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This study is a questionnaire survey of practicing catalogers seeking to determine: how catalogers value flexibility in metadata schemas, how catalogers value flexibility in comparison to other qualities in metadata schemas, and how flexibility factors into catalogers' evaluations of MARC/AACR2 and simple Dublin Core. For the purpose of this study flexibility was operationalized into three different aspects: (1) the flexibility to represent information needs of different material types, (2) the flexibility to adapt to evolving cataloging standards, and (3) flexibility in rules to allow catalogers to utilize personal judgment.

Twenty-one participants responded. They supported the first two aspects of flexibility, but supported having strict schema rules over flexible ones. Flexibility was considered in evaluations of metadata schemas, but not considered to be the most important quality of a metadata schema both generally and when evaluating Dublin Core and MARC/AACR2.

Headings:

Metadata

Cataloging

MARC System

Dublin Core

Anglo-American cataloging rules

THE VALUE OF FLEXIBILITY IN METADATA SCHEMAS

by  
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## Table of Contents

<b>INTRODUCTION .....</b>	<b>3</b>
<b>METADATA TERMS DEFINED .....</b>	<b>4</b>
<b>LITERATURE REVIEW.....</b>	<b>6</b>
Osborn and Lubetsky.....	6
USMARC Format Integration .....	8
Electronic Resources .....	10
Enter the Dublin Core Metadata Initiative.....	12
DC-4: Minimalist and Structuralists .....	13
MARC and XML.....	14
Room for Multiple Metadata Schemas.....	15
Flexibility Issues Overtime .....	16
<b>OBJECTIVES.....</b>	<b>17</b>
<b>METHODOLOGY .....</b>	<b>18</b>
<b>PROFILE OF PARTICIPANTS.....</b>	<b>19</b>
<b>DATA ANALYSIS .....</b>	<b>20</b>
How Valuable is Flexibility in Metadata Schemas .....	20
Flexibility in Comparison to other Metadata Schema Qualities .....	23
Flexibility of MARC/AACR2 and Dublin Core.....	25
<b>DISCUSSION .....</b>	<b>32</b>

**CONCLUSIONS AND RECOMMENDATIONS ..... 35**

**ACKNOWLEDGMENTS ..... 37**

**REFERENCES ..... 38**

**APPENDIX A..... 41**

## Introduction

A reoccurring topic in library and information science literature is whether Machine Readable Cataloging (MARC), the current standard for transmission of bibliographic data, has reached the point beyond its usefulness and should be replaced with a new standard. An often cited article is Tennant's 2002 editorial in *Library Journal* entitled "MARC Must Die". Two approaches that have been presented in literature have been to replace MARC with the simple Dublin Core Metadata Element set or to take advantage and restructure bibliographic databases into eXtensible Markup Language (XML). In discussions of both approaches, a commonly cited weakness of MARC is that it is too rigid and more flexibility is needed to represent of bibliographic information for modern library systems. Yet there has also been counter criticisms that these approaches are too flexible and lack the uniformity of MARC cataloging records.

This is not the first time that issues of flexibility have appeared in evaluation of cataloging schemas. One event of historical significance is Osborn's famous 1941 article "The Crisis in Cataloging" that criticized the ALA cataloging codes for being too and rigidity and legalistic. Another event is Machine-Readable Bibliographic Information Committee (MARBI)'s decision to integrate all the different MARC material formats into one format to allow catalogers more flexibility in representing cataloging materials of different types in 1980s. In both cases, the proposed initiatives were met with both favor and opposition.

The reoccurrence of flexibility issues in regards to cataloging standards is a pattern worthy of analysis. Interestingly, in each manifestation of flexibility issues there have been differing opinions on the particular issue. This study seeks to through surveying practitioners to see how their opinions on these issues align with the various voices on the subject in the literature and discover how strongly catalogers value flexibility in metadata schemas.

## **Metadata Terms Defined**

Metadata is a relatively new term and the definition of it and other related terms are still developing making it necessary to clarify which definitions are used in this study before continuing discussion. The traditional metadata definition of data about data is vague and there have been several more precise and informative definitions. One definition is Greenberg's (2003) definition of "structured data about an object that supports functions associated with the designated object" (p. 1876). This definition is preferable to the traditional simplistic definition because it incorporates what metadata does. The functions that metadata can serve for its object are numerous. Common functions include description, administration, structure, preservation, and authentication.

While all of these different functions are important this paper focuses only on descriptive metadata, or metadata that describes a resource so that potential users are able to discover it and determine whether it would be useful to them without actually having to look at the a parent object (Dempsey & Heery, 1997). Descriptive metadata includes information such as title, creator, and subject of the object being described. Under this definition, library cataloging records are an embodiment of descriptive metadata.

There has been some debate in library and information science literature whether cataloging records can be called metadata. The term metadata first arose within information technology circles as a way to help control electronic documents. While conceptually the same as cataloging, the distinction arose that descriptive records belonging to electronic documents were called metadata while records belong to any other type of material were called cataloging (Milstead & Feldman, 1999; Greenberg, 2003). This distinction has been refuted as artificial by people such as Milstead and Feldman (1999) in their article “Metadata: Cataloging by Any Other Name.” For the purpose of this study, cataloging records will be considered to be a metadata.

Another term that has been used in various ways is metadata schema. Greenberg (2003) defines a metadata schema as “a unified and structured set of rules developed for object documentation and functional activities” (p. 1878). In other words a schema is a standard, but not necessarily a formalized one, for representing metadata for a specific purpose and community. For the purposes of this study metadata schema is to be defined as a standard for expressing cataloging information.

This definition of metadata schema encompasses both cataloging standards pertaining to content and those pertaining to containers. Differentiating between container and content has caused some confusion in the literature. The term container refers to the physical wrapper that houses the metadata while the term content refers to the information that makes up the metadata itself. Not infrequently container and content are governed by two separate standards. For example, the typical MARC cataloging record is created accorded to two standards, MARC which is the container standard and Anglo American Cataloging Rules (AACR2) which is the content standard. Many times

the distinction is not made between the two standards and the two are treated as one entity under the name of MARC. One example of this approach is Tennant (2002) who argues that both MARC and AACR2 are so interconnected in the cataloging process that it is not worth to try to distinguish them. Tennant brings up an important point that certain issues span across the boundaries of both. Since it is possible to create a functional MARC record that does not conform to AACR2, it is important not to overlook the distinction between the two. When addressing flexibility issues that span both content and container, this study will treat MARC and AACR2 as a combined entity referred to as MARC/AACR2.

## Literature Review

There are several discussions in cataloging literature that shed light on the importance of flexibility in metadata schemas. Two historical discussions are Osborn and Lubetsky's criticisms of the ALA Cataloging Rules in the 1940s and 1950s and USMARC format integration in the 1980s. More recently, the changes that the internet has made to the cataloging landscape has spawned a set of relevant discussions focusing on electronic resource cataloging and the emergence of new metadata schemas such as Dublin Core. The remainder of this section will outline these discussions.

