CONVENIENCE TO THE CATALOGER OR CONVENIENCE TO THE USER? :

AN EXPLORATORY STUDY OF CATALOGERS' JUDGMENT

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This mixed-method study explored cataloger's judgment through the presence of text as entered by catalogers for the 11 electronic resource items during the National Libraries test for Resource Description and Access (RDA). Although the literature discusses cataloger's judgment and suggests that cataloging practice based on new cataloging code RDA will more heavily rely on cataloger's judgment, the topic of cataloger's judgment in RDA cataloging was not formally studied. The purpose of this study was to study the differences and similarities in the MARC records created as a part of the RDA National Test and to determine if the theory of bounded rationality could explain cataloger's judgment based on the constructs of cognitive and temporal limits. This goal was addressed through a content analysis of the MARC records and various statistical tests (Pearson's Chi-square, Fisher's Exact, and Cramer's V). Analysis of 217 MARC records was performed on seven elements of the bibliographic record. This study found that there were both similarities and differences among the various groups of participants, and there are indications that both support and refute the assertion that catalogers make decisions based on the constructs of time and cognitive ability. Future research is needed to be able to determine if bounded rationality is able to explain cataloger's judgment; however, there are indicators that both support and refute this assertion. The findings from this research have implications for the cataloging community through the provision of training opportunities for catalogers, evaluating workflows, ensuring the proper indexing of bibliographic records for discovery, and recommended edits to RDA.

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CHAPTER 1

INTRODUCTION

Even though the term "cataloger's judgment" is a more contemporary one, the concept

has been around since Charles Cutter published *Rules for a Dictionary Catalog* in 1876. Cutter

states,

> The convenience of the public is always to be set before the ease of the cataloger. In
> most cases, they coincide. A plain rule without expectations is not only easy for us to
> carry out, but easy for the public to understand and work by. But strict consistency in a
> rule and uniformity in its application sometimes lead to practices which clash with the
> public's habitual way of looking at things. When these habits are general and deeply
> rooted, it is unwise for the cataloger to ignore them, even if they demand a sacrifice of a
> system and simplicity. (1904, p.6)

With this, Cutter grants permission for catalogers to deviate from the rules to create a catalog

that is easy for the users to access the materials they need. This concept led to the birth of

cataloger's judgment.

Since this time, others have described this "convenience" to the user through the use of

terms such as choice, judgment, interpretation, etc. (Dunkin, 1969; Snow, 2011). In each of

these cases, they discuss how the user must be at the forefront of thought while describing the

surrogates of the bibliographic record catalogers create. Dunkin states, "[t]here is seldom just

one "true" answer" (1969, p. 8) and that the cataloging rules adopted stress that judgment is

critical to the role of the cataloger. This has not always been the case. Jewett believed that

cataloging rules should be all encompassing and should leave little to judgment. However, with

the adoption of the new cataloging standard, Resource Description and Access (RDA), it is

evident that the broader, long-standing cataloging community has abandoned Jewett's thought

in favor of convenience of the user through applying cataloger's judgment. This is exemplified

throughout the new cataloging rules because they provide options in which catalogers exercise

judgment (Cronin, 2011). Cataloger's judgment is a decision-making process of determining

what information to include in the bibliographic record. It takes education, experience, and

knowledge in order to determine what information should be included (Snow, 2011). This

decision-making process has similarities to economic-based decision-making theories,

specifically, bounded rationality. Bounded rationality is a theory that states people make

decisions based on time and their cognitive abilities (Simon, 1955).

This study will explore the relationship of bounded rationality to cataloger's judgment in

a test of RDA conducted by the Library of Congress (LC), National Library of Medicine (NLM),

National Agricultural Library (NAL), and the other members of the formal RDA test group.

Problem Statement

Released in 2010, RDA is a replacement for the second edition of the *Anglo-American

Cataloguing Rules (AACR2)*. Since then, few studies have been conducted by other researchers

regarding the use of RDA; however, none of these studies have been focused on the decisions

made by librarians and others that create the Machine-Readable Cataloging (MARC) record and

others that use the MAchine Readable Cataloging (MARC 21) format to communicate

bibliographic and related information using the new set of rules. RDA is based on the Functional

Requirements for Bibliographic Records (FRBR) and the Functional Requirements for Authority

Data (FRAD), which are conceptual models created by the International Federation of Library

Associations (IFLA) Study Group on FRBR under the direction of the Standing Committee of the

IFLA Section on Cataloging and the Working Group on Functional Requirements and Numbering

of Authority Records (FRANAR), falling under both the Cataloguing and Indexing Sections of IFLA.

In 2010, three national libraries, the Library of Congress (LC), the National Library of Medicine (NLM) and the National Agricultural Library (NAL), tested these new standards utilizing the electronic version of the rules (i.e., *RDA Toolkit*). They selected 23 other test partners to create bibliographic records using RDA, and to provide feedback on their experiences using the new standard. Twenty-six organizations involved in the test group created 10,570 original cataloging records. Each group was to catalog 25 common items using both AACR2 and RDA resulting in the creation of 50 records per test organization (Library of Congress, 2011). In addition to this set of records, each organization was to submit records for at least another 25 items of their choosing. Participants were then to submit a survey for each record they created and include information such as who created the record and their overall experience with the process (e.g., time spent creating the bibliographic record, etc.).

The data to be analyzed for this study comes from the common set of MARC records created by the formal test group of the RDA national test. As stated above, the testing procedures for the formal test of RDA required each cataloging organization to construct original cataloging records for the same set of items; this created a great opportunity to study the similarities and differences in how cataloging staff interpret cataloging rules.

Significance of the Study

One of the stated goals of RDA is to provide better guidance in the creation of bibliographic records for electronic resources, and it is for this reason this study was limited to only the MARC records for electronic resources created in the RDA National Test. The reported

dissertation provides the library community with a formal study relating to the analysis of cataloger's judgment by cataloging staff of those participating in the National test by the national libraries. One outcome of this study was to provide a better understanding of how catalogers interpret cataloging rules through professional practice; ultimately, to provide the cataloging community with significant information to identify the greatest variances of such practices. The data gathered during the National test provided the researcher with a rich test bed in which to study cataloger's judgment when creating records for electronic resources.

This study is important to the future of cataloging. In 2012, the Library of Congress embarked on a new initiative called the Bibliographic Framework (BIBFRAME) to serve as a replacement for MARC. Although development work is underway to transition from MARC in favor of a new encoding scheme, the fact remains that the goal is not to abandon library catalogs. Instead the focus is to develop a new method that will better meet the needs of today users (Kroeger, 2013). According to Van Ballegooie and Borie (2014), the power of BIBFRAME will be in leveraging linked data and the practice of cataloging will change significantly if or when BIBFRAME is implemented. If the system goal of the BIBFRAME project and the greater community is to move from MARC to another schema, this leads to the question of, why conduct a current practice that utilizes MARC? The answer is this study is about cataloger's judgment, and since the most widely used standard in the US for cataloging is MARC, then it only makes sense to study what catalogers use in order to determine how they define cataloger's judgment through practice.

Research Questions

This study attempts to answer how librarians interpret cataloging rules through the lens of bounded rationality and cataloger's judgment. The study explores the following questions in order to understand cataloger's judgment and its relation to practice.

RQ1 How did catalogers participating in the Resource Description and Access (RDA) National

Test exercise cataloger's judgment as they created RDA-based MARC records for

electronic resources?

1a: What are the similarities and differences of the records?

1b: To what extent can the differences in text entered in the records be explained by

differences in characteristics of the catalogers (e.g., level of position, experience,

prior course work and/or training, etc.)?

RQ2 How can cataloger's judgment be explained through the lens of Bounded Rationality?

2a: How can cataloger's judgment be predicted using the constructs of bounded

rationality?

Background

Bounded Rationality

This study is not about the "right" decisions; rather it is a study about the outcomes of decisions made by various catalogers analyzing the same information entities. In order to explain these phenomena, a closer look at judgment theory, decision-making, and bounded rationality will be necessary to understand the behavior of catalogers as they create bibliographic records.

Koehler & Harvey (2004) define judgment "as a set of evaluative and inferential processes that people have at their disposal and can draw on in the process of making decisions" (p. xv). For catalogers, this would include the rules, standards, and local practices they refer to in making their decisions. Koehler & Harvey (2004) describe decision making as a broad activity where a person takes in the account of "social, emotional and cultural influences" and weighs the risks to determine the outcome (p. xv). Over (2004) asserts that one must also look at rationality when describing judgment and decision-making. Rationality applies when one chooses to follow or deviate from traditional rules through conscious decision-making. In bounded rationality, there are limits to decision-making by the constraints of time and cognition.

Classical judgment theory is rooted in the thought of absolution, meaning individuals do not stop making decisions until they have reached an omnipotence of the idea they are considering. It is assumed that those making decisions have an unbounded amount of time and possess all of the information required to determine the best outcome (Simon, 1955). Simon (1955) has described this as optimal choice. Since many individuals do not have the ability to spend an unbounded amount of time or resources to make decisions, many contemporary researchers are in favor of the ideals of descriptive decision-making theory and have abandoned the classical view of judgment theory.

Decision-making theory has two major divisions, normative and descriptive. Normative decision making-theory seeks to describe the highest level of decision-making through the optimal use of all faculties that lead one to making the one right judgment. Normative decision-making is similar to classical judgment theory, while descriptive decision-making theory, on the

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other hand, attempts to describe how individuals and/or organizations make decisions through normal limitations (Johnson & Kruse, 2009). Normative theories of decision-making are unattainable in everyday life. For this reason, a descriptive theory of decision-making is most suited for this type of study, and H. A. Simon's theory of bounded rationality is the best match for this study of cataloger's judgment.

Although bounded rationality is a theory that describes economic behaviors, it has also found acceptance in the field of library and information science. The theory has been used to describe the information seeking of individuals (Marchionini, 1995; Higgins, 1999; Agosto, 2002), the use of information in user decisions (Hines, 2009), the decisions in collection development (Chu, 1994), and others. Buczynski (2005), Monsourian, Ford, Webber & Madden, (2008), Hines (2009), and Holt (2010) used the idea of satisficing, which is a blend of satisfying and sufficing used to formulate a decision and a primary concept in bounded rationality, to explain various aspects of library user behavior. Further exploration of bounded rationality will be discussed in the review of literature in Chapter 2.

Cataloger's Judgment

In a review of the literature, there is no mention of formal research on the topic of cataloger's judgment. However it is often mentioned in the literature relating to subject analysis and classification, cataloging education and training, and cataloging quality; additionally a few articles are devoted solely to cataloger's judgment. The articles written on the specific topic describe anecdotal evidence or are opinion pieces on the struggles of practice.

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Many describe cataloger's judgment as "common sense" (Ferris, 2008, p. 179); however, it also involves a series of interpretations of rules, standards, and needs of users. For one organization, the interpretation of a rule may be different than another based on the type of institution, the purpose of the acquisition, or local cataloging workflows and rules. Some see these inconsistencies between records as a series of mistakes or as evidence that one record is better than the other; however, these varied records may both be correct (Santamauro and Adams, 2006).

The variances between records often create chaos for cataloging students as well as novice and experienced catalogers. Miksa (2008) describes how her cataloging students are always requesting the "correct" answer to cataloging examples. Her reply is "it depends" along with various interpretations of the rules, which leaves her students with a level of anxiety in their quest for meaning (p. 21). For novice and experienced librarians, the challenge is that they may lack training or enough coursework to prepare them for the tasks they are to complete. A strong understanding of cataloging principles and standards is required in order to apply them to create bibliographic records. It is through this maze of chaos that order arises, which then enables users to discover the resources they need (Santamauro & Adams, 2006). In other words, it is through the application of cataloger's judgment that users are able to find, identify, select, and acquire the information they need.

Electronic Resources

The discussion of the infusion of electronic resources into library catalogs has greatly increased over the past two decades. The majority of articles written on the topic of electronic

resources are specifically on the actual cataloging processes, E-Serials, digital library collections, and eBooks. In the articles specific to cataloging, the literature points to the difficulties in cataloging such assets. The international cataloging community has recognized this challenge, and in an effort to create a better environment for cataloging electronic resources, the Joint Steering Committee for the Development of RDA (JSC) has included this problem as one of the goals of RDA. RDA is a paradigm shift that is not only a change in rules, but also provides a new approach to describing resources of all types. This is accomplished through providing a "…set of guidelines and instructions on resource description and access covering all types of content and media" (Joint Steering Committee for the Development of RDA, 2009, RDA - Resource Description and Access: A Prospectus, para. 2) including non-print resources found in library catalogs.

To gain a better understanding of the history of electronic resource cataloging, one needs to investigate the history of non-print materials first. Non-print materials include anything that are not considered to be books including, but not limited to maps, still images, sound recordings, motion pictures, and electronic resources. Even though these items may contain the printed word, they are not monographs. The recorded history of non-print materials begins with the inclusion maps in libraries in 1800 , followed by still images in 1889, sound recordings around 1900, and motion pictures in 1935 (Weihs, 2011). The post-World War II era marked some very important changes in the cataloging of non-print materials due to an increase in the number of audio-visual materials purchased by school libraries to update their collections, to meet new instructional standards, and through a large appropriation of federal funds to school libraries (Weihs, 2011).

Weihs (2011) describes these events as having a pivotal role in the revision of AACR. AACR provided rules for cataloging non-print items in Part III. These rules did not follow the same convention found for books and did not meet the needs of catalogers attempting to describe audio-visual materials. She contends that through further committee work to provide better audio-visual cataloging standards, the broader cataloging community agreed with the need for a revision of AACR in order to describe all items available for inclusion into the library catalog. This process paralleled the challenge of revising AACR2 and creating a new standard, RDA, in order to meet the cataloging needs of electronic resources.

RDA National Test

A three month formal national test of RDA was conducted October 2010 through December 2010. During this period of time, test participants created bibliographic records to submit to the national libraries for analysis, which was conducted in January of 2011. For the three months prior to the test, participating organizations accessed the *RDA Toolkit* to practice using the new tool and to determine workflows.

The reason for the test was based on the concerns of the Library of Congress Working Group on the Future of Bibliographic Control, with the result that the Library of Congress (LC), National Library of Medicine (NLM), and National Agricultural Library (NAL) conducted a formal test of RDA. The stated outcome of this study by the national libraries was to "assure the operational, technical, and economic feasibility of RDA" (Library of Congress, About the U.S. National Libraries Test Plan for RDA, para. 1). The test included the three national libraries and the broader U.S. library community.

The U.S. National Libraries RDA Test Coordinating Committee determined who would be participating in the national test and limited the group to a manageable size. In all, there were over 90 applicants; however, only 23 test partners in addition to the three national libraries received an invitation to participate. This group comprises "representatives from all types and sizes of libraries - - national, government, academic, public, school, special; archives; museums; book vendors; system developers; library schools; and consortia" (Library of Congress, U.S. National Libraries RDA Test Partners, para. 2). These test partners used a variety of library automation systems, encoding schemas (MARC, MODS, etc.), types of materials cataloged, and a variety of locally adopted cataloging rules (AACR2, AMIM, DACS, etc.) used by the chosen organizations.

The selection of test partners was based on the limited funds that the national libraries had for such a study. They had determined that they would choose 20 test partners; however, the response was great, so they increased the number of testing organizations to 26, which included a broad spectrum of organizations that create bibliographic records (U.S. RDA Test Coordinating Committee, 2011). It is important to note that the researcher was a formal participant in the RDA National Test, representing school libraries. In addition to the formal test partners, they also allowed participation by informal testers; however, the only data considered for this study is the common set of original cataloging records from the formal test group.

In this test, the U.S. National Libraries RDA Test Coordinating Committee developed a list of eight factors that would be evaluated by the formal test. These factors were:

- Record creation
- Record use

- Training documents and needs

- Use of the RDA *Toolkit*/RDA content

- Systems and metadata

- Technical feasibility (later merged with systems and metadata)

- Local operations

- Cost and benefits (U.S. RDA Test Coordinating Committee, 2011, p. 29)

The coordinating committee had also created some assumptions about the formal test.

These assumptions included that the data and results would be shared with the library

community and the testing would wait until a final version of the *RDA Toolkit* was formally

released. The National Libraries also determined which elements of RDA were considered core;

however, participating organizations were encouraged to follow their own cataloging

workflows and requirements as long as the core elements were represented (U.S. RDA Test

Coordinating Committee, 2011).

The U.S. RDA Test Coordinating Committee (2011) modeled their test design after that

of a similar test for adoption of the CONSER Standard Record. In the RDA test, participating

organizations were to create original catalog records for 25 common items for all testers, an

additional set of at least 25 items of their choosing, the creation of 5 common copy items, and

the optional creation of additional copy items. Two records were created for each original

catalog record; one following AACR2 (or their current standard practiced) and one utilizing RDA.

Testers were to use their local cataloging practices and were only to provide the descriptive

elements of the bibliographic record without any subject analysis or classification; however,

testing partners were to provide authority work if that was a normal workflow for their institution. Each tester was to complete a survey for each bibliographic record they submitted.

The coordinating committee selected the surrogates to be cataloged and packaged the common original record set (COS) that included print and non-print materials including monographs, serials, integrated resources, audio-visual materials, electronic resources, etc. The goal was to engage the testers in creating records of a broad spectrum of resources. The committee provided electronic surrogates for the 25 common items through a password protected Basecamp site, an electronic content management system similar to Joomla or Moodle. Each of the 25 items was given a generic title so as not to skew the testing results.

In addition to the 25 COS items to be cataloged by the formal testers, they were also to create at least 25 additional items of their choosing, also known as the extra original set (EOS), and copy catalog five (5) common items (CCS). Testers could also submit additional copy records if they chose to, referred to as the extra copy set (ECS). The only set of records to be considered for this study is those from the COS.

One of the greatest challenges the coordinating committee faced was how testers would submit their records. They had determined that those using Online Computer Library Center (OCLC) metadata services would submit their records through their typical workflows, and non-OCLC users would either email their records or upload them via FTP to the LC. This was not a factor for this dissertation study since all of the records were able to be retrieved from the LC website.

Once a bibliographic record was created, testers were instructed to complete and submit a survey on each record. Using an online survey service, SurveyMonkey, the committee

had created four (4) different record surveys for each of the four types of records that an

institution could submit (COS, CCS, EOS, and ECS). The surveys included both quantitative and

qualitative data such as to capture the amount of time it took to complete the bibliographic

record, any problems encountered, and how long RDA record creators have been cataloging

that type of resource. Test participants were also asked to complete a record creator profile

(RCP), which provided descriptive data as to their level of cataloging experience, education, and

training. Each test organization was also to submit an institutional questionnaire (IQ) and a

record use survey (RU) that would provide information on the users perceptions of the RDA

records created for the test. The survey data relevant for this study come from RCP, COS, and

IQ surveys (Appendix B).

Once the records and surveys were collected, the coordinating committee analyzed the

data. The coordinating committee had determined they would conduct an in-depth study of the

COS records since these were common to all testers and they had the surrogates for them. The

LC staff created benchmark records to compare to the submitted records with various options.

They identified differences between records to determine the needs for future RDA training.

The committee also analyzed the data from the surveys. Table 1.1 provides a breakdown of the

8509 survey responses by the type of survey, its abbreviation, the number of surveys collected,

and the number of testing institutions that did not submit any survey questions for a particular

survey.

Table 1.1

U.S. RDA Test Survey Categories

Survey Title	Abbreviation	Number of Surveys	Institutions that did not respond
Institutional Questionnaire*	IQ	29	0
Record Creator Profile	RCP	219	3
Record Use Survey**	RU	163	4
Common Original Set	COS	1200	0
Extra Original Set	EOS	5908	1
Common Copy Set***	CCS	111	7
Extra Copy Set ***	ECS	801	7
Informal Testers Questionnaire	IT	80	Not Applicable

* The GSLIS Group submitted four IQ surveys.
**Some testing institutions did not have users that could be surveyed.
*** Work on copy records was optional.

In order to make sense of the surveys, the coordinating committee had to clean up

some of the data. This included normalizing the data to strip responses of wording when they

had requested the numeric value of minutes. A small number of surveys were determined to be

invalid, and they chose to exclude this data. In the findings of the final report released by the

U.S. Coordinating Committee (2011), they stated that they had considered running a more

rigorous approach to analysis; however, they did not have the time to prepare tools for a more

rigorous analysis, such as a codebook for open-ended questions.

In January 2011, once the formal test period was completed, the national libraries

analyzed the data to determine whether to adopt RDA. At the conclusion of the analysis, the

national libraries shared their findings with the broader cataloging community and announced

that they would indeed adopt RDA. The adoption of RDA by the national libraries and the wider

cataloging community occurred in March 2013.

Definition of terms

For the purpose of this study, the following terms have been defined:

- Cataloger's Judgment - The decisions catalogers make while creating bibliographic

  records for information entities to be included in the library catalog. These decisions not

  only include the information that appears in the record, but also where it may exist in

  the record or whether or not it is left out entirely. These decisions are based on the level

  of education, training, and "practice" a cataloger engages in the process of applying

  rules to practice even though there may not be an exact rule to meet every scenario in

  order to meet their user's need. This definition of cataloger's judgment is adapted from

  Snow (2011).

- Electronic Resources - Any content made available by a library to its patrons via

  electronic means including computers, smart phones, eReaders, etc. Electronic

  resources include E-Monographs (including eBooks), E-Serials, websites, integrated

  resources, streaming video, etc.

- Indexing – Instructions made within a database system that inform which parts of the

  data will be analyzed and available to be searched and retrieved by users. In the case of

  MARC records found in library systems, not all fields of the MARC record are mapped to

  be searched and displayed to library users. Indexing action may be automatically set by

  a vendor or individually set by a library institution.

- Non-Print Materials - A broad class of materials included in library collections that

  include maps, still images, sound records, motion pictures, and electronic resources.

  Non-print materials and non-book materials are synonymous (Weihs, 2011).

- Satisficing - A concept that is very similar to satisfying as it is a blend of satisfy and suffice, as those who make decisions do so by making an adequate decision opposed to an optimal one (Gigerenzer & Selten, 2001; Simon, 1972)

Delimitations and limitations

This study only focused on the common set of electronic resource RDA records created by the formal test group. One of the purposes of RDA is to allow for better cataloging of electronic resources, including E-Monographs, E-Serials, streaming video, and integrating resources. In an effort to curtail the amount of data, this study only included those records that conform to the RDA standard and not those created using AACR2. The purpose of limiting this study was to look closer at the decisions made by catalogers in their practice of applying a new set of cataloging rules for electronic resources, one of the reasons RDA was created.

One important caveat of this study was that RDA was in its infancy, and some would argue it still is, and for this reason very few catalogers had been exposed to applying the standard. For this reason, it is very possible that because of the participants' limited exposure they had difficulty applying the new set of rules to the practice they had known in the past. RDA was designed to help the cataloger think differently about cataloging and the information we provide to users, and for some test participants they may have found the rules difficult to apply or considered the standard to be ambiguous. Anecdotally, in various informal conversations between the researcher and catalogers, they have suggested that catalogers' practice using the prior standard, AACR2, was very much based on the structure of MARC and not necessarily the cataloging rules themselves. It is very possible that participants would continue their previous

practice in the new standard. The intent of this study was not to confirm this assumption; however, the data analysis does suggest support for the assumption.

The purpose of the RDA national test was to understand the cataloging of the descriptive elements of the bibliographic record. For this reason, only the descriptive elements of the record are included in this study. This study does not include subject analysis or classification since they were not included in the National test. Although in addition to bibliographic records, many authority records were created, not all institutions participated in this part of the test. It is for this reason that this study does not analyze this type of data.

There are several limitations in this dissertation. First, the data is representative of only the 26 cataloging agencies involved in the formal test group. Furthermore, the test participants themselves were self-selected since not all catalogers from each institution could opt-in or opt-out of participating. The 26 test partners represent a broad spectrum of the types of libraries and other cataloging organizations; however, for some types of institutions, such as school libraries, only one K - 12 organization was chosen from this very large group of libraries. Second, the surveys submitted by participants were self-reported. Individual participants completed a survey about their experience after completing each catalog record whether the record was created using AACR2 or RDA. This self-reporting may skew the results of the participant surveys due to self-bias.

Another limitation in this study is that not all catalogers submitted a survey for every record they created. Although 1,200 surveys were returned, there were 1,509 COS records submitted. This number is higher than the 1,300 records anticipated since some testing organizations submitted more than one record for an information resource. This includes the

group of LIS students that participated in the testing from several universities. As a result, any record that did not have the corresponding data associated with it was removed from this study.

The final limitation is the size of the sample which included all records created by RDA test participants for all 11 electronic resources in the common set of test resources. Although this sample may be small, the data is rich. Because of the limited number of information resources being studied, there were difficulties in determining significance levels due to the granular level at which this study intended to explore.

Summary

This study investigated cataloger's judgment during the RDA National Test by examining the MARC records and surveys created and submitted by the test participants for the electronic resources included in the common original set of test items. Analysis of the data was completed by utilizing descriptive statistics for quantitative survey information, content analysis of the notes fields, and the application of a regression analysis of the MARC records.

CHAPTER 2

LITERATURE REVIEW

Introduction

Full rationality requires unlimited cognitive capabilities. Fully rational man is a mythical hero who knows the solutions to all mathematical problems and can immediately perform all computations, regardless of how difficult they are. Human beings are in reality very different. Their cognitive capabilities are quite limited. For this reason alone, the decision-making behavior of human beings cannot conform to the ideal of full rationality. (Selten, 2001, p. 14)

Individuals are constantly tasked with needing to make decisions in their quest to solve problems. They may ask themselves, "What is the best route to take to work?"; "How much money should I save for my child's education?"; "Should library organizations adopt RDA?" Some have argued that for every decision one makes, the decision is fully rational. This was the belief prior to the early 1950's and was the classical or traditional thought of judgment and decision-making theories.

In the quest to help explain the phenomena of cataloger's judgment, a variety of theories were investigated to determine the one that would most relate to the practice. Judgment theory was first considered and later abandoned as it seemed to assume too much of the decision-maker. It is now thought that decisions are made based on the information and time they have, and this is the reality of the human decision-maker and the foundation for bounded rationality (Gigerenzer & Selten, 2001).

It is through bounded rationality that people and organizations make their decisions. In the library cataloging community, decisions are made through the creation and revision of principles, standards, and processes. This chapter is organized from the most philosophical

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aspects of cataloging, down to a more practical application of cataloging electronic resources; from the abstract to the concrete.

Bounded Rationality

Good, fast, cheap... pick two (Wolf & Grodzinsky, 2006), you cannot have it all, and cataloger's know this all too well. This quote can be used to describe a workflow process relating to the quality, efficiency and economics in decision-making. One is able to have a high level of quality along with high efficiency, but it will be expensive; efficient and inexpensive, but not of high quality; or of high quality and inexpensive, but not efficient. This economic view of decision-making parallels that of bounded rationality. There are constraints that limit the decisions of individuals. Simon (1955) refers to these constraints as bounded by time and cognitive limits.

Bounded rationality provides an explanation of how individuals and organizations work to solve problems through making judgments or decisions. H. A. Simon is credited for creating an economic theory of bounded rationality where individuals work within the constraints of time and knowledge to reject and ultimately accept possible outcomes until they are satisfied with a workable decision. Although bounded rationality has its roots in economics, a search of the literature has found the information science community has accepted the theory as a way to explain how people make decisions.

Through the exploration of the literature on decision-making, bounded rationality stands out because it explains the decision-making process. Other, more classical, theories assumed no limits, as the decision-maker was omnipotent about the decision to be made and

there is no room for mistakes. The decision-maker would conduct all mathematical calculations of the various plausible outcomes and then choose the best, also known as optimization (Simon, 1956). Instead, Simon (1955) believed that people are more accustomed to making a decision that is "good" instead of "best." In order to find the "best" result would entail greater cognitive abilities and time. The terms "aspiration levels" and "satisficing" describe this decision-making process.

The aspiration level is the level at which an individual will be satisfied with any one decision. Aspiration levels are not static since they move either up or down as a person continues through the decision-making process. Satisficing is a Scottish term that is very similar to satisfying as it is a blend of satisfy and suffice, as those who make decisions do so by making an adequate decision opposed to an optimal one (Gigerenzer & Selten, 2001; Simon, 1972).

Simon (1955, 1972) explained the process of aspiration levels and satisficing through the analysis of chess players. In the game of chess, a good player anticipates the future moves of both himself and his opponent. In classical decision-making theories, the player would need to calculate every possible future move of both himself and his opponent before moving a chess piece. This is an example of optimization. This process is far too lengthy and the chance of missing a predicted move increases along the continuum of increasingly possible outcomes. For this reason, the chess player determines which moves would benefit him the most within the time he is comfortable in giving to the task. This is known as setting an aspiration level. The player begins to analyze the moves, and based on the difficulty of the task and his cognitive level, the aspiration levels move up or down. At some point in time, the player finally decides on the move he will take, and executes it through satisficing behaviors based on his aspiration

level (Simon, 1955; Simon, 1972). The concepts of aspiration levels and satisficing haves also been described in the library and information science literature.

The use of bounded rationality emerged in the library and information science field in the late 1980's, but it began to be more widely accepted in the 21st century. Overall, there has been little research conducted on the topic. However, this decision-making theory has been used to describe elements of information seeking behavior within the reference interview (Chu, 1994), federated searching (Buczynski, 2005) collection development (Schwartz, 1989), and ending the decision making process (Prabha, et al. 2007; Watt, 2010). In these studies, bounded rationality has been used to explain aspiration levels and satisficing.

Chu (1994) describes the reference interview as a conversation in the discovery of information of library users. The user comes to the interview with a predetermined aspiration level and with the assistance of the librarian, works to find the information or resources needed. "Sometimes when librarians and [users] don't understand each other, it becomes a process of expanding the bounds of rationality until the librarian's fuzzy set of satisfactory answers and the student's fuzzy set of acceptable answers overlap" (p. 459). This 'fuzzy set' is the question that the user is looking to have answered. In order for the librarian to assist the user, the aspiration level of the student will be negotiated, altered, decreased and/or expanded throughout the interview. Rarely are all possible resources or scenarios considered during these types of interviews. Instead, a subset of possible choices was used. Users do decide at what level they will be satisfied with their results; their aspiration level is based on their knowledge and limitations of the topic. The research has not discussed the time and spatial constraints on aspiration levels; however, this would be worth further investigation in future research.

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The most popular topic in the literature relating to bounded rationality is that of satisficing, or stopping a search when finding something is found to be "good enough" (Agosto, 2002; Chu, 1994). Zach (2005) describes satisficing as not collecting all knowledge, but collecting enough knowledge. Chu (1994) relates bounded rationality to the library and information science (LIS) field by comparing it to the reference interview used when academic library users come with questions that are described as "fuzzy sets." These sets are information needs that are more than just factual information, but instead rely on broader resources to back up inferences. Chu states that even though the librarian attempts to find the one right answer, there is often more than one correct answer, and the user will decide when the answer is "good enough" for his/her needs, and this decision is dependent upon the user's level of rationality.

Buczynski (2005) describes satisficing as a way to understand why users do not use better resources to discover information. He states that users tend to forgo specialized electronic collections such as digital libraries in favor of Google or other search engines in order to work within time constraints, and he calls for the use of federated searching to allow for greater access to specialized collections. Through federated searching, the individual will reduce the number of ways to search, increasing their boundaries through redundant searches among multiple resources. Connaway, et al. (2011) agrees "convenience is central to information-seeking behaviors" (p. 186) and those users tend to gravitate to resources that they feel are more accessible and easier to use.

Within the LIS literature, one of the tenets of satisficing is the discussion of limits. According to Simon (1957), the limits for decision makers are of time and cognitive constraints.

