
This study is a content analysis of electronic mails exchanged among members of the Dublin Core Metadata Initiative surrounding the 1:1 issue. The 1:1 issue concerns the creation of unique metadata for each unique resource, versus utilizing inherent metadata for resources that have as their basis an underlying work of intellectual effort. The researcher investigated the difference of opinion between librarians and non-librarians as represented by these messages. The study discovered that the librarians advocated a work-oriented model of metadata assignment, in which the underlying work that constitutes a resource is described, while the non-librarians were evenly divided between the work-oriented model and the 1:1 model, which calls for the individual item to be described. The results are discussed in terms related to bibliographic description, and recommendations for best practice are made based on type of institution.

Headings:

Dublin Core
Metadata
THE WORK VERSUS THE ITEM IN THE DUBLIN CORE: A CONTENT ANALYSIS OF ELECTRONIC MAILS FROM THE DUBLIN CORE COMMUNITY

by Daniel M. Isaacs

A Master’s paper submitted to the faculty of the School of Information and Library Science of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Science in Library Science

Chapel Hill, North Carolina

April, 2000

Approved by:

_______________________
Advisor
# TABLE OF CONTENTS

Introduction ......................................................................................................................... 1

The 1:1 Issue ......................................................................................................................... 4

Research Objectives ........................................................................................................... 6

Methodology ......................................................................................................................... 8
  Sampling ............................................................................................................................. 8
  Classification ..................................................................................................................... 9

Analysis ............................................................................................................................... 11

Discussion ........................................................................................................................... 12

The Messages ....................................................................................................................... 14

Works and Items ................................................................................................................. 15

Best Practice Recommendations ......................................................................................... 19

Conclusion .......................................................................................................................... 20

Notes .................................................................................................................................. 22

Appendix .............................................................................................................................. 24

Bibliography ....................................................................................................................... 29
Introduction

Because of the increasingly prominent role of electronic resources as valid and reliable research tools, there is a great need to enhance their accessibility. The rapid growth of the Web has made indexing these resources a difficult task, and information retrieval in this environment typically suffers from high recall and low precision. In an attempt to counter this chaos, a group of individuals has come together under the name of the Dublin Core Metadata Initiative (DCMI) in order to create a simplified resource description standard, called the Dublin Core, whereby access to these electronic objects would be facilitated. The Dublin Core is a set of metadata elements that were originally intended to be used for the description of electronic resources in order to enhance information access and retrieval. It contains fifteen elements that will, when supplied with values, offer a basic bibliographic record for a particular resource (see Appendix). In providing for this basic level of resource description, it is felt that the often difficult task of locating relevant material in the online environment will be made easier. Although such a creation does not yet exist, there is hope that there will eventually be commercial Web search engines that will fully incorporate Dublin Core fielded searching into their capabilities. While this wide scale development for searching all existing Dublin Core records does not yet exist, there are examples of institutions and organizations that have started to create Dublin Core metadata sets and are making them searchable via a localized mechanism.

The DCMI is composed of individuals from various backgrounds and professions, such as computer scientists, librarians, museum administrators, archivists, and scientists, who are working together as they attempt to resolve some of the issues that pertain to description and discovery of electronic resources. The model for the description of
information resources has long been that of the traditional library cataloging procedure, with its grounding in the Anglo-American Cataloging Rules, and its use of the MARC format for data exchange. This model works well when the collection being described is a fairly static one, such as that found in a traditional library, in which tangible objects are housed within a physical space. This is because libraries maintain a great deal of control over the access to the physical items in their possession. The application of this model, however, raises questions when applied to online resources. Web pages are constantly changing, moving, and disappearing, which makes the task of describing them and thus, locating them, often very difficult. This challenge has been the impetus behind the formation of the DCMI and the creation of the metadata sets for individual web resources.

The DCMI has been in existence since 1995, and since then there has been a series of workshops in which the participants have tried to establish appropriate methods for the implementation of Dublin Core metadata. Initially, the proposal called for the creation of Dublin Core metadata sets by the resource creator, the belief being that there are so many electronic resources being developed that to depend upon specialists to create these metadata sets would be impossible. Although allowing the resource creators to act also as metadata creators was believed to have been a less than perfect situation, it seemed the most pragmatic solution. As it was stated at the outset of the initiative, “Since the Internet contains more information than professional abstractors, indexers and catalogers can manage using existing methods and systems, it was agreed that a reasonable alternative way to obtain usable metadata for electronic resources is to give authors and information providers a means to describe the resources themselves.” With this in mind, making the metadata set simple to create was of utmost importance, since most of these resource creators would have no experience in creating document surrogates of this type. Another important point to make here is that the initial use for the Dublin Core was intended to be the description of electronic resources, and specifically, that these resources
would fall under the definition of “document-like objects,” and would consist mainly of text, thereby allowing the accompanying metadata set to resemble traditional cataloging records.

