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What does it mean to adopt a metadata standard? A case study of Omeka and the Dublin Core

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Abstract

Purpose – The purpose of this paper is to employ a case study of the Omeka content management system to demonstrate how the adoption and implementation of a metadata standard (in this case, Dublin Core) can result in contrasting rhetorical arguments regarding metadata utility, quality, and reliability. In the Omeka example, the author illustrate a conceptual disconnect in how two metadata stakeholders – standards creators and standards users – operationalize metadata quality. For standards creators such as the Dublin Core community, metadata quality involves implementing a standard properly, according to established usage principles; in contrast, for standards users like Omeka, metadata quality involves mere adoption of the standard, with little consideration of proper usage and accompanying principles.

Design/methodology/approach – The paper uses an approach based on rhetorical criticism. The paper aims to establish whether Omeka's given ends (the position that Omeka claims to take regarding Dublin Core) align with Omeka's guiding ends (Omeka's actual argument regarding Dublin Core). To make this assessment, the paper examines both textual evidence (what Omeka says) and material-discursive evidence (what Omeka does).

Findings – The evidence shows that, while Omeka appears to argue that adopting the Dublin Core is an integral part of Omeka's mission, the platform's lack of support for Dublin Core implementation makes an opposing argument. Ultimately, Omeka argues that the appearance of adopting a standard is more important than its careful implementation.

Originality/value – This study contributes to our understanding of how metadata standards are understood and used in practice. The misalignment between Omeka's position and the goals of the Dublin Core community suggests that Omeka, and some portion of its users, do not value metadata interoperability and aggregation in the same way that the Dublin Core community does. This indicates that, although certain values regarding standards adoption may be pervasive in the metadata community, these values are not equally shared amongst all stakeholders in a digital library ecosystem. The way that standards creators (Dublin Core) understand what it means to "adopt a standard" is different from the way that standards users (Omeka) understand what it means to "adopt a standard."

Keywords Digital libraries, Classification, Generation and dissemination of information,
Written communications, Standards, Communication, Information studies, Bibliographic systems

Paper type Conceptual paper

Introduction

Many women are familiar with this scenario: you are browsing the racks for a new summer dress, and you spy an option that seems to fit your taste and needs. Now, which size should you try on? If the selection permits, you will likely take three different sizes back to the fitting room. Why? Because women's clothing sizes, while theoretically standardized, are anything but. If "your" size is a US size 6, your closet undoubtedly includes clothing in sizes 4, 8, and even 10.

When manufacturers use a sizing "standard" in a particular way, they send different kinds of messages to potential customers. A generously sized 6 and a restrictively sized 6 make contrasting statements about "normal" weights and shapes, for example. The phenomenon of "vanity sizing," or assigning smaller numbers to more generous

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cuts, enables larger women to select smaller sizes – and feel better about themselves. In contrast, high fashion sizes tend to be smaller, suggesting an air of exclusivity. Moreover, a single boutique that includes a diverse range of sizing implementations communicates something about the standard itself: while clothing sizes are not meaningless (a 2 will be smaller than a 16, and if "your" size is a 6, a 16 is probably too large), merely adopting the standard does not mean that the information provided is reliable or of any particular quality. In the case of vanity sizing, the appearance of being a size 2 is more valuable to the customer than adherence to any predictable system of measurement.

Within information studies, adopting a descriptive standard, such as the Dublin Core metadata standard, is often perceived as a baseline indicator of metadata quality and reliability (Park, 2009). But when an organization adopts a standard, what is really being communicated to whom? As with the example of clothing sizes, the claim of adoption might send different messages depending on how the standard is implemented in practice. For example, if the Dublin Core elements are implemented with as diverse a range of interpretations as women's clothing sizes, then the rhetorical argument invoked by adopting a standard for descriptive metadata – that consistent, reliable metadata is useful and that metadata quality is important – might be undercut by the contrasting rhetorical argument of actual metadata implementation. As with vanity sizing, the mere appearance of adopting a standard like Dublin Core may be more valuable to some users than actual adherence to Dublin Core best practices for metadata quality.

In this paper, we employ a case study to demonstrate how the adoption and implementation of a metadata standard can result in contrasting rhetorical arguments regarding metadata utility, quality, and reliability. Our case study examines the adoption of the Dublin Core metadata standard by the digital library platform Omeka, which is popular for digital humanities projects. We propose that, while Omeka appears to make a certain rhetorical argument by adopting Dublin Core, the platform's lack of support for Dublin Core implementation makes an opposing argument. Ultimately, Omeka argues that the appearance of adopting a standard is more important than its careful implementation.