These limits are identified as stopping points for information-seekers throughout the literature (Hines, 2009). Time is one of the most common stopping rules described. Prabha, et al. (2007) states, that both faculty and students work within time constraints to complete either their coursework or projects. In a study of information seeking behaviors of young adult females, it was found that physical constraints should be added to the list of limits. Agosto (2002) unexpectedly found that searches might also terminate based on physical discomfort (pain, eye strain, etc.). One could argue that these physical constraints are also a factor of time since as time passes, these limitations are more pronounced. Mansourian et al. (2008) agree with the limits described by Agosto and have incorporated bounded rationality into a model of searching behavior.

The other stopping rule explained by Simon is that of cognitive constraints. The LIS literature agrees with this constraint as information seekers often find themselves with information, textual, and outcome overload. In each of these scenarios, the user finds the search for information at times to be overwhelming (Agosto, 2002). Other studies found that some resources were not considered by information seekers due to the lack of knowledge, or because they did not see the need to use resources different from the ones they typically rely on (Buczynski, 2005; Zach, 2005). Mansourian et al. (2008) identified that searchers often demonstrate remorse over ending a search knowing that there could be more information out there to find. Chu (2004) does provide some insight to the stopping behaviors as it relates to not having access to all of the information a user may need. This is related to the fact that the user may have a higher aspiration level to begin with and then is disappointed when he/she needs to lower the level. The research in the LIS literature does point to a variety of factors in

information seeking; however, there is no discussion of the ability to access information or the information seeking behaviors of people with disabilities.

In some cases, the user relies on heuristics, or "rules of thumb," in order to guide their decisions. This was the case with senior arts administrators in a study relating to their information-seeking processes. Zach (2005) found that "they rely heavily on direct personal experience to fill their information-seeking needs" (p. 32). They view these "rules of thumb" as important devices in seeking of information. Watt (2011) found that parliamentary staffers rely heavily on heuristics as a means to search "fast and frugal" (p. 445). This allows them to find information with the swiftest speed and at the lowest cost, even though the information they find may not be of the highest quality.

Although bounded rationality has been used to describe the decisions in the information-seeking process, the literature has pointed to greater research in the use of bounded rationality in the library community. Hines (2009) suggests considering heuristics in the planning, implementation, and evaluation of library services. She also believes that satisficing is a valid part of decision-making and it should be embraced, and "[f]urther research into the application of these theories into concrete situations is also welcome" (p.85). Other researchers mentioned a greater need for research conducted on the information seeking of individuals and how they apply satisficing (Mansourian & Ford, 2007; Warwick & Rimmer, 2009).

Cataloger's Judgment

Cataloger's judgment is another area of library science that could benefit from taking a closer look at bounded rationality. The literature on cataloger's judgment is very limited in scope. There are only a few articles devoted solely to this topic (Santamauro & Adams, 2006; Intner, 1998); however, some authors have included cataloger's judgment within broader topics such as cataloging education (Clare, 1950; Elrod, 2008; Miksa, 2008; Tauber, 1953), cataloging quality (Harmon, 1996; Paiste, 2003; Snow, 2011), ethics in cataloging (Bair, 2005, Ferris, 2008), the role of cataloging personnel (Cox & Myers, 2010; Fain, Brown, & Faix, 2008; Rider, 1996; Wakimoto, 2009), and how cataloger's were encouraged to exercise cataloger's judgment during the RDA National Test (Cronin, 2011). One of the goals of RDA was to "make it easier for catalogers to exercise their judgment, rather than depend solely on its instructions" (Intner, 2006, p. 1). For this reason, it is anticipated that there will be much more written about cataloger's judgment as libraries begin to implement RDA.

Cataloger's judgment has been described as applying common sense to the cataloging rules; however, common sense is defined as "the use of sound and practical judgment that any reasonable person, devoid of specialized training, would apply given the specifics of the situation in hand" (Dinur, 2011, p. 697). Since cataloger's judgment is an activity of applying specialized training, education and experience, to a set of established rules (Santamauro & Adams, 2006), common sense is often overruled. For this reason, many practitioners and students have trouble in applying rules that are, at times, ambiguous (Intner, 2006). Santamauro and Adams (2006) describe cataloger's judgment as "applying tenets of information management to order and provide access to texts" (p. 14) in accordance with local

policies to "meet end-user needs according to cataloging principles" (p. 13). Ferris' (2008) definition is aligned to the one offered by Santamauro and Adams by stating that cataloger's judgment is "the level of expertise attained by each cataloger after years of having interpreted and applied the principles of bibliographic control" (p. 179). Snow (2011) takes this definition even further by stating that "one could also argue that cataloger's judgment is not solely about the level of expertise, but rather the cataloger's ability to utilize that expertise to make informed cataloging decisions" (p. 4). She continues her argument that the rules do not cover all possible scenarios that a cataloger may face when cataloging an information resource, and that "judgment is usually developed and refined over time as the cataloger gains more experience cataloging information objects and navigating various cataloging tools" (p. 4).

Cataloger's judgment is necessary because the current set of rules cannot be applied universally without a cataloger's interpretation due to the number of inconstancies that may be encountered and the audience for which the information resources are intended. Ferris (2008) states, "the value of catalogers' judgment is that it supports the idea that *one size does NOT fit all* in applying the rules of bibliographic control" (p. 179).

The history of cataloger's judgment found in the literature supports the struggles of library educators in trying to prepare future catalogers by training them to understand cataloger's judgment. There was a philosophical split among library educators about whether to teach to the cataloging rules in a laboratory setting or to teach only the cataloging principles (Tauber, 1953). Boughton was a believer of teaching the "objectives of cataloging and the problems to be solved" (p. 32). However, Boughton was in the minority (Tauber, 1953). Humeston (1951) was undecided about whether to teach to the rules or the principles but did

believe the rules "leave too much to the judgment of the student -- the student, who, with little basis for judgment wants a rule" (p. 41). Almost 60 years and many rules later, the similar problems still seem to occur. Miksa (2008) writes that students often display frustration when the cataloging rules do not guide them to the one "right" answer (p.21).

Other library educators make connections between cataloger's judgments along with cataloging quality. Elrod (2008) notes that students lack the skills needed to make decisions, and they "lack a basis in the principles in cataloging, which should have been a part of their professional education for librarianship" (p. 5) thus leading to a reduction of quality in library catalogs.

The discussion in the literature relating to the behaviors of catalogers often turns to that of cataloging quality. Although the topic of quality is different from cataloger's judgment, there are some similarities between the two which make the topic of quality worth discussion.

Ruschoff (1995) states there are two facets to cataloging. First is the quality of cataloging and how it relates to the accepted standards and practices, and how the cataloging process should be completed so that there is no need to revise work that has already been performed. The second aspect of quality is related to the user, and how catalogs align to user tasks. Quality has been defined as the absence of typographical errors (Beall, 2005; Beall & Kafadar, 2004; Mann, 1991), maintaining authority control (Bade, 2002), the avoidance of duplicate records (Norgard, Berger, Buckland, & Plaunt, 1993), and the level of information provided in the bibliographic data, often referred to as record enhancement (Hanson & Schalow, 1999; Shedenhelm & Burk, 2001). The quality of the library catalog reflects the decisions made by catalogers.

The topic of quality catalogs also includes the types of information included in the bibliographic record as it relates to ethical practice. Bair (2005) describes catalogers as "gate keepers for information and architects of the information infrastructure to provide fair and equitable access to relevant, appropriate, and uncensored information in a timely manner and free of personal or cultural bias" (p. 22). It is their decisions in creating subject headings and recording descriptive information and other access points that allow users to find the information objects they need. To achieve these goals, well-practiced and educated catalogers need to act without bias in describing information resources.

Professional catalogers are not the only cataloging staff members that are expected to exercise judgment. The literature points to an increase in the number of paraprofessional cataloging staff that are responsible for copy cataloging, the process of editing bibliographic records created by another cataloging agency, and engaging in the creation of original catalog records (Cox & Myers, 2010; Rider, 1996). Some libraries have decided to "cross-train" other library professionals to create or edit bibliographic records as well. Reference librarians bring their subject expertise and their knowledge of information-seeking behavior of their users to create records with more relevance (Fain, et al., 2004). Fait et al. (2004) express the benefits of using reference librarians in decreasing the cataloging backlog by providing the reference librarians with an increased knowledge of the structure of metadata; however, the literature does not state how effective these practices are in creating quality bibliographic records with sound judgment and would benefit with further research.

"Cataloging is an art, not a science. No rules can take the place of experience and good judgment, but some of the results of experience may be best indicated by rules" (Cutter, 1904,

p. 6). These are the last words of the Preface to the 4th and final edition of the *Rules for a Dictionary Catalog* by Charles A. Cutter (1904) and these words underline the problem for this study. The cataloging community can argue whether cataloging is an art or a science, but the one thing it can agree upon is that judgment serves an important role and it will only be more so with the adoption of RDA.

Cataloging Principles

Tillett (2009) states, "The idea of stating [cataloging] principles is to build cataloger's judgment in deciding how to describe or provide access to bibliographic resources" (p. 4). The principles will guide the cataloger in preparing the bibliographic record for an item to be included in the library catalog through the use of various rules and encoding standards (AACR2, RDA, MARC21, etc.). These sets of codes have been adopted by libraries worldwide and allow for the sharing of bibliographic records. However, in order to ensure effectively that the codes and rules are in alignment, it is necessary to have a set of principles that will provide the necessary guidance in the creation of the codes and rules. The first set of internationally recognized cataloging principles was adopted in 1961. The Statement of Principles, more commonly known as the Paris Principles, was an international effort to provide a framework to guide the creation of cataloging rules.

The Paris Principles were influenced largely by Charles Cutter's work and the theoretical foundations assembled by Seymour Lubetsky (Spanhoff, 2002). The use of Cutter's objectives or functions of a catalog (Figure 1) provide catalogers with a goal of what an effective catalog should be able to do in assisting users.

OBJECTS.*

1. To enable a person to find a book of which either
      (A) the author
      (B) the title   } is known.
      (C) the subject
2. To show what the library has
      (D) by a given author
      (E) on a given subject
      (F) in a given kind of literature.
3. To assist in the choice of a book
      (G) as to its edition (bibliographically).
      (H) as to its character (literary or topical).

Figure 2.1: The function of a catalog. Cutter, C. A. (1904). Rules for a printed dictionary catalogue (4th Edition). Washington, D.C.: Government Printing Office.

Prior to 1961, there were no internationally agreed upon principles for cataloging. According to Buizza (2004), one of the reasons behind the creation of the internationally accepted principles was to allow for the greater sharing of bibliographic information from libraries around the world. These principles were not for the purpose of providing a framework for authority files, but for the "author and title catalogue" with the following aspects: (1) "finding and collocating functions (the latter twice over: for checking which works of an author and which editions of a work are in the library); structure (at least one main entry per book, with added entries and references), [and (2)] devices (uniform headings both main and added)" (p. 118). Spanhoff (2002) agreed with Buizza and provided more enlightenment to the overall purpose of principles by stating that principles would provide a framework for the catalog and how the objectives of a catalog can be achieved.

Section 1 of the Paris Principles presents the scope of the principles and how they are limited to the "choice and form of headings and entry words" (ICCP, 1961, Sec 1). Section 2 describes the library catalog as a vessel and it should be able to state whether a library holds a

particular book. This is accomplished by searching for the author, title, variant title, or a combination of them as well as being able to determine the edition of each book. Sections 3 – 12 describe the use of main entries, added entries and references within the bibliographic record such as a uniform heading that includes the author(s), corporate body, or a title.

These principles were created for large library catalogs for describing "books and other library materials having similar characteristics'" (Creider, 2009, p. 584). It is also important to keep in mind that the Paris Principles were created during a technical environment in which "individual typewritten catalogue cards" (Buizza, 2004, p. 119) were considered the best method of cataloging. At the time, most libraries only had books represented in their library catalogs; however, records for other types of materials such as maps were starting to be included (Guerrini, 2009). As time progressed, the number of different types of electronic resources and other non-print materials increased and catalogers struggled with how to appropriately record these types of resources.

Over time, it became necessary to reexamine the principles, rules, codes, etc., in order to evaluate whether or not they are still relevant. In the 1980's many libraries began adopting library automation systems that required printed cards to be converted into electronic bibliographic records. The library community found that the sharing of electronic records would facilitate a swifter transition from print to electronic. These changes in cataloging provided the need to review the processes and rules used in the development of electronic cataloging records. The Conference on the Conceptual Foundations of Descriptive Cataloging in 1987 began these discussions. The purpose of this meeting was to discuss ways in which library automation would allow for increased level of cooperation among libraries (Spanhoff, 2002).

The transition from the printed catalog card to the electronic bibliographic record is only the beginning of the effects the electronic age has had on library organizations. During the 1990's, libraries began to incorporate electronic resources into their library collections. Although the Paris Principles provides a footnote describing that they are also for the use of other types of materials beyond books, the principles still did not meet the needs many required to describe electronic resources and other non-print materials. A study was commissioned by International Federation of Library Associations (IFLA) in 1990 in part to re-examine functions and to provide a new framework to display bibliographic records. This study is known as the Functional Requirements for Bibliographic Records (FRBR). The review was prompted by economic concerns that would allow for the greater sharing of bibliographic data and to meet the needs of the digital world (IFLA, 1998). This study led to the creation of the FRBR entity-relationship model and an update to the Paris Principles and the creation of RDA.

According to Spanoff (2002), the growth of the Internet was the greatest threat to cataloging due to the increasing number of electronic resources (computer software, electronic databases, digital files, etc.) available to users. She further discusses how the search engines are sophisticated and easy to use, and that they are in competition with library catalogs. The cataloging community responded by calling for an update to the Paris Principles.

In 2001, there was a call by Natalia Kasparova, a librarian at the Russian State Library in Moscow, and also a member of the IFLA's Cataloguing Section, for the review of the Paris Principles in order to meet the needs of the time. This call was met with agreement from others in attendance and resulted in the evaluation of the current principles. Through the re-examination, it was found that

The objectives of the new principles should be formulated in clear expressions, easily understood and valid everywhere for all types of resources; should make it possible to work in the web; and be consistent with other rules. They had to mirror the relational structure of the catalog, and to address primarily the various resources found in libraries and the electronic ones to which libraries provide access *via* the Internet, or other connecting modes. The text also has to cover both descriptive and subject cataloging, to pay great attention to authority records, and to deal not only with the collection of *one* library but virtually with the collections of *all* libraries and including the features of digital collections (Guerrini, 2009, p. 723-724).

These new expectations of the principles were in alignment with FRBR, which will be discussed in more detail in the next section of Chapter 2. A further look at the ever increasing number of types of resources in the universe opposed to the printed items of the 1960's, this review should account for the emergence of technology in how users search for information (Guerrini, 2009).

Work on a new set of principles began in 2003 by the IFLA Meeting of Experts on International Cataloguing Code (IME ICC). Meetings of the global bibliographic community took place prior to the IFLA conferences in Frankfurt, Germany; Buenos Aires, Argentina; Cairo, Egypt; Seoul, South Korea; and Pretoria, South Africa. In all, representatives from eighty-one countries were in attendance throughout the five-year review of the new principles (Creider, 2009; Guerini, 2009).

The original plan was simply to update the Paris Principles to reflect the cataloging needs of the time; however, IMEICC realized that the standard needed to be expanded and broadened in scope. Terminology needed to reflect the number of different resources found in library catalogs and the increase of electronic resources available to users. For example, the term "bibliographic resources" would replace "books" and align the International Cataloging

Principles (ICP) with FRBR and FRAD so that systems would provide tools that are more efficient for future users (Guerrini, 2009).

The official name change from Statement of Principles, known as the Paris Principles, to the Statement of International Cataloging Principles (ICP) within the revision, emphasizes the international scope of the work. The revision of Paris Principles into the ICP resulted in two important outcomes (1) new terminology and (2) attention to the user. For example, creator replaces author and defining the terms work, expression, manifestation and item in alignment with FRBR (Creider, 2009). The ICP makes it clear in the introduction of the principles that "[t]he first principle [of the nine] is to serve the convenience of catalogue users" (IFLA, 2009). The other eight principles are common usage, representation, accuracy, sufficiency and necessity, significance, economy, consistency and standardization, and integration. Each of the other eight general principles also guide the creation of cataloguing rules to allow for cataloger's judgment in order to meet the needs of the information consumers.

Although created over a century ago, the library community still believes that the functions have relevance today, albeit with some modifications. Cutter's objectives were created for print materials and modern libraries offer many different types of materials (electronic, audiovisual, etc.). It is for this reason that one should think of the term 'book' to be synonymous with the term 'work' to recognize all types of formats found in catalogs (Taylor, 2006). The process of updating the cataloging principles was in response to this need, resulting in multiple revisions of the ICP prior to its final acceptance. In 2009, the IME ICC released the ICP, which replaced the only set of principles, the Paris Principles that have been accepted internationally and will continue to focus on the needs of the user (Bianchini & Guerrini, 2009).

Functional Requirements of Bibliographical Records

In 1997, the IFLA Section on Cataloguing approved the Study Group on the Functional Requirements for Bibliographic Records document entitled *Functional Requirements for Bibliographic Records: Final Report – 1998.* This report was the result of the study resolution passed at the IFLA Universal Bibliographic Control and International MARC Programme and the IFLA Division of Bibliographic Control's Stockholm Seminar on Bibliographic Records in 1990. The charge of the study was to determine the functions of a bibliographic record and how it will meet user needs (IFLA, 2009) and how to best promote Universal Bibliographic Control (UBC) to reduce cataloging costs through the reduction of the duplication of the work done by many organizations (Madison, 2005). According to the IFLA (2009) report, the study was needed due to changes in the technology in the bibliographic world including automation, databases, the continued sharing of bibliographic data due to reducing cataloging costs and the inclusion of electronic resources into the publishing world. It was also determined that user expectations and needs had grown and the current practices were not necessarily meeting all of these needs, including how to address the wide variety of materials represented in the bibliographic universe. This resulted in the examination of the minimal level record, and elements such as the descriptive portions, access points, annotations, etc. The most significant findings of FRBR for this dissertation is the shift from describing elements in isolation to describing elements that share relationships between Works, Expressions, Manifestations, and Items through the use of an entity-relationship conceptual model.

The study group determined early in the process that the entity-relationship (E-R) model would be used to develop FRBR. Questions were raised as to why other models were not considered. Madison (2005) reflected that

> The E-R approach is one of several approaches popular in logical database design. This approach differs from some other approaches in that it begins with an abstract or conceptual schema of neither the domain nor universe question. The universe is characterized in terms of the entities in it and the relationships that hold among them. As such the conceptual schema is not restricted by the capabilities of any particular database system and is independent of any particular record definition. By virtue of its unrestrictive and independent nature, it is perceived as providing a unified view of the data to be modeled. It is perceived as being more easily understood, more stable, and easier to design than a schema conditioned by assumptions pertaining to what constitutes a bibliographic record or by storage and efficiency consideration. (p. 29)

Madison believed that this statement provided the bibliographic community the assurance that this model was the correct one to pursue. This led to the acceptance of the FRBR model by many community members.

One of the reasons driving the creation of a new model for bibliographic records was the evolving concept of the user. FRBR has defined four user tasks for the bibliographic record to support: a user in finding, identifying, selecting, and acquiring (or obtaining) information. The FRBR user tasks are expanded from the user tasks identified in Charles Cutter's Objects for a catalog that were also the building blocks for the Paris Principles (Madison, 2005). The catalog needs to assist users in finding the materials they are looking for; to confirm they have found the correct item through identification; selecting the appropriate resource based on their needs; and assisting the user in obtaining the item through available access points (loan, purchase, etc.). The "user tasks reinforce the traditional objectives of a catalog, as described by Cutter in 1876 to enable a user to find and to collocate works" (Tillett, 2004, p. 5).

The FRBR model is made of three groups of entities and relationships between them. Group 1, Entities and Primary Relationships describes the nature the entities Work, Expression, Manifestation, and Item. Figure 2 demonstrates the relationships between these four entity types. A work is realized through an expression, the expression is embodied in a manifestation, and the manifestation is exemplified in an item.
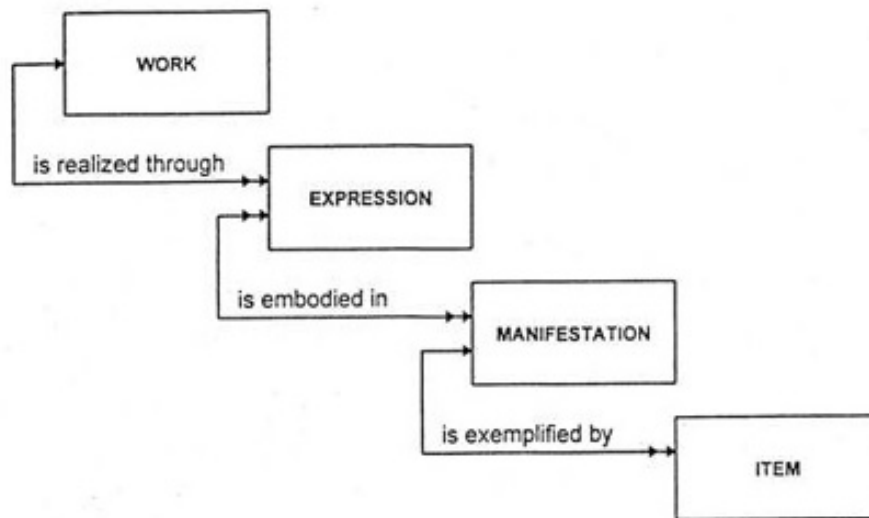
Figure 2.2: Group 2 Entities and "Primary" Relationships. IFLA Study Group on the Functional Requirements for Bibliographic Records (IFLA) (1998). Functional Requirements for Bibliographic Records: Final Report. Retrieved from http://archive.ifla.org/VII/s13/frbr/frbr1.htm#3

As noted by Boeuf (2005), understanding Group 1 entities can be difficult due to the abstract nature of the term Work. He further concludes that the term Item is exemplified by the "physical carrier of a text" (p. 3); the Manifestation is the edition of that physical carrier; the expression is the actual text of the Manifestation; but the Work is still a Work. He argues that the term Work is so abstract that it will have a different meaning to different people and that the model should have forgone the term Work. Adamich (2007) describes the term work to

imply that it is the idea of the entity and the expression is that idea recorded in some form by a

creator who then produces a Manifestation such as edition, translation, performance, etc., that

is then put into a tangible item which the library can then shelve or find electronically for a user

to use.

Group 2 entities are the entities involved in the creation of the Work, Expression,

Manifestation or Item. These entities are either persons or corporate bodies. Figure 2.3

provides a visual of how these are related to the Group 1 entities. The Work is created by, the

Expression is realized by, the Manifestation is produced by, and the Item is owned by a person

or corporate entity.
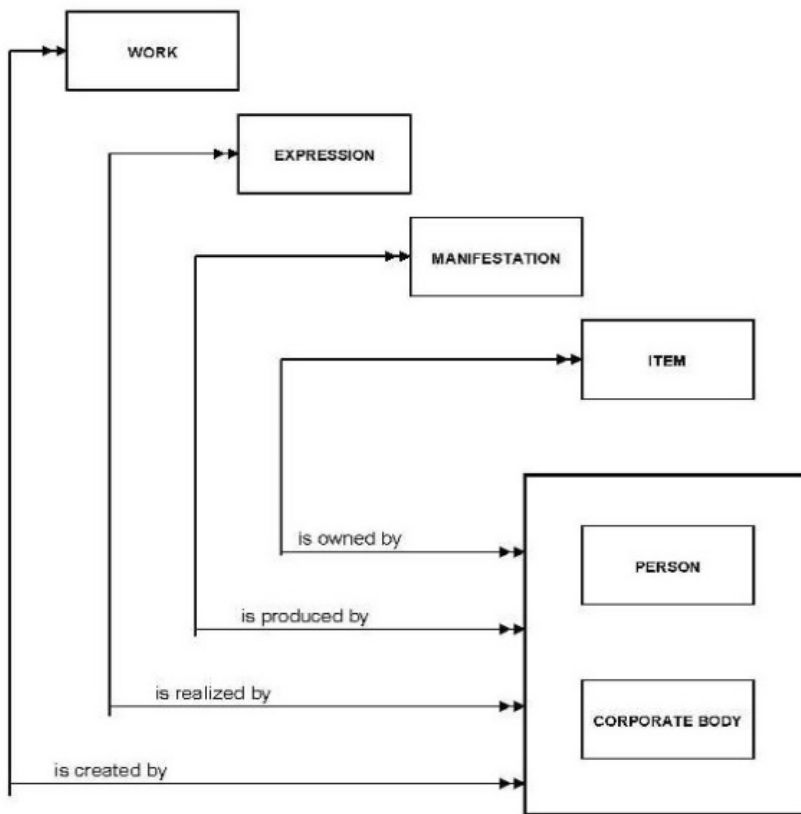
Figure 2.3: Group 2 Entities and "Responsibility" Relationships . IFLA Study Group on the Functional Requirements for Bibliographic Records (IFLA) (1998). Functional Requirements for Bibliographic Records: Final Report*. Retrieved from* http://archive.ifla.org/VII/s13/frbr/frbr1.htm#3

Group 3 entities are the relationships between the Work and the subjects. These entities assist the user in understanding what the Work is about. Figure 2.4 shows how the Work could have a subject of any of the Group 1 entities, Group 2 entities, or a concept, object, event, or place.
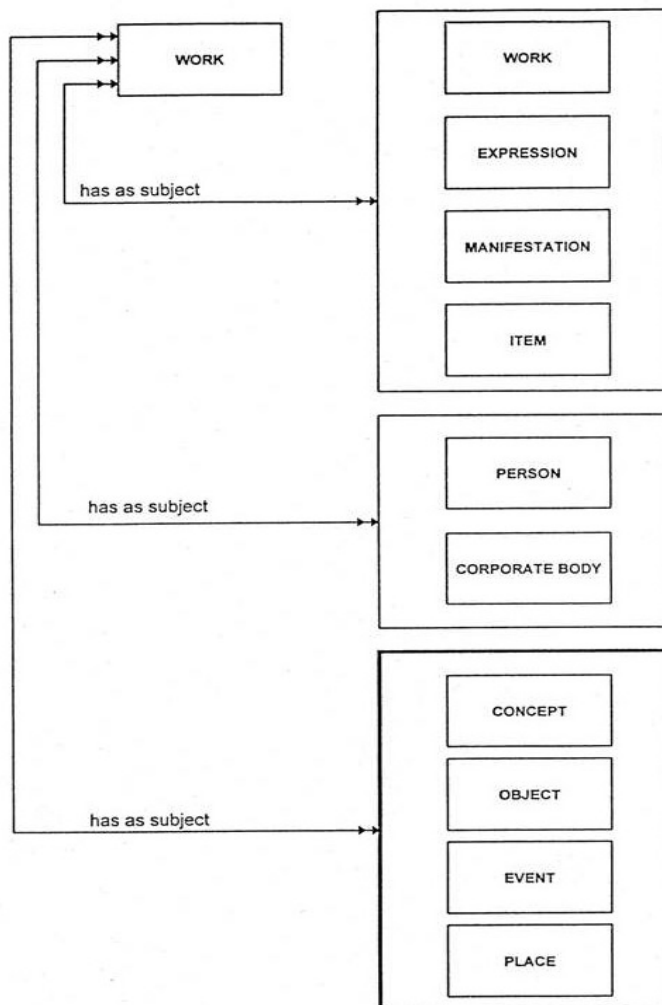
Figure 2.4: Group 3 Entities and "Subject" Relationships. IFLA Study Group on the Functional Requirements for Bibliographic Records (IFLA) (1998). Functional Requirements for Bibliographic Records: Final Report. *Retrieved from http://archive.ifla.org/VII/s13/frbr/frbr1.htm#3*

It is important to note that FRBR is a model for bibliographic records and it does not reflect a model for authority data. The Functional Requirements for Authority Data (FRAD) is the model that has been created to describe authority data. FRAD was originally known as the Functional Requirements for Authority Records (FRAR); however, the name was changed to reflect that the focus was on the data and not the record (Veve, 2009).

FRAD also has a set of user tasks which include Find, Identify, Contextualize, and Justify.

In order for a database to be successful in implementing FRAD, it must be able to meet all of

these user needs. The user must be able to locate the entity; confirm the entity as the one

being searched; know that the entity is the one they are looking for by matching it with variant

names or to be able to clarify the relationship between it and another entity; and to provide the

proof that the entity is the entity the cataloger says it is (Patton, 2005). Delsey (2005) mentions

more similarities between the two models such as the ability of FRAD to characterize authority

records in the same manner that FRBR characterizes the bibliographic universe, and that there

are similarities between the different types of entities described within the models (i.e.,

persons, corporate bodies, objects, concepts, events and places). When comparing the two

models, there is a definite relationship between them.

Tillett (2005) summarizes FRBR and FRAD when discussing the benefits of adopting

these two models worldwide using technology

> The benefits for end-users are enormous for future 'one-stop-shopping' to search all
> potential sources of information through intelligent systems like the Semantic Web, and
> that system would have improved precision of searches and better clustering of related
> entities through cataloging, authority control, and the implementation of the FRBR
> concepts… We are moving to an era when we have the ability to share and re-use
> bibliographic descriptions created anywhere in the world and tie the bibliographic
> descriptions with real access, so users can obtain the resources they want (p. 201-202).

If this outcome is realized through the creation of these models, then the intent of the

resolutions at the Stockholm Seminar would, at the very least, be met. The re-writing of rules,

codes and principles resulted with the acceptance of these models, especially with FRBR.

Functions of a Catalog

Online catalogs have been described as inefficient and as barriers to those searching for information. Wakimoto (2009) asserts that the catalog faults are due to Integrated Library System (ILS) vendors that have been unresponsive to the changes in user needs. The catalog provides users with quality resources that are not always available using search engines such as Google. Wakimoto states, "[p]roviding appropriate and context-sensitive resources for the local users is what makes the catalog viable and valuable" (p. 412). This is accomplished by providing enriched content through the access of hidden resources such as rare materials, archives and manuscripts; electronic resources such as eBooks and E-Serials; and digital collections such as institutional repositories (Wakimoto, 2009). The provision of additional resources allows users greater access to materials. Many catalogs do not allow this to happen due to how resources are indexed. It is through catalogs that are designed to meet the conceptual model of FRBR and the records created using RDA that data will be to be allowed to be used in ways that have been limited in the past. The power of the data is not in the data itself, but in the relationships present in the metadata. The current state of most library catalogs does not capitalize on this possibility.

The ICP and the FRBR model both recognize Cutter's objects and provide guidance as to the purpose of the catalog and the user tasks. As discussed previously, FRBR acknowledges the user by defining four general user tasks: find, identify, select, and obtain (IFLA, 2009). The ICP uses "acquire" instead of "obtain" and also provides a fifth task, navigate (IFLA, 2009). These user tasks guide both catalogers and systems designers as to how a catalog should maximize information retrieval for its users.

Members in the cataloging community believe that use of the FRBR model in library catalogs will increase the collocation of titles in the catalog because the model has a greater emphasis on bibliographic relationships (Kemp, 2008). The Online Computer Library Center (OCLC) recognized the need to apply the FRBR model into a new program that fulfills the intent behind the model. Hickey and O'Neill (2005) discuss how OCLC's WorldCat categorizes information entities at the Manifestation level; when a user searches for an item in the catalog, the result set provides the user with bibliographic records based on the Manifestation. In FRBR, the initial level of display should be the Work (IFLA, 2009). OCLC has released an algorithm that will allow for bibliographic records to be grouped by "collapsing a large number of expressions into a single work mak[ing] the display of large numbers of records much more comprehensible" (Hickey & O'Neill, 2005, p. 250).