Given the complexity of this endeavor, it comes as no surprise that there has been a series of ongoing discussions over the course of the development and implementation of the Dublin Core. As with any attempt to establish a standard of this sort, there will likely never be complete agreement among those involved. Much of the debate that has taken place is documented in the form of an archive of electronic mails at a publicly accessible Web site referred to as dc-general. The individuals behind the Dublin Core have drawn upon their own experiences in this debate, and because they are from a variety of institutions and backgrounds, the discussion has often strayed from the traditional model of library cataloging. Many of the persons involved in this discussion indicate through their e-mails that the Dublin Core is flexible enough to allow for the description of physical objects, and these participants use as examples objects such as museum pieces, works of art, archival holdings, and even people. The suggestion is that the Dublin Core has been established as an extensible metadata set, which in turn allows the user to describe any entity, in any form.

Using the Dublin Core to describe physical objects as well as electronic resources raises a number of questions about how best to establish values for each metadata element. Where once the Dublin Core was intended solely for use with electronic resources, now there are individuals and institutions who wish to describe unique artifacts, museum pieces, and realia, all with this one metadata schema. Because of the original intention of using Dublin Core for electronic resources, the developers established a means to allow for the proper linking of related objects via the DC.Relation element. What was originally intended to exist in this field was a uniform resource locator (URL), or other singular identifier for a resource that was deemed closely related to the resource being described.
If the Dublin Core is used to describe physical objects, the use of DC.Relation is less obvious, presumably being used to give location and description information for any resource, electronic or physical, that is in some way related to the one being described. Still, the design of the Dublin Core is such that any conceivable relationship among entities can be described.

The 1:1 Issue

The issue examined in this paper is a debate about the proper implementation of the Dublin Core so as to provide the most effective system of linkages among related resources, referred to as the 1:1 debate. It is called the 1:1 debate because it centers around the question of whether or not each unique resource being described should receive an entirely unique set of Dublin Core metadata (one resource, one set of metadata elements). Those who favor this method of assigning metadata are said to adhere to the 1:1 philosophy. In this model, the creator of Dublin Core metadata for a specific resource would be concerned primarily with describing the resource in front of them, and would assign the value of DC.Creator to the individual who created the resource being described. Then, relationships between this resource and any others would be accounted for by using the DC.Relation element (for further explanation of the Dublin Core elements, see Appendix).

The other side of the debate, which is referred to here as the work-oriented model, calls for less creation of unique metadata for objects that share content, regardless of the specific representation of that content. The assumption is that this would allow for less duplication of effort, in much the same way that libraries now utilize bibliographic records created by other institutions. Presumably, whenever content is shared among multiple resources, an essential set of Dublin Core elements could be reused, including DC.Title and DC.Creator, with specific changes being made in elements such as DC.Type, and
other elements that are specific to format. These are the values assigned to the work of intellectual effort, which is the reason for referring to it as the work-oriented method of Dublin Core implementation. The question remains, however, as to what constitutes a unique resource, deserving of its own unique metadata elements, and this in turn has become the focal point of the discussion.

An example is included here to help explicate the matter stated above: imagine a Web site that offers access to the full text of a novel that has been published previously in another form. The Web site has been created by a person other than the original author of the text, so the 1:1 debate as it will be discussed in this paper centers around the designation of DC.Creator in that site’s Dublin Core set. Those who argue in favor of adherence to the 1:1 philosophy suggest that the individual responsible for making the text available in its electronic form should be designated as DC.Creator, and the author of the original text would thus be designated as DC.Contributor. The proponents of the work-oriented model recommend that the metadata set for the electronic version would have the author of the original text as its DC.Creator, while the person responsible for the electronic version would be designated as DC.Contributor.

Another important point to consider in addition to resource discovery is that of intellectual responsibility. Library cataloging practice calls for the inclusion of a statement of responsibility in the bibliographic record, and this usually signifies the individual or corporate body responsible for the creation of the work, not the specific item being described. Because of the institutionalized means of establishing this intellectual responsibility, it is usually the case that library catalogers have a fairly obvious choice for determining what should go in this particular field. This value also will frequently be the main entry heading for the work in question, which makes it obvious what individual or corporate body stands responsible for the work. In the case of 1:1 implementation of the
Dublin Core, the entity in the DC.Creator field is not assumed to be responsible for the intellectual work, but rather the specific manifestation being described.