Through this Omeka example, we illustrate a conceptual disconnect in how two metadata stakeholders – standards creators and standards users – operationalize metadata quality. For standards creators and advocates such as the Dublin Core community, metadata quality involves implementing a standard properly, according to established usage principles; in contrast, for standards users like Omeka, metadata quality involves mere adoption of the standard, with little consideration of proper usage and accompanying principles.

To construct our case study, we employ the Aristotelian concepts of given ends and guiding ends. Given ends comprise the stated goal or desired outcome of a series of rhetorical acts. Guiding ends constitute the craft, or means of attaining that goal (Garver, 1994). In a successful rhetorical argument, given ends and guiding ends align. Using the concepts of given ends and guiding ends, we focus our case study on two research questions:

RQ1. What rhetorical argument is Omeka making regarding Dublin Core?

RQ2. How does Omeka's argument about Dublin Core align with the goals of the Dublin Core community regarding metadata quality?

Omeka's mission, described on its website, involves making "standards based, serious online publishing" simple for non-professionals. This goal – to be serious and standards based – forms Omeka's given ends. Omeka's guiding ends comprise the actual rhetorical argument made through its textual statements and material actions. Evidence for the guiding ends includes the documentation that Omeka provides regarding Dublin Core usage, and the actual metadata generated by Omeka users.

Our case study suggests that Omeka's claim to adopt Dublin Core as a standard is not persuasive to an audience for whom metadata interoperability and aggregation are important goals. The Dublin Core community contends that metadata interoperability and aggregation are best facilitated when Dublin Core is implemented according to specific usage principles. Omeka's omission of these principles in its documentation, and Omeka's selection of projects that ignore these principles as model Omeka exhibits, demonstrate that Omeka's position on Dublin Core adoption is at odds with that of the Dublin Core community. To a particular group of standards users, as represented by Omeka, metadata quality focuses on "using" Dublin Core. But to standards creators, metadata quality focuses on using Dublin Core according to established usage principles. To standards creators, therefore, Omeka has not actually "adopted" the Dublin Core – even as Omeka contends that it has adopted it.

This study contributes to our understanding of standards and their use. In our case study, the misalignment between Omeka's position and the goals of the Dublin Core community suggests that Omeka, and some portion of its users, do not value metadata interoperability and aggregation in the same way that the Dublin Core community does. This indicates that, although certain values regarding standards adoption may be pervasive in the metadata community (represented here by the Dublin Core), these values are not equally shared amongst all stakeholders in a digital library ecosystem (represented in our case by Omeka and its users). The way that standards creators (Dublin Core) understand what it means to "adopt a standard" is different from the way that standards users (Omeka) understand what it means to "adopt a standard."

Our study also makes a methodological contribution. We show how rhetorical analysis of both textual and material-discursive elements can reveal these discrepancies in stakeholder values. Our case study illustrates that claims of standards adoption require more evidence than technical implementation to be persuasive. While Omeka does include the Dublin Core in its default installation, we show that inclusion of a standard, by itself, provides insufficient evidence for a convincing rhetorical argument.

This paper proceeds as follows. First, we provide a brief rationale for our methodological approach, followed by a review of metadata quality, as understood from the perspective of standards creators. Next, we describe our research setting, providing background about the Omeka platform and the Dublin Core standard. We continue with sections that address our two research questions.

Methodological approach

Rhetoric is the study of persuasive communication. Classic rhetorical criticism examines oral and written texts to explain how their arguments are constructed and to analyze the appeals that make these arguments persuasive to particular audiences (Black, 1965; Foss, 2008; Sillars and Gronbeck, 2001). Digital rhetoric extends the purview of classic rhetoric to include complex, dynamic digital systems, from individual blogs to entire social media systems like Facebook, Twitter, and YouTube (Eyman, 2015). Where classical rhetoric looks at a static text written by a single author, digital rhetoric investigates assemblages of diverse content contributed by multiple authors, rendered through constantly evolving interfaces and technical infrastructures. Although a physical library might have once been an unusual object of investigation for classical rhetorical criticism, a digital library is functionally similar to common objects of digital rhetorical criticism, such as websites and social media platforms.

