-LRM adds the concept of a hierarchical structure among entities, implementing superclass/subclass relationships among certain entities. The main effect of this structure is to avoid redundancy in rela-

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tionships and attributes by capturing generalizations using the superclass entities. Any attribute or relationship defined for a superclass entity automatically applies to its subclass entities, without needing to be explicitly defined for each of them. FRBR-LRM defines a top entity (LRM-E1, arbitrarily named ‘res’, or ‘thing’ in Latin) to stand for «any entity in the universe of discourse». The ten other entities are subclasses of ‘res’. Two attributes are defined for the entity ‘res’: category (LRM-A1), being «a type to which the ‘res’ belongs», and note (LRM-A2). These provide the possibility of sub-categorizing any entity, and of attaching notes to any entity. The top-level association relationship between ‘res’ (LRM-R1) serves as the super-relationship to all relationships defined in the model and can be sub-typed to create any new relationships that might be needed. Additionally, several key relationships are defined using the entity ‘res’, meaning that they can be applied to any entity in the model. Thus any ‘res’ can be the subject of a ‘work’ (LRM-R12), can have an appellation (LRM-R13), and can be associated with a ‘place’ (LRM-R15) or a ‘time-span’ (LRM-R16).

The responsibility relationships first defined in FRBR for the entities ‘person’ and ‘corporate body’, then implicitly extended in FRAD to also apply to the entity ‘family’, had to each be formally declared three times in the FR namespaces⁶, once for each target entity. For example, the relationship of a creator to a ‘work’, conceptually a single idea, required these three namespace declarations:

WORK is created by PERSON (frbrer:P2009)

WORK is created by FAMILY (frad:P2020)

WORK is created by CORPORATE BODY (frbrer:P2007)

This redundancy continued throughout the responsibility relationships for ‘expressions’, ‘manifestations’, and ‘items’. In FRBR-LRM a new entity ‘agent’ is defined as the superclass of all these specific types of ‘agents’, making the declaration of a single relationship possible:

WORK was created by AGENT (LRM-R5)

When combined with the structural relationship that the entity ‘person’ is a subclass of ‘agent’, the chain of two relationships permits the specification that a ‘work’ was created by an ‘agent’ that is a ‘person’, while retaining the understanding that the nature of the creation relationship to a ‘work’ is conceptually the same regardless of the type of ‘agent’. A useful by-product is that the work-creation relationship can be recorded even when the nature of the ‘agent’ is entirely unknown and it is impossible to specify even whether the creator is a ‘person’ or some ‘collective agent’.

In a further simplification, FRBR-LRM defines the single entity ‘collective agent’ to include both the FRBR entity ‘corporate body’ and the FRAD entity ‘family’, since an analysis of the attributes and relationships involving these two entities did not reveal any that applied to only one of them. The definition of ‘collective agent’, «a gathering or organization of persons bearing a particular name and acting as a unit» (LRM-E8), should be recognized as including key elements from the long-standing definition of a ‘corporate body’, that is, bearing a particular rather than a generic name and having the ability to act as a unit, such as in responsibility relationships. This definition describes an entity that is narrower than any group of persons, as some groups are not identified with specific names (consider unnamed conferences), or cannot act collectively in responsibility relationships (an ethnic group as a whole, for instance).

While all relationships and attributes involving a superclass automatically apply to the subclass entities, the reverse does not hold. This means that when an attribute,

⁶ Namespaces for all models in the FRBR family are declared in the Open metadata registry and can be accessed through <<http://iflastandards.info/ns/fr/>>.

such as profession/occupation (LRM-A24), is defined for the entity 'person', it is because it cannot logically apply to the entity 'agent' as a whole. However, when an attribute, such as contact information (LRM-A21), is defined for the entity 'agent', then it automatically also applies to the entity 'person' as well as to the entity 'collective agent', and to any sub-types of these entities that might be defined in a specific application.