There are projects underway that are attempting to realize the FRBR model in the catalog interface. These include prototypes such as OCLC's Fiction Finder; automation system vendors such as VTLS, Innovative Interfaces, Ex Libris, and Portia; and digital libraries and institutional repositories (Salaba & Zhang, 2007; Dickey, 2008). Overall, the development of these types of products has been slow, and many automation system vendors have yet to release a product that has a fully realized FRBRized catalog. However, there are some examples of next generation catalogs going live that do attempt to realize the FRBR model such as the XC project at the University of Rochester, E-Matrix at North Carolina State University, and Virtura Integrated Library System by Visionary Technology in Library Solutions (VTLS). Salaba and Zhang (2008) state that the benefits of a FRBRized catalog will have the most beneficial effect on works of fiction, music, and serials. These materials typically have a higher number of

Manifestations. OCLC recognized the effect of a FRBRized catalog with fiction titles which lead

them to create Fiction Finder, their prototype of a FRBRized catalog.

FRBR provides a model of data that will allow users to access resources of all types in

new ways. However, the previous cataloging standard, the Anglo-American Cataloging Rules,

2nd Edition (AACR2) was a barrier to successful implementation of the FRBR model, which was

one of the reasons why RDA was created.

AACR2

"The *Paris Principles* [is] the most relevant theoretical reference framework in the

history of cataloging in the second half of the twentieth century; it was taken as the basis for

the codes developed worldwide from the mid-sixties, beginning with the 1967 AACR" (Guerrini,

2009, p. 723). In 1974, there was a need to review AACR, the cataloging rules of the time. The

new standards needed to incorporate additional rules for non-book materials. The new text

was called simply AACR2 and was released in 1978 as an international collaborative project

between the American, British, Canadian, and Australian library communities.

The introduction to AACR2 states the intended use of the rules is for libraries and for all

types of materials found in libraries, but not necessarily for use in special libraries except as a

resource for the development of their own rules. The previous set of rules, AACR, was released

as two separate publications, one for the British community and the other for the North

American community. The introduction also provided the cataloger with the scope of the rules,

descriptive cataloging and access points, and that it is a shared text with one publication for

both the British and North American communities (AACR2r, 2005).

AACR2 has two parts, Description and Headings and Uniform Titles and References. Part I, Description, was based on the General International Standard Bibliographic Description (ISBD(G)) which is a standard that was created to facilitate the world-wide sharing of bibliographic data among libraries. Part I consists of thirteen chapters:

1. General Rules for Description

2. Books, Pamphlets, and Printed Sheets

3. Cartographic Materials

4. Manuscripts

5. Music

6. Sound Recordings

7. Motion Pictures and Videorecordings

8. General Materials

9. Electronic Resources

10. Three-Dimensional Artifacts and Realia

11. Microforms

12. Continuing Resources

13. Analysis

Chapter 1 provides rules that the cataloger will refer back to when using chapters 2 - 12. This includes such tasks as determining the chief source of information, punctuation, level of description, and the general rules for the title and statement of responsibility; edition; material type; publication information; physical description; series; notes; and the standard number and terms of availability. Chapters 2 - 12 provide rules for cataloging specific types of materials

based primarily on their format. Each chapter begins with a scope note that provides the

information of what types of entities are to be cataloged using the rules found in that chapter

and then continues with more specific rules that follow the structure of chapter 1. Chapter 13

assists the cataloger in describing those entities that are a combination of multiple parts, which

makes up a single bibliographic heading (AACR2r, 2005).

Part II of the AACR2 contains six chapters for Headings, Uniform Titles, and References:

21. Choice of Access Points

22. Headings for Persons

23. Geographic Names

24. Headings for Corporate Bodies

25. Uniform Titles

26. References

Chapter 21 provides direction in how to create access points in the bibliographic record

based on type of work. Chapters 22 - 25 provide the cataloger direction in creating headings for

persons, geographical names, corporate bodies, and uniform titles. Chapter 26 provides rules

for creating reference statements (*see* and *see also*) for the bibliographic record (AACR2r,

2005).

Much has been written about the efficiency of the rules found in AACR2. Various

authors have pointed to detailed issues with the General Material Designation (GMD), serials,

uniform headings, the level of difficulty in using the rules, and the rules' inability to provide

guidance in cataloging new types of materials that are acquired into libraries, especially

Internet resources (Taylor, 1999; Weihs, 2011).

Prior to the 1997 IFLA conference, a three day meeting was convened to discuss cataloging principles and the future of AACR2 (Tillett, 1998). This conference was the beginning of the creation of a new set of cataloging rules, RDA, to be based on the FRBR conceptual model (Guerrini, 2009). The format of the conference focused on exploring a variety of cataloging issues through a worldwide contribution of presented papers on topics related to the problems with AACR2 such as the previous principles, rules, processes, etc. The speakers conveyed that the old rules do not meet the needs of the bibliographic community, and the effect of new technologies had progressed, creating a mandate for such a change. During the conference, seven challenges were highlighted as areas of concern under the current rules:

 (1) The need for a greater number of access points in library catalogs and the need to allow additional means to deal with multiple authors. This issue relates directly to the "Rule of Three," which will be later defined in this chapter.

(2) The new set of principles must match the technology available at this time and in the future.

(3) The principles and rules must be easy to understand and to teach and be extended to new types of media that are unknown today.

(4) The new set of rules must be compatible with current principles and rules by being backwards compliant in order to ease adoption and contain costs.

(5) Increase the use of shared bibliographic records between libraries to maximize cooperative efforts between libraries.

(6) Solve the dilemma of the GMD, which can reflect a content type or a carrier type. This is especially true of electronic resources that currently can be classified as multiple GMDs. Finally,

 (7) eliminate the special case-based rules found in Part 2 (Tillett, 1998).

Participants at the International Conference on the Principles and Future Development of AACR2 in 1997 determined that a revision was necessary. AACR2, released in 1978, was too old to meet the current and future technological needs of catalogers and information consumers. Moore (2006) points out that card catalogs were still the norm in 1978, but library catalogs have progressed into databases with the ability to index and search large amounts of metadata at one time. The branch of thought of limiting the amount of data found on the catalog card conflicts with the expectation of providing robust data for today's electronic catalogs. Attempting to accommodate the current needs, revisions to AACR2 were attempted; however, the revisions still did not meet the demands of cataloging emergent types of materials. Moore notes that "[i]t is becoming increasingly difficult to retrofit the old rules. Difficult issues include: the nature of authorship, the nature of the 'work;' bibliographic relationships, seriality; and the description of new types of media" (p. 14). New types of media, mostly those found in the digital environment, are one of the reasons why a revision to AACR2 was necessary.

RDA

It was not until 2004 that the Joint Steering Committee (JSC) for the Revision of AACR began working on what was to be called AACR3. In 2005, the working title was changed to

Resource Description and Access (RDA) due to the cataloging community's rejection of the first

drafts of AACR3. According to Kraus (2007), the name change was needed

> because RDA's intent to become compatible with international standards; 'Cataloguing' was replaced with 'Resource Description,' a term embraced by other metadata producing communities; and 'Access' points towards the goal of creating a flexible framework for describing all analog and digital resources... (p. 66)

RDA was intended to be used by all types of libraries and other organizations that have a need

to create data to describe their collections (Moore, 2006).

According to Carr (2007), the creation of RDA is based on the framework of FRBR's

conceptual model and adopts the same terminology and user tasks. RDA is also aligned with the

ICP, which instructs catalogers to base their cataloging records on the Manifestation level of

FRBR and that "a new bibliographic record should be created for each physical format" (p. 284).

RDA is not a metadata schema and will not replace encoding standard such as MARC, MODS,

Dublin Core, etc. Instead, it is a content standard (Oliver, 2007). RDA does not provide guidance

for classification or constructing subject headings (Moore, 2006). It defines the rules for the

preparation of reliable descriptions of items included in a library catalog. Such descriptions

define the attributes associated with the item being described, keeping in mind that the item

could be in one of many different types of formats (including print, multimedia, electronic).

Integrated library system (ILS) vendors have been working with the creators of RDA to ensure

RDA-based records will work within their systems (Carr, 2007).

RDA and AACR2 are guided by the cataloguing principles (Paris Principles and ICP).

However, RDA is designed to meet the needs of a technological or digital environment. RDA

covers a broad range of materials that are not covered in AACR2 in order to meet the objectives

that the standard needs to "provide a consistent, flexible and extensible framework for both

the technical and content description of resources" (Carr, 2007, p. 284). Carr (2007) mentions

that MARC records created using RDA will be compatible with those created using the rules

from AACR2.

RDA is comprised of four parts with a total of ten sections and 32 chapters plus an

introduction, 13 appendices, and a glossary (Table 2.1).

Table 2.1

Structure of RDA

Introduction	
Section 1: **Recording attributes of manifestation and item**	*Chapter 1:* General guidelines on recording attributes of manifestations and items *Chapter 2:* Identifying manifestations and items *Chapter 3:* Describing carriers *Chapter 4:* Providing acquisition and access information
Section 2: **Recording attributes of work and expression**	*Chapter 5:* General guidelines on recording attributes of work and expression *Chapter 6*: Identifying works and expressions *Chapter 7*: Describing content
Section 3: **Recording attributes of person, family, and corporate body**	*Chapter 8:* General guidelines on recording attributes of persons, families, and corporate bodies *Chapter 9:* Identifying persons *Chapter 10:* Identifying families *Chapter 11:* Identifying corporate bodies
Section 4: **Recording attributes of concept, object, event, and place**	*Chapter 12:* General guidelines on recording attributes of concepts, objects, events, and places* *Chapter 13:* Identifying concepts* *Chapter 14:* Identifying objects* *Chapter 15:* Identifying events* *Chapter 16:* Identifying places
Section 5: **Recording primary relationships between work, expression, manifestation, and item**	*Chapter 17:* General guidelines on recording primary relationships between a work, expression, manifestation, and item
Section 6: **Recording relationships to persons, families, and corporate bodies**	*Chapter 18:* General guidelines on recording relationships to persons, families, and corporate bodies associated with a resource *Chapter 19:* Persons, families, and corporate bodies associated with a work *Chapter 20:* Persons, families, and corporate bodies associated with an expression *Chapter 21:* Persons, families, and corporate bodies associated with a manifestation *Chapter 22:* Persons, families, and corporate bodies associated with an item

* Placeholder - Chapter not yet written

(table continues)

Table 2.1 (*continued).*

Section 7: Recording the subject of a work	Chapter 23: General guidelines on recording the subject of a work*
Section 8: Recording relationships between works, expressions, manifestations, and items	*Chapter 24:* General guidelines on recording relationships between works, expressions, manifestations, and items *Chapter 25:* Related works *Chapter 26:* Related expressions *Chapter 27:* Related manifestations *Chapter 28:* Related items
Section 9: Recording relationships between persons, families, and corporate bodies	*Chapter 29:* General guidelines on recording relationships between persons, families, and corporate bodies *Chapter 30:* Related Persons *Chapter 31:* Related families *Chapter 32:* Related corporate bodies
Section 10: Recording relationships between concepts, objects, events, and places	*Chapter 33:* General guidelines on recording relationships between concepts, objects, events, and places* *Chapter 34:* Related concepts* *Chapter 35:* Related objects* *Chapter 36:* Related events* *Chapter 37:* Related places*
Appendices A - M	
Glossary	

* Placeholder - Chapter not yet written
RDA Toolkit (2015)

Although there are some similarities between AACR2 and RDA, there are a number of differences in the rules. In AACR2, the cataloger starts with the format of the entity to begin the description of the resources and then moves to the elements of the description. In RDA, the goal of its organization is to begin with smaller pieces of the entity and go from general to specific. This difference is very noticeable when looking at the RDA.

Transcription of the chief source of information is another change from AACR2 to RDA. RDA no longer uses the term 'chief source,' instead it uses 'preferred source.' This is to allow the cataloger to determine the best place to pull the data from in order to describe the item. RDA allows organizations to either transcribe the information as it is recorded on the item or

use local rules that may still conform to AACR2. An example of this would be transcribing

capitalization in the title or correcting misspellings that occur on the preferred source. This

reflects a what-you-see-is-what-you-get approach to transcription (Carr, 2007).

The use of the 'Rule of 3" is no longer a mandate with RDA. In AACR2, the cataloger is

limited to the number of names it would associate with the creation of an information object.

AACR2r (2005) rule 1.1F5 states,

> If a single statement of responsibility names more than three persons or corporate
> bodies performing the same function, or with the same degree of responsibility, omit all
> but the first of each group of such persons or bodies. Indicate the omission by the mark
> of omission (…) and add *et al.* (or its equivalent in a nonroman script) in square brackets.

In RDA, catalogers are allowed the freedom to determine if all creators of the work will receive

credit no matter how many were involved in the creation of the work. This new practice allows

for greater access to information resources through a wider list of names of those that had part

in creating the intellectual content contained in the information entity.

In AACR2, the use of Latin abbreviations is used when there were more than three

people that could be listed in the statement of responsibility. RDA has reduced the number of

Latin abbreviations. Instead, the cataloger may use all of the names or terms such as "and 5

others" instead of [et al.]. There are many other differences between the abbreviations in RDA

and those found in AACR2. For example, in AACR2, the use of 'ill.' is used to describe if there

were illustrations in the book; however, in the new standard, the cataloger should spell the

word 'illustrations' out in its entirety. Another set of abbreviations that will change are those

used to describe publisher information. In AACR2, [s.l.] was used to describe that the place of

publication was not known. In RDA, the phrase [Place of publication unknown] is used instead

(AACR2r, 2005; Carr, 2007; RDA Toolkit, 2015). Two of the goals of RDA are to allow greater convenience to the user, and the ability to share bibliographic data with non-library communities. The elimination of abbreviations is one way of achieving this goal.

Although there has been much praise surrounding RDA, there has been much discussion that RDA may not meet the needs of the bibliographic community. Coyle and Hillmann (2007) state that RDA is still too deeply based on AACR2 and that the changes do not go far enough. Others feel that RDA goes too far and that the cost of change will prohibit institutions from adopting the new standard or that the current standards serve the community well (Intner, 2006; Kraus, 2007). Gorman (2007) provides several reasons as to why RDA does not meet the needs of the library community. One of the main issues he has with RDA is the term "guidelines" instead of "rules." This change in language promotes a greater use of cataloger's judgment in the interpretation of the new standard. He fears there is a lack of structure to the new guidelines that prohibit a logical progression through the completing of a bibliographic record. Gorman also notes that the guidelines have partially abandoned the ISBD(G) which provided standardization for bibliographic records world-wide. He also finds that the rules confuse the reader and do not make them easier for the user; however, he provides no data to support his claims. Gorman is not alone in his assessment of RDA. Intner (2008) agrees with many of his arguments including problems of the structure, vocabulary and lack of good examples as issues with RDA.

Aside from the issues with RDA as it relates to the content and structure of the rules, Hillman (2006) finds the goals of RDA to be overambitious. They are to allow for the cataloging of the digital world, but in order to catalog the digital world one must assume that there is

some level of stability within digital resources. However, that is not the case; digital resources

can appear one day and either be modified or completely gone the next.

RDA National Test

RDA is the new cataloging code for the international cataloging community; however,

many in the U.S. cataloging community had reservations in the implementation of the rules. For

this reason, the three national libraries vowed to conduct a test of the new code in order "to

assure the operational, technical, and economic feasibility of RDA" (Library of Congress, n.d.,

para. 1). The national libraries collaborated to create a coordinating committee that would

determine how to conduct such a test, which should participate, create a timeline for testing,

and evaluate the results. In the end, they choose twenty-three (23) additional test partners that

included libraries and non-library organizations such as museums and archives, book vendors,

etc. The official testing period of the National Test of RDA occurred from July 1, 2010 -

December 31, 2010. The first three months of the testing period were devoted to training and

practice for testers using the *RDA Toolkit.* The second half of the testing involved the actual

creation of descriptive bibliographic records for the coordinating committee to review and

evaluate to determine whether they would recommend the implementation of RDA as the new

cataloging code.

The formal test contained 25 common items that each testing institution used to create

bibliographic records in their current set of cataloging rules (i.e., AACR2) and again using RDA.

Partner organizations determined which type of encoding schema that they would choose to

create these records (MARC, MODs, etc.). The common set of items to be cataloged included

monographs, audio-visual materials, serials, and integrating resources. A portion of these

materials can also be classified as electronic resources. Each institution would assign two

different staff members to each item to be cataloged. One would catalog the item using the

current rules of the institution and the other person would catalog the item using RDA. If the

organization performed authority work in their normal workflow, then the testers should also

apply this to the test; however, if it is not a normal part of the organizational workflow, then

the tester was not to perform such work. In addition to the 25 common set items, each partner

institution would also create bibliographic records for at least 25 additional items. Each partner

was to determine which items to include; however, they were to include a variety of formats

and types of resources they normally catalog including maps, kits, music scores, realia, etc.

(Library of Congress, 2009b)

   Once bibliographic records were created, individual testers were to complete a survey

that provided additional data on the process that they had taken to create the record. The

survey included questions on the amount of time it took to create the cataloging record, ease

of using the cataloging standard, challenges, and other resources used to create the record. In

addition to submitting a survey for each RDA or AACR2 record created, each institution was to

"solicit feedback from their internal end users about the RDA records they create[d]" (Library of

Congress, 2009b, number 7).

   On June 20, 2011, the national libraries released a report with a conclusion that RDA

would be adopted by the national libraries no sooner than January 2013. The adoption was

implemented soon after the proposed date – in March 2013. The committee did find that RDA

does meet some of the goals, but not all, and for this reason is delaying implementation until

revisions can be made to RDA and additional training materials are created. The coordinating

committee provided a list of tasks that needed to be addressed prior to the adoption. The

broad categories are listed below:

- Rewrite the RDA instructions in clear, unambiguous, plain English

- Define process for updating RDA in the online environment

- Improve functionality of the *RDA Toolkit*

- Develop full RDA record examples in MARC and other encoding schemas

- Announce completion of the Registered RDA Element Sets and Vocabularies.

- Ensure registry is well described and in synchronization with RDA rules

- Demonstrate credible progress towards a replacement for MARC

- Ensure and facilitate community involvement

- Lead and coordinate RDA training

- Solicit demonstrations of prototype input and discovery systems that use the RDA

  element set (including relationships)

(U.S. RDA Test Coordinating Committee, 2011, p. 3-4)

Many of these recommendations were also uncovered as problems in a special issue of

Cataloging & Classification Quarterly (Hall-Ellis & Ellett, 2011).

Some of the testers of RDA for the national libraries have since authored articles

describing their experiences throughout the test in a special issue of *Cataloging & Classification

Quarterly.* In the special issue the authors discuss the testing, RDA rules, encoding standards,

RDA Toolkit, the education and training, their users, cataloger's judgment, and their

recommendations to implement RDA (Hall-Ellis & Ellett, 2011).

Many describe their organization's design and purpose in testing RDA. Most of the participants included only a portion of their cataloging staff; however, at the University of Chicago, the decision was for all cataloging professionals to participate. This decision was made based on their initial discovery that RDA would at one time be adopted and if so, additional training beyond the test would cause additional training costs and time (Cronin, 2011). The University of Chicago not only submitted bibliographic records, but they also performed authority work and submitted the authority records for the bibliographic items (Cronin, 2011); however, this was not true of all test partners since this was not in their normal workflows (Bloss, 2011). None of the authors expressed that they had second thoughts about participating in the study; however, McCutcheon (2011) does question the purpose of the test. One of the outcomes of the test was to determine the difference in time it takes to create an RDA record as opposed to creating one using AACR2. McCutheon's feelings were that the focus of the test should have concentrated on the usefulness of the record instead of the amount of time required to create records.

Each of the articles in a 2011 special issue of *Cataloging & Classification Quarterly* devoted to RDA National Test described the new rules found in RDA, and how they would affect workflows and decisions. Bloss (2011) commented that the new rules lacked clarity and the vocabulary was not easy to understand. The elimination of abbreviations was discussed by several of the authors who also described how cataloging personnel did not like the additional time it took to enter the full spellings; however, some were able to create shortcuts to insert data (Cronin, 2011; Shieh, 2011). Format and the elimination of the GMD were discussed as well. Bloss (2011) noted that there was a de-emphasis on format and type of materials that

allows for greater flexibility in the rules. However, the term "unmediated" used for the media

type is difficult to understand (Bloss, 2011; Cronin, 2011; McCutcheon, 2011). Cronin (2011)

described another major shift from AACR2 to RDA in the elimination of the "Rule of Three." The

new rules allow a cataloger to decide if they want to include all names in the statement of

responsibility and create additional entries for the individuals. Overall, Cronin (2011) agrees

with the move away from the "Rule of Three".

Several of the authors discussed the effectiveness of using an encoding schema to

create a bibliographic record. Of the RDA national test participants who submitted articles

published in this special issue, all but one used MARC as the encoding standard. Bloss (2011)

conveyed that the new rules were created for the MARC record creator and the rules are

friendly for this environment. The rules will allow for backward compatibility to AACR2 for

those institutions that choose to incorporate the new standard without converting records

created under AACR2 to RDA. It is for this reason that one does not see much difference

between RDA and AACR2 (McCutcheon, 2011). The one author that discussed testing while

using a non-MARC encoding schema advocated for better training documents needed for non-

MARC standards, and that it was difficult to test RDA rules implementation in non-MARC

standards without these additional materials (Wacher et al., 2011).

The *RDA Toolkit* is the container through which the RDA rules are accessible. The toolkit

provides not only the rules, but also workflows and examples. It was only available

electronically for the test and many noted how difficult it was to navigate (Shieh, 2011).

However, some consulted the workflows that were added to the toolkit and mentioned how

extremely important these were to overcome the difficulties in navigation (Young & Bross,

2011). There is also consensus that more examples should be included to provide catalogers

with additional guidance (Biella & Lerner, 2011; McCutcheon, 2011).

Testing organizations found a variety of sources to consult when educating and training

individual participants. They used the LC webinars, consulted Library of Congress Policy

Statements, created local documentation, and consulted training materials developed by others

outside of the formal test (McCutcheon, 2011; Shieh, 2011). Bloss (2011) and Cronin (2011)

agree that catalogers need to have a good understanding of FRBR and less so of FRAD in order

to appropriately apply the new rules. Bloss (2011), who worked with library and information

science graduate students, noted that there is a need to continue to teach AACR2 in graduate

programs, but also a need to expose students to RDA and the use of the *RDA Toolkit.*

Cronin (2011) states that applying cataloger's judgment in RDA is greater than it had

been when utilizing AACR2. Most of the authors in this special issue briefly mentioned or

referred to cataloger's judgment directly or indirectly (Biella & Lerner, 2011). This is mostly due

to the number of options RDA provides to a cataloger (Cronin, 2011). In one article, satisficing

behavior was noted as catalogers searched for a decision that was "good - enough" (Cronin,

2011, p. 637).

There were a number of authors that described how the new rules would affect users.

The elimination of many abbreviations will aid users in understanding the data in a more

meaningful way (McCutcheon, 2011)and creating additional access points by eliminating the

"Rule of Three" will allow users to find related items (Cronin, 2011). However, Biella & Lerner

(2011) state that RDA does not meet the needs of an "international" community as

demonstrated through the cataloging of works written in Hebrew. They contend RDA is still for

an English speaking cataloging world and that RDA does not meet the needs of other languages, specifically those that are recorded in a different script. RDA is now available in Chinese, German, French, Korean, and additional translations in other languages are currently under development (Luo, Zhoa & Qi, 2014).

Although some remarked that creating a cataloging record with RDA took more time (McCutcheon, 2011; Young & Bross, 2011), the thought was that in time, the speed would be increased through practice (McCutcheon, 2011) or with shortcuts (Shieh, 2011). McCutcheon (2011) also argued that RDA relied too much on ISBD punctuation rules. The authors in the special issue agreed that the testing had been able to provide them with greater information to assist their organization in determining how they may adopt RDA in the future. Not every author stated whether they supported the adoption of RDA; however, several did state that they were in favor of adoption with modifications (Bloss, 2011; Cronin, 2011). This was the same recommendation made by the U.S. RDA Test Coordinating Committee.

Implementation of RDA Worldwide

Up to this point the review of the literature on RDA has focused on the United States; however, it is important to understand that RDA is an international standard, and other countries have been involved in a variety of activities related to the implementation of RDA. The RDA Toolkit is a joint publishing project of the American Library Association, the Canadian Library Association, and the Chartered Institute of Library and Information Professionals (United Kingdom) (RDA Toolkit, 2015).

Although not a national library, the decisions of LC have had a profound effect on the cataloging standards worldwide. For example, the National Library of Israel decided to adopt RDA as the new standard for several reasons, but Goldsmith and Adler (2014) stated that their previous practice of following American cataloging practices by accepting copy cataloging from LC played a major role in the decision to adopt RDA.

International discussions have started to emerge in the literature regarding RDA, including a special issue published in *Cataloging & Classification Quarterly* in 2014. The articles presented in journals have provided a broader context in the challenges and successes that various countries have encountered as they are in the mist of implementation of RDA at various stages.

Several themes have emerged throughout the articles relating to the challenges such as language and translation barriers, costs of implementation, moving away from old practices, legacy data, and the need for additional training. In China, Luo, Zhao & Qi (2014) discussed the challenges of overcoming the language barrier of RDA and how it can be effectively translated into Chinese. The challenge of translating into other languages other than English was also confirmed by librarians in Latvia (Goldberga, Kreislere, Sauka, Stürmane &Virbule, 2014).

Cost was another barrier that has been mentioned by the global cataloging community. The steep costs associated with a change in standards included training, subscription costs for RDA Toolkit, and the cost of integrating legacy data with data created in RDA (Luo, et al., 2014). Such costs will have an impact on library organizations because they may not have direct access to the RDA Toolkit (Acedera, 2014), the ability to be ready for what seems to be eminent, a

post-MARC environment, and delayed training for more rural libraries (Luo, et. al., 2014; Choi, Yusof &Ibrahim, 2014).

The topic of training is not unique to the U.S. as it was the strongest theme throughout literature that discussed RDA with a global perspective. In Iran, a survey was conducted to determine the perceptions of cataloger knowledge of RDA. It was found that catalogers had a higher level of knowledge in a self-assessment, but after more detailed questions it was determined that they did not have as much familiarity as first thought (Pazooki, Zeinolabedini & Arastoopoor, 2014). For this reason, it was determined that greater training opportunities were needed. In China (Luo, et al., 2014), many libraries have held onto local traditions of cataloging and the examples are not clear, so training will be necessary to ensure the proper adoption of the new standard. The most significant statement regarding an implied need for training is based on a statement about cataloger's judgment in Singapore by Choi, Yusof, and Ibrahim. They state,

> Staff noticed that with RDA, there were many more instances requiring a cataloger's judgment, alternatives, and optional additions/omissions. It takes time for staff to practice applying a cataloger's judgment and to familiarize themselves with it. It is not easy to make decisions to embrace RDA and at the same time, fulfill NLB's internal cataloging requirements. (2014, p. 619)

This statement has implications for the training of those that employ cataloger's judgment so that fidelity to the rules can be maintained.

With these challenges, come opportunities. As an international community, catalogers have embraced the testing of RDA (Luo, 2014; Behrens, Frodl, & Polak-Bennemann, 2014; Choi, et al., 2014). In Canada, where most training occurred face-to-face prior to adoption, webinars

have brought together a community of catalogers that, in the past, were very isolated (Cross, Andrews, Grover, Oliver, and Riva, 2014).

History of Non-Print Materials

Non-print items began to appear in library catalogs around 1800 with maps, then still images, sound recordings, and later followed by motion pictures. It was not until the Post World War II Era that an influx of a variety of audio-visual materials started to appear in libraries in mass quantities (Horn, 1955; Weihs, 2011). The thrust of this started to occur in the 1940's and 1950's as school libraries began collecting various audio-visual materials (e.g., filmstrips, slides, records, etc.) (Intner, 2006). Universities began creating special collections of non-print materials around this same time (Horn, 1955). By the mid-1960's, the library community had difficulty cataloging these materials. The standards did not fully address the needs of the librarian for these newly introduced types of formats. The lack of audio-visual standards stilted efforts to share records electronically to ease the workload on librarians (DAVI, 1968). Weihs (2011) confirmed this in the recollection of her work from the early 1960's through the beginning of the 21st century.

In 1957, the Soviet Union launched Sputnik into space. This single act caused the American government to increase federal funding in the areas of science, math, and foreign languages. This funding increased the collections of existing school libraries and created new ones where they did not exist before causing an influx of materials to be ordered and cataloged including audio-visual materials (Weihs, 2011). This great increase in resources for school

libraries provided additional need for a change in cataloging rules for both print and non-print materials.

In 1968, a new standard was released for the cataloging of audio-visual materials. The National Education Association's Department of Audiovisual Instruction (DAVI) published *Standards for Cataloging, Coding and Scheduling Education Media.* These standards provided school librarians with rules to catalog audio-visual materials for the description, access, and retrieval of non-print materials. However, the broader context of the need for standards was as stated in the standards.

> In the larger centers, computer technology is being used for both cataloging and scheduling. The possibility of sharing, by means of the computer, a national pool of information about materials and the potential exchange of information among local, regional, and national resource centers are especially intriguing. The use of computer technology for these purposes, however, requires the development of national accepted guidelines or standards for catalog information and computer in-put. (DAVI, 1968, iii)

DAVI was instrumental in providing a new set of standards to the school library community. However, the broader library community continued to struggle with the cataloging of non-print materials. The DAVI standards were created outside of any guidance from AACR and only briefly mention AACR in a footnote (Weihs, 1972).

According to Weihs (2011), AACR did not provide sufficient rules in describing non-print resources in Part III. AACR lacked guidance in describing various formats of materials, and she concludes that there was not enough time and energy devoted to the writing of Part III since it was completed in only two weeks. This lack of attention to non-print materials in AACR left the cataloging community at odds in describing non-print resources, which resulted in the formation of committees to come up with solutions.

Up until the late 1960's, most libraries segregated their non-print catalogs from print. For many libraries, they kept non-print materials from the hands of the typical library user and only allowed access to a chosen few. As more non-print materials became available, librarians began to allow these materials to be circulated to a larger number of users, which led to the idea of combining catalogs or "to create an omni-catalog" that would integrate typical print collections with non-print (Weihs, 1972, p. 307). Various committees met after the release of AACR tasked with finding solutions. Within time, it was decided that a revision to AACR was necessary to embody all of the changes that were recommended for the cataloging of non-print materials.

Rose and Duncan (1976) mentioned the cataloging community was preparing yet again for a change in cataloging standards. The AACR2, based on the International Standard Bibliographic Description (ISBD) was under development and would be released and adopted in 1978. Once AACR2 was released, a few libraries began implementing the new standards for their organizations; however, it took LC until 1981 to accept and embrace the new cataloging rules. A part of the delay in adoption from the Library of Congress was how to mitigate the changes in cataloging for non-print materials (Weihs, 2011). Others however, had decided to move forward knowing that AACR2 would offer additional guidance for the cataloging of print and non-print materials.

AACR2 did not solve all of the problems in cataloging non-print items. As new formats emerged and electronic resources were introduced into library catalogs, it was more apparent that additional changes were needed. Many of the revisions of AACR2 were in part an attempt to resolve long standing issues in the treatment of non-print materials. However, problems with

the general media designations, the "Rule of Three" in the assigning of the main entry, and

media form subdivisions became evident, as more resources were available electronically

(Weihs, 2011). Non-print materials often are of mixed media, such as describing an MP3 file

that is both an electronic resource and a sound recording. Another issue with describing non-

print materials is who is responsible for the intellectual content of the work. More than one

individual creates a motion picture; however, the "Rule of Three" restricts listing all of those

responsible for creating the intellectual content. This leads to difficulty in defining the main

entry or main access point for non-print materials. Some prefer a title entry and others try to

determine who has the greatest influence in creating the intellectual work. Finally, librarians

reported that users need additional ways to search for certain types of media and eliminate

others (Wiehs, 2011). These challenges are factors that have led the cataloging community to

declare that change was needed in the way they describe emerging types of materials available

in catalogs.