### *Osborn and Lubetsky*

One of the first historically known articles to take the position that cataloging quality suffers from overly strict rules is Osborn's 1941 article "The Crisis in Cataloging." According to Osborn, the cataloging profession was suffering a crisis from having overly legalistic approach to cataloging, as exemplified is the ALA Cataloging Rules the predecessor to AACR2. He defined legalistic as "there must be rules and



definitions to govern every point that arises; there must be an authority to settle questions at issue” (p. 93). While he concedes that many catalogers like this approach because if every little detail of the process is defined and mandated there will be no time wasted debating different possibilities, he argues in reality this does not work. There will always be new cases that arise that will not be covered by the rules and under the legalistic approach a long review process will be required to determine how to catalog these cases. In the long run this wastes more time than it saves.

As an alternative to the legalistic approach, Osborn proposed that catalogers take a pragmatic approach and only make rules that cover the majority of cases and not try to make rules to dictate the unusual cases. He explains this would involve training catalogers “to use their judgment, [and] not to expect a rule or a precedent to guide them at all times” (p. 99). One benefit of allowing catalogers to utilize personal judgment is granting catalogers to decide on an item to item basis how in depth a catalog record to create. In theory, by giving catalogers the flexibility to use their own judgment in making cataloging decisions the quality of cataloging will improve because catalogers will be more involved in their work. In addition, catalogers would be able to tailor their records to the specific needs of their institutions.

Lubetsky reiterated Osborn’s sentiments in his 1953 critique of the ALA Cataloging Rules. In this piece he argued that the cataloging community is desperately in need of principles instead of rules. According to him these principles will help catalogers see the larger pictures instead of getting lost in the minutia of a bunch of contradictory rules and case law. Proponents of Lubetsky’s recommendations were not the dominant voice on creating Anglo American Cataloguing Rules (AACR) which was published in

1967 as a replacement to the ALA Cataloging Rules. As Gorman (2000) explained instead of being strictly a description of overall cataloging principles AACR was written to direct cataloging on cataloging cards. At the same time MARC came on the scene and greatly altered the way that cataloging information was entered. This consequently led to a redesign and second edition of AACR (AACR2) in 1978 which incorporated Lubetsky's idea of principles by deleting rules for how to represent information and becoming strictly a content standard. In theory, this created a flexible cataloging code that could adapt to technological changes of transmission of bibliographic data without having to be revised.

#### *USMARC Format Integration*

One of the major concerns when first developing MARC was how to handle the different descriptive needs of different material types. For example, in serial cataloging it is important for records to include information on how often the serial comes out. For the USMARC format, the name of national MARC format used in the United States from 1969-1999, this problem was addressed by the creation of seven different bibliographic MARC formats for different material types (Crawford, 1989).<sup>1</sup> However, having different formats for different material types created another set of problems. Since different elements such as availability were recorded differently in different MARC formats it caused problems for providing consistent indexing from format to format (Coyle, 1990). Many cataloging systems handled these inconsistencies by requiring

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<sup>1</sup> During MARC development different countries have developed their own national format. In the format used in the US starting 1969 was official called MARCII but commonly known as LC MARC due to its origins at the Library Congress. In 1983, the name of the format was changed to USMARC (Crawford, 1989). In 1999, USMARC was harmonized with CAN/MARC, national MARC format of Canada, into MARC 21 which is the current version of MARC used in both countries as well as others (Network Development and MARC Standards Office Library of Congress, 1998).

patrons to search separate catalogs for each different material type as defined by MARC format. As a result, patrons had to know what format the material they were looking for was classified by the cataloger in order to retrieve it.

This problem was further complicated by mixed material items. These items had multiple legitimate choices for material type and catalogers only choose one to catalog it as. More problematic was whatever decision the cataloger made to classify the item would prohibit him or her from describing the special features of other possible material types it could be classified as (Crawford, 1989; Attig, 1983). As John Attig explained in his 1983 piece "The Concept of a MARC Format," for a serial map the cataloger would have to make the choice between cataloging it as a serial and having access to all the special fields for represent serial information or cataloging it as cartographic material and use the special fields for that but not both (p. 13). This issue led to Attig's conclusion that the different USMARC formats should be integrated into one bibliographic format which provided the catalogers the use any of special material type fields for any item. In 1995, the integration of the material format officially took place (Studwell, 1995).

While format integration offered catalogers more flexibility in their ability to describe mix material resources, format integration was not without opposition. Much opposition focused on the expense and time to retrain practitioners to implement such a massive overall of the MARC format. Another more structural problem cited was that since there was more flexibility between which fields to use in particular items this decreased consistency of cataloging description and impacted the ability to consistently index resources (Coyle, 1990). On the other hand, since it was not consistent which MARC, format particular catalogers would use to catalog a particular mixed material

piece, this was not a new problem. Importantly, this criticism highlights how consistency is often considered to be lost in favor of greater flexibility. This is one consideration that catalogers need to consider when deciding the degree of flexibility they need in a metadata schema.

### *Electronic Resources*

The ability of AACR2 and MARC to adapting to new formats was greatly challenged by the explosion of internet resources in the 1990s. Internet resources have proposed several challenges for catalogers including their constant fluidity. Another challenge is they often lack of uniform structure making it difficult to determine what should be the chief source. AACR2 being written prior to the advent of this resource did not provide any guidance on how to handle these issues. Another criticism was while internet resources should logically be classified under the AACR2 material heading computer files, the definition of what a computer file was written before internet resources existed and was not broad enough to encompass them (Hunt, 2001). This had a specific impact on cataloging records since this definition was used in the MARC21, the current MARC format used in the United States as well as internationally, input standards to define what could be coded in the 006 fixed field as a computer file. According to Hunt (2001) this was a major problem since this meant that cataloging systems that searched the 006 for computer files would not retrieve internet resources along with the rest of the computer files.

The 2002 revision of AACR2 addressed these issues. The chief source of information for internet resources is now defined as the entire document instead of the title screen which many internet resources do not have. More importantly the term

computer file has been replaced with electronic resource which has a much broader definition that encompasses internet resources. While these changes to AACR2 have helped to clarify how to catalog internet resources, many argue that cataloging internet resources was not incompatible with the earlier AACR2 codes. As Huthwaite (2003) and Tillet (2003) explain the first chapter of AACR2 outlines the basic principles of cataloging so that any format current or yet to be developed can be cataloged. While internet resources may not have fit with the former computer files category, they could still be cataloged according to these general principles.

Another issue in the how to catalog internet resource is not whether MARC/AACR2 accommodates the needs of electronic resources but whether this standard is appropriate to use for internet resources. Due to its inherent complexity, creating MARC/AACR2 records is time consuming and requires extensive training to implement. With the ever increasing number of internet resources, creating MARC cataloging records for them is prohibitly costly and time consuming. In addition, since internet resources are continually searched and retrieved by commercial search engines many argue that it is not necessary to create MARC records for inclusion in library catalogs. Others argue that relying on commercial search engines is problematic. Commercial search engines only index roughly 20-25% of web (Hunt, 2001). In addition, indexing pages via the words that appear on the page as most search engines do, does not create as precise or rich description of as a MARC cataloging record. Often these automatically generated records contain too little information to be useful (Weibel, Godby, Miller, & Daniel, 1995).

### *Enter the Dublin Core Metadata Initiative*

The Dublin Core metadata initiative developed in 1995 is an attempt to compromise between these two options for internet resource description. The goal of Dublin Core was to create much simpler, and consequently less time consuming to implement schema, than MARC which would provide slightly more quality metadata information than what would be generated via automatic tools (Weibel et al, 1995).