'Nomen' as an entity

In FRBR, titles, identifiers, names, and terms were modelled as attributes of entities. It was the FRAD model that introduced the concept of treating as entities the 'names', 'identifiers', and 'controlled access points' used to refer to bibliographic entities. This innovation in FRAD is a significant way of viewing the structure of the bibliographic universe, with many consequences for the model. The FRSAD model also confirmed this perspective, defining the single entity 'nomen' to cover all means of referring to any 'thema'. In developing FRBR-LRM, the advantages of defining a 'nomen' entity, and thus being able to declare attributes of 'nomens' and use relationships to link the 'nomen' entity to other entities, or to use relationships to interrelate different 'nomens', was recognized as very powerful.

The first decision that had to be taken was whether to declare a single 'nomen' entity as in FRSAD, or multiple specific entities as in FRAD. FRBR-LRM took the route of using a single 'nomen' entity. This increased the generality and applicability of the model, steering away from enshrining aspects of current library practice in the model, and continuing the process of generalization that FRAD had begun by defining the single entity 'controlled access point' rather than having distinct entities for authorized and variant access points. Indeed, both identifiers and controlled access points are 'nomens' which happen to be assigned via more formal construction rules, either by libraries or by other bibliographic agencies. The entity 'name' in FRAD corresponds to those 'nomens' that come into being by less formal social and cultural practices for coming to a consensus on a name or way to refer to a given thing or concept. In a more general model, a single entity can capture both formal and informal functions, when related to other entities using the nomen-assignment relationship (LRM-R14) and the has-appellation relationship (LRM-R13). Nomen-derivation (LRM-R19) and nomen-equivalence (LRM-R17) relationships permit the structure of this "nomen-space" to be mapped out.

Having decided to declare a 'nomen' entity in FRBR-LRM, the second important decision was how to define it. There are two viable options, each with repercussions in how the relationships and attributes of 'nomen' must be formulated. Simply put, a 'nomen' can either be an actual string of symbols (devoid of meaning in itself), or a 'nomen' can be the result of assigning meaning to symbols. The deciding factor is the usefulness of the resulting attributes and relationships in describing bibliographically significant phenomena. The possible attributes for a string are quite limited: a string may have a script (a writing system) as an attribute, but not a language, nor a script conversion, nor can it have a status in any sort of controlled vocabulary. In the string view of a 'nomen', these characteristics need to be formulated as part of the nomen-assignment relationship, so that it associates the string with a 'res' «as a noun in English» or «as a valid Dewey decimal classification number» or «as an ISBN». This multiplies the sub-types of the assignment relationship needed just to record facts that are essential in any useful bibliographic implementation. In the alternative view of a 'nomen' as a meaningful symbol, the result of an actual assignment, these characteristics can instead be associated with the 'nomen' itself as attrib-

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utes, allowing for the definition of the FRBR-LRM ‘nomen’ attributes: category, scheme, intended audience, context of use, reference source, language, script conversion, status, as well as script (LRM-A25 to LRM-A33). However, the cardinality of the key relationships, has-appellation (LRM-R13) and assignment (LRM-R14), must then be one-to-many: the ‘nomen’ is assigned to a single ‘res’ in a single process. The advantages of this second view led to the decision to define ‘nomen’ as «a designation by which an entity is known» (LRM-E9).

With this definition, a ‘nomen’ applied to some concept in a particular language (‘nomen’ 1) can also be chosen in a subject thesaurus as a preferred or variant term (creating a second ‘nomen’ for the same concept); also, a name in common use for a corporate body can be formalized via the cataloguing rules into the preferred form of name for the corporate body. These processes result in different ‘nomens’ with different values in the scheme (LRM-A26) or context of use (LRM-A28) attributes even though the character strings comprising the distinct ‘nomens’ use the same symbols in the same arrangement.