Cataloging of Electronic Resources

Electronic resources first appeared in OCLC's WorldCat in 1975 with only one resource

type. By the end of 1979, only ten additional electronic resources appeared. From 1980 - 1989,

this collection grew by almost 30,000 records in WorldCat. In the next ten years, the number of

these types of resources grew by almost 120,000 items. The exponential growth in the number

of electronic resources continued in 2000s and 2010s. For example, from 2000 - 2005, there

was an estimated additional 1,000,000 electronic resources added to WorldCat (Lavoie,

Connaway, & O'Neill, 2007). These numbers provide a startling picture as to the acceptance of

including electronic resources into library collections. Cataloging of electronic resources began

primarily with cataloging computer software in the late 1960s (Weiss, 2003), followed by

computer files in the 1970s (Weiss, 2003), integrating resources and E-Serials in the 1990s

(Zhao, 2006), and finally eBooks (Bothmann, 2004; Wu & Mitchell, 2010).

According to Weiss (2003), the library community began creating rules for the

cataloging of electronic resources in the early 1970s, and these rules first appeared in AACR2

released in 1978. This first set of international cataloging rules for computer media give the

general material designation (GMD) machine-readable data files (MRDF). The new GMD

included any type of media that included data that could be read by a computer or similar type

of machine. It did not specifically include software programs. The chief source of information

for these types of materials would be what is found within the internal file without consultation

of any outside labels or containers. The physical carrier for the MRDF was not considered as a

part of the bibliographic record since the rules concentrated on the intellectual work and not

on the type of media itself. A new bibliographic record would only be created if there was a

change to the intellectual content. Catalogers recorded the technical requirements needed to

read or view the MRDF as a note in the area called mode of use.

As microcomputers began to emerge, libraries began offering software to their users

and this created additional challenges. New standards to deal with new types of media were

presented to the cataloging community that was outside of AACR2. One set of standards

created by Intner (1985) were used to describe computer software. These standards relied

more on the physical format of the material and allowed the cataloger to use any labels or

containers along with the internal information to determine the chief source of information.

"[I]n the note area, 'mode of access' was changed to 'system requirements' suggesting the

software was not going to be transferred from one carrier or operating system to another" (Weiss, 2003, p. 173). This change from AACR2 placed additional importance on the form of material than it did previously.

Due to the changes in cataloging of electronic resources, there was a call for a revision of AACR2. In 1988, the second edition of Anglo American Cataloging Rules underwent a revision (AACR2r) and within it provided a broader definition of electronic resources as the GMD was changed to "computer file" which allowed the description for both computer files and software. The chief source of information for computer files still remained the internal source; however, this would now be termed as the "title screen" and a note of the source would be provided as well, which was consistent with the cataloging of other types of materials (Weiss, 2003). Other changes in AACR2r offered greater importance of format and carrier in the description. Previously, a change in format did not constitute a new bibliographic record unless there was a significant change to the intellectual content. In the revised set of rules, a change to the format or type of operating system used to read the information was considered to be a new manifestation and required a new record (Weiss, 2003).

As computer software evolved, the need for addition revisions to the standards were needed to describe new types of electronic resources such as interactive media (video discs) and the inclusion of links to the World Wide Web in the MARC record. These links offered remote access to information, and created additional changes. In 1997, the ISBD (ER) was created to provide additional guidance and a new GMD, "electronic resources" (Weiss, 2003).

The ISBD (ER) led to amendments to the AACR2r which were published in 2002. This set of amendments cast a wider net over all types of electronic media whether it were accessed

directly, remotely, or through interactive media, which allowed for one set of rules to describe all such resources. There was also a change from the chief source of information to the resource itself, which includes the internal content as well as the physical resource itself and any labels (Weiss, 2003).

Beyond the discussion of cataloging standards, the literature also reflects challenges of whether to catalog certain types of web resources, cooperative cataloging of electronic resources, and the managing the workflows of cataloging eBooks.

Porter and Bayard (1999) struggled with including web sites in the library catalog. Prior to inclusion, subject librarians at the University of Notre Dame created web pages as pathfinders to websites that users could consult for research. This caused users to not only find resources in the library catalog, but also have to find the subject-specific web pages for their research discipline. To solve this problem the authors sought to investigate workflows and determine the amount of time to catalog web sites and to create policies and guidelines to determine the selection of web sites to be included in the library catalog. They found that "web sites are inherently problematic for libraries because there are no standards of any kind to guide the creation of these resources" (p. 391). Libraries are determined to provide barrier free access to resources, including various free web resources such as online technical reports, websites, eBooks, and databases for their users. However, catalogers struggle with the amount of time it takes to catalog these types of materials as well as the issue that URLs are dynamic (Brown & Meagher, 2008). Benerjee (1998) provided three reasons why cataloging electronic resources are difficult: (1) They are inherently more difficult than print items since they cannot be held and inspected as other types of resources; (2) Electronic resources are unstable as they

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are easily changed, edited, or modified without notice; (3) Print and digital resources relate differently to the library catalog. Benerjee (1998) described this through the way users search and browse for materials. With printed material, users will find a resource in the catalog and then browse the shelves for similar items; however, with electronic resources, this type of browsing is limited to what is found in the catalog. In Brown and Meagher's (2008) study, the researchers found that the enhanced web content to the library catalog was worth the time invested, and there is a need to expand the cataloging of these materials in spite of the dynamic nature of URLs and maintaining these web links in the library catalog.

Managing the workflow of eBooks and other online resources cooperatively has been described in the literature as a way to combine resources to reduce workflows and increase productivity (Chen et al., 2004; Preston, 2011). OhioLINK and the Illinois Library Computer Systems Organization (ILCSO) both work to provide services to member libraries in providing users greater access to materials. OhioLINK is a statewide organization that provides a consortium catalog for 88 college and university libraries and the state library in Ohio. Together, they share the workload of creating bibliographic records for electronic resources. Through sharing this work, each member library benefits from the expertise of the other members. Together, they have designed policies to allow continuity between the member cataloging agencies. Through their work, they make six suggestions in how others could benefit from a similar partnership.

1. Communicate expectations for member libraries and the level of work to be performed by each entity

2. Designate at least one expert that will explore various bibliographic tools and then train others on the use of the preferred tool

3. Institute cataloging standards that are flexible enough to meet the needs of member libraries and their users

4. Explore methods to obtain records to copy to increase efficiency

5. Be open to change, and accept new workflows as they present themselves that allow for increased efficiency

6. Record processes and procedures to allow for greater participation in the future (Preston, 2011).

The ILCSO consortium is similar to that of OhioLINK in that it provides a union catalog to colleges and universities and the state library although they also include high school and other non-academic libraries. Naun and Braxton (2005), discuss their participation in the cooperative cataloging process in their state. Much of their work aligns to that of OhioLINK's, but they stressed the need to make sure the MARC records created for the catalog meet the needs of the users and the member libraries. In 2003, ILCSO created a task force to investigate the best way to increase access to e-Journals and eBooks through the library catalog. What they found was that "they are dealing with a volatile set of unstable resources which change names, contents, providers, and URLs with alarming frequency and thereby require repeated revisions" (Chen et al., 2004, p. 174). For this reason, many libraries do not include all possible resources into their library catalog. This was also to be found true by Parks and Wang (2005). The reality of electronic resources is that they are difficult to catalog, but there is value in providing them

to users. The use of cooperative consortia cataloging is one solution to share the work and to reduce costs.

The final major theme in the literature relating to the cataloging of electronic resources was the discussion of managing and cataloging eBooks. Although the first eBook emerged in 1971, they were not readily adopted by libraries until the end of the 1990s when eBook readers began to appear on the market (Wu & Mitchell, 2010). EBooks may be acquired in a number of ways such as purchased or sold on a subscription basis. Some may allow unlimited simultaneous users or be restricted to one user per copy owned.

Although the literature points to eBook use in school and public libraries, most of the literature on cataloging eBooks is presented by academic libraries. The earliest work describes the practice of how one should catalog eBooks (Bothmann, 2004). Since then, libraries have struggled to provide access to this new type of material (Simpson, Lungren, & Barr, 2007) which involved uploading large batches of eBook MARC records (Sanchez et al., 2006). Dinkelman and Stacy-Bates (2007) state that users need multiple access points to find eBook collections. They argue that there needs to be a link directing users to web pages that provide a list of eBook offerings or to search the catalog limited to eBooks. Although their perspective is different from many cataloging professionals, they do discuss the convenience to the user and how libraries need to provide additional means to obtain the materials users need. Simpson et al. (2007) provide a different perspective. They argue that eBooks should be linked from the print, bibliographic record. This would allow users to discover any print materials and electronic resources for the same title at once. It would also reduce the number of bibliographic records in the catalog and provide a more FRBR-like feel to the catalog.

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One of the largest challenges for cataloging departments is keeping up with the acquisition of new electronic resources. Sanchez et al. (2006) describe the challenges in batch loading a large number of NetLibrary eBook records. They were well aware of the issues other libraries have had in working with these vendor-supplied records. Some of the problems included incorrect subject headings, duplicate records, and problems with authority control.

In 2009, the Program for Cooperative Cataloging (PCC) came out with a new standard that called for a provider-neutral record for eBooks. This standard was to simplify the cataloging of eBooks by providing a single record for a resource regardless of the provider. This standard does seem to help; however, it does complicate things when a library owns the same title offered through several different vendors. The solution to this problem has been either to add another 856 MARC tag or to create a second bibliographic record (Wu & Mitchell, 2010).

Each call for a change to AACR2 has resulted in a modification in how catalogers describe electronic resources. The inclusion of electronic continuing resources and eBooks has only provided additional challenges to cataloging. It is partially due to the changing nature of electronic resources and that AACR2r 2002 continued to be based on the printed card catalog (McCracken, 2007). McCracken (2007) states, "One of the major goals of RDA is to simplify the code and make it more consistent/less redundant. RDA will include guidelines that describe analog and digital materials…" (p. 271). It is for this reason describing electronic resources is expected to be made easier through the adoption of RDA.

Since the development and release of RDA, the topic of how to handle the workflow of electronic resources has emerged. Topics include methods to provide access to electronic resources, digital rights management, and coordination of acquisitions and cataloging. Libraries

have had a difficult time determining how to represent electronic resources for their users.

Sapon-White (2014) states that some make content available through the online public access

catalogs (OPACs) while others chose to provide users with content options through various

webpages not linked or represented in the OPAC including, but not limited to, topical lists and

bookshelves hosted by third party vendors (Shorten, 2006). There are benefits and challenges

for both of these models. For example, utilizing the OPAC as the one place where all electronic

resources are accessed could make it easier for users to access just one website. However,

since many electronic resources are purchased as packages, this requires batch uploading of

MARC records, which may include uploading poor vendor supplied MARC records (Sapon-

White, 2014). Utilizing A-Z lists, topical lists of links, or a vendor bookshelf allow users to narrow

their search to discover resources by topic or collection; however, often times, it does require

users to spend more time searching individual collections (Hinton, 2002).

There are several reasons why libraries have not included MARC records for all of the

online content they purchase or subscribe to in the library catalog. The most prevalent reasons

are because the record quality varies from vendor to vendor and some of the MARC records

received require more editing than time permits (Sapon-White, 2014); there are challenges to

the batch loading of MARC records into the ILS (Martin, Dzierba, Fields, & Roe, 2011); and

finding solutions in how to remove access through the OPAC when licensing to the content

expires (Chen, Colgan, Greene, Lowe, & Winke, 2004). Boydston and Leysen have recognized

these challenges and confirmed through their research; libraries are opting to use non-MARC

local collections to manage electronic resources in order to find more efficient workflows

(2014).

Although workflows were discussed in the literature, decisions about which specific MARC fields should be represented in a bibliographic record for electronic resources has been ignored.

Conclusion

The literature states that providing access to materials for their users is an important function of a library. Principles, rules, and guidelines provide catalogers the tools necessary to be able to do this effectively. However, it takes education and experience for catalogers to determine the level of cataloger's judgment they will exercise throughout this process. Bounded rationality helps to explain this phenomena; catalogers work within time and cognitive constraints in order to engage in the decision-making process.

The inclusion of electronic resources in library catalogs has made the decision-making process even more difficult. The literature states that AACR2 did not provide enough guidance to catalogers in describing these types of entities, and this is one of the reasons for the creation of RDA. The RDA National Test provided the library community with an opportunity to evaluate the new set of rules. The outcome of the test was that the national libraries adopted RDA in March 2013.

The RDA National test provides a rich set of data to study, and it was the original intention of the national libraries to share this data for further research. The LIS literature does indicate research on cataloging quality; however, the literature is almost void of any research on the concept of cataloger's judgment.

CHAPTER 3

METHODOLOGY

Introduction

This chapter defines and explains the methodology used in this exploratory study. The

study utilized both qualitative and quantitative methods. Mixed method studies have received

a wider acceptance in recent years in LIS and other social science fields (Fidel, 2008). Mixed

method research is "research in which the investigator collects and analyzes data, integrates

the findings, and draws inferences using both qualitative and quantitative approaches or

methods in a single study or program of inquiry" (Tashakkori & Creswell, 2007, p. 4). One of the

reasons researchers use mixed method research is for the triangulation of data to ensure

accuracy and validity within a study that utilizes various data collection methods (Fidel, 2008).

This study employed the use of descriptive statistics (mean, mode, Chi-square, etc.), content

analysis, and regression analysis to analyze the data.

Sample

The study included the analysis of the electronic resource MARC records created using

RDA and the survey responses for those items from the common original cataloging records

prepared by the formal testers involved in the RDA National Test. The purpose for limiting this

sample to only electronic resources is based on one of the goals of RDA, to provide rules that

will be able to describe those resources found in the digital environment (McCracken, 2007).

Therefore, this study focused on all of the electronic resource items cataloged as part of the

RDA National Test (44% of 25 test items). These 11 electronic resources were described by 329

or 41.6% of the 791 total common original set of records submitted for the formal RDA National Test (see Table 3.1). Of the 329 possible records, 112 were eliminated from the study due to missing common original set (COS) and the record creator profile (RCP) surveys. To ensure the most comprehensive data analysis, as well as meaningful comparisons for the 11 records studied, only those records for which a COS survey and RCP survey could be traced back to the bibliographic record were included in the study. This resulted in 217 viable records that were further analyzed. Table 3.1 illustrates the sample of items reviewed and selected in this study.

Table 3.1

Record Titles and Counts Used in the Study

Item	Title	Material Type	Total Number Created	Number Studied
H	Americans with Disabilities	E-Monograph	35	20
I	Benjamin Button	E-Monograph	34	22
J	Reconciling Scientific Approaches for Organic Farming Research	E-Monograph	31	22
M	Criterion	E-Serial	28	17
N	Utley	E-Serial	29	18
O	San Diego	E-Serial	29	21
Q	Acupuncture	Streaming Video	30	22
V	Our Science – Research Directory	Integrating E-Resource	27	19
W	NCJRS	Integrating E-Resource	30	18
X	UN	Integrating E-Resource	29	19
Y	Proquest	Integrating E-Resource	27	19
Total			329	217

Research Approach/Design

A mixed method study was conducted to answer the research questions as stated in Chapter 1 and below. The qualitative and quantitative research methods were used to analyze an existing data source from the Library of Congress (LC), National Medical Library (NML) and

the National Agricultural Library (NAL). This data was collected through their formal test of a new international cataloging standard, Resource Description and Access (RDA).

The RDA National test was described in both Chapters 1 and 2, and was used by the three national libraries to determine if they should adopt this new standard. The test involved 23 other partners (26 testing organizations in total) tasked to create bibliographic records and complete a survey after they had completed a bibliographic record. This resulted in the creation of 10,570 records, and of those, 791 were RDA records for the 25 common set of items each organization was to create. This study analyzed a sample of the data collected by the RDA Test Coordinating Committee. The sample being evaluated to answer the research questions are the RDA common set of electronic resource records created using MARC.

Prior to beginning the study, the MARC records for one of the non-electronic resource items (Item P) in the RDA National Test was used as a pilot to test and refine the research procedure. The details of the examination of Item P, a DVD video of *March of the Penguins,* are presented later in this chapter.

Research Questions and Methods to Analyze

The following research questions were used to guide the study:

RQ1 How did catalogers participating in the Resource Description and Access (RDA) National Test exercise cataloger's judgment as they created RDA-based MARC records for electronic resources?

1a: What are the similarities and differences of the records?

1b: To what extent can the differences in text entered in the records be explained by

differences in characteristics of the catalogers (e.g., level of position, experience,

prior course work and/or training, etc.)?

RQ2 How can cataloger's judgment be explained through the lens of Bounded Rationality?

2a: How can cataloger's judgment be predicted using the constructs of bounded

rationality?

To answer the first question and the two sub-questions, a variety of methods was used

to analyze the data. Specifically, the analyses completed for each sub-question were then used

to answer the broader main question. Sub question 1a was answered by reviewing the

submitted record data and recording observations of the actual text. Descriptive statistics were

collected on the frequency of text presence and absence.

Sub-question 1b required conducting a content analysis using the MARC records and the

RDA rules as found in the *RDA Toolkit* during the time of the test. Chi-square test for association

was used to determine if the categorical groups (job title, years of experience in cataloging and

years of experience cataloging electronic resources, minutes spent creating MARC records, and

minutes spent consulting others) were statistically independent. Cramer's *V* was used to

determine the magnitude of the associations. Descriptive statistics were used to describe the

MARC records and categorical groups to assist in answering the sub question.

A binomial logistic regression was used to find the relationship between a dependent

variable (e.g., the presence of text in the 100 $a MARC field) and the categorical groups. The

analysis was completed by analyzing the constraints of cognitive limits (job titles as were self-

reported on the RCP survey), as well as the time spent in the creation of MARC records.

Data Collection

This study included the analysis of the RDA COS electronic resource MARC records and

survey responses (Appendix B) for the records created by the test participants. The Library of

Congress (LC) provided the data for this study. The MARC records are available to anyone

through the LC website (http://www.loc.gov/catdir/cpso/RDAtest/rdatestrecords.html), and

the participant survey responses were acquired through a request to LC. As a participant in the

National Test, I knew who to contact and where the data records would be archived. The

request stated that the survey data would be used in a study on cataloger's judgment. Susan

Morris from LC provided an original copy of the Access database at the ALA Annual Conference

in June 2011. LC stated the data in the Access database was downloaded by the survey

instrument and the data file had not been edited in any way.

Once the data was received, a small sample of bibliographic records and accompanying

RCP surveys for Item P, a non-electronic audiovisual resource, COS item, was reviewed. Item P

was not one of the items that was to be considered in the formal study, but was selected to

provide additional information regarding the amount and breadth of data that was available to

study. A review of Item P revealed that only six (20.6%) of the surveys were submitted for the

29 RDA MARC records created for this one item. The COS and RCP surveys were extremely

important since they provided information to determine the categorical groups of:

- Job title

- Years of experience in cataloging

- Years of experience cataloging the resource type

- Number of minutes spent creating the cataloging record

- Number of minutes spent consulting others (this would be the amount of time the participant consulted others about creating the MARC record)

Further discussion of the preliminary findings for Item P will be discussed later in this chapter.

Data Analysis

Since the data collection is based on existing data, no additional data collection was needed. A variety of statistical analysis techniques were used to extract further information about the phenomena of cataloger's judgment. A mixed methods approach including content analysis, descriptive statistics, chi-square test, and logistic regression assisted in bringing meaning to the data.

Prior to analyzing the MARC records, a free MARC editing utility called MarcEdit was used to extract the MARC data into an Excel spreadsheet. The steps used to complete the task are listed below:

1. Download MARC Records from

   http://www.loc.gov/catdir/cpso/RDAtest/rdatestrecords.html

2. Unzip File and change file type from .bib to .mrc

3. Import into Marc-Edit 5.7 and perform the following functions

   a. Select the records to export into a new file for the item needing analysis

   b. Go to File → Select Individual Title to Make... → Import File → Select appropriate titles → Click Retain Clicked Items → Export Selected

   c. Save the File as ItemName.mrc

   d. Run Field Count Report

e. Create a .txt file to import into MARC Tools Using the following

    i. #NORMAL:#false

    ii. #MARC:#false

    iii. 000

    iv. 001

    v. 003

    vi. 100

    vii. Add all other tags in the field count report

    viii. Name this file ItemName_ImportSettings.txt

4. Create a spreadsheet of all MARC fields in the selected records by performing the following functions in MARC Tools component of MarcEdit

    a. Tools → Batch Process Records – Export Tab Delimited → Choose your source information (ItemName.mrc) and destination file name (ItemName.csv) → Click Next → Click settings → Load Settings and import ItemName_ImportSettings.txt → Click MARC → Export

5. Open .csv spreadsheet in Excel and view data

It is important to note that for repeatable MARC fields and subfields, the text will appear in only one cell with a semicolon used to differentiate between repeated field information. Therefore if there were two 500 $a notes, they would appear in the same spreadsheet cell as "note 1;note 2" (e.g., "Serial No. 111-95.";Viewed November 4,2010.).

Once the MARC data was extracted and placed into Excel, and non-electronic resource records were removed, MARC records were matched with the surveys submitted for the

specific records. In each MARC record the cataloger included information as to who created the

record. The VLOOKUP function in Excel, which looks up a value in one column of an Excel

spreadsheet and populates it in another, was used to match the MARC record data with COS

and RCP survey data. Five data points from these two surveys were pulled into the worksheet

with the MARC data.

1. Job title (RCP)

2. Years of experience in cataloging (RCP)

3. Years of experience cataloging the resource type (COS)

4. Number of minutes spent creating the cataloging record (COS)

5. Number of minutes spent consulting others (COS)

Once all of the data was placed in one worksheet, a frequency analysis of the fields was

conducted to determine which fields of the electronic resource records were used most often.

The basis of determination of the fields included in this study was based on this list. All fields

prior to the 100 field were removed from consideration since most of them are system

supplied or were used to identify which cataloger created the record. Therefore, they were not

part of the descriptive cataloging that the test was assessing. The two lists of fields were also

compared to two different studies. The first was the *MARC Content Designation Utilization*

study that investigated frequently used fields in the OCLC catalog (Eklund, Miksa, Moen,

Snyder, and Polyakov, 2009). The second was a study on the implications on cataloging quality

in which participants ranked various fields that they determined to be important when

evaluating the quality of a MARC record (Schultz-Jones, Snow, Miksa, & Hasenyager, 2012).

Both of these studies were consulted to support the final list of fields to be included in this

investigation. The fields that were studied in this test were 100, 110, 130, 245, 246, 260, 300, 336, 337, 338, 500, 538, 588, 700, 710 and 856. Table 3.2 provides the MARC field number and the description of the type of information included in each of these fields.

Table 3.2

Marc Fields and the Type of Data Included in the Field

MARC Field	Description
100	Personal Name (Main Entry)
110	Corporate Name (Main Entry)
130	Uniform Title (Main Entry)
245	Title Statement
246	Varying Form of title
260	Publication, Distribution, etc. (Imprint)
300	Physical Description
336	Content Type
337	Media Type
338	Carrier Type
500	General Note
538	System Details Note
588	Source of Description Note
700	Personal Name (Added Entry)
710	Corporate Name (Added Entry)
856	Electronic Location & Access

Since the national test concentrated on descriptive analysis, the subject fields, 6xx, were not included in this study.

Due to the richness of the data, and this being an exploratory study, the only fields in which content analysis was performed are the note fields (500, 538, and 588). These fields were selected in order to determine the types of notes that were represented by the data entered by the test participants.

A content analysis of the General Note MARC field 500 $a was performed. Content analysis is "a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use" (Krippendorff, 2004, p. 18) and is used to identify a person's perspective on a topic or to "characterize the communications of [a] group" (White & Marsh, 2006 p. 29). It requires the creation of a codebook for the researcher to indicate the themes of the data being analyzed. Once the codebook was created, and the researcher had coded the 500 $a field, the reliability of the coding was tested. This was completed through a process termed "intercoder reliability." Intercoder reliability is a process in which at least one other coder performs the same test to determine if there is agreement. According to Neuendorf (2002), this process is essential to ensure reliability and a Cohen's kappa of .80 or greater is recommended in order to get an acceptable reliability of 80% or higher.

For this study one other coder was used to validate the coded data for the General Note 500 $a field. The person performing this work is a faculty at a university in Illinois who's teaching and research expertise is cataloging. The only portion of the data that was analyzed using content analysis was 500 $a; 100% of the data was coded by both the investigator and the outside expert. The value of Cohen's kappa was .911 which exceeds the minimum acceptable level of agreement.

Once the coding and reliability was confirmed, Chi-square and regression testing were performed using the statistical software program SPSS. In some cases, the assumptions for the Chi-square test were not met due to the small sample size. In these cases a Fisher's Exact Test was performed to determine if the categorical variables were statistically independent. These

tests assisted in answering Q1. According to Kotrlik, Williams, and Jabor (2011), while the p-value is not the only way to demonstrate significance, the Cramer's *V* is able to " judge the magnitude of the differences between or among groups, which increases the researcher's capability to compare current research results to previous research and judge the practical significance of the results derived" (p. 134).

To determine a significant result for Chi-square or Fisher's Exact the p-value must equal or be less than .050 (Krippendorff, 2007). To determine a Cramer's *V* effect size, values between .00 and under .10 have a negligible association, .10 and under .20 have a weak association, .20 and under .40 have a moderate association, .40 and under .60 have a relatively strong association, .60 and under .80 have a strong association, and .80 and under 1.00 have a very strong association (Rea & Parker, 1992).

Once the associations had been tested, a binomial logistic regression, or logistic regression for brevity, was performed. Originally, it was intended that a series of T-tests, multi-factor ANOVAs, and factor analysis would be conducted; however, due to the sample size the regression test was selected instead.

The logistic regression is a predictive test to determine if there is any probability that an occurrence will appear in a certain category. For the purpose of this test, each group would be tested to predict the probability that a cataloger would enter text or leave the field empty. This type of analysis provides a prediction model to determine if bounded rationality can apply to this test.

Finally, descriptive statistics was used to describe how the MARC records created by various individuals compare to each other, in addition to the inferential statistics methods

performed. The occurrences of specific MARC fields and subfields as submitted by the testers were computed and then applied to the descriptive statistical analysis. The descriptive analysis provided a way to describe the data while the inferential statistics allowed for investigating the content of the data that was entered into the MARC record.

With the triangulation of data utilizing various research methods, it was possible to answer the research questions as stated above.

Findings for Item P

Prior to applying the methodology outlined above, Item P, a DVD of the *March of the Penguins,* was analyzed to better understand the data to be studied and to test the proposed methodology. The main purpose was to determine if the data was rich enough to conduct a study on cataloger's judgment.

A total of 29 MARC records were submitted for Item P. The MARC record information revealed many differences among the catalogers in their cataloging of the descriptive elements of Item P. Table 3.3 demonstrates the variances found in the MARC field and subfield counts for Item P. Each cataloger included a 245 field and 300 field; however, there was a difference in the subfields ($) they chose to include. Seven catalogers did not include a $c, Statement of Responsibility, and only one person included a $b, Remainder of Title, for the 245 field. In the 260 field, one cataloger did not enter any information for any subfield. A further look at the 260, Publishing Information, revealed that some catalogers entered multiple subfields $a, Place of Publication, and $b, Publisher Name. There were two entries for $f, Manufacturer, and $e, Place of Manufacture. For the 300 tag, Physical Description, there was a bit more consistency in

the description of this data as it relates to the number of occurrences for the subfields.

Although this provided some information about Item P and how cataloger's judgment

manifested their decisions, it did not provide a complete picture for these MARC fields.

Table 3.3

Field Count Report for Item P

Field	Subfield	Field/Subfield Description	Total
245		Title Statement	29
	$a	Title	29
	$b	Statement of responsibility, etc.	1
	$c	Remainder of title	23
260		Publication, Distribution, etc.	28
	$a	Place of publication, distribution, etc.	35
	$b	Name of publisher, distributor, etc.	42
	$c	Date of publication, distribution, etc.	28
	$e	Place of Manufacture	2
	$f	Manufacturer	2
300		Physical Description	29
	$a	Extent	29
	$b	Other physical details	29
	$c	Dimensions	29

The next three tables (3.4, 3.5, and 3.6) provide additional information regarding the

decisions made by catalogers. These tables provide the data input, evidence of rule usage, and

comments for the 245, 260, and 300 fields for three random records submitted for Item P.

Since test participant did not record the rule sequences used, the evidence of rule usage was

determined by the investigator by comparing the text with the RDA rules. Due to the fact that

the participant did not provide this data, there is no way to be completely certain that the rules

referenced were used by the cataloger. It was however, one way to look at cataloger's

judgment.

The sample of the title and statement of responsibility for Item P reveals that there are

differences between the three records. All three catalogers recorded the same information for

the title; however, they decided not to transcribe the title as allowed in RDA (i.e. MARCH OF

THE PENGUINS). However, the statement of responsibilities differs between all three. For

example, it appears that the third cataloger chose to use the container as the preferred source

of information, and the other two used the label on the DVD. This led to additional variations.

There are other differences in the application of cataloger's judgment as seen in the "Evidence

of Rule Use" in Table 3.4 which provides the data entered into the MARC record, evidence of

rule usage, and researcher comments for three of the MARC records submitted for Item P.

Table 3.4

Data Sample for Title and Statement of Responsibility of Item P

245	Evidence of Rule Use	Comments
00$aMarch of the penguins /$cWarner Independent Pictures ; and National Geographic Feature Films.	2.3.1.1 2.3.2.1 2.3.2.2 2.2.2.3 2.3.2 .1 2.3.2.7 2.4.2.1 2.4.2.2 2.4.2.3	Preferred source of Information = DVD
00$aMarch of the penguins /$c[presented by] Warner Independent Pictures and National Geographic Feature Films.	2.3.1.1 2.3.2.1 2.3.2.2 2.2.2.3 2.3.2 .1 2.3.2.7 2.4.2.1 2.4.2.2 2.4.2.3 2.4.1.5 2.4.1.7	Preferred source of Information = DVD
00$aMarch of the penguins /$cas told by Morgan Freeman ; Warner Independent Pictures and National Geographic Feature Films present a Bonne Pioche production in association with Wild Bunch.	2.3.1.1 2.3.2.1 2.3.2.2 2.2.2.3 2.3.2 .1 2.3.2.7 2.4.2.1 2.4.2.2 2.4.2.3	Preferred source of information = Container (front and back)

Table 3.5 is a set of sample data for Item P relating to the publication, distribution, and other characteristics of the information entity. There was partial agreement with the place of publication as well as one person stating that it was not identified. There was no agreement within $b or $c of the MARC record. However, this lack of agreement seems to be more related to the level of specificity of how the publication data was described. The first entity below did appear not to follow the rule for publication/copyright date, but appears to blend the set of rules together. Table 3.5 provides the rule use and other comments by the researcher for the data that was entered by catalogers.

Table 3.5

Data Sample for Publication, Distribution, etc. of Item P

260	Evidence of Rule Use	Comments
\\$aBurbank, CA :$bWarner Home Video, $cc[2005?]	2.8.2.3 2.8.4.3 2.8.6.6 1.9.2.3	$c c[2005?] does not follow the convention it is a blend between 2.8.6.6/1.9.2.3/2.11.1.3
\\$a[Place of publication not identified] :$bWarner Independent Pictures,$c[2005], Â©2005.	2.8.2.6 2.8.4.3 2.8.6.6 1.9.2.3 2.11.1.3	Chooses the option of including a publication date from the copyright date
\\$aBurbank, CA :$bWarner Independent Pictures :$bNational Geographic Feature Films :$bWarner Home Video [distributor],$cÂ©2007.	2.8.2.3 2.8.4.3 2.8.4.4 2.8.4.5 2.8.6.3 2.11.1.3	Includes the role of Warner Home Video

The sample of physical description data in Table 3.6 shows how catalogers encoded their interpretations of the RDA rules for this part of the MARC record. It appears the first record below did not consult rule 7.22.1.3, which instructs the cataloger to follow the abbreviations in the *RDA Toolkit* Appendix for minutes. Other variations include the order of

the sound and color attributes, and the utilization of the Library of Congress Policy Statements (LCPS) for the transcription of the dimensions. Specifically, the U.S. uses inches instead of centimeters for videodiscs.