In information studies, rhetorical analysis has been used to understand the persuasiveness of classification schemes, the construction of taste via Netflix alt-genres, and Q&A discussion boards (Feinberg, 2012; Lawrence, 2015; Savolainen, 2014). Our case study follows a similar approach. Here, we focus our analysis using the Aristotelian

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concepts of given ends and guiding ends (Garver, 1994). The given ends represent the external, manifold goal of communication. The guiding ends represent the artful means by which the given ends are achieved. Medical surgery provides an example of the relation between given ends and guiding ends. For surgery, the given ends are to sustain the patient's life; the guiding ends are the mechanics, or craft, of surgery itself. The craft of surgery (guiding ends) is the means by which life is sustained (given ends). An incompetent surgeon is not likely to save a patient's life.

While appropriate guiding ends are necessary to rhetorical success, they are not always sufficient. Although the surgeon might perform the craft (guiding ends) of surgery well, this is not a guarantee of success; sometimes patients die on the table, no matter the surgeon's skill. But inappropriate guiding ends – a misalignment between given ends and guiding ends – will inevitably result in failure. No matter how dexterous, a surgeon who attempts to stitch a patient's soul will not sustain the patient's physical life. The two devices – guiding ends and given ends – must be in alignment for the given ends to be realized.

Rhetorical criticism focused on given ends and guiding ends examines different forms of textual evidence to draw its conclusions. While this evidence may suggest implied motivations or goals for the author of the discursive object under examination, these implied motivations and goals are what the text indicates as authorial intentions, and not necessarily what the author feels, thinks, or believes. Rhetorical criticism, in other words, looks at what authors actually say, and not what they mean to say.

In the following case study, we examine what Omeka "says" by including, omitting, and referencing certain kinds of information on its website, and we argue that these actions indicate a certain rhetorical argument regarding the Dublin Core. These statements that we identify might not be what the Omeka team intends to say regarding Dublin Core; we argue, however, that it is what they do say.

Metadata quality: the perspective of standards creators
Within the communities that create and study metadata standards, there is acknowledgment that merely using a standard does not ensure metadata quality. What metadata quality does involve, however, is not a settled matter.

For many, metadata quality facilitates interoperability of aggregated data. If using a common standard is insufficient to enable interoperability of aggregated data, metadata quality has to do with those characteristics that increase the potential for interoperability when a standard is also used. As one example of this understanding of metadata quality, Weagley et al. (2010) examined Dublin Core metadata from several digital video repositories to assess how this metadata facilitated interoperability. Following Park (2009), the authors operationalized metadata quality in the service of interoperability as "completeness, accuracy, consistency, and usage of controlled vocabularies." (Other studies, such as Windnagel, 2014, have also used Park's definition of quality, which resulted from a 2009 literature review; we use Weagley et al. as a representative example). All the data examined by Weagley et al. used Dublin Core metadata elements, but the data varied in these additional quality characteristics. Weagley et al. identified problems with completeness, accuracy, consistency, and controlled vocabularies as barriers to interoperability.

In assessing the effects of poor metadata quality in their data sample, Weagley et al. considered how data that was insufficiently interoperable might affect resource discovery. For example, one important source of inconsistency in their sample involved differences in how Dublin Core metadata elements were used. Inconsistent use of metadata elements resulted in semantic ambiguities: it became unclear what kind of data a user might find for a particular element. The authors asked, did such semantically ambiguous data aid or hinder resource discovery? Discussing such problems with inconsistency and semantic ambiguity, Weagley et al. note that these inconsistencies often result from inadequate quality control on the part of

metadata creators, commenting that "Both Shreeves and colleagues (2005) and Bui and Park (2006) found that inconsistencies in metadata usage are caused in part by the variety of contributing collections and the resulting variations in quality of metadata application."

Shreeves and colleagues (2005) focus on mismatches of element/value pairs in Dublin Core (e.g. the wrong value, in their study, was found to often appear with the wrong element), which then impedes successful implementation of the 1:1 principle (we discuss the 1:1 principle as implemented by Omeka in a subsequent section). Weagley *et al.* assert that the Dublin Core's pared-down simplicity as compared to other standards is a double-edged sword for metadata creators. While Dublin Core is easy to understand and use, it lacks the expressiveness of more complex standards. Shreeves' study and others point to quality issues associated with such ease of use.

While some studies, including Weagley *et al.*, operationalize quality as completeness, accuracy, and consistency, other studies, like those of Lee *et al.* (2015), assert that metadata quality is difficult to pin down:

> Most evaluation seeks to identify and improve metadata quality, but few attempt to define concretely what "quality" entails. Without established conceptual and operational definitions, it is difficult, if not impossible, to evaluate metadata quality (Moen *et al.*, 1997). In the absence of definitions of quality, scholars and organizations offer different principles that constitute quality metadata.