During the development of FRBR-LRM, more and more consequences of the declaration of ‘nomen’ as an entity were discovered. One significant consequence is the recognition that uniform titles of ‘works’ and ‘expressions’ function as ‘nomens’, and come into existence through an assignment process like any other ‘nomen’. This abstract view of titles as ‘nomens’ is in relation to their function and not to any linguistic content or meaning that may be recognizable within them. And so a ‘nomen’ which takes the form of an opaque numeric identifier is just as functional in the model as one that can be read meaningfully in a language. In fact, sometimes ‘nomens’ are quite misleading, if their meaning as ordinary words is considered, but as long as the appellation relationship is recorded, their functionality is not compromised.

Nature of the entity ‘person’

The recognition of the power of a thorough implementation of ‘nomen’ as an entity resolved the dilemma of how the entity ‘person’ should be defined in FRBR-LRM. In FRAD a ‘person’ was defined as «an individual or a persona or identity established or adopted by an individual or group» (FRAD, section 3.4, p. 24). FRAD combined real human beings with bibliographic personas or identities in a single entity. This led to difficulties within FRAD regarding the applicability of the attributes defined for ‘person’⁷ and of the relationships among ‘persons’⁸, with most attributes and relationships being logically applicable to only a subset of the instances considered as ‘persons’ in FRAD. Moreover, in FRAD the term person appears in the definitions of the entities ‘family’ and ‘corporate body’, ostensibly used in the ordinary dictionary definition of the word rather than in the FRAD entity definition.

7 FRAD, section 4.1, p. 38-40, lists the attributes of person as: dates associated with the person, title of person, gender, place of birth, place of death, country, place of residence, affiliation, address, language of person, field of activity, profession/occupation, biography/history, other information associated with the person. Of these, only title of person, and other information associated with the person, which refer to aspects of the form of the name can easily apply to identities or personas.

8 FRAD, section 5.3.1, p. 61-64, Relationships between persons, includes the collaborative, sibling, and parent/child relationships which can only logically apply between real persons, while the definition of the pseudonymous relationship explicitly sets up an opposition between «a ‘real’ person (i.e., an individual) and a persona(ae) or identity». Similarly, in the membership relationships found in FRAD sections 5.3.2 (Relationships between Persons and Families) and 5.3.3 (Relationships between Persons and Corporate Bodies) implicitly apply only to real persons.

Implementing the entity ‘nomen’ resolves this very confusing issue by recognizing that bibliographic identities or personas are actually ‘nomens’ applied to real ‘persons’ (known or unknown). This permits the pseudonymous relationship to be clarified using appellation relationships between a real ‘person’ and one or more ‘nomens’ associated with that ‘person’ in different contexts (operationalized by recording different values in the context of use attribute for each of the ‘nomens’ involved). As a ‘nomen’ is defined with respect to its correspondence with a specific instance of an entity, there is also no confusion in the model when two different people happen to use names that are written with the same string, nor when a person uses as a name a term that is also applied to some other thing (for instance, adopting Kitty as a nickname does not turn a woman into a feline in real life). Since the entity named is different, the ‘nomens’ are distinct. This allows the term person in FRBR-LRM to always be used in the same sense as the definition of the entity ‘person’, and permits the full range of responsibility relationships defined for ‘agents’ to logically apply to ‘persons’. It is a ‘person’ (or other ‘agent’) that may create a ‘work’ or ‘expression’, produce or distribute a ‘manifestation’, own or modify an ‘item’. A ‘nomen’ is not logically able to do so. However, a ‘nomen’ may appear within a statement of responsibility transcribed from a ‘manifestation’, and be recognized as the appellation of a ‘person’.

Continuity and change for ‘works’, ‘expressions’, ‘manifestations’, and ‘items’

The four group 1 entities ‘work’, ‘expression’, ‘manifestation’, and ‘item’, along with their primary relationships, formed the core of the FRBR model. FRBR-LRM retains all four entities and the relationships among them, but proposes some reworking of the definitions, still intending to convey the same essential meanings and roles in the model. In FRBR, ‘expression’, ‘manifestation’, and ‘item’ were defined using other group 1 entities in their definitions, so that the definitions of the four entities depended on each other. In FRBR-LRM the definitions of these four entities attempt to stand independently, without reference to each other.