LCPSs were included in the RDA Toolkit for the duration of the test (U.S. RDA Test Coordinating Committee, 2011); however, these particular documents were not accessible through the RDA National Test archive that was posted online. Based on the text entered in the 300 field, it could be assumed that these policy statements and other LCPSs published by LC could have affected the application of RDA by test participants.

Table 3.6

Data Sample for Physical Description of Item P

300	Evidence of Rule Use	Comments
\\$a1 videodisc (80 minutes) :$bsound, color ;$c4 ¾ in.	3.4.1.3 7.18.1.3 7.17.3.1 3.5.1.4 LCPS 3.4.1.4.4	Used LCPS for diameter of disc
\\$a1 videodisc (80 min.) :$bcolor, Dolby digital stero and mono ;$c4 ¾ in.	3.4.1.3 7.17.3.1 3.16.2.3 7.22.1.3 3.4.1.4 LCPS 3.4.1.4.4	stereo misspelled Used LCPS for diameter of disc
\\$a1 videodisc (80 min.) :$bsound, color ;$c12 cm	3.4.1.3 7.18.1.3 7.17.3.1 3.5.1.3 3.5.1.4.4	"sound" is not found by itself in the rules

Although this was an extremely small sample of what could be uncovered, the variances were noted and it was determined that the MARC records from the RDA National Test were worthy of further research. The remaining data that was made available for this study from the

RDA National Test was extensive, and even without statistically significant results, the data

provides greater insight into the decision making process of catalogers.

Conclusion

This chapter reviews methodology utilized throughout the study. It describes the

research approach, sample, data collection, and the preliminary data that was considered

before formal study began. A mixed method research approach allowed for the study of

cataloger's judgment as manifested through the creation of MARC records during the RDA

National Test. Together, these steps and processes assisted in answering the research

questions.

CHAPTER 4

DATA ANALYSIS

Introduction

In this study, 217 cataloging records produced by 79 different individuals were analyzed to determine if the theory of bounded rationality, which proposes that individuals make judgments within the constructs of cognitive and time constraints is able to explain any significance in cataloger's judgment. No two records submitted had identical text entered for every field, which resulted in 217 unique records. This chapter discusses observations made from analyzing the data and statistical findings. There were an additional 112 records created for the electronic resource items; however, they were removed from this study since they did have corresponding survey data that would allow for the analysis required.

Due to the small sample size per record, the assumptions for the Chi-square Test of Independence were met 28.49% of the time. For this reason, the Fisher's Exact test was used for 71.51% of the data. In addition to describing the associations between variables using the Chi-square or Fisher's Exact, the Cramer's V is also reported. This test evaluates the effect size when evaluating the relationships between groups.

Throughout this chapter, various RDA rules are referred to for each of the fields studied. The rules that are referenced are the set of rules that were published in the RDA Toolkit at the time of the RDA National Test. Many revisions have been made since the time of the test and some rule numbers have changed.

Sample Statistics

The data studied consisted of a sample of 217 MARC records created by 78 unique individuals that submitted between one and ten MARC records for the test (Table 4.1). The MARC record data was acquired freely through the LC website; however, a formal request to the LC was required to obtain the survey data.

Table 4.1

Records Submitted by Test Participants

Number of Records Submitted	Number of Participants
1 Record Submitted	19
2 Records Submitted	13
3 Records Submitted	30
4 Records Submitted	8
5 Records Submitted	5
6 Records Submitted	0
7 Records Submitted	1
8 Records Submitted	1
9 Records Submitted	0
10 Records Submitted	1
Total Unique Participants	78

The RDA National Test required each test participant that submitted at least one MARC record to complete two surveys. The first was a profile survey that provided general information regarding their job title and total number of years cataloging. Participants only needed to submit this survey once. The second survey provided information about the resource they cataloged. Some of questions included asked participants how long it took them to create the catalog record, how many minutes they consulted with others, and the amount of years they have spent creating cataloging records for the type of resource being described. Participants needed to submit one of these surveys for each record they completed for the test.

The categorical groups used in this study were created based on the respondents'

answers (Table 4.2). A great majority (87.57%) of the respondents describe their job title as a

librarian, followed by 7.37% paraprofessionals, 5.53% for both students and other.

A majority of the participants, 55.3%, stated they had between 6 – 22 years total

experience in cataloging, 22.5% stated they had more than 22 years of experience, 17.97% of

the respondents reported they had 3 – 6 years of experience, and 4.15% reported 0 – 3 years of

experience. However, the makeup of these groups was very different when they responded to

the question about the number of years cataloging electronic resources. The majority of

respondents, 67.74%, stated they had 0 – 3 years of experience, 16.59% reported having 3 – 6

years of experience, 16.59% stated having 6 – 22 years of experience, and 1.84% reported

having more than 22 years of experience.

Table 4.2

Descriptive Statistics for Categorical Groups

Group	N	%
Job Title		
Librarian	177	81.57%
Paraprofessional	16	7.37%
Student	12	5.53%
Other	12	5.53%
Total Number of Years Cataloging		
0-3 Years of Experience	9	4.15%
3-6 Years of Experience	39	17.97%
6-22 Years of Experience	120	55.30%
22+ Years of Experience	49	22.58%
Years of Experience Cataloging Electronic Resources		
0-3 Years of Experience (ER Only)	147	67.74%
3-5 Years of Experience (ER Only)	30	13.82%
6-22 Years of Experience (ER Only)	36	16.59%
22+ Years of Experience (ER Only)	4	1.84%
Number of Minutes Creating Test MARC Record		
0-30 Minutes	36	16.59%
31-60 Minutes	74	34.10%
61-90 Minutes	49	22.58%
91-120 Minutes	26	11.98%
121-300 Minutes	32	14.75%
Number of Minutes Consulting Others		
0 Minutes	122	56.22%
1-30 Minutes	73	33.64%
31+ Minutes	22	10.14%

Further analysis of these groups was made by comparing the crosstabs of the groups.

The crosstabs is a matrix of the frequency distributions of the categorical variables. The

crosstabs are important to review since they provide insight into those that took part in

creating the electronic resource records.

The most interesting findings in the crosstabs were between job title and years

of experience cataloging and then job title and years of experience cataloging electronic

resources. The crosstabs display that there are 107 records created by librarians that have

between 6 and 22 years of experience cataloging, but there is a large difference with those that

have far less experience cataloging electronic resources. There were only 21 records created by

librarians with 6 - 22 years of experience cataloging electronic resources and 118 records

created by librarians with 0 – 3 three years of experience cataloging electronic resources. Due

to the size of the output from SPSS, summaries of the data have been created instead of

sharing the result of each test. Anyone requesting to view the complete output may contact the

researcher directly. Table 4.3 provides a summary of the crosstab data.

Table 4.3

Categorical Group Crosstabs

		Job Title				Total Years of Experience Cataloging				Experience Cataloging Electronic Resources			Number of Minutes Spent Creating Cataloging Record					Number of Minutes Spent Consulting Others		
		Librarian	Other	Paraprofessional	Student	0 - 3 Years	3 - 6 Years	6 - 22 Years	22+ Years	0 - 3 Years	3 - 6 Years	6+ Years	0 - 30 Minutes	31 - 60 Minutes	61 - 90 Minutes	91 - 120 Minutes	121 - 300 Minutes	Did Not Consult	1 - 30 Minutes	31+ Minutes
Job Title	Librarian	-	-	-	-	1	24	107	45	118	21	38	32	63	42	22	18	104	60	13
	Other	-	-	-	-	0	7	3	2	8	3	1	0	3	2	2	5	7	3	2
	Paraprofessional	-	-	-	-	0	5	10	1	10	6	0	3	5	5	0	3	4	10	2
	Student	-	-	-	-	8	3	0	1	11	0	1	1	3	0	2	6	7	0	5
Total Years of Experience Cataloging	0 - 3 Years	1	0	0	8	-	-	-	-	9	0	0	2	6	0	0	1	3	0	6
	3 - 6 Years	24	7	5	3	-	-	-	-	27	12	0	2	15	15	9	4	18	14	7
	6 - 22 Years	107	3	10	0	-	-	-	-	81	14	25	28	37	37	27	14	65	48	7
	22+ Years	45	2	1	1	-	-	-	-	30	4	15	4	22	22	13	7	36	11	2
Experience Cataloging Electronic Resources	0 - 3 Years	118	8	10	11	9	30	27	81	-	-	-	26	47	33	15	26	78	50	19
	3 - 6 Years	21	3	6	0	0	4	12	14	-	-	-	3	14	8	2	3	17	11	2
	6+ Years	38	1	0	1	0	15	0	25	-	-	-	7	13	8	9	3	27	12	1

(*table continues*)

Table 4.3 (*continued*).

		Job Title				Total Years of Experience Cataloging				Experience Cataloging Electronic Resources			Number of Minutes Spent Creating Cataloging Record					Number of Minutes Spent Consulting Others		
Number of Minutes Spent Creating Cataloging Record	0 - 30 Minutes	32	0	3	1	2	2	28	4	26	3	7	-	-	-	-	-	27	5	4
	31 - 60 Minutes	63	3	5	3	0	15	37	22	47	14	13	-	-	-	-	-	52	21	1
	61 - 90 Minutes	42	2	5	0	0	9	27	13	33	8	8	-	-	-	-	-	21	25	3
	91 - 120 Minutes	22	2	0	2	1	4	14	7	15	2	9	-	-	-	-	-	14	9	3
	121 - 300 Minutes	18	5	3	6	6	9	14	3	26	3	3	-	-	-	-	-	8	13	11
Number of Minutes Spent Consulting Others	Did Not Consult	104	7	4	7	3	18	65	36	78	17	27	27	52	21	14	8	-	-	-
	1 - 30 Minutes	60	3	10	0	0	14	48	11	50	11	12	5	21	25	9	13	-	-	-
	31+ Minutes	13	2	2	5	6	7	7	2	19	2	1	4	1	3	3	11	-	-	-

The MARC record file downloaded from the LC website consisted of 329 MARC records

for the 11 items that were analyzed for this test. The items included three E-Monographs, three

E-Serials, one streaming video, and four Integrating Resources. The 112 records that were

removed from the analysis were done so due to missing data in the MARC 040 field that was

required to trace the entry back to a specific cataloger or because the cataloger did not

complete the required RCP and/or COS surveys (Table 4.4).

Table 4.4

Item MARC Record Distribution

Item	Title	Material Type	Total Number of Records Created	Number of Records Analyzed	Percentage of Total Analyzed
H	Americans with Disabilities	E-Monograph	35	20	57%
I	Benjamin Button	E-Monograph	34	22	65%
J	Reconciling Scientific Approaches for Organic Farming Research	E-Monograph	31	22	71%
M	Criterion	E-Serial	28	17	61%
N	Utley	E-Serial	29	18	62%
O	San Diego	E-Serial	29	21	72%
Q	Acupuncture	Streaming Video	30	22	73%
V	Our Science – Research Directory	Integrating E-Resource	27	19	70%
W	NCJRS	Integrating E-Resource	30	18	60%
X	UN	Integrating E-Resource	29	19	66%
Y	Proquest	Integrating E-Resource	27	19	70%
Total			329	217	66%

The data collected from the RDA National Test surveys and the bibliographic records in

MARC format were analyzed using Excel spreadsheets and the statistical program, SPSS 22. The

following discussion provides the results of the analysis performed on survey data and the

bibliographic records.

Recording Names

It was noted that in reviewing the records, that there were some differences in how personal names were reflected in the test records. Often times, catalogers consult the LC authority database, or a comparable authority database, when creating records. However, there are times when name authority files are lacking for individual, corporate, or family names. In these cases the cataloger is left to consult the item itself for additional information or to seek other sources that may assist in determining the appropriate entry of information.

It is important to note that the directions to participants in the RDA National Test were as follows:

> If your institution normally uses templates to create the basic record, you may use templates to create the bibliographic records. If your institution normally creates authority records, create authority records from scratch for each access point in the record, based on the same rules you used to catalog the record. Do not search for an existing heading. Do not submit any of these headings to the National Authority File as these are only artificial test records. Authority records may be saved in the OCLC save file. Do not assign subject headings or classification for any of the titles in the common original set. Do not use the single record approach when cataloging the common original set even if your institution normally uses a single record approach for material issued in print and online. (Library of Congress, 2009a, p. 3)

Although participants were not to consult a database for the headings, many did use the correct headings. Alternatively, it is possible that the system used to create the records provided options to consult previous authority work.

Personal Names (MARC 100 & 700 Fields)

Within the RDA National Test, there were a number of variances among the participants in how personal names were constructed in the 100 and/or 700 MARC fields. Through the

informal analysis of the MARC data, it was found that some records had existing authority

records in the LOC Name Authority Headings and others did not. Three major areas of

disagreement were found within the data that included variations of field data due to not

following authority records, variation based on no authority record, and inconsistencies in

recording a family name.

In item I, an E-Monograph, participants could have consulted the LC Authorities for the

author F. Scott Fitzgerald; however, in analyzing the 100 field for this item, the researcher

noticed variances that five of the 22 participants (22.7%) did so. The other participants entered

a variety of text that did not adhere to the authority file. Below is the authorized heading and

then the variations of what participants entered:

Bibliographic MARC record entry based on authorized heading for Francis Scott Fitzgerald:

100 1 _ $a Fitzgerald, F. Scott $q (Francis Scott), $d 1896-1940, $e author.

Variations entered by participants:

100 1 _ $a Fitzgerald, F. Scott $q (Francis Scott)

100 1 _ $a Fitzgerald, F. Scott $q (Francis Scott), $d 1896-1940.

100 1 _ $a Fitzgerald, F. Scott, $d 1896-1940, $e author.

100 1 _ $a Fitzgerald, F. Scott $q (Francis Scott Key), $d 1896-1940, $e author.

100 1 _ $a Fitzgerald, Francis Scott $q (Francis Scott Key) $d 1896-1940.

100 1 _ $a Fitzgerald, Francis Scott, $q (Francis Scott Key) $d 1896-1949, $e author.

100 1 _ $a Fitzgerald, Francis Scott, $e author.

Although there were differences in how Francis Scott Fitzgerald was recorded, there was agreement among all participants that he was chiefly responsible for the intellectual content of the work and did include him in the 100 MARC field.

Variances occurred in Item J, an E-Monograph, as well; however for this item, there was no LOC name authority record for the author. On both the cover and the title page, the author's name was printed as "Ton Baars." RDA rule 9.2.2 instructs catalogers to use the preferred source of information as defined in RDA rule 2.2. Since this is an electronic version of a paper-based document, the preferred source should be the title page.

In the case of Item J, the title page had the author's name as "Ton Baars." Below are some of the variants that appeared in the records created by the test partners:

100 1 _ $a Baars, T.

100 1 _ $a Baars, T. $q (Anthonie)

100 1 _ $a Baars, Ton

100 1 _ $a Baars, Ton, $d 1956-

100 1 _ $a Baars, Ton, $d 1956, $e author.

At first, it was confusing why someone creating this record would not use Ton Baars, as what was listed on the title page, when the LOC authority file was not located, but after further review of the resource, it was noted that the author was listed on the verso of the title page as "T. Baars." However, if a cataloger used the verso of the title page, then he/she did not do as instructed under RDA 2.2.

Upon further investigation, the Virtual International Authority Files (VIAF), an international directory of authority files, listed three authority files by four different agencies that have completed authority work on the personal name Ton Baars.

Below are the results found in VIAF:

- Baars, T. (Anthonie), 1956- (National Library of the Netherlands)

- Baars, T. (International Standard Name Identifier (ISNI) and German National Library)

- Baars, Anthonie (1956-). (NUKAT Center of Warsaw University Library)

The third large area of disagreement in recording names was that of a family name. Family names are not as common as personal names in cataloging; however, the test did include one such item. Item N, a family newsletter, was the resource that some of the test participants felt should have the family name being recorded as the creator or at least partially responsible for the creation of the newsletter.

In reviewing the records, eight out of the 18 (44.4%) participants did record some variance of the family in the 100 MARC field, six out of 18 (33.3%) recorded the family name in the 700 field, two out of 18 (11.1%) listed the family name as a corporate name in the 710, and finally, two out of the 18 did not record any information in any 1xx or 7xx fields.

Text represented in 100 Field for Item N:

Utley

Utley (Family : Jackson, Tenn.),*

Utley (Family, author. Utley, John Allen),**

Utley (Family : Jackson, Tenn.), author***

Utley (Family : Utley, John Allen)

Utley (Family)

Utley (Family), author

*Two participants listed this entry

** Also included Utley, Jackie, editor. In 700

*** Also included Utley, Jackie, editor of compilation.

Text represented in 700 for item N (two participants listed two 700 fields):

Utley (Family)

Utley (Family : Jackson, Tenn.)

Utley (Family) author

Utley Family, issuing body

Text represented in 710 for item N:

Utley (Family : United States) descendants

Utley (Family : United States) issuing body

During the test, RDA addressed recording family names beginning with Rule 10.2 and directs catalogers to use the preferred name for the family, which then refers the cataloger to consult RDA 2.2.2. It appears that those catalogers that created the records that included a family name, did choose Utley as the preferred name. However, there was some disagreement whether or not they should include the place associated with the family name (RDA 10.5) or the relator term (RDA 18.5.1.3).

After examining the MARC records qualitatively, statistical analysis was performed. A majority of the data for the 100/700 fields did not meet the assumption for the Chi-Square test and for those that did not meet the assumption the Fishers Exact p value is reported instead.

Associations were examined between categorical variables and the text that was recorded in the MARC records. The text was categorized into two groups; the presence of text and no text present. There was a statistical association for 100 $e and total years of experience cataloging, $p = 0.039$ and a Cramer's V = .216, a moderate effect size; and the number of minutes consulting others, $p < .001$ and a Cramer's V = .257, a moderate effect size. There was also a statistical association for 100 $q and years of experience cataloging ER, $p = 0.031$ and a Cramer's V = .197, a weak effect size. There was also a statistical association for 700 $e and minutes consulting others, $p = 0.048$ and a Cramer's V = .168, a weak effect size, and a statistical association for 700 $q and years of experience cataloging ER, $p = 0.025$ and a Cramer's V = .208, a moderate effect size. There was no statistical association between the other variables. Tables 4.5 and 4.6 provide a summary of the results of these tests.

Table 4.5

Chi-Square p-value/Fisher's Exact Results for Names

Chi-square p-value/Fisher's Exact					
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_100$a	.199	.090*	.104*	.260*	.108*
Field_100$c	.199	.063	1.000	.717	.679
Field_100$d	.056	.199*	.084*	.393	.438*
Field_100$e	.117	.039*	.592*	.121*	.001*
Field_100$g	1.000	1.000	1.000	.267	.438
Field_100$q	.267	.229	.031	.673	.904
Field_700$a	.241*	.492*	.491*	.278*	.395*
Field_700$c	1.000	1.000	.805	.710	.126
Field_700$d	.580	.412	.696	.515	.893
Field_700$e	.096	.745	.743	.917	.048*
Field_700$i	.230	.261	.185	.811	.630
Field_700$l	1.000	.221	1.000	.659	.438
Field_700$p	1.000	1.000	.323	.659	.438
Field_700$q	.230	.097	.025	.811	.630
Field_700$t	.580	.581	.210	.604	1.000

The shaded cells indicate significance.

*Variable met Chi-square assumption; therefore, the Chi-square is reported. The p-values are based on all cases with valid data.

Table 4.6

Cramer's V Results for Names

Cramer's V					
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_100$a	.149	.173	.145	.156	.143
Field_100$c	.056	.166	.082	.102	.085
Field_100$d	.197	.147	.155	.133	.087
Field_100$e	.160	.216	.069	.183	.257
Field_100$g	.032	.061	.047	.164	.096
Field_100$q	.129	.153	.197	.112	.041
Field_700$a	.139	.105	.081	.153	.093
Field_700$c	.073	.035	.030	.116	.152
Field_700$d	.070	.086	.043	.126	.030
Field_700$e	.145	.055	.055	.075	.168
Field_700$i	.129	.124	.127	.109	.060
Field_700$l	.032	.145	.047	.126	.096
Field_700$p	.032	.061	.143	.126	.096
Field_700$q	.129	.172	.208	.109	.060
Field_700$t	.070	.067	.107	.117	.018

Cramer's V – Effect Size Categories

.000 - .099 (Negligible Association)

.100 - .199 (Weak Association)

.200 - .399 (Moderate Association)

Corporate Names (MARC 110 & 710 Fields)

  Test participants determined that several of the items had corporate names associated with the resource. As with personal names, there were variances among how participants would record the corporate names for the same items, including those that have LOC authorized headings. There were two additional types of variances that occurred that are worth pointing out for corporate names.

The first is how the corporate name for Item V was recorded by various participants. Item V was an online directory for the Center for Cancer Research. Participants appeared to have difficulty in determining the corporate name based on the preferred source of information (RDA 11.2.2, which then refers the cataloger to 2.2.2), which in this case is the home page for the directory. Some considered Center for Cancer Research as the preferred name and others determined it was the National Cancer Institute.

Figure 4.1 is a screenshot of the archived version of the homepage for Item V as it appeared on May 27, 2010. This is the iteration of the web site as close to the test date that could be discovered by the researcher. Figure 4.1 shows that the two organizational names that appear more prominent than any others are Center for Cancer Research (CCR) and the National Cancer Institute.
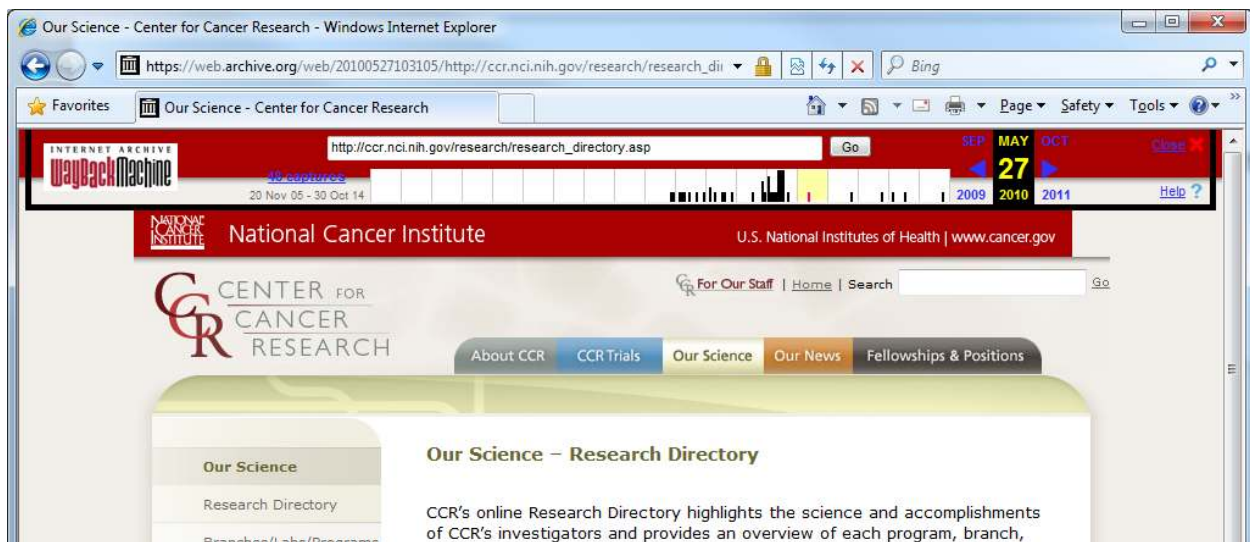
Figure 4.1: Screenshot of the homepage for Item V

When consulting the authority files for each of these, two viable choices appeared

based on which corporate name was chosen as the preferred name (1) Center for Cancer

Research (National Cancer Institute (U.S.)) and (2) National Cancer Institute (U.S.).

This is further complicated by which field the participants would choose to enter this

information. A majority, or 63.2%, determined that this information should be represented in

the 110 field and the remaining determined it was most appropriate to record the information

in the 710 field. Table 4.7 provides a breakdown of how the corporate name was determined

for the nineteen records submitted for Item V.

Table 4.7

Authority Headings Used in the MARC 110/710 Field for Item V

LOC Name Authority Heading	110 Field	710 Field
Center for Cancer Research (National Cancer Institute (U.S.))	8	4
National Cancer Institute (U.S.)	4	2
Included both headings	0	1

The second example of discord among those cataloging the test items concerned Item Y,

the CSA Illumina database. With this resource, the general consensus was that there was no

preferred name; however, participants used a variety of authorized and unauthorized headings

to describe the corporate names that had some responsibility in the intellectual content. Two

participants determined there was a preferred name and two did not list any corporate name in

either the 110 or 710 fields. Table 4.8 provides the headings and their use for Item Y.

Table 4.8

Corporate Names Used in Describing Item Y

Heading Used by Test Participants	LOC Authorized Heading	110	710
Cambridge Scientific Abstracts (Firm)	No	-	1
Cambridge Scientific Abstracts, Inc.	Yes*, but updated heading ProQuest CSA (Firm) is preferred	-	1
CSA	No	-	1
CSA (Firm)	No	-	8
CSA (Firm : Cambridge Information Group)	No	-	1
Proquest	No	1	2
Proquest (Firm)	Yes	1	12
Proquest CSA (Firm)	Yes	-	2

*Instructions in the LOC Authorities states, "THIS 1XX FIELD CANNOT BE USED UNDER RDA UNTIL THIS RECORD HAS BEEN REVIEWED AND/OR UPDATED"

A majority of the participants that included a corporate name did so by including the LOC authorized heading, Proquest (Firm). The second most common used heading was CSA (Firm), which is not an LOC authorized heading. Based on what was entered, it is obvious that the LOC authorized headings were inconsistently used as a determining factor when choosing the corporate name for Item Y.

Relator Terms in Names

Subfield $e for the 1xx and 7xx fields provides users with information relating to the relationship between a name (personal, corporate or family) and that of the resource being described. This subfield is not and was not considered "Core" at the time of the test; however, it is often useful for users to know if the name is associated with authorship, issuing, publication, production, etc. With the understanding that the Functional Requirements for Bibliographic Records (FRBR) model is built upon relationships between works, expressions,

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manifestations, and items, and RDA is partly based on FRBR, building relationships through relators is becoming increasingly more important.

During the RDA National Test, a list of relator terms were listed in Appendix I of RDA. The directions state to utilize this list unless the terms listed in Appendix I are not appropriate or specific enough for the relationship being described.

Analysis of the data shows that out of the 217 records, there were 317 instances were a participant entered a 1xx and/or 7xx field into their record. However, only 147 (46.4%) of these entries had a relator term applied in subfield $e. Table 4.9 provides a greater breakdown of the relator terms by field.

Table 4.9

Relator Terms Used in MARC 1xx and 7xx Subfield $e, Listed by Occurrence

Relator Term	Term Listed in Appendix I	MARC Code List for Relators (LOC)	100	110	700	710
author	Yes	Yes	30	4	2	1
compiler	Yes	Yes	-	2	-	1
online information system	No	No	-	1	-	1
sponsoring institution	No	No	-	1	-	1
corporate sponsor	No	No	-	-	-	1
degree granting institution	Yes	Yes	-	-	-	1
descendants	No	No	-	-	-	1
hosting research institution	No	No	-	-	-	1
awarding institution	No	No	-	-	-	1
originator	No	Yes	-	-	-	1
production company	Yes	Yes	-	-	-	1
host institution	Yes	Yes	-	-	-	2
other	No	Yes	-	-	-	2
sponsoring body	Yes	No: Use Sponsor	-	1	-	6
publisher	No	Yes	-	-	1	7
issuing body	Yes	Yes	-	9	2	35
contributing editor	No	No	-	-	1	-
dedicatee	Yes	Yes	-	-	1	-
dissertation committee	No	No	-	-	3	-
editor	Yes	Yes	1	-	8	-
editor of compilation	Yes	Yes	-	-	1	-
editor-in-chief	No	No	-	-	1	-
lecture series planner	No	No	-	-	2	-
lecturer	No	No	1	-	-	-
on-screen presenter	Yes	No*	1	-	1	-
performer	Yes	Yes	-	-	1	-
presenter	Yes	Yes	2	-	1	-
speaker	Yes	Yes	2	-	3	-
website designer	No	No	-	-	1	-
			37	18	29	63

*on-screen presenter is not acceptable, but onscreen presenter is

In Table 4.9 (above), 119 (54.84%) of the entries for subfield $e did appear in Appendix I

of RDA. The LC also maintains the *MARC Code Lists for Relators*, as an alternative or in addition

to the RDA list of relator terms. Since this element of RDA is optional, it is possible for a variety

of answers to be based on the catalog agency's local practices, which is often an example of a

formalized version of cataloger's judgment, or an individual's cataloger's judgment.

Associations were examined between categorical variables and the text that was

recorded in the MARC records. The text was categorized into two groups; the presence of text

and no text present. There was a statistical association for 110 $a, Corporate Name, and total

years of experience cataloging, p = 0.022 and a Cramer's V = .210, a moderate effect size. There

was also a statistical association for 110 $e, Relator Term, and years of experience cataloging

ER, p = 0.006 and a Cramer's V = .232, a moderate effect size; as well as the minutes spent

creating the MARC record, p = .022 and a Cramer's V = .229, a moderate effect size. There was

no statistical association between the other variables. Table 4.10and 4.11 provides a summary

of the results of these tests.

Table 4.10

Chi-Square p-value/Fisher's Exact results for corporate names

Chi-square p-value/Fisher's Exact					
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_110$a	.273	.022*	.059*	.181*	.290*
Field_110$b	1.000	.729	.548	.677	.958*
Field_110$e	.822	.069	.006	.022	.865*
Field_710$a	.765	.095	.545*	.600*	.728*
Field_710$b	.168	.569	.635	.513	.123*
Field_710$e	.412	.834*	.610*	.929*	.097*

The shaded cells indicate significance.
*Variable met Chi-square assumption; therefore, the Chi-square is reported. The p-values are based on all cases with valid data.

Table 4.11

Cramer's V results for corporate names

Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Cramer's V					
Field_110$a	.144	.210	.161	.170	.107
Field_110$b	.044	.074	.083	.104	.020
Field_110$e	.102	.170	.232	.229	.037
Field_710$a	.071	.170	.075	.113	.054
Field_710$b	.167	.103	.072	.124	.139
Field_710$e	.114	.063	.067	.063	.147

Cramer's V – Effect Size Categories

.000 - .099 (Negligible Association)

.100 - .199 (Weak Association)

.200 - .399 (Moderate Association)

Recording Titles

Preferred Title (MARC 130 Field)

The preferred title, formerly known as the uniform title, allows users to discover various manifestations of a work. The preferred title is to be used for translations or new editions that have revised content and title changes. The preferred title is determined to be the title and the language in which the resource was originally printed (RDA 6.2, 2.2., and 6.2.2).

In previous practice (AACR2), in the case where the title was the authorized access point, MARC field 245, then the MARC 130 field should be completed. This would be for works in which there is not a name associated with the creator of the work. In the test there were two such electronic resources in which some test participants adhered to this rule. The two resources were Items M and O, both of which were online journals.

In each of these resources, seven individuals determined a 130 MARC field was

necessary. For Item O, six of the seven used the exact same text to describe the preferred title,

but there was less agreement with Item M. For M, there were four variations of text with

"Criterion (Maharashtra, India)" receiving the most acceptance. Table 4.12 provides the detail

of what was entered in the 130 field for both items.

Table 4.12

Entries for Preferred Titles (130)

MARC 130 Field Text	Number of Participants using Text
Criterion (2010)	2
The Criterion (Maharashtra, India)	1
Criterion (India)	1
Criterion (Maharashtra, India)	3
Journal of San Diego history (Online)	6
The Journal of San Diego History (Online)	1

Only one of the participants deemed that the editor was the authorized access point

and included the name in the 100 fields "Bite Vishwanath, editor."