Another advantage of the simplicity of Dublin Core's is it does not require as extensive training to implement as MARC, and therefore expanded the capabilities of creating metadata outside of the cataloging field to other participants in the document creation lifestyle like the author. The simplicity of the design of Dublin Core also ensures that it is flexible enough to represent any format. For example all elements are optional so that a cataloger can omit any element that does not apply to the resource they are cataloging. Specifically, the goal was that both text and image resources could be described using the same element set (Weibel & Miller, 1997). In addition, the elements do not have in depth definitions like AACR2. Consequently, different communities could interpret and apply the elements to meet their needs and even add qualifiers to further refine them for their own purposes.

While Dublin Core was never meant to replace MARC as the standard of bibliographic information transmission, some people argued that it should (Medeiros, 1999). Opponents to fully replacing MARC with Dublin Core argued that while Dublin Core is better than relying on automatic search tools, Dublin Core records are not as rich as MARC records. It is questionable whether the depth of information in a MARC record or even Dublin Core record is necessarily needed to retrieve internet resources. In response to these issues Gorman (1999) proposed four levels of cataloging electronic

resources depending on the importance of the resource. These four levels starting with resources of most importance and then ending of resources of least importance are 1) full MARC records, 2) enriched Dublin Core records, 3) minimalist Dublin Core for, and 4) reliance on commercial engine key word search (p.20). Gorman's recommendation is consistent with Osborn's opinion of that catalogers should have the flexibility to use their judgment in determining depth of description to use for a particular item.

#### *DC-4: Minimalist and Structuralists*

While there is no doubt that Dublin Core is considerably more simplistic than MARC there has been a great deal of debate within the Dublin Core community of how simplistic the schema should be. The Fourth Dublin Core Workshop (DC-4) in 1997 is often characterized as the workshop of the minimalist and structuralist debate (Weibel & Iannella, 1997). The minimalists argued that simplicity was the most important principle of the Dublin Core Metadata Element set. To them this simplicity was necessary for broad interoperability of the Dublin Core between communities and the adding of qualifiers to refine these elements would create a difference of application between communities (LeVan, 1997; Weibel & Iannella, 1997). On the other hand, the structuralists argued that qualifiers are necessary to allow communities the flexibility to describe materials to the precision level that they need. The structuralists are willing to trade off broad interoperability in exchange for precision.

This debate illustrates another important trade off between the flexibility and interoperability. Giving catalogers the flexibility to tailor metadata creation to their own collection needs may negatively impact the performance of cross collection searching due to different levels of details.

### *MARC and XML*

There are several proponents that initiative should be taken to fully replace MARC with XML, the most famous being Tennant (2002) in “MARC Must Die.” Like MARC, XML is a container standard. However XML is a meta-markup language and does not have a fixed set of fields and syntax but gives users the flexibility to create their own (Harold & Means, 2001, pp.3-4). XML proponents argue that this flexibility allows easy adaptability to evolving cataloging standards (Fiander, 2001).

Another specific criticism of MARC emphasized by XML proponents is that it flat and cannot represent hierarchical bibliographic information such as table of contents which XML can do easily (Fiander, 2001; Tennat, 2002). The flatness of MARC is specifically problematic in attempts to implement the International Federation of Library Associations (IFLA) Functional Requirements of Bibliographic Description (FRBR). FRBR calls for the creation of relationships between various works which would require the linking of different cataloging records with each other, something not possible in the current MARC structure.

Those more cautious of converting to XML argue that being a new standard has not proven its longevity as MARC has (Medeiros, 2000). Another common argument is that MARC has proven its adaptability over time despite what opponents say (Medeiros, 2000). In addition, there is currently not the infrastructure in most libraries to support XML and that conversion will take time and be costly (Johnson, 2001). Since XML is a meta-markup language, XML Document Type Definitions (DTD) s or schemas for bibliographic information will have to developed and standardized so that institutions will have a way of using XML uniformly.



One of the misconceptions that continually arises within the MARC vs. XML debate is the implication that it has to be an either or choice between the two schemas. This is not necessarily true. One initiative to address the criticisms of MARC that have arisen in conjunction to XML is MARCXML. MARCXML is a XML schema created by the Library of Congress Network Development and MARC Standards Office to mark-up MARC record data in XML. MARCXML retains the structural benefits of bibliographic descriptive measures of MARC while adding the data manipulation flexibility of XML (Library of Congress Network Development and MARC Standards Office, n.d.).

#### *Room for Multiple Metadata Schemas*

The idea of that it has to be an either or choice between MARC and XML also implies that there can only be one metadata schema for bibliographic transmission. This issue also arose earlier in terms whether Dublin Core would replace MARC, a notion which Gorman (1999) countered with his proposal for how to use Dublin Core and MARC for separate levels of cataloging control in electronic resources. These two debates illustrate that there is some confusion in the cataloging community whether multiple metadata schema can coexist in the realm of bibliographic description. Tennant (2004) explains that the main problem underlying this issue is the bibliographic infrastructure currently employed in libraries has not been designed to support a multiple metadata schemas. According to him this structure must change to support records created in different schemas. There has been some work done on this topic such as OCLC restructuring its database into XML and expanding support to Dublin Core as well as MARC.

Support of multiple metadata schemas has also been important to the archival community. While the advent of Encoded Archival Description (EAD) has allowed the profession to represent their material in a way that MARC did not support, EAD records are not able to be searched via OPACs. As a remedy, Hensen (2001) has argued that both MARC records should be created for inclusion in OPACs in conjunction with the creating of EAD finding aids. Moving towards a multiple metadata schema environment will allow catalogers the flexibility to use different schema both singly and in combinations to better tailor metadata description to their needs.

### *Flexibility Issues Overtime*

As evident in the review of cataloging literature the need for flexibility has been a reoccurring topic for the past sixty years. Osborn and Lubetsky proposed in the 1940s and 50s the concept that catalogers should be guided by principles instead of rigid, legalistic rules in order to allow catalogers flexibility to utilize personal judgment and tailor bibliographic description to institutional needs. This need to support different levels of description is also evident in the emergence of different metadata schemas, such as the Dublin Core, for different communities since the 1990s. In addition, there is a desire for flexibility of choice between metadata schema as exemplified in Tennant's support for an environment that supports multiple metadata schemas and Gorman's recommendation of various levels for cataloging electronic resource cataloging.

One of the reasons for different descriptive needs is due to differences between the materials types. How to handle these various material types has been issue throughout the life of USMARC. The original setup was to have separate MARC formats for the different material types was eventually replaced with one integrated

format to offer more flexibility in cataloging mixed material items that did not fit neatly into one particular category. Even with format integration, issues of the flexibility to support to specific material types in MARC are still being discussed, especially in terms of handling new formats such as electronic resources.

Another aspect of flexibility is the adaptability of metadata schemas to evolving cataloging standards. For example after the emergence of MARC, AACR was redesigned to be a content standard was adaptable to cataloging in MARC format or any other new container standard that would emerge. The adaptability of MARC has been seriously questioned lately through whether its flatness of structure can support FRBR.

Interestingly, there have been various opinions on these issues within the cataloging community. This research will examine how the opinions of current cataloging practitioners align with the various voices in literature.