	FRBR	FRBR-LRM
work	A distinct intellectual or artistic creation	The intellectual or artistic content of a distinct creation
expression	The intellectual or artistic realization of a ‘work’ in the form of alpha-numeric, musical, or choreographic notation, sound, image, object, movement, etc., or any combination of such forms	A distinct constellation of signs conveying intellectual or artistic content
manifestation	The physical embodiment of an ‘expression’ of a ‘work’	A set of all carriers that are assumed to share the same characteristics as to intellectual or artistic content and aspects of physical form. That set is defined by both the overall content and the production plan for its carrier or carriers
item	A single exemplar of a ‘manifestation’	A physical object carrying signs resulting from a production process and intended to convey intellectual or artistic content

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With these reworked definitions, emphasis was placed on the essential nature of an 'expression' as consisting of signs in any form, without resorting to an enumeration of these forms in the definition. A 'manifestation' is explicitly identified with a set of 'items' resulting from a production process, a set which might contain only a single 'item'. Finally, clarifying that an 'item' is a physical object, the only one of these entities which is not abstract. The function of the 'work' entity in the model is as a gathering point for those related 'expressions' and 'manifestations' that are felt to usefully belong together for retrieval. A 'work' does not have an existence independent of its 'expressions', and can only come into existence when its first 'expression' is created.

The physical nature of an 'item' is reflected in the relationships that involve the 'item' entity. An 'item' can be modified by an 'agent' (rebound, annotated, damaged, etc.) yet it still remains the same 'item' (relationship LRM-R11). With conceptual entities, a modification will result in a new instance of the entity: a modification of a 'work' will create a related 'work', a modification of an 'expression' will create a derived 'expression', modification of the characteristics of a 'manifestation' will result in a new variant 'manifestation'.

In FRBR-LRM, unlike in FRBR, the frequently occurring and bibliographically significant reproduction relationship (LRM-R26) was defined as holding only between two 'manifestations', never between 'items' or between a 'manifestation' and an 'item'. Considering that a 'manifestation' is a set which may be a singleton set, the reproduction process produces one or more 'items' which form a set sharing specific production characteristics and so must always create a 'manifestation'.

Whole/part relationships are also bibliographically significant and frequent. In FRBR-LRM these are defined whenever it is logically possible for an instance of an entity to have parts which are themselves instances of the same entity. For example, a 'work' may include parts which are themselves 'works', and a 'collective agent' may have a subordinate part which is also a 'collective agent'. This is not the case for all entities, the parts of an 'item', for example, might be a disc or pages, but not 'items', preventing the relationship from being generalized as holding between two instances of 'res'.

The preference for using relationships instead of attributes, in conjunction with the declaration of the entities 'place' and 'time-span', considerably reduced the number of attributes defined in FRBR-LRM for all entities. A significant observation regarding the nature of the attributes generally identified for 'manifestations' served to further reduce the number of 'manifestation' attributes defined. 'Manifestations' are particular as they can bear statements of all kinds, which can be transcribed and used to identify and distinguish 'manifestations'. This is a characteristic particular to bibliographic resources that is generally not shared by archival resources or museum objects, and transcription forms a considerable part of cataloguing practice. The ISBD⁹ details the international consensus on the most relevant statements that should be included in resource description. The observation that transcribed statements all originate from the 'manifestation', and not any other entities, led to the definition of a general manifestation statement attribute (LRM-A16) which would normally be implemented as a series of sub-types, according to the relevant cataloguing rules. By not listing the sub-types of manifestation statements in the model, FRBR-LRM avoids taking the place of the ISBD or specialized cataloguing rules, while providing a place within the model that can be expanded.

⁹ International Federation of Library Associations and Institutions, *International standard bibliographic description: consolidated edition*. München: Saur, 2011.