**Research Objectives**

The point of this research is twofold: 1) to analyze the messages on the `dc-general` e-mail list to see if there are clear differences of opinion between librarians and non-librarians regarding the 1:1 issue, and 2) to make recommendations for Dublin Core implementation based on the type of institution. Because library cataloging is such a specialized and even esoteric undertaking, it seems likely that those participants in this discussion who work outside of the library environment would hold different beliefs about the best method for Dublin Core implementation than would their counterparts from the library profession. It was felt that those individuals from a library background, and especially those from the cataloging arena, would favor the work-oriented model of resource description, in which related entries would be based upon a common set of core metadata values in the same way that catalogers utilize authority files to achieve conformity of author, title, and other cataloging elements. Michael Heaney extends this idea in his research on “object-oriented cataloging,” in which a bibliographic entity would have certain properties assigned to it that it would then carry in all manifestations, regardless of the specific format or instantiation. Conversely, it was believed that the participants who work in areas other than libraries, such as archives, museums, and other similar institutions, might favor the 1:1 model, since the collections they are describing contain unique items that would not share significant amounts of metadata with objects found elsewhere.

Library cataloging actually resembles the 1:1 implementation, in that cataloging typically begins with the physical description of the item in question, and only after that is done are additional access points assigned. However, library catalogs link related records
together through elaborate means, including authority files, which ensure that an author’s name is entered into library catalogs in one consistent way, thus collocating all records by this author together under one name. Catalogers also utilize uniform titles, which allow for the collocation of one work, regardless of how various publishers have rendered the title of the work. All this is done in the interest of facilitating resource discovery by the patron through the establishment of one preferred manner of expressing titles and names, and subsequently linking possible search terms to these preferred terms. Because of this complexity, it cannot be expected that individuals who are unfamiliar with this method of establishing bibliographic relationships to follow these prescribed rules. Many of the individuals who will be creating Dublin Core metadata records do not have ready access to the tools that professional catalogers use, and even if they did, could hardly be expected to follow the rather explicit rules and procedures that dictate their usage. Nevertheless, these are the types of issues that should be taken into account when creating a means for describing electronic resources.

In coming up with recommendations for best practice, the author intends only to suggest methods of Dublin Core usage based on the type of institution in question. Undoubtedly, each institution that decides to utilize the Dublin Core will have unique circumstances regarding the collections being described. The basis for the suggestions made in this paper are based in large part upon the arguments presented by the participants on dc-general, as well as information drawn from the material represented in the bibliography. The primary concern should be the needs of the end user. Any institution that attempts to facilitate resource discovery should incorporate the needs of its users into resource description, and generate metadata that make sense in that particular context.

Methodology
This study is a content analysis of electronic mails that have been posted to a publicly accessible Web site. Much of the 1:1 discussion has taken place here, which makes it possible to track the progression of the debate. This archive contains messages that date from March 1996 to the present, and although this represents only the dialogue that has taken place outside of the more formal forums such as the Dublin Core annual workshops, it was felt that it contains enough material of substance to make its study worthwhile. This particular list also seems to have absorbed a second list that was devoted entirely to the 1:1 discussion (dc-one2one). For the purposes of this paper, the determination was made that dc-general represents the greater portion of the debate, and also that it includes a wider array of participants.

**Sampling**

The researcher eventually selected 57 messages that best represented the 1:1 debate as it is discussed in this paper. The approach used for selecting the messages to be examined was a methodical one. Because it was not always obvious from the subject line of each message whether or not it pertained to the 1:1 discussion, the researcher read all of the messages that appeared in the archive between July 1997 and February 2000. The issues that are believed to be most important to resource discovery, such as the designation of DC.Creator, are the primary focus of the messages that were eventually chosen. The scope of this paper has been kept narrow in the interest of resolving some part of the debate. Upon examination of the entire body of messages posted to dc-general, numerous messages were read that pertained in only a tangential way to the 1:1 debate, and thus were excluded from this analysis.

The analysis was done by examining the entire collection of messages posted by each individual. Although each individual’s opinion was counted only once, it was felt that it was important to look at every message posted that is relevant to the debate.
Looking at each relevant message from each participant allowed the researcher to better pinpoint the opinions expressed, and would also show changes of opinion by the participants as they develop. There are actually messages on the list in which a participant seems to contradict one of their earlier postings. In this case the focus was then on the entire train of thought expressed by that person, and in the case of a change of opinion, the opinion represented by the final posting of that individual was used for classification.

Classification

After the messages were selected, there were two aspects of classification done. First, each participant was classified according to their profession. Two groups were established, librarians and non-librarians, in the interest of investigating the difference of opinion that occurs when distinguishing between librarians and all other professions represented by these e-mails. The assumption was that librarians would probably tend to view the matter similarly to one another, and thus grouping the other professions together would demonstrate if there is a clear distinction that can be made based solely on whether the individual is a librarian or not.