## **Objectives**

Due to the varied opinions on flexibility issues related to metadata schema in literature, it was important do a study to determine how current cataloging practitioners' opinions align with various opinions in literature. As new metadata schemas continue to be developed it is important to that they be designed to meet functionality requirement of implementers. The goal of this research is to determine whether flexibility should be one of these functions.

This study seeks to answer the following questions:

- How do catalogers value flexibility in a metadata schema?
- How do catalogers value flexibility in comparison to other qualities in metadata schemas?

- How do flexibility issues figure into catalogers' evaluations of simple Dublin Core and MARC/AACR2?

## **Methodology**

The research method for this study was a survey. The survey was conducted over the web via use of a webform (see Appendix A). The majority of the survey was ordinal ranking questions asking for participants to rank their agreement with a particular statement and short answer questions.

Three categories of questions were developed: participant profile questions, general metadata schema questions, and simple Dublin Core and MARC/AACR2 comparison questions. The profile questions gathered data about the experience level of the participants. The general metadata schema questions were designed to determine how strongly catalogers valued flexibility on theoretical level. The Dublin Core versus MARC/AACR2 section was designed to test people's opinions on metadata schema flexibility within the context of a concrete situation. Simple Dublin Core and MARC/AACR2 were chosen since both represent near opposite degrees of flexibility and are among the most popular metadata schemas used in the library community.

Flexibility is an extremely broad concept. This study operationalized flexibility into three different aspects, drawing from definitions appearing in the literature. These aspects are (1) the flexibility to represent information needs of different material types, (2) the flexibility to adapt to evolving cataloging standards, and (3) flexibility in rules to allow catalogers to utilize personal judgment.

Before the survey was launched a pilot test was conducted with six advanced cataloging students from the University of North Carolina at Chapel Hill library science graduate program. From their comments, the wording of the questions was refined for clarity. No major structural changes were made to the survey.

The target participants for the study were practicing catalogers. Participants were recruited via an email sent out over the AUTOCAT listserv providing them with a link to the web survey form. AUTOCAT was chosen for recruitment due to its prominence as a professional listserv for catalogers. In addition, since it is a general cataloging listserv it provided an opportunity to sample people from all different cataloging format backgrounds.

The recruitment email was sent out to the listserv February 18, 2004. Respondents completed the survey on their own time. Two weeks later on March 3<sup>rd</sup>, the data collection was closed and the survey taken down.

The data was analyzed using basic statistical frequencies to determine patterns of responses. To generate these statistics for the short answer questions, the responses were given different numerical codes correlating to a different response. To ensure consistency in ranking, a third party advanced cataloging graduate student reviewed the principle investigator's rankings. Where there were differences between the two rankings, the two parties discussed the item and an agreement was reached.

## **Profile of Participants**

Twenty-one participants took part in the study. The sample represented variety of different library positions. Of the participants 6 (28.6%) identified themselves as general catalogers. There were also a high number of specialty catalogers including 3

serials catalogers, 1 metadata librarian, and 1 special formats cataloger. Two cataloging team leaders participated and there were also 2 representatives from school and public library sector and 2 archivists. The respondents also included 4 library paraprofessionals.

The average experience for the sample was 11.25 years. Slightly under two thirds of the sample (65%) had between 5 to 15 years of experience. In addition, all but 4 of the respondents had experience cataloging at least 6 different material types. This illustrates the sample on a whole was fairly experienced in cataloging.

Respondents were also asked to rank their knowledge of MARC/AACR2 and Dublin Core on a scale of 1-10 with 1 being none and 10 being expert. The mean for MARC/AACR2 knowledge was considerably higher at 8.14 than the knowledge of Dublin Core which was 4.76. Considering that MARC/AACR2 has been the standard for library cataloging in the US for the part thirty years, it was expected that most cataloging librarians are more confident in their knowledge of MARC/AACR2 compared to Dublin Core.

## **Data Analysis**

### *How Valuable is Flexibility in Metadata Schemas*

The concept of flexibility was evaluated in three ways according to the operationalized aspects described in the methods. Data for this section was collected from questions asking participants to rank their agreement with certain statements on flexibility on scale of 1 to 5 with 1 being strongly disagree and 5 being strongly agree.

**Table 1: Ability to represent different material types**

Values		Material types do not have different metadata needs.		It is preferable to use one metadata schema that supports multiple material types.	
		<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Scale 1—5 (sd) (sa)	5	0	0%	5	23.8%
	4	2	9.5%	5	23.8%
	3	1	4.8%	3	14.3%
	2	6	28.6%	5	23.8%
	1	12	57.1%	3	14.3%
<b>Total Responses</b>		21		21	
<b>Average</b>		1.67		3.19	

**Note:** Number in parenthesis indicates the ordinal ranking number from the survey that corresponds with this response.

Table 1 focuses on the ability to represent different material types. The majority of respondents did not support the idea that materials do not have different metadata needs indicating that from their experience the majority of respondents feel that different material types have different bibliographic description needs with 12 respondents (57.1%) ranking the statement with a 1. Since the majority the participants, with 5 respondents (23.8%) each ranking the statement with 4 and 5, agreed that they would prefer to use one metadata schema for different material types compared using schemas individualized to particular needs illustrates the preferred method to handle this issue would be with one metadata schema that is flexible enough to accommodated them all.

**Table 2: Adaptability to evolving standards**

Values		Adaptability is important.		Adaptability is not important due to costs of updating	
		<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Scale 1—5 (sd) (sa)	5	6	28.6%	0	0.0%
	4	10	47.6%	1	4.8%
	3	4	19.0%	4	19.0%
	2	1	4.8%	7	33.3%
	1	0	0.0%	9	42.9%
<b>Total Responses</b>		21		21	
<b>Average</b>		4.00		3.19	

**Note:** sd means strongly disagree and sa means strongly agree.

Table 2 focuses on adaptability to evolving standards is important to metadata schemas. The majority of respondents agreed that a schema's ability to adapt to evolving standards was important, with 6 respondents (28.6%) giving a 5 ranking and 10 respondents (47.6%) giving a 4 ranking. For the opposing statement that adaptability is not important due to the infeasibility of updating older records, the majority of respondents disagreed with 9 (42.9%) giving a 1 ranking and 7 giving a 2 ranking (33.3%). The hypothesis behind this statement was that if there would be a difference between catalog records made after the new standard anyways compared to those made before than it may be simpler to create a new schema versus trying to work with an existing schema. The responses to both statements confirm that over half of the sample support the idea that a metadata schema should be adaptable to different cataloging schemas is an important consideration.

**Table 3: Flexibility of Rules and Definitions**

Values		Strict rules and definitions for metadata elements are important.		It is important to have rigid syntax rules	
		<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Scale 1 ← 5 (sd) (sa)	5	9	42.9%	3	14.3%
	4	8	38.1%	9	42.9%
	3	2	9.5%	3	14.3%
	2	2	9.5%	4	19.0%
	1	0	0.0%	1	4.8%
<b>Total Responses</b>		21		21	
<b>Average</b>		4.14		3.45	

**Note: sd means strongly disagree and sa means strongly agree.**

Table 3 shows participants' agreement to statements on whether it is important to have strict rules and definitions in a metadata schema. This is the opposite of the flexibility aspect that it is important to have flexibility of rules so that catalogers are able



to utilize personal judgment. On whether it was important to have strict rules for the different elements of a catalog record, such as title, author, or publisher, the majority of respondents supported the statement, with 9 respondents (42.9%) giving a 5 ranking strongly agreed and 8 respondents (38.1%) giving a 4 ranking. In addition, over half of the respondents agreed that it is important to have rigid syntax rules, with 3 respondents (14.3%) giving a 5 ranking and 9 respondents (42.9%) giving a 4 ranking. In both cases over half of the sample agreed that they preferred strict schema rules for both content and syntax.