To this end, Lee *et al.* (2015) cite Bruce and Hillmann, who argue for:

> […] completeness, accuracy, provenance, conformance to expectation, logical consistency and coherence, timeliness, and accessibility. National Information Standards Organization (NISO) (2007) identifies "good" metadata as metadata that conforms to community standards; supports interoperability; uses authority control and other content standards; includes clear conditions for and terms of use; supports long-term curation and preservation; and possesses the qualities of authority, authenticity, archivability, persistence, and unique identification.

Lee *et al.* (2015) also observe that techniques for analyzing metadata quality vary in the literature. For some, metadata quality should be analyzed at the "point of entry" (when it is created). For others, inter-indexer consistency is key (i.e. quality involves the extent to which different records of different creators are shown to be consistent). Lee, Clarke, and Perti note however:

> […] that these evaluation techniques – as with most methods of metadata evaluation in general – were designed to evaluate descriptive metadata; that is, recorded descriptive values as opposed to elements of a schema or a schema as a whole. Even less is written about how to evaluate a schema as a holistic entity.

In this paper, we undertake the kind of analysis that Lee *et al.* (2015) suggest has been missing from the literature of metadata quality. We use a case study of Omeka's adoption of the Dublin Core to understand how a metadata schema can be made to present a holistic argument regarding that schema's proper implementation. By comparing how particular Dublin Core elements are described in general by Omeka (what Omeka says) with how these elements are implemented for particular, exemplary Omeka instantiations (what Omeka does), we demonstrate how the idea of metadata quality articulated by Omeka differs dramatically from the idea of metadata quality as articulated by the Dublin Core community.

Research setting
This section describes the context for our case study, providing background on the Omeka platform and on the Dublin Core metadata standard.

We have selected Omeka for our case study example because it is both singular and typical. Omeka is singular because it is designed to be used by digital humanities scholars and others without formal training in information practices. Omeka is typical because it

promotes its facilities as upholding the standards of information professionals, and information professionals form a secondary audience of Omeka users. Omeka is supposed to enable a novice to easily create information collections that adhere to the conventions espoused by professionals. For our purposes, because Omeka users are assumed to have little knowledge of metadata quality, they are dependent on Omeka's documentation to explain proper metadata implementation. This means that there should be rhetorical evidence to establish Omeka's position regarding metadata quality. But at the same time, some of Omeka's users are information professionals (archivists, librarians, and so on), who use Omeka to create collections in alignment with professional practices. So Omeka is, at the same time, a platform for novices and professionals: singular and typical.

Omeka

Omeka describes itself as a "free, flexible, and open source web-publishing platform for the display of library, museum, archives, and scholarly collections and exhibitions" (Omeka, project About page, n.d). Omeka positions its product as being simple to set up and use, enabling the creation of digital collections without technical expertise or infrastructure investments. Omeka's primary functions are described as the publication of "archives, collections, exhibits, and teaching materials," and its users are described as "scholars, librarians, archivists, museum professionals, and cultural enthusiasts." Omeka can either run locally or on Omeka servers in the cloud (through a service known as Omeka.net). To date, thousands of repositories worldwide run on Omeka.

The primary elements of an Omeka site are items, collections, and exhibits. Items are described with Dublin Core metadata elements. Items can be included in collections, or groups of items, and in exhibits, which combine items and interpretive text in a graphic layout.

As a platform, Omeka provides not only software but documentation, technical support, and a user community. In this sense, each instantiation of Omeka is not truly singular in its existence. Omeka can be seen as a new media ecosystem of linked digital library installations. Each Omeka site is linked not just by using the same software, but also by an array of co-constructive practices. For example, each builder of an Omeka site might contribute to the ecosystem in the following ways:

- An Omeka user is informed of proper usage of Omeka features through Omeka documentation, and then informs the development of subsequent documentation through participation in user support forums.

- An Omeka user assimilates the potential of Omeka features through the provision of representative and exceptional examples on the Omeka website, and then creates an Omeka installation that might itself be selected and promulgated as a worthy example.

- An Omeka user asks questions about possible feature deployments and how to achieve them via the user support forums, which then promotes the implementation of those requirements through subsequent versions of Omeka or its array of external plugins.

Dublin Core

The Dublin Core metadata standard comprises 15 elements (such as Title and Creator) to provide fundamental description of any content resource. Although Dublin Core was created to provide only the most basic elements of description, as a means to promote resource discovery across collections, Dublin Core is often used as the sole description format in a digital library, rather than as a means to facilitate export and aggregation of basic information across systems. Dublin Core is the default description format for Omeka items.

