FRBR and Ranganathan's Colon Book Numbers: Exploring a Symbiotic Relationship

Shyama Rajaram

Department of Library & Information Science, The Maharaja Sayajirao University of Baroda, Vadodara-390 002
E-mail: shyama.rajaram@gmail.com

ABSTRACT

Library catalogues are significant surrogates of the documents in the library collection. This paper first describes the conceptual model of FRBR. Then it shifts its focus and goes on to describe the Colon Book Numbers of S.R. Ranganathan. Subsequently, it explores a symbiotic relationship between Functional Requirements for Bibliographic Records (FRBR) and Colon Book Numbers. The study reveals that many of the features of FRBR are already present in Colon Book Numbers. The paper concludes that catalogues adopting FRBR model can go for a full-fledged book numbering system like Colon Book Numbers, so that, a simple call number search can also bring together all the entity-relationships in the retrievals.

Keywords: Functional requirements for bibliographic records, FRBR, cataloguing, book number, colon book number, Ranganathan

1. INTRODUCTION

Since the conceptualisation of Functional Requirements for Bibliographic Records (FRBR) by IFLA in 1997, an enormous number of research papers have been written on FRBR from various dimensions and aspects. It is an undisputable fact that library catalogues are the mirror of the library and are significant surrogates of the documents. Although cataloguing is an absolutely important and indispensable function of the library but rarely considered as interesting or fascinating. Even the best of the cataloguers often get lost in the maze of the rules and regulations and myriad of punctuation marks.

1.1 HISTORY OF CATALOGUING RULES

The rules for the library cataloguing began in the 19th century with the 91 rules of Antonio Panizzi in 1841 in the British Museum. In 1908, ALA. Cataloging Rules were published followed by its second edition, ALA. Cataloging Rules for Author and Title Entries in 1949 which was edited by Clara Beetle. The famous International Conference on Cataloguing Principles was held in Paris in 1961 by IFLA and the Anglo-American Cataloging Rules (AACR) was published in 1967. Another landmark was the International Meeting of Cataloguing Experts held in Copenhagen, Denmark in 1969 to establish international standards for the form and content of bibliographic descriptions. This led to the publication of International Standard Bibliographic Description (ISBD) for Monographs in 1971. Subsequently, the second edition of AACR (AACR2) followed in 1978. AACR2 was again revised significantly in 1988 and 2002.

The last decade of the 20th century witnessed a sea change in the information landscape. There was an enormous growth in the number and scope of electronic databases; there were tremendous developments in the automated library management systems; there was more to catalogue for individual libraries than ever before; cataloguing was becoming expensive and at the same time the user expectations and needs were raising in the networked environment. All this led to a series of seminars and deliberations starting from Stockholm Seminar on Bibliographic Records held by IFLA in 1990 to setting up of a study group to define the functional requirements for bibliographic records and eventually the presentation of the final report of the study group in 1997 in the General Conference of IFLA that was held in Copenhagen, Denmark[1]. The generation of Functional Requirements for Bibliographic Records (FRBR) influenced the development of AACR in such a way that, it has now metamorphosed into Resource Description and Access (RDA) instead of being called as AACR3. It was released in June 2010 and subsequently tested by several national libraries.

2. FRBR

The FRBR evolved after much deliberations and intensive research by the study group commissioned after the Stockholm seminar held by IFLA in 1990. According to the FRBR Final Report the terms of reference of the study group was "to delineate in clearly defined terms the functions performed by the bibliographic record with respect to various media, various applications, and various user needs"[1]. The scope of the study was on the full range of functions performed by the bibliographic records. Thus, the focus was more on relating the bibliographic elements and the attributes of information bearing entities to the various needs of the users for which they consult the bibliographic records.