In conclusion, of the three aspects of flexibility in this study, the majority of the sample agreed the flexibility to represent different material types and flexibility to adapt to evolving standards were important. For the third aspect, flexibility of rules that allow catalogers to utilize personal judgment, the majority of the sample agreed that they would prefer strict rules and definitions.

#### *Flexibility in Comparison to Other Metadata Schema Qualities*

Another way to gather data on flexibility was to ask participants to identify what they considered to be the 3 most important qualities in a metadata schema. The 17 out of 21 respondents who answered this question listed a wide variety of different qualities that are important in a metadata schema. A complete list of qualities is available in Table 3.

**Table 4 Important Qualities in Metadata Schema**

	<b>No. Respondents</b>	<b>Percentage Respondents</b>
<b>Interoperability</b>	12	71.6%
<b>Easy to learn/implement</b>	7	41.2%
<b>Clear definitions for elements and procedures</b>	5	29.4%
<b>Flexibility for multiple formats</b>	4	23.5%
<b>Adaptability to evolving cataloging standards</b>	4	23.5%
<b>Granularity/multiple access points</b>	4	23.5%
<b>Structured for consistency</b>	4	23.5%
<b>Community to sustain standard</b>	2	11.8%
<b>Use of controlled vocabulary and name authority</b>	2	11.8%
<b>Functionality</b>	2	11.8%
<b>Flexibility, in general</b>	1	5.9%
<b>Other responses</b>	3	17.6%

**Note:** Percentage column indicates the percentage of the 17 participants who answered this question who gave a particular response. Since respondents were asked to list 3 different qualities the total percentage column should equal 300% and the total number column should equal 51. However, one respondent only listed 2 different qualities making the column totals 295.5% and 50, respectively.

Two of the three aspects of flexibility appeared on respondents' lists. The flexibility to represent different material types and the flexibility to adapt to evolving catalog standards were each identified by 4 respondents (23.5%). This illustrates these two aspects are considered by a sizeable portion of the sample to be one of the more important qualities of a metadata schema.

The third aspect of flexibility, schema rules to allow catalogers to utilize personal judgment, was not identified by any participant. However, its antithesis, rigidity of schema rules, was cited by 5 respondents (29.4%). In other words, flexibility in schema rules was not valued highly by any of the respondents of the question and a sizeable portion strongly disvalued it.

While a sizeable portion of respondents identified aspects of flexibility, they were not the most frequently identified metadata schema qualities. Twelve respondents

(71.6%) identified interoperability as one of the three most important qualities of a metadata schema. Participants described interoperability as both interoperability to different platforms as well as the ability to share data via crosswalking. Some participants said that clear definitions of semantics and syntax are necessary to achieve crosswalking.

The other most popularly identified quality was easy to learn/implement with 7 respondents (41.2%). As one participant elegantly explained a metadata schema “should be simple enough for modestly trained individuals to apply.” Essentially this means that a schema should be intuitive enough that people using it do not need to extensive training to understand how the schema works.

The more frequent identification of these two qualities compared to the frequency of identification of the aspects of flexibility, illustrates that in all likelihood in the sample these two qualities are considered to be more important.

#### *Flexibility of MARC/AACR2 and Dublin Core*

Respondents were asked to identify what they considered to be both the strengths and weaknesses of MARC/AACR2 and simple Dublin Core. Many of the important qualities identified in the previous section of survey were also identified as either schemas strengths or in antithesis form as weaknesses for the two schemas. For example, interoperability appeared on both schemas’ strengths lists and difficulty representing various formats appeared on both weakness lists. This supports that the qualities listed are commonly used when evaluating metadata schemas. A complete list of strengths and weaknesses that participants identified for both MARC/AACR2 and Dublin Core can be found in Tables 5-8.

**Table 5 Strengths of MARC/AACR2**

	<b>Frequency</b>	<b>Percentage</b>
<b>Interoperability/ Ability to share records</b>	6	33.3%
<b>Clear rules and procedures</b>	5	27.8%
<b>Extensive and completeness</b>	5	27.8%
<b>Can be used for multiple formats</b>	4	22.2%
<b>Promotes consistencies</b>	2	11.1%
<b>Index precision due to field breakdowns</b>	2	11.1%
<b>Adaptable to changing cataloging standards</b>	1	5.5%
<b>Flexible to meet individual library needs</b>	1	5.5%
<b>Geared to print resources</b>	1	5.5%
<b>Has a maintenance structure</b>	1	5.5%

**Note:** Percentages are based on the 18 respondents who answered this question. Since many respondents listed more than one strength the frequency column totals over 18 and the percentage column total is over 100%.

**Table 6: Weaknesses of MARC/AACR2**

	<b>Frequency</b>	<b>Percentage</b>
<b>Difficulties cataloging some formats</b>	8	42.1%
<b>Too complex</b>	7	36.8%
<b>Need to be an expert to use</b>	5	26.3%
<b>Slow to change</b>	3	15.8%
<b>Rigidity</b>	3	15.8%
<b>Flatness</b>	2	10.5%
<b>Unique to libraries</b>	2	10.5%
<b>Duplicate fields</b>	1	5.2%
<b>Costly</b>	1	5.2%
<b>Room for interpretation</b>	1	5.2%

**Note:** Percentages are based on the 19 participants who answered this question. Since some respondents listed multiple weakness the total frequency column is greater than 19 and the percentage column total is greater than 100%.

The respondents' answers provided insight into how respondents evaluate MARC/AACR2 and Dublin Core in terms of flexibility. Flexibility was specifically identified as a strength of Dublin Core by 5 out of the 17 participants who answered the question. In contrast only 1 respondents listed flexibility as a strength of MARC/AACR2 and 3 out of 19 respondents identified its rigidity as a weakness of the schema. This suggests that within the sample, Dublin Core is considered to be the more flexible of the two metadata schemas.