To classify by profession, an attempt was made not only to determine the educational background of each participant (chiefly, whether or not they have received a master’s degree in library science), but also the type of environment in which each individual is employed. The assumption was that this would also have a bearing upon the individual’s perception of Dublin Core usage, because of the differences that exist between libraries, even digital libraries, and other types of cultural institutions, such as archives and museums. Here is the distinction made for this paper:

- **Librarian**: these are the participants in the debate who not only have received a degree in library science, but who also frame their
discussion of the 1:1 issue in terms that resemble library cataloging, and who are employed in libraries of some sort

- **Non-librarian**: these are the participants who either 1) have not received a degree in library science or, 2) have a degree in library science, but are employed in an institution other than a library and discuss the 1:1 issue in terms of a non-library cultural institution

After the participants were classified in terms of profession, all of the messages from each participant that pertain to the 1:1 issue were read to determine if the individual favors the 1:1 method of Dublin Core implementation, or the work-oriented method. This was not always an easy decision to make because of the ambiguity present in some of the messages, as well as the fact that in some instances participants appear to contradict earlier statements they had made. Eventually, however, each individual’s viewpoint on the debate was determined, and these views were classified according to these two possibilities:

- **1:1**: the participant either stated explicitly that this is the preferred model of resource description, or their postings to the list made it clear that this is their viewpoint

- **Work-oriented**: the participant has posted messages to the list that call for the description of a resource to reflect the underlying work, rather than the specific manifestation

This leaves four possible classifications: librarian in favor of 1:1; librarian in favor of the work-oriented model; other profession in favor of 1:1; and, other profession in favor of the work-oriented model.

**Analysis**
A total of 57 messages were eventually chosen that clearly pertain to the 1:1 discussion as it is explained above. There are other instances of the 1:1 debate on this list, and on some of the other lists maintained at the mailbase site, but only those that fit clearly within the parameters of this discussion were analyzed. As stated above, this discussion focuses primarily on the determination of the DC.Creator element, and messages that did not touch on this particular issue were excluded from the analysis. There are 23 participants in the discussion who composed these 57 messages, but four of these individuals express no clear opinion on the matter, and so they are not represented in this analysis. This leaves 19 participants who have expressed an opinion on the debate; nine of these people are librarians, leaving ten participants who come from outside the library profession.

The breakdown of the participants is as follows:

- Nine out of nine librarians (100%) advocate the work-oriented model of Dublin Core implementation
- Five of the non-librarians (50%) advocate the work-oriented method of Dublin Core implementation
- Five of the non-librarians (50%) advocate the 1:1 model of Dublin Core implementation

As expected, the librarians came out in support of the work-oriented model of Dublin Core implementation. Of the nine librarians who expressed a clear opinion, all nine recommended that Dublin Core metadata sets share basic information with any resource determined to be an originating intellectual work. In this way, a basic metadata framework for a work of intellectual effort is established and then utilized by all future manifestations of that work. As discussed above, this model reflects in many ways the more traditional model of bibliographic description and collocation of materials that has
taken place in libraries for many years. This includes use of such things as authority files, uniform titles, and other tools that create linkages among resources.

There was no clear consensus of opinion expressed by the non-librarians in this discussion. Of these ten people, five recommend a strict adherence to the 1:1 rule, and the other five opt for the work-oriented model as described by their counterparts with library backgrounds. What the results do suggest is that there is a distinction that can be made between librarians and non-librarians when it comes to the 1:1 issue. Even though the sample size is relatively small, it was felt that the breadth and depth of the discussion that has taken place on the dc-general listserve makes up for the smaller number of participants. This is because the discussion has been very involved and the participants have seen numerous examples on both sides of the debate as they make their own assessment of the issue.

Discussion

The participants who support the work-oriented model of resource description suggest that designating as DC.Creator the individual who is responsible for intellectual content makes the task of information retrieval easier. This approach, it is argued, will also make it more clear who holds copyright over the content of the resource, as well as any other rights of intellectual property and responsibility. This is the approach long used by traditional library catalogers, in which the author of a work remains the same, regardless of the specific manifestation of the material. In this way, all works by a particular author are kept together in the library catalog, and the task of finding these items becomes easier. If the items in a library were organized by publisher of individual manifestations, the works of any one author would exist in many different places throughout the collection, and would be more difficult to locate for the user, unless of
course that user was aware of the various manifestations and publishers of that person’s work.