Representative expression

FRBR-LRM has defined an attribute of the 'expression' which is entirely new and has no precursor in the FRBR family models, this is the representativity attribute (LRM-A5). This attribute, which is not repeatable, has either 'yes' or 'no' as values. The result of marking an 'expression' of a 'work' as a representative 'expression' for that 'work' (representativity = yes) is to permit the identification of certain other attributes of that 'expression' as significant for the 'work'. The 'expression' attributes explicitly linked to the representative 'expression' in FRBR-LRM are: intended audience (LRM-A7), language (LRM-A9), key (LRM-A10), medium of performance (LRM-A11), and scale (LRM-A12). An implementation may define additional attributes not listed in the FRBR-LRM model definition, some of which may also stand in this relationship to the representative 'expression'.

This device was developed in response to a series of observations and issues raised around FRBR. FRBR treated all 'expression' of a 'work' as equal 'expressions', there was no formal marker or distinction to single out an original 'expression' from those that were created as derived 'expressions'. However, the notion of originality is significant to end-users, and the original 'expression' is viewed as standing for the abstract 'work' itself¹⁰. It has also been raised in critiques of FRBR particularly with regards to the language attribute, which FRBR defines as an 'expression' attribute (FRBR section 4.3.4).

In preparing FRBR-LRM, analysis of issues surrounding certain FRBR attributes for 'works' and 'expressions' led to recognizing that several long-standing critiques approached the same issue from different points of view. First, certain attributes, such as language, were defined at the 'expression' level, without any ability to mark or record the original language of the 'work'. Similar issues were raised with regard to the scale attribute (FRBR section 4.3.18), which is seen as being essential to the conception of traditional cartographic works, although this view of scale is challenged by cartographic datasets that can produce output at different scales. Conversely, FRBR defined the attribute key solely at the 'work' level (FRBR section 4.2.10), but included the relationship Arrangement (music) among the relationships holding between 'expressions' of the same 'work' (FRBR section 5.3.2). An arrangement can involve modification of the key of the piece, among other changes, and yet may be considered to produce a new 'expression' of an existing musical 'work', rather than creating a new musical 'work' based on the first 'work'. Finally, FRBR defined the attribute medium of performance twice, at both the 'work' and the 'expression' levels (FRBR sections 4.2.8 and 4.3.17 respectively). This seemed to be an attempt to both recognize the significance of the original medium of performance of a musical 'work', while recognizing the existence of musical arrangements for alternate instrumentation, but there seemed to be no motivation behind the different modelling applied to medium of performance and key, attributes that are generally considered together. However, having the same attribute twice for entities that are disjoint in the model is contradictory. Either the choice of medium of performance defines the boundary between one 'work' and another 'work' (an adaptation), making it a 'work' attribute, or it is a characteristic that can distinguish among certain 'expressions' of the same 'work', but it cannot be both within a logically valid model. Finally, although no issues relating to the intended audience attribute (FRBR sec-

¹⁰ Jan Pisanski; Maja Žumer, *Mental models of the bibliographic universe*, «Journal of documentation», 66 (2010), n. 5, p. 643-667, 668-680; *id.*, *User verification of the FRBR conceptual model*, «Journal of documentation», 68 (2012), n. 4, p. 582-592.

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tion 4.2.6), placed at the 'work' level, have ever appeared in the published literature, discussion among the working group found that this attribute was also subject to the same considerations. While some modifications to create an 'expression' suitable for a different audience (changing a novel conceived for adults into a children's story, for instance) will be considered as an adaptation that creates a new 'work', certain less substantial revisions may result in an 'expression' of a 'work' which is oriented to another audience without resulting in the creation of a new 'work'. The level of adaptation required to result in a new 'work' is not detailed in the model, such criteria are in the domain of cataloguing rules.