**Table 7: Strengths of Dublin Core**

	<b>Frequency</b>	<b>Percentage</b>
<b>Easy to use does not need expert knowledge</b>	8	47.1%
<b>Flexible</b>	5	29.4%
<b>Simple structure</b>	3	17.6%
<b>Supports a range of communities</b>	2	11.8%
<b>Interoperability</b>	2	11.8%
<b>Is a standard</b>	2	11.8%
<b>No required fields, less rules than MARC/AACR2</b>	2	11.8%
<b>Newer technology</b>	1	5.9%

**Note: Percentages based on the 17 participants who answered this questions. Since many respondents listed more than one strength the frequency column totals over 17 and the percentage column total is over 100%.**

**Table 8: Weaknesses of Dublin Core**

	<b>Frequency</b>	<b>Percentage</b>
<b>Too simplistic, does not have all fields needed</b>	8	53.3%
<b>Nebulous definitions</b>	3	20.0%
<b>Geared towards electronic resources</b>	2	13.3%
<b>No weaknesses</b>	1	6.67%
<b>General weakness</b>	1	6.67%
<b>Limited granularity</b>	1	6.67%
<b>Non-experts tend to apply it wrong</b>	1	6.67%

**Note: Percentages based on the 15 participants who answered this question. Since some respondents listed multiple weaknesses the total of the frequency column is greater than 15 and the percentage column is greater than 100%.**

Besides specifically identifying flexibility, some respondents also identified strengths and weaknesses for the two schemas based on the three aspect in the flexibility metrics. For the first aspect, flexibility to represent different material types, both schemas were considered to be deficient in this area. Dublin Core was described as being geared towards electronic resources and not having the extensive fields for describing print resources. For MARC/AACR2, respondents explained that the schema was designed for print resources, especially books, and many of the rules are not easily adapted to electronic formats and other new material formats. Specific formats that were identified to be problematic when cataloging with MARC/AACR2 were serials, internet

resources, digital images, and DVDs. This suggests respondents feel there is a dichotomy between the two schemas in terms of what material types they are best suited for.

It is important to note that despite deficiencies of MARC/AACR2's participants identified in describing some formats, other respondents explained that MARC/AACR2 can be used fairly well to catalog multiple formats. Number wise, 4 respondents praised MARC/AACR2 ability to represent different material types while 8 participants criticized that it was sometimes problematic to catalog some formats in MARC/AACR2. Even though the number of people who identified MARC/AACR2 to be deficient in this area is greater, it appears that different respondents have different definitions of what it exactly means to support the cataloging different materials. These discrepancies are likely a result of catalogers making comparisons with their different experiences with other schemas. One respondent expressed a weakness of MARC/AACR2 by saying "It is a fairly rigid format and thus not easily adaptable to cataloging some of the newer formats such as Internet resources and digital images. But I feel that it is still the best for cataloging any type of material." This demonstrates how comparisons between schemas are a main means for the evaluation of metadata schemas perhaps more so than comparisons of a schema to a theoretical ideal.

The second criteria of the flexibility metric, the flexibility to adapt to evolving standards was not identified specifically as a strength or in antithesis form as weakness for either schema. However, participant did identify related issues. For MARC/AACR2, 3 respondents criticized that due to the number of people involved with regulating the standard the process of change is fairly slow. This suggests that they consider the adaptability to be important and the slowness of change to MARC/AACR2 rules to

problematic. Also, 2 respondents identified flatness as a weakness of MARC/AACR2 that prevents it from adapting FRBR. This suggests that MARC/AACR2 is not easily adaptable to evolving standards.

Only 1 respondent addressed the ability of Dublin Core to adapt to evolving cataloging standards. He or she commented that Dublin Core was “expandable w/o lengthy involvement of outside agencies in decision-making.” Essentially this means that in the respondent’s opinion the schema has mechanisms for adapting the schemas built into itself so it is not necessary to have to contact outside parties to change the schema to meet new needs. Another respondent explained in the additional comments section to the survey that due to the relative newness of Dublin Core it is “somewhat untested in this arena.” It will be of interest to revisit this issue as more institutions and people implement Dublin Core, and see whether there is more discussion on Dublin Core’s adaptability.

In examining the third aspect of flexibility, the flexibility of rules to allow catalogers to utilize personal judgment, both weaknesses and strengths related to this aspect were identified. Having clear rules and procedures was listed by 5 respondents out of the 18 who responded to that question as an important strength of MARC/AACR2. One respondent explained these rules do not detract from the flexibility to tailor records since “there are loopholes that allow flexibility.” Conversely, 2 other respondents argued that these *loopholes* for interpretation are a weakness to MARC/AACR2. As one respondent explained “‘cataloguer’s judgment’ sometimes leaves way too much room for sloppiness.” In other words, in the respondent’s opinion the lack of flexibility in rules is necessary to prevent inconsistencies and ensure quality cataloging records.

In examining Dublin Core, 3 respondents identified the ambiguous definitions of elements as a weakness. One respondent even defined the element definitions as being “nebulous.” Conversely, having fewer rules in comparison to MARC/AACR2 was identified as a strength of the schema by 2 respondents. Another identified strength of Dublin Core, mentioned by 2 respondents, relating to this aspect is the idea that Dublin Core supports a range of communities. Since part of the reason for having flexible schema rules is to allow the ability to tailor to specific institutional needs, arguing that Dublin Core does a good job of doing this implies that it has the necessary flexibility of rules to allow tailoring. These responses suggest that there are both perceived benefits and disadvantages to having strict rules and definitions in a metadata schema and illustrates this issue is more complex than the ordinal ranking data implied.

In summary, as referred to earlier Dublin Core was considered to be more flexible than MARC/AACR2. Evaluating the 2 schemas in accordance with the 3 aspects of the flexibility there are various opinions on each issue and with the smallness of this sample it is difficult to draw conclusions on the two schemas compare to each other on these points. With the information that is gathered if flexibility issues are the most important factor in evaluating a metadata schema than respondents would prefer Dublin Core over MARC/AACR2.

However, when asked whether they preferred to use Dublin Core or MARC/AACR2 when cataloging, all 15 respondents who answered this question said they preferred MARC/AACR2. The two most popular reasons respondents listed for why they chose MARC/AACR2 were that MARC/AACR2 is the international standard that their particular library subscribes to and that MARC/AACR2 had clearer and stricter



rules than Dublin Core that should ensure consistency. This suggests that these two considerations were more important considerations than flexibility when choosing a metadata schema.

It is important to note that 3 respondents indicated they did not answer whether they in general preferred MARC/AACR2 or Dublin Core because their preference varied depending on the material they were cataloging. In a follow-up question, all respondents were asked whether their preference for Dublin Core or MARC depended on what material type they were cataloging. A total of 9 of 19 respondents (47.4%) who answered this question said that it would change.

These respondents were then asked to identify their schema preference for various material formats. More respondents stated that they would prefer to use Dublin Core over MARC/AACR2 when cataloging when cataloging graphic materials (6 out of 7); 3-D artifacts, art objects, and realia (4 out of 6); and electronic resources (6 out of 9). The one material format where the number of respondents who preferred each schema was almost equal was Archives/Records with 3 respondents stating they preferred MARC and 2 respondents saying they preferred Dublin Core. One of the common characteristics of these formats is that they are not traditional print formats which are considered to be what MARC/AACR2 is best suited for. This indicates that perhaps these formats require greater flexibility in a metadata schema than traditional print formats. A complete listing of respondents' schema preferences broken down by format type is available in Table 9.