There are various interpretations of the 1:1 issue that have been floated on this e-mail list, and the author would like to attempt to clarify them for the sake of this discussion. The feeling here is that the 1:1 issue is often confusing, but that it hinges on a few key points. The focus of this discussion is on the DC.Creator field, and the belief is that this field offers the clearest distinction between the two camps. The work-oriented model calls for the use of something akin to a main entry based upon an authority record, which in turn reflects the individual, individuals, or corporate entity responsible for the intellectual content of the work in question. This serves as a method for collocating all related records under one main heading, called the main entry in library cataloging, which thereby enhances resource discovery. Although a main entry element is not present in the Dublin Core, it does serve to provide a model that reflects the intent behind most efforts at resource description, which is one of collocation as a means to enhance resource discovery.

It is not always clear in the discussion that this is the definition of 1:1 that is assumed. For instance, it has been proposed that 1:1 simply implies that every discrete resource being described will have its own discrete set of Dublin Core metadata elements. This seems like an acceptable idea of resource description, and is also one that parallels traditional library practice. However, this model does not appear to lend itself to an accurate portrayal of intellectual responsibility. This is understandably a role of prime importance for the creation of any document surrogate, whether it exists in a physical environment, such as a library, or an electronic environment, such as that found in current resource networks, including the Web.
The Messages

The participants presented many examples in the course of making their arguments. These typically followed the model of using the individual responsible for intellectual content either in the DC.Creator field, or the DC.Contributor field. Those who argue for the 1:1 implementation call for the individual who makes the resource available in its present form to be designated as the creator. For example, if the developer of a Web site scans a photograph taken by another individual and makes it available electronically, the 1:1 camp believes that the developer of the Web site should be designated as DC.Creator, and the photographer should go in a DC.Contributor field.

As defined by one of the participants in this debate, the implementation of the 1:1 principle merely implies that there is a 1:1 relationship between a resource and its accompanying metadata set, “thus, if the metadata we are creating describes a digital object whose source was a photograph which in turn has as its source an original manuscript, there will be three metadata sets (each consisting of as many as all fifteen repeatable Dublin Core elements).” This is the first clear mention of the 1:1 principle that the author was able to locate on the dc-general list. This message immediately raises a question from another participant who questions if a metadata creator, when constructing a set of Dublin Core elements for a different manifestation of a work, is thereby responsible for creating Dublin Core metadata for all other manifestations of that same work, even if they do not have direct access to them. For example, if the metadata creator is describing a scanned image of an original photograph, without having the physical photograph present, would they nevertheless be expected to also describe that previous manifestation to the best of their ability? In response to this message, there is a posting which states that the “1:1 model does not posit separate records for each resource, only a way of recognizing which elements:values belong to what source.” This statement suggests that there will be nested elements and values within a single metadata
record, and distinguishes between a metadata record and a metadata set. While this construct may allow for an extension of this discussion elsewhere, the focus here is on discrete metadata for discrete resources. Regardless of the potential to nest metadata sets, the idea investigated in this paper is who to describe as the creator of a resource, and what it is that constitutes a new work of intellectual effort.

There are various ways of viewing this argument, one of which is articulated in terms of the nature of the resource in question. This individual states that “a photograph that [is based on] a sculpture is a very different thing, with much different ‘content,’ and will always be, in rather important ways, a new interpretation of the subject, and thus a creation in its own right.” This individual is discussing the value of the DC.Type element, in that it will change from “sculpture,” to “photograph.” However, this individual also calls for the designation of the photographer as the DC.Creator, and the sculptor would then be designated DC.Contributor. It is still a little unclear as to the proper way around this confusion, but the opinion here is that to relegate the sculptor to the role of contributor is possibly counterintuitive in the process of resource discovery.

Works and Items

The results of this study make it evident that there are some key terms that should be discussed in more detail. Although these terms may at first appear to have little relevance to a discussion about a metadata schema originally intended to be put into use by individuals with little formal training in the practice of bibliographic description, it is felt that the ambiguity present on the dc-general list makes it necessary to attempt some clarification. A major reason for the inclusion of the following discussion is that it appears now that the people behind the Dublin Core are beginning to envision a world in which these bibliographic records are created by individuals with at least a small amount of familiarity with cataloging practice, and in many cases, by professional catalogers. If this
is what eventually happens, with the majority of Dublin Core records being created by individuals with this sort of training, then it stands to reason standardization is a primary goal.

A study group assembled by the International Federation of Library Associations and Institutions (IFLA) defined some of the key terms in this discussion. Although it is not assumed here that this study has been read by many of the people who will eventually create Dublin Core metadata sets, it does permit us to create some distinctions among these terms. Again, the intent behind the creation of the Dublin Core was to create a simplified means of describing and enhancing access to electronic records, and the following discussion may help to clarify some key aspects of bibliographic description.