Titles (MARC 245 $a, 245 $b, and 246 $a Fields)

The title was a core element in the RDA National Test. When entering the title into

MARC, the cataloger does so by placing the title in subfield $a in the 245 field. If there is a

remainder title, or a subtitle, it is entered into subfield $b of the 245 field. There are times

when variations of the title that were different enough from the title entered into the 245 field

were entered into the 246 field (varying form of title).

In the study, for E-Monographs, E-Serials and the streaming videos there was much agreement among the participants as to what should be entered for the titles. In contrast, there was less agreement with the Integrating Resources (Items V, W, X, and Y). According to the RDA Toolkit at the time of the test, an integrating resource is defined as "a resource that is added to or changed by means of updates that do not remain discrete but are integrated into the whole. An integrating resource may be tangible (e.g., a loose-leaf manual that is updated by means of replacement pages) or intangible (e.g., a Web site that is updated either continuously or on a cyclical basis)." To investigate this further, the websites were located using http://web.archive.org in order to find a version of the website as close to the test date as possible, without going beyond the end date of the test (Figures 4.2, 4.3, 4.4 and 4.5).
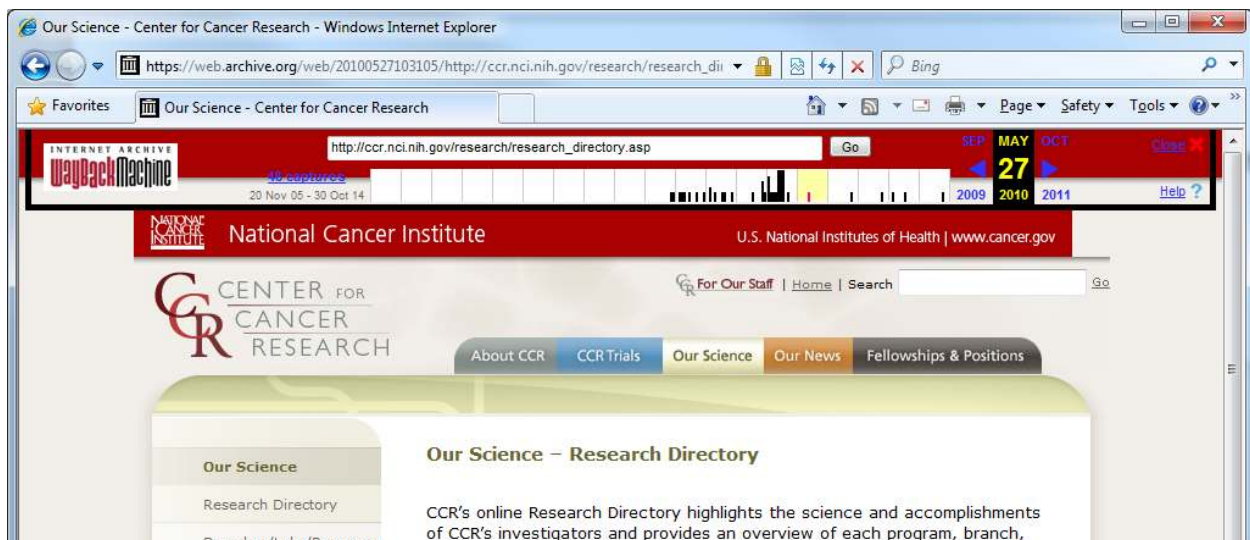
Figure 4.2: Item V, Homepage of Our Science – Research Directory

Figure 4.3: Item W, Homepage of Abstracts Database – National Criminal Justice Reference Center Service

Figure 4.4: Item X, Homepage of Welcome to the United Nations: It's Your World
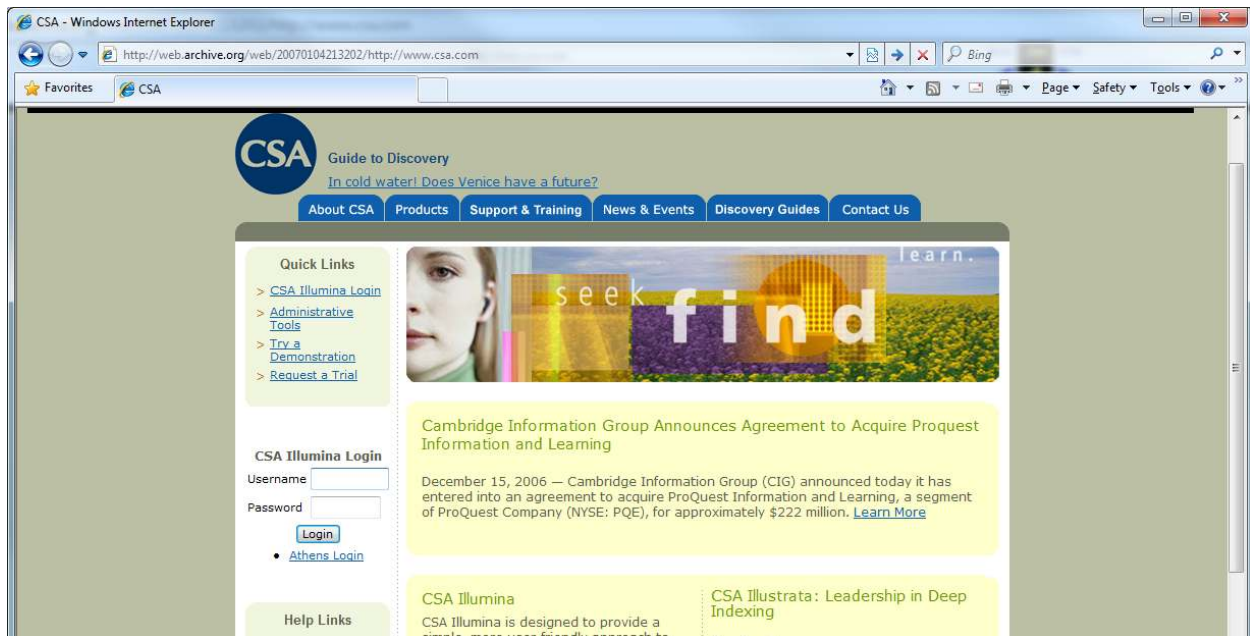
Figure 4.5: Item Y, Homepage of CSA

Each of the integrating resource items studied had 19 records, except for Item W, which had 18.

Table 4.13 provides all of the text that each participant entered for 245 $a and $b and 246 $a

simultaneously. Item V had 13 variations, Item W and X had 15, Item X had 12, and Item Y had

11 for a total of 54 variations across all four items. These numbers suggest that there was very

little agreement for the 75 records that were created.

Table 4.13

Text Entered and Frequencies of the Text Entered in the 245 $a and $b and 246 $a Subfields

Item	245$a and $b	246$a	Number of times Text was used
V	$a Our science $b research directory	Our Science – Center for Cancer Research	2
V	$a Our science $b research directory		2
V	$a Our science $b research directory / Center for Cancer Research	Our science – Center for Cancer Research	1
V	$a Our Science $b		1
V	$a Our science – research directory $b	Our science – Center for Cancer Research	1
V	$a Our science – research directory $b	Our science research directory	1
V	$a Our science – research directory $b	Our science;Center for Cancer Research's online research directory	1
V	$a Our science – research directory $b	Research directory	3
V	$a Our science – research directory $b	Research directory;CCR annual research directory;Center for Cancer Research annual research directory	1
V	$a Our science – research directory $b		1
V	$a Our science – research directory $b		3
V	$a Research directory $b	Our science – research directory;Center for Cancer Research annual research center directory;Center for Cancer Research annual research directory;Annual research directory;ARD	1
V	$a Research directory $b		1
W	$a Abstracts database $b	NCJRS Abstracts database	2
W	$a Abstracts database $b	NCJRS Abstracts Database;Library/abstracts	1
W	$a Abstracts Database $b	NCJRS Abstracts Database;NCJRS Abstracts Database Search	1
W	$a Library abstracts $b	Library abstracts;National Criminal Justice Reference Service library abstracts;NCJRS abstracts	1
W	$a Library abstracts $b	Abstracts database – National Criminal Justice Reference Service;NCJRS abstracts database	1
W	$a National Criminal Justice Reference Service $b	NCJRS;Abstracts database	1
W	$a National Criminal Justice Reference Service abstracts database $b	NCJRS abstracts database;Abstracts database	1
W	$a NCJRS $b library abstracts	National criminal justice reference service	1
W	$a NCJRS $b National Criminal Justice Reference Service	National Criminal Justice Reference Service;Abstracts database	1

*Ending punctuation removed since it is undetermined if the system entered the ending punctuation

(*table continues*)

Table 4.13 (*continued*).

Item	245$a and $b	246$a	Number of times Text was used
W	$a NCJRS $b	Abstracts Database – National Criminal Justice Reference Services	1
W	$a NCJRS abstracts database $b	Abstracts database;National Criminal Justice Reference Service abstracts database	1
W	$a NCJRS abstracts database $b	National Criminal Justice Reference Service abstracts database	3
W	$a NCJRS abstracts database $b	National Criminal Justice Reference Service abstracts database;Library abstracts;Abstracts database – National Criminal Justice Reference Service	1
W	$a NCJRS, National Criminal Justice Reference Service $b	National Criminal Justice Reference Service;NCJRS abstracts database	1
W	$a Search the NCJRS abstracts database $b	NCJRS abstracts database;Abstracts database :	1
X	$a al-Umam al-muttahÌ£idah = $b Huan ying lai dao lian he guo = United Nations = Nations Unies = Organizatï¸ sï¸¡iiï¸ aï¸¡ ObÊºedinennykh Natï¸ sï¸¡iiÌ† (OON) = Bienvenidos a las Naciones Unidas	Huan ying lai dao lian he guo;United Nations;Nations Unies;Organizatï¸ sï¸¡iiï¸ aï¸¡ ObÊºedinennykh Natï¸ sï¸¡iiÌ†(OON);Bienvenidos a las Naciones Unidas;Welcome to the United Nations. It's your world!;United Nations, We the peoples... a stronger UN for a better world.;U.N. website	1
X	$a United Nations $b we the peoples... a stronger UN for a better world	Welcome to the United Nations	2
X	$a United Nations $b we the peoples... a stronger UN for a better world = Nous, peuples des Nations Unis... une ONU plus forte pour un monde meilleur = Naciones Unidas : nosotros los pueblos... unidos por un mundo mejor	Nous, peuples des Nations Unis... une ONU plus forte pour un monde meilleur;Naciones Unidas;Welcome to the United Nations	1
X	$a United Nations $b	Welcome to the United Nations	2
X	$a United Nations $b	Welcome to the United Nations :;United Nations :;UN	1
X	$a United Nations $b		2
X	$a United Nations – your world $b		1
X	$a Welcome to the United Nations $b it's your world	Bienvenue aux Nations Unies ;Bienvenidos a las Naciones Unidas	2
X	$a Welcome to the United Nations $b it's your world	United Nations	1

*Ending punctuation removed since it is undetermined if the system entered the ending punctuation

(*table continues*)

Table 4.13 (*continued*).

Item	245$a and $b	246$a	Number of times Text was used
X	$a Welcome to the United Nations $b it's your world	United Nations :;Nations Unies :;Organizatï¸ sï¸¡iiï¸ aï¸¡ ObÊ¹edinennykh Natï¸ tsï¸¡iiÌ†;Naciones Unidas son su mundo	1
X	$a Welcome to the United Nations $b it's your world	United Nations, we the peoples, a stronger UN for a better world	1
X	$a Welcome to the United Nations $b it's your world	United Nations–it's your world!;United Nations	1
X	$a Welcome to the United Nations $b it's your world		1
X	$a Welcome to the United Nations $b it's your world! = [Arabic title] : [Arabic other title information] = [Chinese title] : [Chinese other title information] = Bienvenue aux Nations Unies : c'est votre monde = Dobro pozhalovatÊ¹ v OON : eÌ¡to vash mir = Bienvenidos a las Naciones Unidas : son su mundo	United Nations;[Arabic title];[Chinese title];Bienvenue aux Nations Unies;Dobro pozhalovatÊ¹ v OON;Bienvenidos a las Naciones Unidas	1
X	$a Welcome to the United Nations. It's your world $b	United Nations. It's your world	1
Y	$a CSA $b	Cambridge Scientific Abstract	1
Y	$a CSA $b	CSA Illumina	1
Y	$a CSA $b	ProQuest	1
Y	$a CSA $b		2
Y	$a CSA Illumina $b	Cambridge Scientific Abstracts Illumina	1
Y	$a CSA illumina $b	CSA	1
Y	$a CSA Illumina $b	CSA;Illumina	1
Y	$a CSA illumina $b	Illumina	1
Y	$a CSA Illumina $b		4
Y	$a ProQuest $b	CSA	4
Y	$a ProQuest $b		2

*Ending punctuation removed since it is undetermined if the system entered the ending punctuation

It is important to look at the separate parts to the whole. Because of how the 245 and 246 fields are indexed users may not find all of the information. The next set of tables (4.14, 4.15, 4.16, and 4.17) provides the breakdown of each subfield to identify further agreement.

Table 4.14 provides the text that each participant entered for 245 $a and $b simultaneously. Item V had five variations, Item W had ten, Item X had eight, and Item Y had

three. There were a total of 26 variations for the 75 records. The RDA rules that provide

guidance for 245 $a and $b are 2.3.2 (title proper) and 2.3.4 (other title information).

Table 4.14

Text Entered into MARC 245 $a and $b for Items V, W, X, and Y

Item	Text Entered in 245 $a and $b*	Number of Times Text was Used
V	$a Our science $b research directory	4
V	$a Our science $b research directory / Center for Cancer Research	1
V	$a Our Science $b	1
V	$a Our science – research directory $b	11
V	$a Research directory $b	2
W	$a Abstracts database $b	4
W	$a Library abstracts $b	2
W	$a National Criminal Justice Reference Service $b	1
W	$a National Criminal Justice Reference Service abstracts database $b	1
W	$a NCJRS $b library abstracts	1
W	$a NCJRS $b National Criminal Justice Reference Service	1
W	$a NCJRS $b	1
W	$a NCJRS abstracts database $b	5
W	$a NCJRS, National Criminal Justice Reference Service $b	1
W	$a Search the NCJRS abstracts database $b	1
X	$a al-Umam al-muttahÌ£idah = $b Huan ying lai dao lian he guo = United Nations = Nations Unies = Organizatï¸ sï¸¡iïï¸ aï¸¡ ObÊºedinennykh Natï¸ sï¸¡iïÌ† (OON) = Bienvenidos a las Naciones Unidas	1
X	$a United Nations $b we the peoples... a stronger UN for a better world	2
X	$a United Nations $b we the peoples... a stronger UN for a better world = Nous, peuples des Nations Unis... une ONU plus forte pour un monde meilleur = Naciones Unidas : nosotros los pueblos... unidos por un mundo mejor	1
X	$a United Nations $b	5
X	$a United Nations – your world $b	1
X	$a Welcome to the United Nations $b it's your world	7
X	$a Welcome to the United Nations $b it's your world! = [Arabic title] : [Arabic other title information] = [Chinese title] : [Chinese other title information] = Bienvenue aux Nations Unies : c'est votre monde = Dobro pozhalovatÊ¹ v OON : eÌ‡to vash mir = Bienvenidos a las Naciones Unidas : son su mundo	1
X	$a Welcome to the United Nations. It's your world $b	1
Y	$a CSA $b	5
Y	$a CSA Illumina $b	8
Y	$a ProQuest $b	6

*Ending punctuation removed since it is undetermined if the system entered the ending punctuation

Table 4.15 provides the text that each participant entered for 245 $a. Items V and Y had

three variations, Item W had eight, and Item X had five. There were 19 variations for the total

of 75 records.

Table 4.15

Text Entered into MARC 245 $a for Items V, W, X, and Y

Item	Text Entered in 245 $a*	Number of Times Text was Used
V	Our science	6
V	Our science – research directory	11
V	Research directory	2
W	Abstracts database	4
W	Library abstracts	2
W	National Criminal Justice Reference Service	1
W	National Criminal Justice Reference Service abstracts database	1
W	NCJRS	3
W	NCJRS abstracts database	5
W	NCJRS, National Criminal Justice Reference Service	1
W	Search the NCJRS abstracts database	1
X	al-Umam al-muttahÌ£idah =	1
X	United Nations	8
X	United Nations – your world	1
X	Welcome to the United Nations	8
X	Welcome to the United Nations. It's your world	1
Y	CSA	5
Y	CSA Illumina	8
Y	ProQuest	6

*Ending punctuation removed since it is undetermined if the system entered the ending punctuation

Table 4.16 provides the text that each participant entered for 245 $b. Item V and W had

three variations, Item X had six, and Item Y had no variations. The total of variations for the

seventy-five records is twelve.

Table 4.16

Text Entered into MARC 245 $b for Items V, W, X, and Y

Item	Text Entered in 245 $b*	Number of Times Text was Used
V	research directory	4
V	research directory / Center for Cancer Research	1
V	No Text Entered	14
W	No Text Entered	16
W	library abstracts	1
W	National Criminal Justice Reference Service	1
X	Huan ying lai dao lian he guo = United Nations = Nations Unies = Organizatï¸ sï¸¡iiï¸ aï¸¡ ObÊºedinennykh Natï¸ sï¸¡iiÌ† (OON) = Bienvenidos a las Naciones Unidas	1
X	we the peoples... a stronger UN for a better world	2
X	we the peoples... a stronger UN for a better world = Nous, peuples des Nations Unis... une ONU plus forte pour un monde meilleur = Naciones Unidas : nosotros los pueblos... unidos por un mundo mejor	1
X	No Text Entered	7
X	it's your world	7
X	it's your world! = [Arabic title] : [Arabic other title information] = [Chinese title] : [Chinese other title information] = Bienvenue aux Nations Unies : c'est votre monde = Dobro pozhalovatÊ¹ v OON : eÌ‡to vash mir = Bienvenidos a las Naciones Unidas : son su mundo	1
Y	No Text entered	19

*Ending punctuation removed since it is undetermined if the system entered the ending

punctuation

   Table 4.17 provides the text that each participant entered for 246. Item V had seven

variations, Item W had fifteen, Item X had twelve, and Item Y had nine. The total of variations

for the 75 records was 43.

Table 4.17

Text Entered into MARC 246 for Items V, W, X, and Y

Item	246$a	Number of times Text was used
V	Our Science – Center for Cancer Research	4
V	No Text Entered	8
V	Our science research directory	1
V	Our science;Center for Cancer Research's online research directory	1
V	Research directory	3
V	Research directory;CCR annual research directory;Center for Cancer Research annual research directory	1
V	Our science – research directory;Center for Cancer Research annual research center directory;Center for Cancer Research annual research directory;Annual research directory;ARD	1
W	NCJRS Abstracts database	2
W	NCJRS Abstracts Database;Library/abstracts	1
W	NCJRS Abstracts Database;NCJRS Abstracts Database Search	1
W	Library abstracts;National Criminal Justice Reference Service library abstracts;NCJRS abstracts	1
W	Abstracts database – National Criminal Justice Reference Service;NCJRS abstracts database	1
W	NCJRS;Abstracts database	1
W	NCJRS abstracts database;Abstracts database	1
W	National criminal justice reference service	1
W	National Criminal Justice Reference Service;Abstracts database	1
W	Abstracts Database – National Criminal Justice Reference Services	1
W	Abstracts database;National Criminal Justice Reference Service abstracts database	1
W	National Criminal Justice Reference Service abstracts database	3
W	National Criminal Justice Reference Service abstracts database;Library abstracts;Abstracts database – National Criminal Justice Reference Service	1
W	National Criminal Justice Reference Service;NCJRS abstracts database	1
W	NCJRS abstracts database;Abstracts database :	1

*Ending punctuation removed since it is undetermined if the system entered the ending punctuation

(*table continues*)

Table 4.17 (*continued*).

Item	246$a	Number of times Text was used
X	Huan ying lai dao lian he guo;United Nations;Nations Unies;Organizatï¸ sï¸¡iïï¸ aï¸¡ ObÊºedinennykh Natï¸ sï¸¡iiÌ†(OON);Bienvenidos a las Naciones Unidas;Welcome to the United Nations. It's your world!;United Nations, We the peoples... a stronger UN for a better world.;U.N. website	1
X	Welcome to the United Nations	4
X	Nous, peuples des Nations Unis... une ONU plus forte pour un monde meilleur;Naciones Unidas;Welcome to the United Nations	1
X	Welcome to the United Nations :;United Nations :;UN	1
X	No Text Entered	4
X	Bienvenue aux Nations Unies ;Bienvenidos a las Naciones Unidas	2
X	United Nations	1
X	United Nations :;Nations Unies :;Organizatï¸ sï¸¡iïï¸ aï¸¡ ObÊ¹edinennykh Natï¸ tsï¸¡iiÌ†;Naciones Unidas son su mundo	1
X	United Nations, we the peoples, a stronger UN for a better world	1
X	United Nations–it's your world!;United Nations	1
X	United Nations;[Arabic title];[Chinese title];Bienvenue aux Nations Unies;Dobro pozhalovatÊ¹ v OON;Bienvenidos a las Naciones Unidas	1
X	United Nations. It's your world	1
Y	Cambridge Scientific Abstract	1
Y	CSA Illumina	1
Y	ProQuest	1
Y	Cambridge Scientific Abstracts Illumina	1
Y	CSA	5
Y	CSA;Illumina	1
Y	Illumina	1
Y	No Text Entered	8

*Ending punctuation removed since it is undetermined if the system entered the ending punctuation

Table 4.18 provides a summary of the Tables 4.14, 4.15, 4.16, and 4.17. There appears to be greater agreement between the catalogers in the 245 field opposed to the 246 field. Part of this may be attributed to two different reasons: (1) the 246 field is repeatable which means that the participant could enter multiple titles, and (2) catalogers were determined to enter foreign language titles for Item X for which there were options to enter the website using translated versions (RDA 2.3.5).

Table 4.18

Summary of Variations within the 245 and 246 Fields and Subfields

Item	N	245 & 246	245	245 $a	245 $b	246
V	19	13	5	3	3	7
X	18	15	10	3	3	15
W	19	15	8	8	6	12
Y	19	11	3	5	0	9
Totals	75	54	26	19	12	43

Associations were examined between categorical variables and the text that was recorded in the MARC records. The text was categorized into two groups; the presence of text and no text present. There was a statistical association for 245 $b and minutes spent consulting others, $p = 0.050$ and a Cramer's V = .116, a weak effect size. There was also a statistical association for 246 $a and years of experience cataloging ER, $p = 0.007$ and a Cramer's V = .142, a weak effect size; and minutes consulting others, $p = .028$ and a Cramer's V = .214, a moderate effect size. There was no statistical association between the other variables. Tables 4.19 and 4.20 provide a summary of the results of these tests.

Table 4.19

Chi-Square p-value/Fisher's Exact Results for Titles

Chi-square p-value/Fisher's Exact					
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_130$a	.483	.062	.694	.180	.386
Field_245$a	N/A	N/A	N/A	N/A	N/A
Field_245$b	.836	.492*	.770*	.502*	.050*
Field_246$a	.178	.223*	.007*	.395*	.028*
Field_246$b	.519	.933	.334	.639	.444
Field_246$f	1.000	1.000	.291	.137	.620
Field_740$a	.478	1.000	.251	.350	.506

The shaded cells indicate significance.
*Variable met Chi-square assumption; therefore, the Chi-square is reported. The p-values are based on all cases with valid data.

Table 4.20

Cramer's V Results for Titles

Cramer's V					
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_130$a	.093	.178	.060	.170	.091
Field_245$a	N/A	N/A	N/A	N/A	N/A
Field_245$b	.077	.105	.049	.124	.166
Field_246$a	.148	.142	.214	.137	.182
Field_246$b	.076	.047	.100	.116	.108
Field_246$f	.046	.087	.105	.155	.085
Field_740$a	.109	.035	.096	.147	.091

Cramer's V – Effect Size Categories

.000 - .099 (Negligible Association)

.100 - .199 (Weak Association)

.200 - .399 (Moderate Association)

Recording the Statement of Responsibility

The statement of responsibility is part of the title statement in MARC 245 and is recorded in subfield $c. As defined in the RDA glossary at the time of the test, the statement of responsibility "is a statement relating to the identification and/or function of any persons, families, or corporate bodies responsible for the creation of, or contributing to the realization of, the intellectual or artistic content of a resource." Overall, the participants had general agreement on 245 $c. However, two of the items, Q and W demonstrated the greatest amount of difference in interpretation. Table 4.21 provides the item and number of text variations found in the records.

Table 4.21

Variations in the Text Entered into the MARC 245 $c Subfield

Item	Number of Records	Number of Text Variations
H	20	2
I	22	3
J	22	3
M	17	4
N	18	2
O	21	2
Q	22	7
V	19	5
W	18	6
X	19	2
Y	19	2
Totals	217	39

In the analysis of Items Q and W (Table 4.22), there was agreement that Ruixin Zhang for Item Q and lesser agreement that the National criminal Justice Reference Service for Item W should be placed into 245 $c. Overall, much of the disagreement centered on how and to what extent the person, corporate body and any additional information should be represented.

Table 4.22

Items Q and W Variations in Text Entered in MARC 245 $c

Item	Text Entered in 245$c	Number of times Text was used
Q	Dr. Ruixin Zhang	5
Q	Dr. Ruixin Zhang, Center for Integrative Medicine, University of Maryland School of Medicine	10
Q	Dr. Ruixin Zhang, Center for Integrative Medicine, University of Maryland School of Medicine ; National Cancer Institute	1
Q	Dr. Ruixin Zhang, Center for Integrative Medicine, University of Maryland School of Medicine ; produced by National Cancer Institute	1
Q	Dr. Ruixin Zhang; NCI, OCCAM.	1
Q	Ruixin Zhang	3
Q	No Text Entered	1
W	administered by the Office of Justice Programs, U.S. Department of Justice	3
W	National Criminal Justice Reference Service	5
W	National Criminal Justice Reference Service. Administered by the Office of Justice Programs, U.S. Department of Justice	1
W	NCJRS	1
W	NCJRS, National Criminal Justice Reference Service ; Administered by the Office of Justice Programs, U.S. Department of Justice	1
W	No Text Entered	7

*Ending punctuation removed since it is undetermined if the system entered the ending punctuation

In Item Q, there were two types of differences noted. The first difference was whether or not Ruixin Zhang should be preceded with the title "Dr." The second was to what extent the Center for Integrative Medicine, the University of Maryland, and the National Cancer Institute should be listed, and if so, should it be spelled out or abbreviated. Only one person did not input any text for 245 $c.

In Item W, there were three overall disagreements. The first was whether or not there should be any information entered at all. Seven of the 19 participants determined this was not necessary. The next disagreement was whether or not to abbreviate or spell out the text for the National Criminal Justice Reference Service (NCJRS). Finally, there were discrepancies as to

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whether or not the Office of Justice programs and U.S. Department of Justice should be a part

of the statement of responsibility.

There was no statistical association between the categorical variables and the text that

was recorded in the MARC record to report the presence of text and no text. Tables 4.23 and

4.24 provide a summary of the results of these tests. However, based on the Cramer's V, there

were weak association effect levels for some of the data.

Table 4.23

Chi-Square p-value/Fisher's Exact Results for Statement of Responsibility

Chi-square p-value/Fisher's Exact					
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_245$c	.363*	.080*	.692*	.510*	.454*
Field_245$f	1.000	1.000	1.000	.267	.438
Field_245$n	1.000	1.000	1.000	.433	1.000

The shaded cells indicate significance.
*Variable met Chi-square assumption; therefore, the Chi-square is reported. The p-values are based on all cases with valid data.

Table 4.24

Cramer's V Results for Statement of Responsibility

Cramer's *V*					
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_245$c	.121	.176	.058	.123	.084
Field_245$f	.032	.061	.047	.164	.096
Field_245$n	.032	.061	.047	.153	.060

Cramer's V – Effect Size Categories

.000 - .099 (Negligible Association)

.100 - .199 (Weak Association)

.200 - .399 (Moderate Association)

Recording Publishing Information

The publishing information in the MARC record includes the place, name and dates associated with the resource described.

The place of publication was a core element during the RDA National Test. At the time of the test, the MARC 264 field for Production, Publication, Distribution, Manufacture, and Copyright Notice was not in use, so the only field studied in this test relating to publication information is the 260 field, Publication Distribution, etc. Of the 217 records, 216 participants entered a 260 $a subfield for the place of publication. The major RDA rules that assist catalogers in determining the text to be included for publication information include 2.82 (place of publication), 2.8.4 (publisher's name), 2.8.6 (date of publication), and 2.11 (copyright date); additionally, basic instructions are also used to construct the text.

Generally, there was agreement for the place of publication for most items. For instance, all 20 records create for Item H, an E-Monograph, had "Washington" as the place of publication; however, four individuals added "D.C." Rule 2.8.2.3 along with 2.8.1 and 2.8.1.4 (basic instructions), does allow for an option to, "Include the full address as part of the local place name if it is considered to be important for identification or access." Although this option exists, one could interpret it to mean that full address would include more than just adding "D.C."

Item I, the eBook that was accessed through Feedbooks, had the greatest amount of variance as it relates to place of publication. For the 22 records created for this item, there were 15 different ways in which the participants entered the place of publication. Table 4.25 provides the text and the number of participants that entered the text.

Table 4.25

Place of Publication Entries for Item I

260 $a Text	Number of Participants Entering Text
[France?] :	1
[France] :	3
[Garches, France] :	3
[New York] :	2
[Paris, France?] :	1
[Paris, France] :	3
[Paris?] :	1
[Place of publication not given] :	1
[Place of publication not identified] :	1
[Salt Lake City, UT] :	1
[United States?] :	1
France :	1
Garches, France :	1
Paris, France :	1
Paris:	1

Based on the entered data, there was no agreement in how the place of publication should be entered. However, 18 of 22 did use square brackets (the cataloging standard for indicating that information was added by the cataloger based on inference) to demonstrate that the information was not provided in the item, and that they entered the data with other information they were able to infer. RDA 2.8.2.2 does allow the cataloger to take the place of publication from several sources such as "another source within the resource itself" or from the list found in 2.2.4 which includes accompanying files, descriptions published about the resource or any other source.

The publisher's name was also a core element for test participants. Of the 217 records, 214 of them included some form of text for the name of the publisher. Based on the records, there was a lower level of agreement among test participants.

For Item J, an E-Monograph, a majority of individuals agreed that the Lois Bolk Institute was the appropriate name for the publisher; however, there was disagreement as to which spelling of the institute should be used. Nineteen of the 22 entries listed some version of Lois Bolk Institute. Fourteen spelled institute as "institute" and five used the spelling "instituut." When consulting the resource, "Louis Bolk Instituut" appeared on the first page of the PDF document (Figure 4.6), and on the verso of the title page, it appeared as "Lois Bolk Institute" (Figure 4.7).

Figure 4.6: Publisher Information Listed on Cover of Item J

Ton Baars (2002)

Reconciling scientific approaches for organic farming research

Part I: Reflection on research methods in organic grassland and animal production at the Louis Bolk Institute, The Netherlands

Part II: Effects of manure types and white clover *(Trifolium repens)* cultivars on the productivity of grass-clover mixtures grown on a humid sandy soil

CIP-DATA KONINKLIJKE BIBLIOTHEEK, Den Haag, The Netherlands

Baars, T. (2002)
Doctoral Dissertation, Wageningen University and Research Centre, with references and summaries in English and Dutch

ISBN: 90-5808-771-9 (Wageningen Agricultural University and Research Centre, Wageningen)

ISBN: 90-74021-25-5 (Louis Bolk Institute, Driebergen)

Production and distribution: Louis Bolk Institute, Hoofdstraat 24, NL - 3972 LA Driebergen
© Louis Bolk Institute, Driebergen

Figure 4.7: Publisher Information as Listed on the Verso of the Title Page

For Item M, there was less agreement in the name of the publisher. A total of 17 records for this item were considered for study. With some variations of each, seven of the participants listed the online journal name as the publisher, six listed the editor as the publisher or probable publisher, and four could not identify a publisher name with one of them not entering any text (Table 4.26). For seventeen records, there was a total of eight different variations of the 260 $b including one of them that used a misspelling of the editor's name.