The FRBR is essentially a conceptual model and not a data model. It is basically "a framework that identifies and clearly defines the entities of interest to users of bibliographic records, the attributes of each entity, and the types of relationships that operate between entities"[1]. The term, 'users' is very broad in scope for this conceptual model; all individuals who are likely to search bibliographic utilities like, library users, library staff, publishers, retailers, service providers and other users of various information services are considered as users. Such a wide spectrum of users would use bibliographic records for a range of tasks like, browsing, purchasing, borrowing, lending, cataloguing, circulation, inventory control, archiving, referencing, information retrieval, etc. The model takes into consideration all such use that is expected from bibliographic utilities. Also all types of materials, media, and formats are covered by this model. There are four key concepts in the FRBR, viz., entities; their attributes; relationships between entities; and the relevance of attributes or relationships to user tasks.

2.1 Entities

The entities defined in the model are the key elements in which users of bibliographic records are interested. There are ten entities divided into three groups. According to the FRBR Final Report:

The first group comprises the products of intellectual or artistic endeavour that are named or described in bibliographic records: 'Work', 'Expression', 'Manifestation', and 'Item'. The second group comprises those entities responsible for the intellectual or artistic content, the physical production and dissemination, or the custodianship of such products: 'Person' and 'Corporate body'. The third group comprises an additional set of entities that serve as the subjects of intellectual or artistic endeavour: 'Concept', 'Object', 'Event', and 'Place'[1].

Here 'Work' refers to a distinctive intellectual or artistic creation which is realised through an 'Expression'. In other words, any artistic or intellectual creation on the idea plane has to be expressed in a language. The 'Expression' has to manifest into a concrete form. In other words when a publisher publishes a work expressed in a language into a physical carrier like a book or any other media, it would be considered as a 'Manifestation'. An 'Item' is a particular example of a 'Manifestation' like a single copy owned by a library.

The second group entities are 'Person' and 'Corporate body' who are responsible for the creation of the content of group one entities or their production or dissemination or ownership. The group three entities are 'Concept', 'Object', 'Event' and 'Place'. These are additional entities that operate as the subject of 'Work'. In other words a 'Work' could be on any idea ('Concept'), a tangible thing ('Object'), an incident ('Event') or a site, scene or setting ('Place'). At the same time the entities in group one and two could also be the subject of a 'Work'.

2.2 Attributes

Attributes are the second key concept in FRBR model. All the ten entities are essentially endowed with certain qualities or characteristics. According to the Report, "Each of the entities defined in the model has associated with it a set of characteristics or attributes. The attributes of the entity serve as the means by which users formulate queries and interpret responses when seeking information about a particular entity"[1]. For instance the title or form of a 'Work'; the language of an 'Expression'; the publisher or edition of a 'Manifestation'; and the call number or accession number of an 'Item' are all considered as attributes of these entities. Similarly, the name or birth date of a 'Person'; the name or place of a 'Corporate body'; are some of the attributes of these entities which users may use for searching the bibliographic records.In its Chapter 4, the FRBR Final Report maps 12 attributes for 'Work', 25 for 'Expression', 38 for 'Manifestation', 9 for 'Item', 4 for 'Person' and 5 for 'Corporate body'. In case of group three entities, i.e., 'Concept', 'Object', 'Event' and 'Place' the alternative words or phrases which may be occasionally used to refer to them are considered their attributes.

2.3 Relationships

Chapter 4 Pages 56 to 81 of the FRBR Final Report are devoted to describing a whole range of relationships that exist between entities. According to the FRBR model, "Relationships serve as the vehicle for depicting the link between one entity and another, and thus as the means of assisting the user to 'navigate' the universe that is represented in a bibliography, catalogue, or bibliographic database"[1]. Chapter 3 of the FRBR Final Report presents three diagrams to show a logical relationship that exist between the entities of all the three groups at a

generalised level[1]. The relationships between group one entities are significant to note. Although a 'Work' can be realised through one or more than one 'Expression' but an 'Expression' is the realisation of only one 'Work'. However, an 'Expression' can have one or several 'Manifestations' and similarly a 'Manifestation' can contain one or more than one 'Expression'. Similarly, a 'Manifestation' can be exemplified by one or more than one 'Item'. However, an 'Item' exemplifies only one 'Manifestation'. Chapter 4 of the Report discusses how the same relationships can be used at a specific level to show the relationship that exists between a particular 'Work' and 'Expression', an 'Expression' and a 'Manifestation', a 'Manifestation' and an 'Item'; or a 'Work' and two 'Expressions'; or a 'Work' and a 'Person' and the like. In other words, there can be multiple ways of linking the specific instances of entities with the help of their attributes. For example:

W1 **–** Toru Dutt's Le Journal de of Mademoiselle D'Arvers

e1 The author's original text in French

e2 An English translation by N. Kamala

m1 The diary of Mademoiselle D'Arvers published by Penguin Books in 2005

i1 The copy signed by the translator in my personal library

Entities in the second group can have many to many relationships, i.e., one or more person or one or more corporate body could be responsible for one or more 'Work', 'Expression', 'Manifestation' or 'Item' and vice a versa. Thus, entities in the second group, i.e. 'Person' and 'Corporate body' are also linked to the entities in the first group. For example:

P1 – V. Raghunathan

w1 Games Indians play

w2 Don't sprint the marathon

w3 The corruption conundrum and other paradoxes and dilemmas

Just like the 'created by' relationship that is demonstrated above between the 'Person' and his 'Work's, the 'realised by', 'produced by' and 'owned by' relationships between the 'Person' or 'Corporate body' to the 'Expression', 'Manifestation' and 'Items' are also linked.

A 'Work' can have a subject relationship to any of the ten entities including the 'Work' entity itself. In other words a 'Work' could have as its subject any 'Concept', thing, 'Event', 'Place', 'Person', 'Corporate body', 'Expression', 'Manifestation', 'Item' or another 'Work' itself. Again a 'Work' can have more than one 'Concept', 'Object', 'Event' or 'Place' as its subject. Similarly, a 'Concept', 'Object', 'Event'

or 'Place' could be the subject of more than one work. Linking a 'Work' to its subject helps not only in identifying the subject of a 'Work' but also in bringing together all the 'Works' on a given subject together.

Users generally search a catalogue with the help of an attribute of an entity known to them. When the catalogue reflects the relationships between the entities it helps the users further in understanding the links between the entities which they need to know to satisfy the task for which they approach the catalogue.

2.4 User Tasks

Users approach a bibliographic utility at a given point of time to perform a particular task. The four generic tasks for which users use a database described in the FRBR model are, 'to find', 'to identify', 'to select' and 'to acquire or obtain'[1]. In other words, users may search a database to see what it has on a given query; or to spot and recognise the entity they are searching for; or choose or reject an entity; or to get hold of and attain the entity through borrowing or buying. Four tables in Chapter 6 of the Report map the attributes and relationships associated with 'Work', 'Expression', 'Manifestation', and 'Item' to the four users' tasks that are defined[1]. Through the use of three symbols, i.e., a dark square equals to high value, a white square equals to moderate value and a white circle equals to low value, show the relative value of each attribute or relationship in sustaining a specific task of the user. Thus, this 'entity–attributes–relationship model' in the 136 page FRBR Report provides the structure to analyse the uses that users make of bibliographic data with specific reference to the entity of their interest and their relative (entity–attributes–relationship) relevance to the task being performed.

3. BOOK NUMBERS

Call numbers generally consist of class numbers and book numbers. Libraries where many separate collections are maintained may include a collection number as well. The term 'call number' perhaps takes its origin from the process of requesting a book from a closed access library. The class number depicts the subject of the book but to individualise the books falling into the same subject and to fix their relative position in the stacks book numbers are used. Although book numbers are very useful and have a long history but they have rarely been a subject of interest or discussion in library science discourse.