The definitions given by IFLA are for the terms work, expression, manifestation, and item. These terms are defined in the context of the more traditional cataloging procedures used by libraries, but they do bear on the discussion at hand. A work is defined as “a distinct intellectual or artistic creation,” which is possibly an abstract concept for many to grasp. However, the author will attempt to clarify it in terms of electronic resources and the Dublin Core. IFLA defines an expression as the realization of a work, meaning that when an effort of intellectual or artistic creation is presented for public consumption, it has been expressed in some manner. Looking at the world of electronic resources, there are many instances of Web pages that are expressions of a work that has appeared previously in different form, and the work serves as the foundation of all future expressions. A manifestation is defined as the physical embodiment of a work. In the case of electronic resources it is not typically useful to think in terms of physical embodiment, but for the sake of argument, the assumption is made here that it is a resource accessible through some electronic means, typically a Web browser of some sort. Finally, an item is defined as “a single exemplar of a work.” This implies that each discrete resource that contains the material defined as a work will be considered an item.
An item, in terms of a discussion on electronic resources, can thus be thought of as a resource viewable at a specific location through a Web browser, or other such discrete entities.

These definitions help establish the boundaries surrounding the debate on the proper implementation of the Dublin Core by providing a basis for establishing what are discrete resources and what are manifestations of the same basic work. A single work is potentially represented by many manifestations, and many items. However, what is foremost in the 1:1 debate is exactly what it is that constitutes a new work. Those who argue in favor of 1:1 suggest that any change in the physical format, any attempt to make a work available in a form otherwise not present, or any new presentation of a work, are all indications of a new work. Because of this, an entirely new set of Dublin Core elements must be created for the resource, and a reference to the original will go in the DC.Relation element. However, there is another key change in the record: DC.Creator will become the individual or corporate body who has made the resource available in this new form.

These types of decisions have long been of interest to the library community. There have been numerous attempts to render the process of bibliographic description more clear, and to assist the users of bibliographic utilities as they attempt to locate relevant material. What is important to remember here is that one of the original objects behind the development of the Dublin Core was that it be simple enough so that it could be easily understood and utilized by individuals who have no training in other forms of bibliographic description. Even within the somewhat narrow confines of the library cataloging world, there have been differences of opinion over how best to make use of the existing tools and schemas to create surrogates for documents that best reflect what those documents are about, without also taking up valuable storage space, whether it be
physical, in the case of a card catalog, or in the form of computer disk space for an online catalog.

One aspect of the *Anglo-American Cataloging Rules* that seems to bear on this discussion is Rule 0.24. It has been discussed in other works in terms relevant to the present discussion. This rule states that “the starting point for description is the physical form of the item in hand, not the original or any previous form in which the work has been published.” What this means is that the basis for bibliographic description is the physical container, rather than the work of intellectual effort that the item contains, and only after that physical description has taken place will the intellectual content of the item be evaluated in order to determine access points (for author, editor, corporate body, etc.), subject headings (if any are to be assigned), and any changes from one edition to the next (if there are any). This model of library cataloging, with its basis in the physical item, more closely resembles the 1:1 method of Dublin Core usage. Regardless of what has come before, or the editions still in existence, libraries catalog a bibliographic item based on the item itself, and only later do they attempt to create the system of linkages which make the work accessible along with all its other manifestations.

Larsgaard states that she opposes this principle of bibliographic description, saying that she instead takes the position that “intellectual content is of primary interest to the user and physical form important but secondary.” Applying Larsgaard’s viewpoint to the 1:1 issue, it seems that she would advocate Dublin Core implementation following the work-oriented model. Although Larsgaard is writing specifically about map cataloging, her view of the basis for bibliographic description applies to the world of electronic resources as well (Larsgaard has even posted one message to the *dc-general* list in which she refers to the paper cited here for clarification of her stance on the 1:1 debate).

**Best Practice Recommendations**
Undoubtedly, there will never be complete agreement among individuals and institutions on how best to implement the Dublin Core, but the results of this study suggest some basic ideas on how to use this metadata schema more effectively. Every institution will have to bear in mind the needs of its users, and also the size and scope of its own collection. In this respect, it might be inferred that the 1:1 debate is a moot point, since anyone who utilizes the Dublin Core will be free to do so as they see fit. Hopefully, every institution that uses Dublin Core will do so in a way that is most effective for their users, and that they will know their users well enough to do so. However, upon reading these messages and looking at other resources that touch upon this issue of work versus item, object-oriented cataloging, and linkages among bibliographic entities, the author feels that there might be some basic guidelines for persons and organizations interested in utilizing the Dublin Core.