**Table 9: Preference for MARC/AACR2 and Dublin Core Based on Material Type.**

	<b>MARC/AACR2</b>		<b>Dublin Core</b>		<b>Total Respondents</b>
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>	
<b>Monographs</b>	8	88.9%	1	11.1%	9
<b>Serials</b>	7	87.5%	1	12.5%	8
<b>Sound Recordings</b>	6	85.7%	1	14.3%	7
<b>Musical Scores</b>	5	83.3%	1	16.7%	6
<b>Graphic Materials</b>	1	14.3%	6	85.7%	7
<b>Audio/Visual</b>	8	100.0%	0	0.0%	8
<b>Government Documents</b>	5	100.0%	0	0.0%	5
<b>Rare Materials</b>	6	100.0%	0	0.0%	6
<b>Archives/ Records</b>	3	60.0%	2	40.0%	5
<b>3-D Artifacts, Art Objects, &amp; Realia</b>	2	33.3%	4	66.7%	6
<b>Electronic Resources</b>	3	33.3%	6	66.7%	9

**Note:** Percentages are based on the number of participants (indicated in the total respondents column) who indicated a specific schema preference of a particular format and indicated on a previous question that their preference between the two metadata schemas varied depending on the material type they were cataloging.

Overall, respondents' preferences for MARC/AACR2 illustrate that flexibility is not most important criteria in decisions in choosing between MARC/AACR2 and Dublin Core.

## **Discussion**

One of the findings of this research is that flexibility is not considered by respondents to be the most important metadata schema quality. Specifically, interoperability and ease of implementation were identified more frequently than aspects of flexibility by respondents as one of the most important top three qualities in a metadata

schema. The fact that interoperability was chosen so frequently implies that respondents are interested in sharing their cataloging records outside of their home institution. Being able to facilitate interoperability is a great benefit to libraries because it allows them to publicize their holdings. Also, libraries often take part in cooperative cataloging initiatives such as OCLC where they upload cataloging records they create for items in their collection in exchange for being able to download records created by other institutions for items in their collection and save time cataloging. Since MARC/AACR2 is the current bibliographic standard for these arenas it is consistent that more respondents would prefer to catalog in MARC/AACR2 versus Dublin Core.

It seems that support for interoperability is related to why the majority of respondents supported having strict schema rules. Some respondents specifically mentioned that they considered clear rules and definitions necessary to ensure interoperability via crosswalking. More importantly if catalogers are sharing their records between institutions, ensuring consistency between records of various institutions is very valuable. One mechanism of doing this is to implement the legalistic approach to cataloging as Osborn (1985) described and having rules that define every element so minutely that there is only one possible way to catalog a particular item. Therefore, respondents may value stricter rules and definitions over more flexible rules because of the consistency argument.

For the other two aspects of the flexibility: flexibility to represent different format types and the flexibility to adapt to changing standards both there was significant support among the sample that these qualities are important. One of the reasons respondents possibly value the flexibility to represent different materials within one metadata schema

is because of they are familiar with the difficulties that profession has had trying accommodate the different descriptive needs of various material formats. Two manifestations of this issue are USMARC format integration discussions in the 1980s and recent changes to AACR2 to support new resource types, such as electronic resources.

Possible reasons why respondents favored adaptability of metadata schemas to changing standards may be because of the criticisms of MARC in the literature that it is not able to support FRBR due its inability to represent relationships between different records. Two respondents did specifically identify this as a weakness to MARC/AACR2 illustrating it is an issue on their mind. The fact that most commonly used metadata schema in libraries is not able to adapt to a major emerging catalog standard like FRBR is a problem that may have inspired respondents to revalue adaptability.

Another finding of this research is that while the majority of respondents generally prefer MARC/AACR2 over Dublin Core, there are specific formats where a high number of respondents preferred to use Dublin Core. One of the commonality between these formats is that none of them were traditional print formats, which respondents had mentioned is what MARC/AACR2 is geared for. This theory would also explain why for graphic materials six of the respondents who answered that question stated that they prefer Dublin Core. Being non-textual, graphic materials have been problematic to catalogers. The Dublin Core initiative has specifically addressed the problem of graphic materials at DC-3: CNI/OCLC Workshop on Metadata for Networked Images in 1996 (Weibel & Miller, 1997). The conclusion of the workshop was that Dublin Core was able to support visual or graphic material format. This may be one of the main reasons why respondents almost uniformly preferred Dublin Core for this

format. Interestingly enough for audio/visual materials, another non -print format, respondents unanimously chose MARC/AACR2 as their preferred cataloging schema. This is possibly due to the fact that Dublin Core does not have the fields to express certain special information about this format such as running length. Overall, this data suggests that there are specific formats where Dublin Core's flexibility can be useful.

Due to the smallness of this research both in sample size and scope there is not enough data to definitively confirm whether any of these reasons are the main reason why participants responded as they did. Even so, the data does suggest that the importance that respondents placed on interoperability did affect their support for strict rules and definitions. Also, current issues in the literature appear to have an impacted on participants' responses. Future research is needed to explore these reasons.

## **Conclusions and Recommendations**

In conclusion, of the three aspects of the flexibility the majority respondents agreed that the flexibility to represent different material types and the flexibility to adapt to evolving cataloging standards are important qualities in a metadata schema. For the third aspect, the majority of respondents preferred strict rules and definitions over having flexible schema rules to allow for catalogers to utilize personal judgment was not valued.

While flexibility issues were important to respondents there are other qualities in metadata schemas that are considered to be more important. For example, interoperability was mentioned by the majority of respondents as one of the three most important qualities in a metadata schema. The importance of interoperability and the ability to share records beyond the institutional level is a possible reason why respondent are more in favor of strict rules that help ensure consistency versus more flexible rules.

The aspects of flexibility issues were also considered in respondents evaluations of the MARC/AACR2 and Dublin Core. Respondents' discussion of flexibility within the context of these two schemas revealed that there some complexities surrounding each of the aspects of flexibility, specifically respondents had mixed opinions whether certain aspects are a strength or weakness of the particular schema. More research is needed to explore these complexities.

In addition, the majority of respondents preferred using MARC/AACR2 when cataloging in general. If flexibility was the most important factor in choosing a metadata schema than Dublin Core since it is considered to be a more flexible schema should have been preferred. The most common reason that most respondents gave for their preference of MARC/AACR2 was that it was the metadata schema used in their institution and it had stricter definitions and schema rules. This suggests that these criteria are more important than flexibility. When schema preferences were broken down by material type, the majority of the respondents preferred to use Dublin Core for graphic materials; 3-D Artifacts, art objects, and realia; and electronic resources. While this illustrates that MARC/AACR2 may not be the best at handling all formats with the smallness of this sample, further research is needed to explore why Dublin Core is more suitable for cataloging these materials.

Due to the smallness of this sample, it is not possible to make generalizations about whether the opinions held within this sample are the held by the majority of practicing catalogers. Even so, the research does support that the flexibility to represent different material types and the flexibility to adapt to evolving cataloging standards are considered when evaluating and choosing metadata schemas, even if they are not

consider to be the most important quality. Therefore these aspects of flexibility should be considered when developing future metadata schemas. More research on a larger scale is need before drawing more extensive conclusions about the majority of practicing catalogers' opinions.

Another topic for further research would be to explore why the majority of respondents listed interoperability as one of the three most important qualities in a metadata schema, including exactly how they define interoperability and how the importance of this quality effects catalogers' estimations of other qualities.

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## Appendix A

### Metadata Schema Survey

This survey seeks to collect opinions of library professionals regarding how important flexibility is in a metadata schema. A metadata schema is defined here as a standard for expressing cataloging information. Examples of metadata schemas include but are not limited to MARC/AACR2, Dublin Core, EAD, and TEI. In addition to general questions on the topic of flexibility, this survey will also ask specific questions about Dublin Core and MARC/AACR2.