A very simple method of book numbering is to use the first three letters of the author's name. Many small libraries even in the contemporary

times do so. Cutter started combining a letter and two numbers to represent author's name; which Sanborn expanded to three numbers. Merrill Book Numbers and Jast & Brown Book Numbers also are a combination of letter and number to represent the author. Out of all these, the 'Cutter-Sanborn Three Figure Author Table' is more in use in large libraries today. Ranganathan rightly finds this exercise of translating letters into numbers futile. He observes, "This is perhaps due to a blind mania for numerals, even when the alphabet serves the purpose equally. Much ingenuity has been wasted over the translation of letters into numerals"[2]. Such book numbering methods just focus on author's name and fail to individualise the different copies and editions of the same book or the volumes of a multivolume book or books by different authors on the same subject sharing the same surname. Biscoe Book Numbers use the year of publication of the book as the book number by using a Roman Capital letter to represent the millennium, century and the decade and a numeral to represent the year. However, among other short comings, this system also fails to individualise the different copies and editions of the same book. Rider's Two Symbol Book Number modified the Biscoe Book Number and used the first digit to represent the decade of publication and the second digit to represent the name of the author[2]. Even this system ignores many facets which one finds in Colon Book Numbers.

3.1 Colon Book Numbers

For his CC which is a faceted scheme of classification, Ranganathan created Colon Book Numbers. Colon Book Numbers are very carefully designed not only to take into consideration all possible characteristics of a book, but also facilitate the user needs. The facet formula that is prescribed by Ranganathan is presented as[2]:

[L] [F] [Y] [A].[V]-[S];[C]:[EV]

L = Number of the language of exposition, to be taken from the Language schedule of CC

F = Number of the form of exposition to be taken from the Form schedule of CC

Y = Number for the year of publication to be taken from the Chronological schedule of CC

A = A serial number to distinguish the different books having the same language and form in the same ultimate class. This number begins with 1 for the second such book in the library.

V = Number for the volume to be taken from the book itself

S = Number for supplement to be taken from the book itself

C = A serial number for copy, other than the first

EV= Evaluation number for Pseudo-Classics

Ranganathan devised these facets of book numbers on the basis of his actual observation of the user behavior in the stack rooms. These book numbers are not actually as elaborate as they appear in the first glance but at the same time they can all be present in a particular case if need be. In his CC (1960), Ranganathan gives a more detailed description of these facets of Colon Book Numbers. The number for the language facet which is taken from the Language schedule of the CC is not given to books if they happen to be in the favoured language of the library, i.e., the language in which majority of the books in a library are written. It means majority of the books in the library may not need a language number at all. For books belonging to the main class 'Literature', the language numbers are not given in the book number part, if the book happens to be in the same language in which the literature of the book is. Also in case of periodicals language numbers are not given. In case of polyglot books, like commentaries in two or three languages for the text of a classic, the language of the classic is used for the book number part. In case where the classic is less important than the commentary then the most popular language among the commentaries is chosen for the purpose of book numbers. In other words, in case of polyglot books one can go by the logic of most popular language in the book to construct the language number.

Form numbers are not given to books if they are in the traditional prose form. Similarly, for books falling in the main class 'Literature', form numbers are not needed as they would be already treated in the class number part. Form numbers are taken from a schedule especially devised for this purpose and included as chapter 2 in CC (Ed.6). The date of publication of the book serves as the year number and the Chronological schedule of CC is used to construct the year number. All the documents in the library would receive year numbers; in case of periodicals the year covered by the volume serves as the date of publication. When the use of the first three facets give rise to the same Book Number then a serial number beginning with the numeral 1 can be added to the second such book and 2 to the third such book and so on. In case of a multi-volume work the volume number is added preceded by a dot in Indo-Arabic numerals to the respective volumes as their book numbers. In case a volume also has a supplement then the supplement volume is given the same book number as that of its volume followed by a dash and the number of the supplement. Multiple

copies of a book in the library would have the same Book Number as that of the first copy; however a copy number would be added to the second copy by adding digit 1 preceded by a semi-colon; digit 2 to the third copy; digit 3 to the fourth copy and so on. The "re-issue and renewed editions of the one and the same Distinctive Editions of a work in Literature or a Sacred Book in Religion or a Classic in any other subject"[14] should also be treated as copies of the same book.