Table 4.26

Publisher Names Entered for Item M

Text Entered in 260 $b	Number of Participants Using Text
The Criterion	6
Criterion,	1
Dr. Vishwanath Bite?	2
Vishwanath Bite,	2
[Dr. Nishwanath Bite?]	1
Dr. Vishwanath Bite,	1
[publisher not identified],	3
No Text Entered	1

The date of publication is an element included in the publisher statement. RDA defines the date of publication as the publication, release, or issuing of a resource (RDA 2.8.6) and is a core element if it is available. RDA provides guidance for the cataloger should there be no publication date on the item. The two options are to give an approximate date or record the phrase "date of publication not identified" instead (RDA 2.8.6.).

In the records analyzed for this study, more than a quarter of them did not include any date in the 260 $c. Each of the records should have included a date or a notation that there was not a date available. For the records that did include text in the subfield, there were 23 variations in how the information was represented. The descriptions in Table 4.27 are

representative of the types of data included in 260 $c, and all dates that were entered by

participants would fall into one of the descriptive categories. The examples are a sample of the

data that was entered by test participants to illustrate the descriptive category.

Table 4.27

Types of Information Included in the Date of Publication (MARC 260 $c)

Description of Date	Sample of Actual Text
Printed year	1922
Unknown but probable century of publication known	[19??]
Unprinted, known starting year	[1955]-
Unknown, but probable beginning year of resource	[1997?]- [1998?-
Unknown, but probable decade of work (with extra dash)	[200-?]
Unprinted, known beginning year of resource and includes copyright date	[2001], ©2001-
Unknown, but probable year of publication	[1997?]
Unknown, but probable year of publication plus copyright date	[2002?], ©2002.
Unknown, but probable beginning year of resource	[2007?-]
Unprinted, known beginning year of resource and includes unprinted year of update	[2007]- [updated 2011]
Unprinted, known starting year and copyright	[2010]-, ©2010- [2010-], c2010-
Unprinted, known year and copyright date	[2010], ©2010-
Printed year of first issuance	1955-
Unknown, but probable date published after date	[after 2002]- [not before 2002]
Unknown, but probable date published before date	[before November 30, 2010]-
Unknown, but probable between two dates	[between 2002 and 2010?]
Unknown specific date, but probable between two dates	[between 2006 and 2010]
Unknown and no date to determine and includes copyright date	[date of publication not identified], 2010-.
Unknown and no date to determine and includes probable copyright date	[no publication date, ©2000]-
Unknown and no date to determine	[Date of publication not identified].
No date of publication, but include unprinted update	[updated 2010]
No date of publication, but includes copyright statement	©2006-2010, 1922. Copyright 2000-2001. Copyright 2010. © 2010 © 2010-

Associations were examined between categorical variables and the text that was recorded in the MARC records. The text was categorized into two groups; the presence of text and no text present. There was a statistical association for 260 $a and job title, = 0.043 and a Cramer's V = .268, a moderate effect size; and the number of years of experience cataloging ER, p = .007 and a Cramer's V = .321, a moderate effect size. There was no statistical association between the other variables. Tables 4.28 and 4.29 provide a summary of the results of these tests.

Table 4.28

Chi-Square p-value/Fisher's Exact results for publication information

Chi-square p-value/Fisher's Exact					
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_260$a	1.000	.444	.542	.515	.191
Field_260$b	.043	.007	1.000	.171	.230
Field_260$c	.451	.968*	.378*	.875*	.067*
Field_260$e	.335	1.000	.291	.237	1.000
Field_260$f	.335	1.000	.291	.237	1.000

The shaded cells indicate significance.
*Variable met Chi-square assumption; therefore, the Chi-square is reported. The p-values are based on all cases with valid data.

Table 4.29

Cramer's V results for publication information

Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Cramer's V					
Field_260$a	.046	.089	.082	.130	.135
Field_260$b	.268	.321	.056	.162	.094
Field_260$c	.116	.034	.095	.075	.158
Field_260$e	.158	.087	.105	.179	.042
Field_260$f	.158	.087	.105	.179	.042

Cramer's V – Effect Size Categories

.000 - .099 (Negligible Association)

.100 - .199 (Weak Association)

.200 - .399 (Moderate Association)

<div align="center">Recording Extent</div>

<u>Physical Descriptions</u>

The physical description of a resource refers to the various characteristics of a physical container or online resource. In RDA 3.1.1, the directions guide the cataloger to base the description on the resource's carrier and if necessary, other sources.

Rule 3.1.5 states, "Record *online resources* as the carrier type for all online resources." Additionally, if the resource is complete, then the completeness should be included (e.g., 1 image file, 75 pages, etc.). For the case of the electronic resources in this study, and based on the records studied, it was generally accepted that the notations for the physical description would be represented in this way:

300 _ _$a 1 online resource (75 pages)

338 _ _ $a online resource

The extent of the item would be expressed in pages, if the format is text-like (e.g., paginated) or if it could be described by the type of file (e.g., video, audio, data files). In this case it would be represented as "1 online resource (1 video file)." For the one streaming video recording resource included in the test, it would be appropriate to include the duration or video characteristics as found in RDA 7.22 which is a sub-rule of Chapter 7 which deals with "Describing Content" of Work and Expression.

Physical Description – Extent (MARC 300 $a)

In the study, test participants generally followed the RDA guidelines to construct the text for the 300 fields; however, there were variations within the text. RDA 3.1.5 and 3.4.1.3 provide the greatest guidance when recording the extent for online resources. Together, they state to record the extent as "1 online resource" followed by the extent (e.g., number of pages) if the total is known. Participants had variations that included the number of pages, duration, number of resources, etc. There were many variations found in the text entered for Item Q, a streaming video. Participants used terms such as computer file, online resource, streaming video file to describe the extent. The use of "streaming video" is mentioned in RDA 3.19.2.4, which instructs the cataloger to record the details of the file type if he/she feels it necessary for identification or selection; however, that rule is mapped to MARC field 516, Type of Computer File or Data Note. Participants were not consistent with the duration of the video. Some

entered no duration while others listed it as 36 minutes; 36 min., 4 sec; 36:04; 37 min. etc.

There were 20 variations for the 22 records studied for Item Q (Table 4.30).

Table 4.30

Text Entered for Physical Description (MARC 300 $a) for Item Q

Physical Description	Number of Participant Entries
1 computer file (36 minutes)	1
1 online resource (1 streaming video file) (36 minutes 4 seconds) :	2
1 online resource (1 streaming video file, running time 36:04) :	1
1 online resource (1 video file (36:04)) :	1
1 online resource (1 video file) (36 min, 04 sec.) :	1
1 online resource (1 video file) (36 min.) :	1
1 online resource (1 video file) :	1
1 online resource (1 video file, 37 min.) :	1
1 online resource (1 video file, 69 bytes, 36 min., 4 sec.) :	1
1 online resource (1 video file: 46 min.)	1
1 online resource (36 min.) :	1
1 online resource (36 min., 4 sec) :	1
1 online resource (37 min.) :	1
1 online resource :	1
1 streaming video (36:04)	1
1 streaming video	1
1 streaming video file (36 min.)	1
1 streaming video file (36 min., 4 sec.)	3
streaming video (36:04 minutes) :	1

For Item Q, 14 of the 22 did use the term online resource to describe the item, seven

used streaming video, and one used the term computer file. No rules were found stating that

streaming video or computer file could be used to describe the extent of an online resource.

When referring to the MARC Bibliographic to RDA Mapping information in the RDA

Toolkit, it references a variety of RDA rules that could be used to enter various types of

additional information such as base material, layout, sound characteristics, encoding format,

illustrative content, etc. Based on the MARC to RDA mapping, it appears that there are three

different areas that could typically be considered for inclusion in the MARC for 300 $b, Other

Physical Details. They are encoding format (RDA 3.19.3), illustrative content (RDA 7.15) and

color content (RDA 7.17).

In analyzing the studied records, 58.1% of the participants did not enter any detail in the

300 $b subfield. Others used a variety of terms such as PDF, HTML, sound, color, and

illustrations; illustrations was the most common term used.

In Item H, and E-Monograph, exactly half (10), of the participants included text in the $b

of the physical description. The most popular detail provided was that the resource contained

illustrations. Some also included that the resource was a PDF and/or a text file (Table 4.31).

Table 4.31

Text Entered for Other Physical Details (MARC 300 $b) for Item H

Other Physical Details	Number of Participant Entries
illustrations	5
illustrations, PDF	1
illustrations, text file, PDF	2
PDF.	1
text file, PDF	1
(No Text Entered)	10

RDA 7.15.1.1 states, "*Illustrative content* is content designed to illustrate the primary

content of a resource." It further states in 7.15.1.3, "If the resource contains illustrative

content, record *illustration* or *illustrations,* as appropriate. Tables containing only words and/or

numbers are not considered as illustrative content. Disregard illustrated title pages, etc., and

minor illustrations." The term "minor illustrations" requires cataloger judgment. Since all of the

items in this study allowed the participants to examine the entire information resource, they

could use their judgments to determine the presence of illustrations. MARC records with no

mention of illustrations imply that catalogers judged the illustrative matter to be minor or

absent.

Associations were examined between categorical variables and the text that was

recorded in the MARC records. The text was categorized into two groups; the presence of text

and no text present. There was a statistical association for 300 $a, Extent, and minutes spent

creating the MARC record, p = 0.038 and a Cramer's V = .216, a moderate effect size. There was

no statistical association between the other variables. Tables 4.32 and 4.33 provide a summary

of the results of these tests.

Table 4.32

Chi-Square p-value/Fisher's Exact Results for Extent of Item

Chi-square p-value/Fisher's Exact					
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_300$a	.188	.190*	.370*	.038*	.143*
Field_300$b	.606*	.289*	.659*	.546*	.660*

The shaded cells indicate significance.
*Variable met Chi-square assumption; therefore, the Chi-square is reported. The p-values are based on all cases with valid data.

Table 4.33

Cramer's V Results for Extent of Item

	Cramer's *V*				
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_300$a	.148	.148	.096	.216	.134
Field_300$b	.092	.132	.062	.119	.062

Cramer's V – Effect Size Categories

.000 - .099 (Negligible Association)

.100 - .199 (Weak Association)

.200 - .399 (Moderate Association)

Content, Media and Carrier Types and Characteristics (MARC 33x)

In AACR2, the General Material Designation (GMD) was recorded as a part of the Title and Statement of Responsibility; however, in RDA, this practice was abandoned and the old GMD is redefined to meet the growing demands of the digital environment. The GMD was more of a description of an item's format, such as a video recording. In today's digital environment, a video recording could be a DVD, an MP4 file, streaming video, etc. For this reason a new structure was created to provide additional detail on content (6.9), media (3.2), and carrier types (3.3). A controlled vocabulary has been created for these types and is included in RDA rules 6.9.1.3, 3.2.1.3, and 3.3.1.3.

Content, Media and Carrier Types (336, 337, 338)

RDA defines content type as, "... categorization reflecting the fundamental form of communication in which the content is expressed and the human sense through which it is intended to be perceived... (RDA 6.9.1.1)" For the electronic resource items in this study, most

of the resources would be considered "text" as one content type since they were textual in

nature in order to understand the content. However, Item Q was a streaming video, so it would

be considered a "two-dimensional moving image." In the analysis of the records in the study,

other types were included such as computer dataset, computer program, and text along with

other content types (i.e., Text and still image) (Table 4.34).

Table 4.34

Text Entered for Content Type (MARC 336 $a) for All Items

Content Type Description	Number of Participant Entries
computer dataset	1
computer program	2
other	1
text	180
text, still image(s)	5
text;other	1
text;still image;spoken word;two-dimensional moving image	1
text;still image;two-dimensional moving image	1
text;still image;two-dimensional moving image;spoken word;cartographic image	1
text;two-dimensional moving image;sounds;spoken word;still image	1
text;two-dimensional moving image;spoken word	1
text;video;audio	1
two dimensional moving image	2
two-dimensional moving image	16
two-dimensional moving image;spoken word	2
two-dimensional moving image;still image	1

RDA defines media type as the, "... categorization reflecting the general type of

intermediation device required to view, play, run, etc., the content of a resource" (3.2.1.1). For

the electronic resource items in this study, the resource needed would be a computer since all

of these resources were created to require some type of computer device to view them.

However, a few listed something other than the computer. The one item that had the most

disagreement was Item Q, the streaming video item, (Table 4.35).

Table 4.35

Text Entered for Media Type (MARC 337 $a) for All Items

Media Type Description	Number of Participant Entries
computer	199
video	6
computer ; video	4
other	3
text	3
projected	1
unmediated	1

RDA defines content type as the, "categorization reflecting the format of the storage

medium and housing of a carrier in combination with the type of intermediation device

required to view, play, run, etc., the content of a resource" (3.3.1.1). For the electronic resource

items in this study, most of the resources would be considered "online resources" as the format

appeared as a resource that was posted on the Web. The participants overwhelmingly agreed

with this description, 96.8% of them chose "online resource" as the carrier type for these

resources. However, Item Q was a streaming video, so it could be considered a "two-

dimensional moving image." In the analysis of the records in the study, other types such as

computer dataset, computer program, and text along with other content types (i.e., text and

still image) was included (Table 4.36).

Table 4.36

Text Entered for Content Type (MARC 338 $a) for All Items

Carrier Type Description	Number of Participant Entries
online resource	210
computer	3
computer carriers	1
online resource ; other video carrier	1
volume	1

Associations were examined between categorical variables and the text that was recorded in the MARC records. The text was categorized into two groups; the presence of text and no text present. There was a statistical association for 336 $b, Content Type Code, and job title, p = 0.010 and a Cramer's V = .219, a moderate effect size; and the number of minutes spent creating the MARC record, p = .010 and a Cramer's V = .256, a moderate effect size. There was also a statistical association for 337 $b, Media Type Code, and job title, p = 0.010 and a Cramer's V = .219, a moderate effect size; and the number of minutes spent creating the MARC record, p = .010 and a Cramer's V = .256, a moderate effect size. There was a statistical association for 338 $b, Carrier Type Code, and job title, p = 0.010 and a Cramer's V = .219, a moderate effect size; and the number of minutes spent creating the MARC record, p = .010 and a Cramer's V = .256, a moderate effect size. There was no statistical association between the other variables. Tables 4.37 and 4.38 provide a summary of the results of these tests.

Table 4.37

Chi-Square p-value/Fisher's Exact results for Content, Media, and Carrier Types

				Minutes	
		Years of	Years of	Spent	Minutes
		Experience	Experience	Creating	Consulting
Data Field	Job Title	Cataloging	Cataloging ER	Record	Others
Field_336$a	N/A	N/A	N/A	N/A	N/A
Field_336$b	.010	.256	.242	.010	.093*
Field_336$2	N/A	N/A	N/A	N/A	N/A
Field_337$a	N/A	N/A	N/A	N/A	N/A
Field_337$b	.010	.256	.242	.010	.093*
Field_337$2	N/A	N/A	N/A	N/A	N/A
Field_338$a	1.000	.447	1.000	.659	1.000
Field_338$b	.010	.256	.242	.010	.093*
Field_338$2	1.000	.447	1.000	.659	1.000

The shaded cells indicate significance.

*Variable met Chi-square assumption; therefore, the Chi-square is reported. The p-values are based on all cases with valid data.

Table 4.38

Cramer's V Results for Content, Media, and Carrier types

				Minutes	
		Years of	Years of	Spent	Minutes
		Experience	Experience	Creating	Consulting
Data Field	Job Title	Cataloging	Cataloging ER	Record	Others
Field_336$a	N/A	N/A	N/A	N/A	N/A
Field_336$b	.219	.120	.114	.256	.148
Field_336$2	N/A	N/A	N/A	N/A	N/A
Field_337$a	N/A	N/A	N/A	N/A	N/A
Field_337$b	.219	.120	.114	.256	.148
Field_337$2	N/A	N/A	N/A	N/A	N/A
Field_338$a	.032	.126	.047	.126	.060
Field_338$b	.219	.120	.114	.256	.148
Field_338$2	.032	.126	.047	.126	.060

Cramer's V – Effect Size Categories

.000 - .099 (Negligible Association)

.100 - .199 (Weak Association)

.200 - .399 (Moderate Association)

General Notes (MARC 500)

By the nature of the MARC 500 field, these can be general notes or notes specific to previously entered information such as title, publication, layout, extent, changes in content characteristics, etc. For this reason, the general note field was the most complex field to analyze. This is not only due to the broad nature of the types of information but it was also due to the variety of free text that participants entered.

It was necessary to first determine which type of note was present for each resource and the rule associated with it, and then attempt to classify based on the meaning of the note, which required revisiting the various items to gather meaning.

It was observed that 18 types of notes were recorded by participants in the MARC 500 field. There were also 68 records in which no notes were included. Table 4.39 provides the note types and the frequency in which they occurred.

Table 4.39

Note Types and the Frequency of Types Utilized in MARC 500 $a

Rule Number and Note Rule Name	Frequency
2.20.2 – Note on Title	81
2.20.3 – Note on Statement of Responsibility	9
2.20.7 - Note on Publication Statement	34
2.20.10 – Note on Copyright Date	8
2.20.13.3	3
2.20.13.4 – Note on Iteration Used as the Basis for the Identification of an Integrating Resource	7
2.20.13.5 – Note on Date of Viewing of an Online Resource	83
3.19 – Note on Encoding Format	11
3.20 – Note on Equipment or System Requirements	2
7.2 - Notes (General)	22
7.14 – Note on Accessibility Content	8
7.15 – Note on Illustrative Content	1
7.16 – Note on Supplementary Content	5
7.19 – Note on Aspect Ratio	1
7.22 – Note on Duration	1
25.1 – Note on Related Work	1
27.1 – Note on Related Manifestation	10
Miscellaneous Note (No Rule Found)	21
Provided No Notes	68

Associations were examined between categorical variables and the text that was

recorded in the MARC records. The text was categorized into two groups; the presence of text

and no text present. There was a statistical association for 500 $a, General Note, and total years

of experience cataloging, $p < 0.001$ and a Cramer's V = .277, a moderate effect size. There was

also a statistical association for 500 $a utilizing RDA rule 2.20.2 and total years of experience

cataloging, $p = .025$ and a Cramer's V = .208, a moderate effect size; and the number of years

cataloging ER, $p = .010$ and a Cramer's V = .207, a moderate effect size. There was also a

statistical association for 500 $a utilizing RDA rule 2.20.13.5 and total years of experience

cataloging, $p = .008$ and a Cramer's V = .234, a moderate effect size; and the number of minutes

spent creating the MARC record, p = .042 and a Cramer's V = .214, a moderate effect size. There

was also a statistical association for 500 $a utilizing RDA rule 3.19 and total years of experience

cataloging, p < .001 and a Cramer's V = .230, a moderate effect size; and the number of minutes

spent consulting others, p = .017 and a Cramer's V = .210, a moderate effect size. There was

also a statistical association for 500 $a utilizing RDA rule 3.20 and job title, p = .033 and a

Cramer's V = .254, a moderate effect size, and 500 $a utilizing RDA rule 25.1 and total years of

experience cataloging, p = .041 and a Cramer's V = .327, a moderate effect size. There was no

statistical association between the other variables. Tables 4.40 and 4.41 provide a summary of

the results of these tests.

Table 4.40

Chi-Square p-value/Fisher's Exact Results for the General Notes Field

		Chi-square p-value/Fisher's Exact			
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_500$a	.576	.001*	.624*	.401*	.065*
Field_500_9999	1.000	1.000	.778	.797	.637*
Field_500$a_2.20.2	.215	.025*	.010*	.302*	.169*
Field_500$a_2.20.3	1.000	.631	.877	.679	.341
Field_500$a_2.20.7	.690	.947*	.688*	.268*	.237*
Field_500$a_2.20.10	.452	.208	.057	.294	.203
Field_500$a_2.20.13.3	1.000	.655	.071	.609	.099
Field_500$a_2.20.13.4	.765	.581	.307	1.000	.608
Field_500$a_2.20.13.5	.380	.008*	.451*	.042*	.079*
Field_500$a_3.19	.061	.001	.639	.212	.017
Field_500$a_3.20	.033	.113	1.000	.137	1.000
Field_500$a_7.2	.154	.517	.358	.114	.847*
Field_500$a_7.14	.258	.786	1.000	.205	.244
Field_500$a_7.15	1.000	.221	.138	.433	1.000
Field_500$a_7.16	1.000	.583	.126	.928	1.000
Field_500$a_7.19	.184	1.000	1.000	.659	.438
Field_500$a_7.22	1.000	.447	1.000	.433	.438
Field_500$a_25.1	1.000	.041	1.000	.433	.101
Field_500$a_27.1	.325	.139	.342	.986	.088

The shaded cells indicate significance.

*Variable met Chi-square assumption; therefore, the Chi-square is reported. The p-values are based on all cases with valid data.

Table 4.41

Cramer's V Results for the General Notes Field

		Cramer's V			
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_500$a	.100	.277	.066	.136	.159
Field_500_9999	.038	.029	.056	.086	.064
Field_500$a_2.20.2	.148	.208	.207	.150	.128
Field_500$a_2.20.3	.099	.100	.024	.101	.089
Field_500$a_2.20.7	.081	.041	.059	.155	.115
Field_500$a_2.20.10	.084	.131	.147	.132	.104
Field_500$a_2.20.13.3	.056	.077	.183	.122	.166
Field_500$a_2.20.13.4	.077	.118	.081	.045	.050
Field_500$a_2.20.13.5	.123	.234	.086	.214	.149
Field_500$a_3.19	.230	.380	.057	.146	.210
Field_500$a_3.20	.254	.226	.067	.155	.042
Field_500$a_7.2	.157	.086	.088	.194	.039
Field_500$a_7.14	.143	.069	.033	.163	.125
Field_500$a_7.15	.032	.145	.170	.153	.060
Field_500$a_7.16	.073	.095	.120	.099	.052
Field_500$a_7.19	.241	.061	.047	.126	.096
Field_500$a_7.22	.032	.126	.047	.153	.096
Field_500$a_25.1	.032	.327	.047	.153	.203
Field_500$a_27.1	.069	.177	.107	.062	.148

Cramer's V – Effect Size Categories

.000 - .099 (Negligible Association)

.100 - .199 (Weak Association)

.200 - .399 (Moderate Association)

Notes in Other Fields (MARC 538 and 588)

The 538 MARC field is used to include any system or equipment requirements needed in order to technically access or use a resource. This was not a core element of the test, yet 40.1%, or 87 of the respondents, entered some type of system note. Most of the time, the text of a

538 note will begin with "System requirements" or "Requires." In the test, 19 notes started the note statement with "System requirements" or "Requires," 57 began the note using "Mode of access," and 11 started with something different (e.g., HTM, PDF, Streaming video, etc.).

While analyzing the results of this field, RDA was consulted to gain a better understanding about the acceptable forms of entry (Figure 4.8). It was noted that "Mode of access" is not listed in RDA as an acceptable entry for the 538 MARC field.

3.20 Equipment or System Requirement
3.20.1 Basic Instructions on Equipment or System Requirements
3.20.1.1 Scope
An *equipment or system requirement* is the equipment or system required for use, playback, etc., of an analog, digital, etc., resource.

3.20.1.2 Sources of Information
Use evidence presented by the resource itself (or on any accompanying material or container) as the basis for recording the equipment or system requirements of the resource. If desired, take additional evidence from any source.

3.20.1.3 Recording Equipment or System Requirements
Record any equipment or system requirements beyond what is normal and obvious for the type of carrier or type of file (e.g., the make and model of equipment or hardware, the operating system, the amount of memory, or any plug-ins or peripherals required to play, view, or run the resource).

> For Information Design reader
>
> For 65-note player piano
>
> Filmslip mounted in rigid format for use with Phono-viewer
>
> Requires PC with AudibleManager, or a portable device with AudiblePlayer, Audible Download Manager, AudibleAir, Windows Media Player, or Apple iTunes
>
> Playaway, a dedicated audio media player
>
> Requires RTI Series 500 CD-ROM DataDrive
>
> Requires IBM PC AT or XT and CD-ROM player and drive
>
> System requirements: IBM PC; 64K; colour card; 2 disk drives
>
> System requirements: Adobe Acrobat Reader
>
> System requirements: IBM-compatible PC with a Pentium processor or higher; 128MB of RAM; Windows 98, 2000, or XP; 11MB of available hard disk space; Windows-based word processing program
>
> Requires: Windows: 98SE/2K/XP (preferred) PC, 400 MHZ PII or higher recommended, 64 MB RAM, 14X CDROM drive, 800x600, 16 bit color (thousands of colors), Microsoft DirectX5.2 or OpenGL (recommended)
>
> Requires: Macintosh: power Macintosh/Power PC, OS9.1, OSX, 32 MB RAM, 14x CDROM drive

Alternative
Record the equipment or system requirements as they are presented on the resource.

> System requirements: Windows XP SP2, 256 MB; Vista, 512 MB; 1.0 GHz; 15 GB hard drive; 56.6 kbps or better for Internet play; DirectX 9 hardware compatibility and audio card with speakers and/or headphones; DirectX 9.0c compliant video card with 32mb of ram and support for hardware transformation and lighting

Figure 4.8: Rule for Equipment or System Requirements

MARC 588, the source of description note, is used to describe what specific resource was used to complete the cataloging record. This field is most useful when describing serials and integrating resources since there are multiple iterations or issues of the work possible. Typically the note will begin with "Identification of the resource based on..." or "Description based on..." The statement will most often include the date in which the resource was viewed. This is especially important for online resources since the resource is more easily editable.

In the RDA National test, 109 (50.2%) of the respondents entered a 588 field to the record. Of these, 88 of them started with "Identification of the resource based on..." or "Description based on..."; 16 began with "Title from..."; 7, "Last issue consulted..."; 4, "Viewed on..."; and 1 started with "Earlier title proper..."

Associations were examined between categorical variables and the text that was recorded in the MARC records. The text was categorized into two groups; the presence of text and no text present. There was a statistical association for 588 $a utilizing RDA rule 2.20.13.5 and job title, $p = 0.034$ and a Cramer's $V = .200$, a moderate effect size; and the total years of experience cataloging, $p = .029$ and a Cramer's $V = .203$, a moderate effect size. There was no statistical association between the other variables. Tables 4.42 and 4.43 provide a summary of the results of these tests.

Table 4.42

Chi-Square p-value/Fisher's Exact Results for Other Notes Fields

	Chi-square p-value/Fisher's Exact				
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_538$a	.595	.423*	.914*	.138*	.121*
Field_588$a	.561*	.188	.153*	.876*	.979*
Field_588$a_2.20.2.3	.920	.455*	.933*	.497*	.139*
Field_588$a_2.20.13.3.1	.882	.217*	.799*	.701*	.987*
Field_588$a_2.20.13.4	.147	.240*	.084*	.085*	.583*
Field_588$a_2.20.13.5	.034*	.029*	.650*	.186*	.855*

The shaded cells indicate significance.

*Variable met Chi-square assumption; therefore, the Chi-square is reported. The p-values are based on all cases with valid data.

Table 4.43

Cramer's V Results for Other Notes Fields

	Cramer's *V*				
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_538$a	.097	.114	.029	.179	.139
Field_588$a	.097	.148	.132	.075	.014
Field_588$a_2.20.2.3	.062	.110	.025	.125	.135
Field_588$a_2.20.13.3.1	.039	.143	.045	.100	.011
Field_588$a_2.20.13.4	.164	.139	.151	.194	.071
Field_588$a_2.20.13.5	.200	.203	.063	.169	.038

Cramer's V – Effect Size Categories

.000 - .099 (Negligible Association)

.100 - .199 (Weak Association)

.200 - .399 (Moderate Association)

Electronic Location and Access (MARC 856 $u)

The MARC 856 field is used to provide the Uniform Resource Locator (URL) for the resource being described. The URL is the web address where the online resources are able to be accessed. A large majority, 89.4% of the respondents, included a URL in the 856 field. Twenty-three participants did not include one at all.

Of those that did include a URL, it was strange that there were several variations of the URL represented. Item V, an integrating E-Resource, had the greatest number of variations (Table 4.44). Fourteen respondents entered one URL, two respondents entered two, and one did not include any URL at all. In the test surrogate (Appendix B) several of the electronic resources had two different URLs, and Item V was one of them. The two individuals that listed two URLs for Item V included both addresses. It is interesting that one of the variations below begins with http://http://. It is unknown if the participant entered this by mistake or if the cataloging entry system automatically adds http:// to any URL entered.

Table 4.44

Frequency of URLs Entered in MARC 856 $U for Item V

URLs Entered in 856 $u for Item V	Frequency
http://ccr.nci.nih.gov/research/research_directory.asp	11
http://ccr.nci.nih.gov/research/research_directory.asp;http://web.archive.org/web/20021108224555/http://ccr.nci.nih.gov/research/annual_research_dir.asp	2
http://ccr.ncifcrf.gov/research/research_directory.asp	1
http://http://ccr.nci.nih.gov/research/research_directory.asp	1
http://web.archive.org/web/20021108224555/http://ccr.nci.nih.gov/research/annual_research_dir.asp	1
No URL Listed	1

Associations were examined between categorical variables and the text that was recorded in the MARC records. The text was categorized into two groups; the presence of text and no text present. There was a statistical association for 856 $u, Uniform Resource Identifier, and total years of experience cataloging, $p = 0.025$ and a Cramer's V = .235, a moderate effect size; years of experience cataloging ER, $p = .024$ and a Cramer's V = .164, a weak effect size; and minutes spent creating MARC record, $p = 0.014$ and a Cramer's V = .231, a moderate effect size. There was no statistical association between the other variables. Tables 4.45 and 4.46 provide a summary of the results of these tests.

Table 4.45

Chi-Square p-value/Fisher's Exact Results for Electronic Location and Access

Chi-square p-value/Fisher's Exact					
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_856$u	.076	.025	.024	.014	.428*

The shaded cells indicate significance.
*Variable met Chi-square assumption; therefore, the Chi-square is reported. The p-values are based on all cases with valid data.

Table 4.46

Cramer's V Results for Electronic Location and Access

Cramer's *V*					
Data Field	Job Title	Years of Experience Cataloging	Years of Experience Cataloging ER	Minutes Spent Creating Record	Minutes Consulting Others
Field_856$u	.181	.235	.164	.231	.088

Cramer's V – Effect Size Categories

.000 - .099 (Negligible Association)

.100 - .199 (Weak Association)

.200 - .399 (Moderate Association)

Summary of p-value with Significance

There were a total of 34 subfields in which the Chi-square/ Fisher's Exact $p < .05$. For

these 34 subfields, it was determined that the differences among the groups were great

enough to be considered significant. Tables 4.47, 4.48, 4.49, 4.50, and 4.51 provide the

breakdowns of the categorical groups and a summary of the residual value of the expected

results for those subfields that demonstrated a significant value ($p < .05$). The residual is the

difference between the expected number of occurrences that text would be present and the

actual. For the purpose of this analysis, if the residual value is between -0.9 and 0.9, then the

value will be considered that it met the expectation. If the value is greater than or equal to 1.0

then the result is considered as greater than expected, and if the residual value is less than or

equal to -1.0 the result is considered as less than expected.

In the categorical groups represented for job title, the librarian category had two of the

six residual values that exceeded more than expected and four of the six less than expected. For

the job category of "other" three of the six subfields had a greater number of individuals that

included text, one of the six had less than expected, and the remaining two as expected. The

paraprofessionals had four out of the six subfields that had expected results greater than

expected, zero that were less than expected, and two as expected. Finally, the student group

had none greater than expected, two that were less than expected, and four that were as

expected. Table 4.47 provides a summary of these results.