The results of this survey will be used for my masters' paper for the degree of Master of Science in Library Science from the University of North Carolina at Chapel Hill. If you have any questions, please feel free to contact me, Michelle Mascaro, at [mascaro@email.unc.edu](mailto:mascaro@email.unc.edu) or my advisor, Dr. Jane Greenberg, at [janeg@ils.unc.edu](mailto:janeg@ils.unc.edu). Participation in this research is completely voluntary, and no risks are anticipated to respondents. You may refuse to answer any question, and all information you provide will be confidential. By filling out this survey and clicking on the "submit" button, you are indicating that you consent to participate in this study.

*Please answer the following questions to the best of your ability.*

#### Personal Background Questions

1. Current Position:

2. Years of Experience:

3. Have you had experience cataloging the following material types?

	Yes	No
a. Monographs	<input type="checkbox"/>	<input type="checkbox"/>
b. Serials	<input type="checkbox"/>	<input type="checkbox"/>
c. Sound recordings	<input type="checkbox"/>	<input type="checkbox"/>
d. Musical scores	<input type="checkbox"/>	<input type="checkbox"/>
e. Graphic materials (static images)	<input type="checkbox"/>	<input type="checkbox"/>
f. Audio/visual (film, video), and multimedia	<input type="checkbox"/>	<input type="checkbox"/>
g. Government documents	<input type="checkbox"/>	<input type="checkbox"/>

h. Rare materials	<input type="checkbox"/>	<input type="checkbox"/>
i. Archives/records	<input type="checkbox"/>	<input type="checkbox"/>
j. 3-D Artifacts, art objects, & realia	<input type="checkbox"/>	<input type="checkbox"/>
k. Electronic Resources	<input type="checkbox"/>	<input type="checkbox"/>
l. Other (specify) <input type="text"/>		

## Metadata Schema Questions

*Rate your agreement with these statements (1 strongly disagree, 5 strongly agree)*

4. The more flexible a metadata schema is, the easier it is to implement.

strongly disagree  1  2  3  4  5 strongly agree

5. A good metadata schema has strict rules and definitions for the different elements of a cataloging record such as title, author, publisher, etc.

strongly disagree  1  2  3  4  5 strongly agree

6. It is preferable to use a single metadata schema that supports the description of multiple material types rather than using different metadata schemas that are specially designed for individual material types.

strongly disagree  1  2  3  4  5 strongly agree

7. There is very little difference in the metadata needs for different material types.

strongly disagree  1  2  3  4  5 strongly agree

8. A metadata schema's ability to adapt to evolving cataloging standards, such as the Functional Requirements for Bibliographic Records (FRBR), is an important consideration.

strongly disagree  1  2  3  4  5 strongly agree

9. Because upgrading older catalog records to meet new standards is expensive enough to often render it unfeasible, the adaptability of a metadata schema is not necessarily an

important consideration. (This does not mean that new content standards should not be made.)

strongly disagree  1  2  3  4  5 strongly agree

10. Rigidity in metadata schema syntax, such as strict rules for punctuating and expressing elements, is important.

strongly disagree  1  2  3  4  5 strongly agree

11. What do you consider to be the three most important features in an ideal metadata schema?

1.

2.

3.

**The following questions are about the specific metadata schemas, MARC/AACR2 and Dublin Core. Unless otherwise specified, questions refer to Dublin Core, simple.**

***Please Rate Your Knowledge of the following Metadata Schemas (1 being none, 10 being expert).***

12. MARC/AACR2

none  1  2  3  4  5  6  7  8  9  10 expert

13. Dublin Core

none  1  2  3  4  5  6  7  8  9  10 expert

***Rate agreement with these statements (1 strongly disagree, 5 strongly agree).***

14. Cataloging in MARC/AACR2 Bibliographic Format is complex.

strongly disagree  1  2  3  4  5 strongly agree  don't know

15. Cataloging in Dublin Core is complex.

strongly disagree  1  2  3  4  5 strongly agree  don't know

16. MARC/AACR2 is able to represent different material types well.

strongly disagree  1  2  3  4  5 strongly agree  don't know

17. Dublin Core is able to represent different material types well.

strongly disagree  1  2  3  4  5 strongly agree  don't know

18. MARC/AACR2 has adapted well to new cataloging standards.

strongly disagree  1  2  3  4  5 strongly agree  don't know

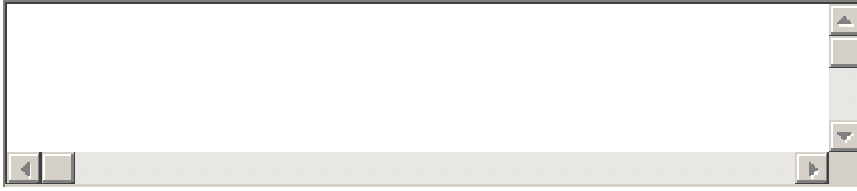
19. Dublin Core has adapted well to new cataloging standards.

strongly disagree  1  2  3  4  5 strongly agree  don't know

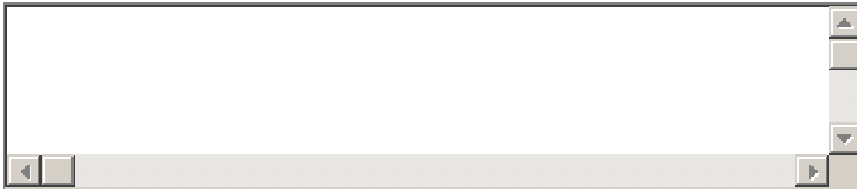
20. What do you consider to be the main strengths of MARC/AACR2?

21. What do you consider to be the main weaknesses of MARC/AACR2?

22. What do you consider to be the main strengths of Dublin Core?



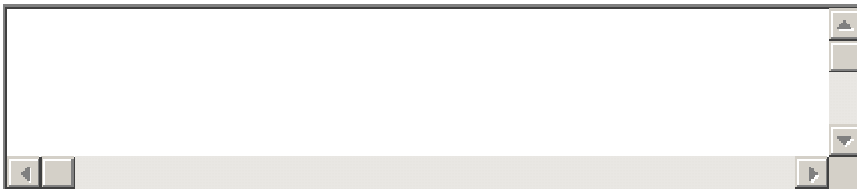
23. What do you consider to be the main weaknesses of Dublin Core?



24a. In general do you prefer to use Dublin Core or MARC/AACR2 when cataloging?

MARC/AACR2  Dublin Core

24b. Why?



25. Would your answer for question 24 vary depending on the type of material you were cataloging?

yes  no

If no, please skip to question 28.

26. For the following material types, do you prefer to catalog in MARC/AACR2 or Dublin Core?

	MARC/AACR2	Dublin Core	No Experience
a. Monographs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Serials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Sound recordings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Musical scores	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Graphic materials (static images)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Audio/visual (film, video), and multimedia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Government documents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Rare materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Archives/records	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. 3-D Artifacts, art objects, & realia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Electronic Resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Other (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text"/>			

27. Please share any comments you have to your answers to question 26.

28. Are you familiar with Qualified Dublin Core?

yes  no

If no, skip to question 30.

29. How would your responses have differed if this survey had asked about Qualified Dublin Core versus Dublin Core, simple?



30. Any other comments you would like to add?