To understand many of the above facets, let us take the example of two copies of a book on Banking in two volumes published in 1998 in Hindi language in the collection of a library where majority of the books are in English. In the example the Colon Book Numbers are shown leaving two spaces after the Colon Class Number X62 for banks:

(Number for the first volume of the first copy)

X62 152N98.1

(Number for the first volume of the second copy)
X62 152N98.1;1

(Number for the second volume of the first copy)
X62 152N98.2

(Number for the second volume of the second copy)
X62 152N98.2;1

The last facet of Colon Book Number is referred to as 'evaluation' facet or 'criticism' facet. When a book is not a 'Classic' as defined by CC, yet it has other books written on it; it is called a host book and the other book as the associated book. In such a case the book number of the associated book would be the same as that of the host book with the addition of ":g" to it. This is called criticism number; ":g" is an energy posteriorising common isolate for indicating criticism in CC. If there is more than one associated book for a host book then second, third or fourth such book would have the same Book Number as that of the first associated book followed by the digits 1 for the second book, 2 for the third book and so on.

4. SYMBIOTIC RELATIONSHIP BETWEEN FRBR AND COLON BOOK NUMBERS

There has always existed a symbiotic relationship between the work of a cataloguer and a classifier. Classifier gives a class number to books and a cataloguer decides the subject headings on the basis of the class numbers and goes about preparing the main and added entries; book numbers can be added by either of them, the practice may differ from library to library. Once the catalogue is ready, it is the call number that users use to trace the location of a book on the shelves of a library. Call numbers are essentially composed of class number plus book number and in some cases also a collection number. Therefore, call

numbers are an essential component of a library catalogue and a symbiotic relationship between the two can never be denied. Thus, this paper now on will try to explore how Ranganathan's Colon Book Numbers find a resonance in the latest concept in cataloguing, i.e., FRBR .

- FRBR group one entity 'Work', which refers to a distinct intellectual creation, is actually represented by a class number. Irrespective of the fact what classification scheme is used, the class number is essentially a translation into notation the subject of the intellectual creation under scrutiny. So, the CC Number that comes before a Colon Book Number can be viewed as the 'Work' which is an abstract entity.

- FRBR group one entity 'Expression' refers to the realisation of the 'Work' in a form. The work has to be expressed in a language and a form. The first facet of the Colon Book Number is Language and the second facet is Form. Thus, when the Colon Book Number depicts the language of the book and the form of the book, it means it shows the 'Expression' of the 'Work'.

- FRBR group one entity 'Manifestation' is the physical embodiment of an 'Expression'. Thus when a 'Work' expressed in a particular language is published by different publishers; it can be viewed as 'Manifestation'. The third facet of Colon Book Number, i.e., the year of publication can be easily equated to a 'Manifestation' of an 'Expression'.

- The fourth facet, i.e., the accession part of the Book Number can be seen as the linking of one 'Manifestation' to another related 'Manifestation'.

- The Volume and Supplement facets of Colon Book Numbers depict the part-whole relationships within a 'Manifestation' which is also discussed in the FRBR model.

- FRBR group one entity 'Item' is a concrete entity that exemplifies a manifestation. The seventh facet of Colon Book Number is the copy number which again is an exemplar of a particular item. Each individual copy would have a distinct copy number. So if a library has 20 copies of the same book, the first copy would not have a copy number and the subsequent 19 copies would have a copy number serially form 1 to 19. Thus each copy gets linked to its manifestation and yet possesses a distinct book number.

- The 'Work–to-work' relationships conceptualised in the FRBR Report are akin to the 'Evaluation' facet of the Colon Book Numbers. A 'Work' can be a subject of another 'Works' and that is what the Evaluation/Criticism facet attempts

to show. Through this facet the associated book finds a place next to its host book on the stacks where it would be most helpful. An adjunct to this facet, which happens to be the last facet of the Colon Book Number, is the 'Accession Part of the Criticism Number'; this helps in bringing together on the shelves all the associated books of a host book yet each one would have a distinct number.

• In Colon Book Numbering, the year of publication of the different editions of an ordinary book can also be used to construct the copy number so that they can all be brought together on the shelves next to each other. Such a facility in FRBR model is shown as 'Manifestation-to- Item' relationship.