Table 4.47

Frequency of Expected Results for Job Title

Categorical Group	Total Number of Subfields p < .05	Number of Expected Results with p-value Determined Significant		
Job Title	6	Greater than Expected	Less than Expected	Met Expectation
Librarian		2	4	0
Other		3	1	2
Paraprofessional		4	0	2
Student		0	2	4

For the categorical groups represented for total years of experience cataloging, the $0 - 3$ years of experience category had three of the ten residual values that were exceeded than expected and five of the ten lower than expected, and two that were as expected. For those with $3 - 6$ years of experience, three of the ten subfields had a greater number of individuals that included text, two of the ten less than expected, and the remaining five as expected. For those with $6 - 22$ years of experience, seven out of the ten subfields that had greater than expected results, two that had less than expected and one as expected. Finally, those with greater than 22 years of cataloging experience, there was one of the ten subfields in which they exceeded the number expected, five of the ten that were lower than expected, and four in which was as expected. Table 4.48 provides a summary of these results.

Table 4.48

Frequency of Expected Results for Total Years of Cataloging Experience

Categorical Group	Total Number of Subfields p < .05	Number of Expected Results with p-value Determined Significant		
Total Years of Experience Cataloging	10	Greater than Expected	Less than Expected	Met Expectation
0 – 3 Years		3	5	2
3 – 6 Years		3	2	5
6 – 22 Years		7	2	1
22+ Years		1	5	4

For the categorical groups represented for total years of experience cataloging electronic resources, the 0 – 3 years of experience category had two of the six residual values that were exceeded, and four of the six that were lower than expected. For those with 3 – 6 years of experience, two of the six subfields had a greater number of individuals that included text, three of the six less than expected, and the remaining one as expected. For those with 6 or more years of experience, two out of the six subfields had greater than expected results, three that had less and one as expected. Table 4.49 provides a summary of these results.

Table 4.49

Frequency of Expected Results for Total Years of Cataloging Experience ER

Categorical Group	Total Number of Subfields p < .05	Number of Expected Results with p-value Determined Significant		
Years of Experience Cataloging ER	6	Greater than Expected	Less than Expected	Met Expectation
0 – 3 Years		2	4	0
3 – 6 Years		2	3	1
6+ Years		2	3	1

For the categorical groups represented for number of minutes spent cataloging the record, those that spent between 0 and 30 minutes had three of the seven residual values that

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were higher than expected, and four of the seven lower than expected. For those that spent 31 – 60 minutes creating the record, one of the seven subfields had a greater number of individuals that included text and six of the seven less than expected. For those that spent 61 – 91 minutes creating the record, four out of the seven subfields that had greater than expected result and three that were less than expected. For those that spent 91 – 120 minutes creating the record, six of the seven had a greater value than expected, and one was as expected. Finally, those who spent 121 – 300 minutes creating the record, there were two of the seven subfields in which they exceeded the number expected, two of the seven that they were lower than expected, and three in which was as expected. Table 4.50 provides a summary of these results.

Table 4.50

Frequency of Expected Results for Total Years Cataloging Experience

Categorical Group	Total Number of Subfields p < .05	Number of Expected Results with p-value Determined Significant		
Minutes Spent Creating Record	7	Greater than Expected	Less than Expected	Met Expectation
0 – 30 Minutes		3	4	0
31 – 60 Minutes		1	6	0
61 – 90 Minutes		4	3	0
91 – 120 Minutes		6	0	1
121 – 300 Minutes		2	2	3

For the amount of time spent consulting others, the subgroup that did not consult anyone at all, had residual values that were less than expected. For those that consulted others between 1 and 30 minutes, four of the five subfields had a greater number of individuals that included text and one of the five was as expected. For those that consulted with other 31

minutes or more, two of the five were greater than expected, three of the five were lower, and

none were as expected. Table 4.51 provides a summary of these results.

Table 4.51

Frequency of Expected Results for Total Years Cataloging Experience ER

Categorical Group	Total Number of Subfields p < .05	Number of Expected Results with p-value Determined Significant		
Minutes Spent Consulting Others	5	Greater than Expected	Less than Expected	Met Expectation
Did Not Consult Others		0	5	0
1 – 30 Minutes		4	0	1
31 + Minutes		2	3	0

Conclusion

Based on the observations of the data, there are many variations to the data and each

record is unique. The question that is left unanswered is whether or not there are significant

differences between groups. Chapter 5 will discuss how this data analysis was used to address

the research questions.

CHAPTER 5

FINDINGS

Introduction

This study used existing data from the National Libraries test on RDA, a new content

standard for cataloging. The data included 11 of the items cataloged from the common original

set of resources that each of the 26 institutions were instructed to catalog. Through the analysis

of the data, important results were revealed about cataloger's judgment and the text that was

entered within the MARC records. These findings assisted in answering the research questions,

although not necessarily to the level I had hoped. This chapter restates the problem statement;

the major findings including the research questions posed, further discussion about how the

data analysis answers the questions, future research projects to be considered, and

implications and recommendations for the cataloging community.

Restatement of the Problem

As stated in Chapter 1, the problems of this study address cataloger's judgment—a topic

rarely studied, but often referred to when describing how a cataloger enters text into a MARC

record. According to Cutter, the library catalog should serve the convenience of the user, and

therefore, catalogers should exercise some judgment as to the information included in the

library catalog. Bounded rationality explains judgment making as a series of decisions based on

the constraints of cognitive ability and time of the decision maker.

In this study, I sought to analyze the decisions catalogers make within the constraints of

time and cognitive ability. The data analyzed for this study comes from the common set of

MARC records created by the formal test group of the RDA national test. As previously stated in

this study, the testing procedures for the formal test of RDA required each cataloging

organization to construct original cataloging records for the same set of items; this created a

great opportunity to study the similarities and differences in how cataloging staff interpret

cataloging rules.

Major Findings

This study is based on two research questions. The first research question was very

broad and for this reason two sub-questions were asked to limit the scope in order to analyze

specific groups and the constraints they had during the RDA national test. Since the sub-

questions are interrelated, they are grouped with the main question for this discussion of the

major findings.

RQ1 How did catalogers participating in the Resource Description and Access (RDA) National

Test exercise cataloger's judgment as they created RDA-based MARC records for

electronic resources?

1a: What are the similarities and differences of the records?

1b: To what extent can the differences in text entered in the records be explained by

differences in characteristics of the catalogers (e.g., level of position, experience,

prior course work and/or training, etc.)?

RQ2 How can cataloger's judgment be explained through the lens of Bounded Rationality?

2a: How can cataloger's judgment be predicted using the constructs of bounded

rationality?

Research Question 1

To answer question 1, how catalogers participating in the Resource Description and Access (RDA) National Test exercise cataloger's judgment as they created RDA-based MARC records for electronic resources, the MARC records and the survey instruments collected by the RDA National Test were analyzed for significant differences. Based on the preliminary informal look at the data for one of the non-electronic resource items, it was determined that there were differences in the text or lack of text entered into the MARC fields. These preliminary findings also raised questions if these differences were based on categorical differences between catalogers (experience levels, job titles, and time spent creating the MARC record and consulting others).

In the formal study, there were only five instances of unanimous agreement out of the 73 subfields studied where text should be present in a specific subfield (Title Statement, 245 $a; Content Type, 336 $a and $2; and Media Type, 337 $a and $2).

Although there was agreement found in these five subfields, it is important to note that there was less agreement on the actual text that was entered into the subfield for Title Statement, 245 $a, Title. For instance, there were 19 variations of the 245 $a for 75 records submitted for items V, W, X, and Y. Item W alone has eight variances.

When stepping back and looking at the elements relating to titles in subfields 245 $a, Title, 245 $b, Remainder of Title and Varying Form of Title, 246 $a, there was even greater disagreement. For items V, W, X and Y, 75 records were analyzed and there were a total of 54 variations across all three of these subfields. Greater agreement could be found within a single subfield, such as 245 $b, Remainder of Title, that had 12 variations among the 75 records. This

was not a unique phenomenon limited to just this example, but across all items and cataloging elements.

Question 1a, examined the similarities and differences of the records and Question 1 b, extended the question to ask to what extent the differences in text entered in the records could be explained by differences in characteristics of the catalogers (e.g., level of position, experience, prior course work and/or training, etc.)? This was answered using Chi-square/Fisher's Exact tests to determine associations between groups. Due to the small sample size per record, and average of 19.72 records per item, the Chi-square test was not applicable for a majority of the tests due to not meeting the assumption of having at least 5 records for each cell in 80% of the crosstabs. Only 104 of the 365 tests performed (28.49%) were able to be analyzed using Chi-square. The remaining 261 records were analyzed using the Fisher's Exact test. Thirty-four of the 365 tests (9.31%) resulted in significant associations.

In addition to the Chi-square and Fisher's Exact tests, the Cramer's *V,* a post-test, was performed to determine the effect size of the associations. The post-test determined that 29 of the 34 had a moderate effect size and five of the significant associations had a weak effect size. The Cramer's *V* is independent of the Chi-Square p-value; however, the Cramer's *V* does tend to correlate with the Chi-square p-value. For this reason it is important to look at the Cramer's *V* results for non-significant associations as well. Four of non-significant associations show a moderate effect size and 185 of the non-significant associations demonstrated a weak effect size. Even though these did not yield a significant association based on the Chi-square/Fisher's Exact test, it is important to note that sample size for Chi-square has a great influence on the result for significance. Therefore, although a majority of tests were not found to have

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significant associations, the post-test does demonstrate that with a larger sample, the result could be far different. Although question 1a, what are the similarities and differences of the records?, cannot be answered to full certainty, the data does support that there are differences in the presence of text among the groups.

Research Question 2

To answer the second research question, how can cataloger's judgment be explained through the lens of Bounded Rationality? and its sub question, how can cataloger's judgment be predicted using the constructs of bounded rationality?, a predictive test such as logistical regression would need to performed. Unfortunately, using quantitative statistics to answer this question was not possible due to the size of the data set.

Since logistic regression could not be completed due to the sample size, the Chi-square/Fisher's Exact results are used to describe some trends that were emerging from the test data. In chapter four the expected results of the crosstabs were compared with the residual values. This analysis provides a window into whether or not the theory of bounded rationality supports the decision making among catalogers as they make their determination of whether to include text or not.

According to bounded rationality, decisions are made within the constructs of cognitive ability and time. The assumption would be that the greater cognitive ability and more time spent on a decision would result in better judgment. It was not the intention of this study to determine if the best judgments were made, but rather to study how different groups entered text or not. It could also be assumed that those with greater cognitive ability would require less

time to make decisions since they would have greater knowledge of the rules. However, with a new standard, prior knowledge could be a barrier as these catalogers may hold onto previous truths.

Based on the analysis in chapter 4, this assumption does not hold true all of the time since it does not hold true that the librarian, those with 22 or more years of experience cataloging, those that have more than six years of cataloging electronic resources, those that spent the most time cataloging records, and those that spend more time consulting others, results in a greater amount of text present. Based on the analysis, the groups that exhibited the greatest positive amount of residual value were the paraprofessional, those with 6 - 22 years of experience, those that spent 91 - 120 minutes creating the catalog record, and those that spent 1 - 31 minutes consulting others. For the category of experience cataloging electronic resources, there was not one single group that stands out as exceeding the expected amount. Based on these results, it appears that the theory of bounded rationality does not completely support the assumptions proposed in this study.

Results indicate that bounded rationality does not support the phenomena of cataloger's judgment, but it is important to note that RDA is a new standard, and this study did not cover the levels, types and quality of training each group received or the quality of the records that were created. It is too early to determine if in fact bounded rationality can or cannot explain cataloger's judgment.

Extending beyond the research questions posed for this study, the most significant finding that was not anticipated, or I did not know to question at the start of this study, was how participants would determine the preferred source of information. Through the analysis of

the data, I repeatedly found that the differences in cataloger's judgment had to do with the preferred source(s) of information referred to in order to enter text. In most cases, I was able to identify why catalogers determined the text they entered based on the source of information they were using. This process was done by going back to the actual item and comparing the text the cataloger entered and then searching to see if I could identify the source of information the user may have used to assign the text they entered. One of the examples provided in Chapter 4 was for the E-Monograph Item J. The cover and title page of the document listed Ton Baars as the author; however, on the title page verso, under the CIP-Data from Koninklijke Bibliotheek, the author was listed as Baars, T.

RDA has moved away from the chief source of information in favor of a preferred source with several options. It is my educated guess that test participants perceive these options to be weighted the same without regard to an order of preference. The long-term effects of this could be dire for cataloging as it will create a system of irregularities that later becomes a disservice to our users as they search for various resources. An example of this would be if there are variations of creator names, titles, or other types of controlled vocabularies; the inconsistencies would require the user to use various terms in order to find all of the items that should have been collocated together during a user's search. This would also make it difficult for systems to use linked data, as proposed in BIBFRAME.

Further Discussion

How titles were described was the focus of the major findings discussed above; however, there were other elements that also provided the ability to make inferences as to the

outcome of the research questions. This section will discuss how the other elements have contributed to the findings in this study.

Names

There was significant disagreement among the participants in how the element should be expressed and what MARC field was to be used. It can be inferred, but cannot be proven, that the amount of variance is based on the fact that because recording family names does not occur as often as individual names, the test participants had less experience, and thus less certainty of how to represent the access point in describing a family name.

Statement of Responsibility

There was not general agreement for the statement of responsibility for Item Q, the streaming video resource. Participants included a variety of information such as the name of the presenter, the name of the presenter and their affiliation, or in some case no information at all. From what I observed and the rules that I consulted, it appears that there was a lack of understanding of what was the preferred source of information to describe this element.

Publication Information

The area of the most apparent disagreement in the publication information is the place of publication for Item I, the eBook. Some included brackets for place of publication, others did not; some determined the place of publication to be in France, New York, or Salt Lake City; some respondents entered text to let the user know that the location of publication was

unknown, while others did not include any information. When studying the actual resource, I could tell why some users determined what they entered, and as in the statement of responsibility, there was a lack of consensus on what the preferred source of information should be.

Extent

Generally, participants agreed that "1 online resource" should be recorded in Physical Description field 300$a; however, the amount of information that should be included for Item Q, the streaming video, varied greatly. Some used "1 online resource" while others used a variation of the term streaming video. There was also disagreement in how the time should be recorded. There was a lack of agreement on whether to abbreviate minutes, include seconds, or to include the term video or streaming video after online resource. Anecdotal evidence suggests that experienced catalogers often times "memorize" based on previous practice. This may be the best way to explain the variances in the recording of the extent.

Notes

While analyzing the results of this field, RDA guidelines were consulted to gain a better understanding about the acceptable forms of entry. It was noted that "Mode of access" is not listed in RDA as an acceptable entry for the System Details Note 538 MARC field; however, upon further investigation, it appears that in the previous practice (under AACR2) this was an acceptable entry. It can be inferred that these participants were accustomed to this practice in AACR2 and have carried it over to the RDA-based records regardless of its absence in RDA.

Therefore, prior experience or possibly a lack of familiarization of the new set of rules or the Toolkit itself could have played a negative role in the creation of these records during the national test.

Electronic Location and Access

The lack of including a URL in Electronic Location and Access MARC field 856 $u was the greatest surprise since the nature of the catalog is to provide access to materials. Since all of the resources studied were electronic resources, I expected that every participant would have included the URL to the resource in 856 $u. Of the 217 submitted records, 23 (10.6%) of them did not include a URL. In this case, I believe that the cataloger has violated Cutter's *Rules for a Dictionary Catalog.* By including a URL, it does make it easier, if not possible, for the user to access the material. This demand on the cataloger is very low since it requires very little encoding and most likely would require a simple cut or copy and paste. It is unknown why catalogers omitted the URL, but it does make me wonder why such an important component to the ability to access the information resource was not included.

Future Research

In the course of this study, I reflected on where future research on cataloger's judgment should be directed. Three main ideas come to the forefront. First, I suggest conducting the same type of study as this one. Second, a study on cataloger's judgment and as it relates to organizational policy, and thirdly, a study on preferred source(s) of information and how they are used in cataloging e-resources.

This study was limited by the sample size and the survey instruments. In a future study, the structure would remain similar to this one; however the design must be altered to yield additional data that could be analyzed with greater rigor.

The first change would be to increase the number of catalogers that would catalog each of the items. In the current study, the same individuals did not create records for each item. Each of the participants would catalog the same 10 electronic resources. The profile survey that participants would complete would be based on the profile survey used by the RDA National Test; however, it would be more detailed in the number of years of experience, level of education, percentage of time spent cataloging, and the type of library they work in. It would also include questions about their familiarity with the rules, the amount of time they have had using RDA prior to the study, and the types of training they have received (formal and informal). Finally, the follow up survey, similar to the COS survey in this study would be completed by each participant to provide greater insight into the decisions they made.

In addition to the surveys and the record data, participants would record the preferred source of information and rule sequences used as well as interviews with participants would be conducted. The rule sequences would assist in determining the decision catalogers make and how they utilize the Toolkit. The interviews would be used for participants to explain the processes they used, problems they encountered, and recommendations for rules they would like to see added, deleted, or edited to make them less ambiguous.

Receiving more detailed information about the individual and a greater number of participants would allow for the study to use other statistical procedures that then could provide a deeper understanding about catalogers and their judgments.

Organizational Policy Based on Cataloger's Judgment

As pointed out in previous research, library administrators often do not understand the role of cataloging or the needs of the cataloging department (Snow, 2011). Further research in cataloger's judgment may assist library administrators in determining the appropriate in-house policies that will facilitate an environment that honors the needs of cataloger's judgment to provide quality cataloging. For instance, if the theory of bounded rationality can explain cataloger's judgment, then policy recommendations could be made to facilitate a higher quality of cataloging. According to this theory, people make decisions based on the constructs of cognitive ability and time. The assumption is that there is an intersection between cognitive levels (e.g., training and experience) and time spent on task that will allow for a more efficient model of cataloging practice. In the end, this could reduce costs, provide differentiated and targeted professional development, and increase cataloging quality and consistency that aids the user.

A study to assist in determining policy could include two control groups that would complete a series of cataloging tasks; however, the two groups would receive differing levels of professional training to determine if providing additional cognitive experiences will lead to more efficient judgments that have a positive impact on cataloging quality.

Based on the inferences made from this study, there is a great discrepancy in how to determine where to identify the data for electronic resources to include in the cataloging record. A future study on preferred sources should provide greater guidance in how cataloging rules are constructed and then used to report various elements of a resource. This study could help explain why individuals determined their "preferred" source over another. It would also test the inferences that catalogers often rely on their memory of rules as opposed to consulting the rules to determine if their current practice is actually in agreement with the rules.

Implications and Recommendations for the Cataloging Community

The amount of data for this study was extremely rich, and the results of the study have implications for the cataloging community. In analyzing the results and through observations of the data, this study has led to some recommendations for the cataloging community such as suggestions for training, workflows, indexing, and further edits to RDA.

Training

One of the most obvious implications is to ensure the cataloging community has the necessary resources, tools, and training to support catalogers. Based on the findings, it appears that novice catalogers are not the only group that need continuing training on cataloging standards, but veteran catalogers, those with the most experience, need continued support in the form of professional development as well. It appears that experience levels of those catalogers who are in mid-career (6 - 22 years of experience) are better prepared for RDA than

any other group. No matter the demographic, all groups can benefit from additional

professional learning opportunities. Because of the enormity of electronic resources that users

search for, it is extremely important that formal education and training experiences include the

cataloging of electronic resources. Without proper training, records will be created that do not

meet the needs of the users, thereby impeding retrieval by users.

Since the group of catalogers that consulted others for 1 - 31 minutes had higher

residual amounts, it supports the notion that a collaborative workflow, whether at the same

location or not, will yield more results than an isolated one. Snow (2011) described these as

communities of practice.

Workflows

Workflows are the local procedures or systems which catalogers should follow to

catalog materials. It is recommended that these workflows are reviewed to make sure they

align with RDA. Based on the review of what was entered into the cataloging records, the

previous practice of AACR2 is still evident in areas that have changed. By reviewing and aligning,

and then providing additional training on these changes, catalogers will have greater guidance

in how to create records that meet the expectations of RDA and ultimately benefit the user.

Indexing

Specifically based on the results of the observations within the Title Statement 245 and

Varying Form of Title 246 MARC fields, it is extremely important that these fields are indexed

appropriately so that users are able to find, identify, select and acquire the resources they

need. In the study records, there were many variations to the 245 and 246 fields. However, if

one looks closely at the actual content of these fields, there are similarities within the text.

Some participants placed everything in 245 and nothing into 246 while others represented the

titles in other ways. The inconsistent entries were often due to the variety of judgments

catalogers made in determining the preferred source information. If the 246 is not indexed in

the automation system, then the information in 246 would not be discovered. For this reason, it

is extremely important that the librarian or person responsible for the automation system

understands that appropriate indexing is necessary for users to find the information they are

looking for.

Further Edits to RDA

The final implication to be discussed is that the profession needs to voice when the

rules are ambiguous or difficult to follow and seek clarity or advocate for change when

necessary. Clarity can come from the JSC, LC, professional organizations, a local cataloging

agency or the broader cataloging community. At the same time, the JSC and Committee on

Cataloging: Description and Access should spend time interviewing catalogers so that those

who use the rules have the opportunity to voice how they apply the rules in practice. A dialog

among the community will allow others to think more deeply about their work and challenge

assumptions. The one area from this study that is recommended for increased clarity is that of

the preferred source of information. There seems to be confusion about which sources to use

for electronic resources. It is recommended that the JSC consider revisions to provide greater

guidance.

Conclusion

The RDA National Test data provided a unique opportunity to study cataloger's judgment, a topic that has for the most part, been largely ignored as an area of study. Cataloger's judgment has been referred or alluded to throughout the literature since the time Cutter allowed such permission in the *Rules for a Dictionary Catalog* (1876) as long as it benefits users.

Cronin (2011), Intner (2006) and others have expressed that RDA will require an increase in cataloger's judgment during the process of creating bibliographic records. Prior to even reviewing the records in a formal study, it was noted the number of variances that occurred between one record and the next. It was noted that for the records that were studied, no two were the same. Each was unique and required cataloger's judgment to not only determine the actual text, but to also decide if the presence of any text was necessary.

The significance of this study lies in its attempt to better understand cataloger's judgment. More specifically, it sought to determine if cognitive ability and time influence the text that catalogers enter into bibliographic records. This exploratory study set out to determine whether or not there were differences among various categorical groups in how they make judgments for entering text into bibliographic records, and if this could be explained using Simon's theory of bounded rationality.

There are indications that both support and refute the assertion that catalogers make decisions based on the constructs of time and cognitive ability. However, this study does provide a baseline of data that warrants further research. Continued research will provide

greater insight into not only the text included in a MARC record, but how to improve RDA to make the rules less ambiguous.

The most important outcomes of this study are the implications for the field. Training and communities of practice will provide the knowledge needed to lead to better cataloging decisions. Ensuring the proper indexing of MARC fields will lead to greater discovery. Finally, the broader cataloging community needs to advocate for clarity of the rules that they find confusing. All for the benefit of the user, as Cutter intended.

APPENDICES

Appendix A

List of Common Original Set (COS) Items

Table A.1

List of Common Original Set (COS) Items

ID	Resource Type	Short title
A	Print Mono 1	Macroeconomics
B	Print Mono 2	Winnie
C	Print Mono 3	Twain
D	Print Mono 4	Barbie
E	Print Mono 5	Mysterius
F	Print Mono 6	Gospel
G	Print MultiPart Mono 1	Aunt Lute
H*	E- Mono 1	Americans with Disabilities
I*	E -Mono 2	Benjamin Button
J*	E -Mono 3	Reconciling Scientific Approaches for Organic Farming Research [thesis in two parts, published in Netherlands]
K	Print Serial 1	Modern Drug
L	Print Serial 2	PACIIA
M*	E serial 1	Criterion
N*	E-Serial 2	Utley
O*	E-Serial 3	San Diego
P	AV 1 film DVD	March
Q*	AV 2 streaming video	Acupuncture
R	AV 3 sound recording on CD	Rattletrap
S	AV 4 audiobook	CFA
T	AV 5 poster	5Billion
U	Integrating Resource 1 –print loose-leaf	Multichannel
V*	Integrating Resource 2 e-resource	Our Science – Research Directory
W*	Integrating Resource 3 -- e-resource	NCJRS
X*	Integrating Resource 4 –e-resource	UN
Y*	Integrating Resource 5 –e-resource	ProQuest

*Electronic resources to be studied

Table modified from http://www.loc.gov/catdir/cpso/RDAtest/commonsets.pdf

Appendix B

Survey Questions

Table B.1

Record Creator Profile (RCP)

RCP -Q01*	Assigned RDA Tester ID: Please provide your unique RDA Test tester ID, as assigned by your institution, based on your institution's general RDA Test ID.
RCP -Q02*	Please supply your overall opinions about RDA, if you wish.
RCP -Q03*	Do you think that the US community should implement RDA?
RCP -Q04*	What is your position at your institution?
RCP -Q05*	How many years of cataloging experience did you have as of October 1, 2010?
RCP -Q06*	What formats of material do you have significant (in your own opinion) experience in cataloging? Check as many as apply:
RCP -Q07*	Please specify any formats, as listed in Question no. 6 above, for which you feel that RDA did not offer adequate guidance. If RDA offered adequate guidance for all formats you described in the Test, please record "N/A."
RCP -Q08*	What cataloging instructions do you use most frequently in your current work?
RCP -Q09*	What type of cataloging documentation do you normally consult?
RCP -Q10*	Did your training in RDA consist of (check all that apply):
RCP -Q11*	If you took distance learning sessions or classroom training other than those listed in Question no. 10 above, please specify the source. Enter "N/A" if you did not take distance learning sessions or classroom training.

*Questions to be considered

Table B.2

Common Original Set (COS)

COS-Q01*	Tester ID: Please provide your unique RDA Test tester ID. (Your unique tester ID is assigned to you by your institution, based on your institution's general test ID.)
COS-Q02*	What is the sequential number of this record in your personal bibliographic record production? Of all the bibliographic records you've produced since the start of the formal RDA Test record submission period, was this your first (no. 1), second (no. 2), f
COS-Q03*	Please supply the alphabetical identifier of the resource, A-Y. Please see Instructions for Testers.
COS-Q04*	Please provide any comments you wish to make concerning your experience in creating this bibliographic record and/or any associated authority records.
COS-Q05*	How much experience do you have in cataloging this type of resource? (Your experience does not need to have been full-time.)
COS-Q06*	What descriptive cataloging instructions did you apply to complete this record?
COS-Q07*	For RDA records only: Did you use workflows in the RDA Toolkit as you created/updated this record?
COS-Q08*	What is the communication format/coding/tagging scheme for the bibliographic record you have just completed?
COS-Q09*	How many minutes did it take you to complete this bibliographic record? Exclude any outside interruptions or consultation time (which is recorded below). Exclude time spent on authority records (see questions no. 12-16 below). Express your answer as a who
COS-Q10*	In creating this record, which of the following did you encounter difficulties with? Please check all that apply:
COS-Q11*	How many minutes did you spend in consulting others as you completed this bibliographic record? Exclude time spent in consultation regarding authority records (see questions no. 12-16 below). Record only your own time, not the time of others whom you cons
COS-Q12*	How many minutes did it take you to create authority records associated with this item in the Common Original Set? Exclude any outside interruptions or consultation time (which is recorded below). Express your answer as a whole number, e.g., not "1.6 hour
COS-Q13*	How many new authority records did you create in describing this item? Express your answer as a whole number. If you did not create any authority records, record a zero.
COS-Q14	What type of new authority records did you create in describing this item? Please check all that apply:
COS-Q15	In creating authority records for this item, which of the following did you encounter difficulties with? Please check all that apply:
COS-Q16	As you created authority records for this item, how many minutes did you spend in consultation with others? Record only your own time, not the time of others whom you consulted. Express your answer as a whole number, e.g., not "1.6 hours" or "96 minutes,"

* Questions to be considered

Table B.3

Institutional Questionnaire (IQ)

IQ-00	US RDA Test Partners Institutional Questionnaire (IQ)
IQ-Q01	Please give the name of your institution:
IQ-Q02*	Please provide any general comments you wish concerning the test, the RDA Toolkit, or the content of the RDA instructions:
IQ-Q03	Do you think that the US community should implement RDA?
IQ-Q04	If the US national libraries do NOT implement RDA, will your institution decide to implement RDA anyway?
IQ-Q05	If the US national libraries implement RDA, will your institution decide NOT to implement RDA anyway?
IQ-Q06*	What approach to RDA options did your institution apply in creating/updating original RDA records? Check all that apply.
IQ-Q07*	If you have further comments about the RDA options, please provide them here. If you have no comments about the options, please record "N/A."
IQ-Q08	What approach did your institution apply in creating/updating records using copy? Check all that apply:
IQ-Q09	Please describe briefly any macros your institution created for use in creating/updating RDA records for the RDA Test. If you did not use macros, please record "N/A."
IQ-Q10*	Please describe the additional RDA workflows that your institution created using the wizard. If you did not create any additional workflows, please record "N/A."
IQ-Q11	Please add any general comments on the RDA Toolkit workflows and the wizard.
IQ-Q12	Can your institution's ILS accept records with the new MARC 21 changes related to RDA?
IQ-Q13*	What training did your institution's testers receive before they began producing records for the US RDA Test? Please check as many as apply:
IQ-Q14*	Please describe any local documentation that your institution created or revised for use with RDA. If there was none, please record "N/A."
IQ-Q15*	Please describe any consortial documentation that your institution created or revised for use with RDA. If there was none, please record "N/A."
IQ-Q16*	Please describe any national-level documentation that your institution identified as needing to be created or revised for use with RDA. If there was none, please record "N/A."
IQ-Q17*	Were your staff able to move back and forth from local documentation to the cataloging instructions in the RDA Toolkit as they needed, via hot links?
IQ-Q18*	Were your staff able to move back and forth from consortial documentation to the cataloging instructions in the RDA Toolkit as they needed, via hot links? "Consortium" means a group of institutions that share a cataloging enterprise and policies, e.g., CC
IQ-Q19*	Were your staff able to move back and forth from national-level documentation (e.g., PCC documentation) to the cataloging instructions in the RDA Toolkit as they needed, via hot links? (For consistency's sake, please consider OCLC documentation as national
IQ-Q20*	Did any of your staff make personal annotations in the RDA Toolkit?

IQ-Q21*	Did your institution/consortium make annotations in the RDA Toolkit?
IQ-Q22*	If RDA is implemented, what will be the impact on your existing documentation?
IQ-Q23*	Will the impact on your existing documentation be a barrier to or a benefit in implementing RDA?
IQ-Q24	Is your institution considering using the RDA Toolkit to replace any currently existing documentation? (For consistency's sake, please consider OCLC documentation as national-level.)
IQ-Q25	Is your institution considering ceasing subscriptions to any other cataloging instructions or tools if RDA is implemented? Please check all that apply:
IQ-Q26*	How much impact on local operations do you anticipate if your institution implements RDA?
IQ-Q27*	What do you believe the negative impacts will be if your institution implements RDA?
IQ-Q28*	What do you believe the positive impacts will be if your institution implements RDA?
IQ-Q29	Were you able to create acceptable RDA records in MARC from non-MARC, non- RDA metadata, e.g., from an ONIX feed? If you do not actually import non-MARC data to create MARC records, please record "N/A."
IQ-Q30	Were you able to create acceptable RDA records in DC or other non-MARC formats (if they are your institution's usual formats) from non-MARC, non-RDA metadata? If you do not usually produce records in non-MARC formats, please record "N/A."
IQ-Q31	After the US RDA Test is completed, the RDA Toolkit will no longer be available to your institution free of charge. Will the expense of subscribing to the RDA Toolkit for use by your staff be greater than your current cost of providing cataloging tools?
IQ-Q32	What will be the impact on local operations of any increased costs in subscribing to the RDA Toolkit?
IQ-Q33	Does your institution anticipate cost adjustments to any cataloging contracts/vended work as a result of RDA if it is implemented?

* Questions to be considered

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