It seems logical that in institutions that maintain collections of unique physical objects, of which there are no other manifestations, the 1:1 method of Dublin Core usage will work well. In collections such as this, the items themselves are of primary importance, and these items are what potential users are attempting to locate. As these institutions create digital surrogates of the items and make these surrogates available on a Web site, the question remains as to the best way to represent this new, digital “object,” as opposed to the original, physical item. The 1:1 camp would recommend that the individual within the institution who made the image available electronically should be represented as the creator of the digital object. While this construct does not always seem to reflect accurately the intellectual work, the author feels that if the name of the digital item retains the character of the physical item, and if the subject descriptors follow suit, then resource discovery will not be adversely affected.

In the case of digital objects that are manifestations of works that are primarily based upon existing works that in turn have a clearly defined bibliographic history, the
recommendation is that the work-oriented method stands the best chance of enhancing resource discovery. The author feels that the underlying work, when it has already been adequately described elsewhere, is of fundamental importance to resource discovery. This is not to say that specific manifestations should not be described, only that any metadata inherent to the intellectual work should form the basis for description, and the manifestation accounted for secondarily. This recommendation is primarily intended for libraries as they attempt to move into the electronic environment. As this happens, it stands to reason that libraries will be scanning pages of text in order to make them more widely available to their users. It makes more sense in this case to use the properties of the underlying bibliographic work in order to properly assign Dublin Core metadata to the digital object. Thus, the recommendation is that digital libraries and similar initiatives follow the work-oriented method of Dublin Core usage.

Conclusion

As libraries begin to adopt a more prominent online presence, the problems of resource description will undoubtedly force a reevaluation of the cataloging rules presently in effect. The basis in the physical form as dictated by AACR2 does not transfer effectively to the online environment. Although the Dublin Core will help fill the gaps in the number of resources that can be described, it seems likely that the developers of cataloging rules will attempt to make formal rules of description that more accurately reflect the realities of the electronic world.

Because the Dublin Core is affiliated with OCLC, it is possible that the initiative will gain the broad support of the larger library community. If this were to happen, it seems that the collective weight of the OCLC network might make the use of Dublin Core more attractive to those institutions in need of a simplified, but effective, means of resource description. The situation now is such that the Dublin Core is a standard with
full recommendation from the Dublin Core Metadata Initiative, as well as the support from libraries and other cultural institutions in numerous countries. However, until it gains wide acceptance within the more generalized population represented on the Web, there is little impetus for search engines and other wide-scale information retrieval devices to build in the ability to recognize Dublin Core metadata. As stated at the outset of this paper, there are examples of institutions that have implemented Dublin Core on a local scale, complete with the ability to limit searches by specific field. If this model of search and discovery gains a foothold within a larger environment, there is hope that the Dublin Core will gain widespread acceptance.

A key point to remember is that the Dublin Core still has as one of its basic tenets that it be simple enough for individuals without formal training in its use (or training in any form of bibliographic description) to be able to create Dublin Core records that make their own resources more accessible. What the author discovered among the electronic messages on the dc-general list was in large part more confusing than clarifying. There are efforts now among the Dublin Core participants to create qualifiers for certain elements that would allow for a finer-grained method of description. While this means that the Dublin Core metadata elements have the potential to become more and more accurate with regard to resource description, it also carries with it the distinct possibility that it will become so complicated that potential users will either look elsewhere for a simple means of description, or that they will omit description altogether.

Notes


4. Ibid.

5. *dc-general*. Available at http://www.mailbase.ac.uk/lists/dc-general/


7. *dc-general*.

8. Ibid.

9. Ibid.

10. Ibid.

11. Ibid.


13. Ibid.

14. Ibid.

15. Ibid.

16. Ibid.

Appendix

The Dublin Core metadata element set now consists of fifteen elements, an increase from the thirteen that originally composed the schema. The following information has been taken directly from the Dublin Core Web site, accessed at [http://purl.org/DC/documents/rec-dces-19990702.htm]. Because of the progressive
changes within the Dublin Core Metadata Initiative, the reader should check the Web site for the latest information regarding the schema.

**Element: Title**

Name: Title  
Identifier: Title  
Definition: A name given to the resource.  
Comment: Typically, a Title will be a name by which the resource is formally known.

**Element: Creator**

Name: Creator  
Identifier: Creator  
Definition: An entity primarily responsible for making the content of the resource.  
Comment: Examples of a Creator include a person, an organisation, or a service.  
Typically, the name of a Creator should be used to indicate the entity.