• One of the rules given by Ranganathan for constructing the Language Facet of Colon Book Numbers is that "In the case of a book belonging to a Main Class other than 'Literature', if it is in the Favoured Language or if the Language to be used to construct the Language Number is the favoured one, the Language Number need not be written"[3]. There is yet another rule for the Form Facet that if the book happens to be in the traditional prose form then form numbers need not be given[3]. Owing to these rules, not only all the 'Expressions' of a given 'Work' in the favoured language would come together in one place on the shelves of a library; but they will also have precedence over 'Expression's of the same 'Work' in other languages. The reason being Roman Capital letters are given precedence over all other digits used in Colon Book Numbers; and the Book Number of a book which does not have a Language Facet and a Form Facet would start with the third facet, namely, the year of publication, for which a Roman Capital letter is used. For Language Facet numerals are used and for Form Facet Roman smalls are used.

Besides the Colon Book Numbers, the Classic Device that Ranganathan uses to construct the class numbers for a 'Classic' is an ingenious method of bringing together on the shelves of a library a classical work and the various editions of different commentaries on it and sub-commentaries on different commentaries on it. According to Ranganathan, 'Classic' is a work which has a permanent value, which is very powerful and cuts a new ground. For such a work he feels it is important to present it with its associated literature as a 'continuous spectrum' with nothing unrelated intervening[3].

Further, even in his Classified Catalogue Code (CCC) to construct the Main Entry of a Classified Catalogue, Ranganathan provides five sections, viz.

(a) Leading section,

(b) Heading section,

(c) Title section,

(d) Note section,

(e) Accession number, and

(f) Tracings.

He presents a choice of Notes for the Notes Section like Series note, Multiple series note, Extract note, Change of title note, and Associated book note. These notes present the relationships between entities that FRBR model in Chapter 5 of the Final Report depicts as 'Work-to-work', 'Expression-to-expression', 'Expression–to-work', Manifestation-to-manifestation, 'Manifestation-to-item' and 'Item-to-item'. The Cross Reference added entry of CCC takes care of the part-whole relationships between the 'Items'. So most of the concepts contained in the FRBR model are actually already present in Ranganathan's Colon Book Numbers.

5. CONCLUSIONS

In the contemporary world, the computerised catalogues have replaced the card catalogues that dominated the 20th century. The popular classification schemes today are: Universal Decimal Classification, Dewey Decimal Classification, or LC Classification schemes. Cutter-Sanborn Three Figure Author Table or LC Cutter Tables are popular Book Numbering methods today. It is AACR-2 which forms the basis for bibliographic description along with MARC-21 tags in most of the automated library management systems. Now, RDA which has evolved from AACR-2 and is a structure-based on FRBR and FRAD (Functional Requirements for Authority Data) can include in its flexible framework rules for book numbers. Whatever be the classification numbers used, a bibliographic utility can construct book numbers having all the facets suggested by Ranganathan. In fact, an author facet can also be added to it which is not present in Colon Book Numbers, but are an obsession with other Book Numbering methods. New schedule for form numbers can be devised to accommodate the newer media that has emerged today. Similarly, new schedules can be designed for Language Facet and a Chronological schedule for the year of publication facet. Thus, catalogues that are trying to implement the FRBR model can go for a full-fledged book numbering system like Colon Books Numbers, so that, a simple call number search can also bring together all the entity-relationships in the retrievals. This would help users in their four primary tasks, 'to find', 'to identify', 'to select' and 'to obtain'. This would also help in housekeeping activities of a library and arranging the books on the shelves in a much better way. While marching ahead with the new technology and the humongous variety and volume of information resources; we

should try to take the gems and nuggets imbedded in old concepts and practices rather than leaving them behind.

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About the Author

Dr Shyama Rajaram is Associate Professor & In-charge Head of Department of Library and Information Science and Chairperson, Board of Studies in Library and Information Science in M.S. University of Baroda, Vadodara. She received Dr. C.D. Sharma award for the best written and presented paper in 1996 in the 41st All India Library Conference of Indian Library Association.