Reflecting on the essential features of these seemingly disparate issues coming from the description of textual, cartographic, and musical works led to the conclusion that these are all features that, without being essential to the nature of a 'work', can be used to recognize 'expressions' that are closer to the original conception of the 'work'. In entity-relationship modelling there is no standard way of labelling as special one instance of 'expression' within the 'expression' set that makes up an instance of 'work'. To create such a marker, the modelling mechanisms available are either attributes or relationships. And so it seemed more convenient to label an instance of 'expression' with a special attribute, than to make a sub-type of the *is-realized-as* relationship (LRM-R2) that holds between 'works' and 'expressions'. As the criteria for selecting the significant 'expression' are under the control of the cataloguing rules, and not a structural part of the model, the attribute was named *representativity*, rather than some variation of *original-ness*.

The significance of an original 'expression' is also embedded in many bibliographic practices. Consider the mental process behind the identification of a uniform title for a 'work'. First, the cataloguer is working with a single 'item' (the item in hand), which the cataloguer recognizes as exemplifying a specific 'manifestation'. The 'item' is usually a good, complete exemplar of the 'manifestation', and thus its characteristics can be abstracted as being those that other exemplars of the same 'manifestation' need to exhibit to be recognized as belonging to the same 'manifestation'. These characteristics can be physical (number of pages or other physical units comprised in the 'manifestation') or can be the transcribed statements found on sources of information. These statements then form the attributes of the 'manifestation', including its title proper. In a further process of abstraction, the transcribed title proper is used as the basis for assigning the title of the 'expression', and finally, the uniform title of the 'work', but this last step is valid only in the case where the 'manifestation' is recognized as embodying an 'expression' of the 'work' that is considered original, or canonical, according to the criteria set out in the cataloguing rules. This mental process is a significant feature of library practice, and quite different from the assignment processes of other types of identifiers.

The criteria for choosing the representative 'expression' may be explicit or implicit, and in some cases have an element of arbitrariness. Usually the uniform title comes from the title proper of the earliest, and so ideally the most original, published 'manifestation'. The hope is that this would lead to using the title chosen by the original creator in the identification of the 'work', but there is no guarantee that the title proper on a 'manifestation' was chosen by the creator rather than by a publisher or other intermediary. No matter how it was chosen, this title would have the advantage of being commonly associated with the 'work' by library users, making it useful for retrieval. This is the normal situation, but in some cases there is no single title that can be seen as original. For instance, simultaneous editions in the same language published in different countries may have different titles proper, or it may be

impossible to determine the original language (such as for government documents of multilingual countries). This is where cataloguing rules impose a choice of uniform title, generally giving preference to a title in the language of the cataloguing agency, or to the title of the ‘manifestation’ catalogued first. Another exceptional situation is when the original ‘manifestation’ does not bear a title that can be transcribed. This can be the case with non-textual works, or with musical works given non-distinctive titles. Cataloguing rules then prescribe ways to devise a title, often keeping considerations of identification and descriptiveness in mind. Although this is arbitrary, making a choice among titles or devising a title permits the cataloguer to continue their work.

In FRBR-LRM, the representativity attribute for an ‘expression’ of a ‘work’ stores the cataloguer’s judgement about whether the values recorded for other attributes of that ‘expression’ can be viewed as significant in the description of the ‘work’, without any logical contradiction when other ‘expressions’ of that same ‘work’ differ with respect to language, or key and/or medium of performance, and so on.

Conclusion

As with any model declaration, the FRBR-LRM text presents a description of the model in a way that is intended to be complete in itself, but cannot cover the reasoning behind the decisions taken or describe the alternatives that were ultimately rejected. In this brief discussion, I have highlighted some of the areas in which FRBR-LRM innovates with respect to the previous models in the FRBR family and provided some of the considerations that led the Consolidation Editorial Group to the solutions adopted. All these decision points led to consequences for other aspects of the model, as the goal is to produce a single consistent model. Many of these issues have been discussed in one form or another since the initial publication of FRBR in 1998. I do not doubt that discussion of the most effective and useful ways of modelling bibliographically relevant phenomena will continue through the next steps in the completion and adoption of FRBR-LRM, and beyond.

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