**Element: Subject**

Name: Subject and Keywords  
Identifier: Subject  
Definition: The topic of the content of the resource.  
Comment: Typically, a Subject will be expressed as keywords, key phrases or classification codes that describe a topic of the resource. Recommended best practice is to select a value from a controlled vocabulary or formal classification scheme.

**Element: Description**

Name: Description  
Identifier: Description  
Definition: An account of the content of the resource.  
Comment: Description may include but is not limited to: an abstract, table of contents, reference to a graphical representation of content or a free-text account of the content.
Element: Publisher

Name: Publisher
Identifier: Publisher
Definition: An entity responsible for making the resource available
Comment: Examples of a Publisher include a person, an organisation, or a service. Typically, the name of a Publisher should be used to indicate the entity.

Element: Contributor

Name: Contributor
Identifier: Contributor
Definition: An entity responsible for making contributions to the content of the resource.
Comment: Examples of a Contributor include a person, an organisation, or a service. Typically, the name of a Contributor should be used to indicate the entity.

Element: Date

Name: Date
Identifier: Date
Definition: A date associated with an event in the life cycle of the resource.
Comment: Typically, Date will be associated with the creation or availability of the resource. Recommended best practice for encoding the date value is defined in a profile of ISO 8601 [W3CDTF] and follows the YYYY-MM-DD format.

Element: Type

Name: Resource Type
Identifier: Type
Definition: The nature or genre of the content of the resource.
Comment: Type includes terms describing general categories, functions, genres, or aggregation levels for content. Recommended best practice is to select a value from a controlled vocabulary (for example, the working draft list of Dublin Core Types [DCT1]). To describe the physical or digital manifestation of the resource, use the FORMAT element.

Element: Format

Name: Format
Identifier: Format
Definition: The physical or digital manifestation of the resource.
Comment: Typically, Format may include the media-type or dimensions of the resource. Format may be used to determine the software, hardware or other equipment needed to display or operate the resource. Examples of dimensions include size and duration. Recommended best practice is to select a value from a controlled vocabulary (for example, the list of Internet Media Types [MIME] defining computer media formats).

**Element: Identifier**

Name: Resource Identifier
Identifier: Identifier
Definition: An unambiguous reference to the resource within a given context.
Comment: Recommended best practice is to identify the resource by means of a string or number conforming to a formal identification system. Example formal identification systems include the Uniform Resource Identifier (URI) (including the Uniform Resource Locator (URL)), the Digital Object Identifier (DOI) and the International Standard Book Number (ISBN).

**Element: Source**

Name: Source
Identifier: Source
Definition: A Reference to a resource from which the present resource is derived.
Comment: The present resource may be derived from the Source resource in whole or in part. Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system.

**Element: Language**

Name: Language
Identifier: Language
Definition: A language of the intellectual content of the resource.
Comment: Recommended best practice for the values of the Language element is defined by RFC 1766 [RFC1766] which includes a two-letter Language Code (taken from the ISO 639 standard [ISO639]), followed optionally, by a two-letter Country Code (taken from the ISO 3166 standard [ISO3166]). For example, 'en' for English, 'fr' for French, or 'en-uk' for English used in the United Kingdom.
**Element: Relation**

Name: Relation  
Identifier: Relation  
Definition: A reference to a related resource.  
Comment: Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system.

**Element: Coverage**

Name: Coverage  
Identifier: Coverage  
Definition: The extent or scope of the content of the resource.  
Comment: Coverage will typically include spatial location (a place name or geographic coordinates), temporal period (a period label, date, or date range) or jurisdiction (such as a named administrative entity). Recommended best practice is to select a value from a controlled vocabulary (for example, the Thesaurus of Geographic Names [TGN]) and that, where appropriate, named places or time periods be used in preference to numeric identifiers such as sets of coordinates or date ranges.

**Element: Rights**

Name: Rights Management  
Identifier: Rights  
Definition: Information about rights held in and over the resource.  
Comment: Typically, a Rights element will contain a rights management statement for the resource, or reference a service providing such information. Rights information often encompasses Intellectual Property Rights (IPR), Copyright, and various Property Rights. If the Rights element is absent, no assumptions can be made about the status of these and other rights with respect to the resource.

As stated on the page from which these element definitions are taken, the values supplied for these elements should refer to the resource currently being described. In a sense, this is precisely the argument that the 1:1 camp makes, since it calls for the DC.Creator field to reflect the person or agency responsible for making the resource available in its current form. It says nothing here about making a determination as to
intellectual content versus present form, nor does it make clear the role or roles that a
DC.Contributor might play in making the resource available. It is also worth noting that
the Dublin Core is undergoing further analysis and revision, and that the creation of
enhanced methods for linking resources is one of the current goals.

Bibliography