The 15 fundamental Dublin Core elements are officially documented as both an ISO (2009) and NISO (2012) standard. The Dublin Core Metadata Initiative (DCMI) provides additional documentation of Dublin Core, including syntaxes for encoding it, an abstract

model, and usage guidelines. DCMI sponsors a yearly conference for metadata researchers and practitioners, and an ongoing series of webinars.

The Dublin Core abstract model clarifies that a description, in the Dublin Core context, is a set of statements about a single resource (Powell, *et al.*, 2007). A statement is a property (i.e. a Dublin Core element, such as Creator) and a value (either a literal value like "Shakespeare" or an identifier for a resource, such as the URI for Shakespeare's authority file record). The restriction that the statements in a description can only refer to a single resource is called the 1:1 principle. Although the 1:1 principle seems logical and obvious, it becomes tricky to maintain when considering the potential array of digital representations that might exist for a particular work. To follow the 1:1 principle, there would be separate descriptions for a printed historical photograph (which might be physically stored in a box in an archive) and its digital surrogates (e.g. a JPEG version of the physical photograph, stored in a digital repository like Omeka).

As noted by Richard Urban, who describes the pervasiveness of 1:1 principle errors in Dublin Core metadata, such errors are not often noted by humans, who can see a date of 1903 and a format of JPEG and recognize that the date is for the original photograph and the format is for its digital representation (Urban, 2012; Urban, 2014). But computers cannot make such distinctions, and 1:1 principle errors have the potential to be problematic when metadata is aggregated across systems and subject to automatic processing. In general, although Dublin Core is meant to facilitate aggregation, human metadata creators have a difficult time anticipating what their metadata will look like and how it will be interpreted (by people or computers) outside of its originating context. Because of such issues, although the Dublin Core elements are simple, creating metadata that can be reliably and usefully aggregated is not as easy and straightforward a process as it might first appear to be. Urban (2012) cites the following example as representative of a 1:1 principle violation:

```
<description>100 x 70 cm</description>
<description>image/tiff</description>
```

This example uses the Dublin Core Description element to describe two different resources: a physical resource with length and width dimensions and a digital resource with the tiff file format. (Additionally, both physical and digital format information (tiff) might more accurately be placed in the Format element, while the clarification that the resource is an image would be in the Type element, but these are interpretations of element definitions, not misapplication of the 1:1 principle).

Omeka's argument

This section addresses the first research question: What rhetorical argument is Omeka making regarding Dublin Core?

Omeka's given ends can be identified using direct textual evidence from the Omeka website, which states:

> The Omeka team decided that we wanted to contribute to a movement that is helping to standardize data about digital objects. While there are different standards available, the Dublin Core Metadata Initiative is the most widely adopted and offers users the greatest flexibility (Omeka, Working with Dublin Core page, n.d.).

Omeka's team underscores this goal on the Omeka About page. There, Omeka's value proposition is described as making it easy to achieve "standards based, serious online publishing." Omeka's ease of use is presented as a means to a larger end, that of "serious" publishing, which is achieved through adherence to standards, of which the Dublin Core is the most prominently featured.

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According to this direct textual evidence, Omeka aligns itself with the metadata standardization goals of the DCMI. Congruence with the DCMI's goals, then, constitute Omeka's given ends. If this is the case, then the guiding ends – the mechanisms through which the rhetorical argument is expressed – should work to articulate and support this position.

To examine the guiding ends of a complex media ecosystem like Omeka, direct textual evidence is insufficient. We need to consider material-discursive evidence as well. In other words, in addition to what Omeka says about the Dublin Core, what are its actions toward the Dublin Core? How does Omeka support the implementation of Dublin Core according to its usage principles, such as its official element definitions and the 1:1 principle?

To discern Omeka's guiding ends, we consider the following forms of material-discursive evidence:

- Omeka's instructions to its users regarding Dublin Core implementation.
- Dublin Core metadata as implemented for Omeka sites that have been selected by the Omeka team as exemplary installations.

Omeka's Dublin Core documentation for Omeka users
In its documentation section, the Omeka website includes a page titled Working with the Dublin Core. The first section of this page, Why Dublin Core? Provides two outbound links. One link connects to Diane Hillman's 2005 Dublin Core usage guidelines on the DCMI website. Although these guidelines might seem authoritative, this page is prefaced with a warning in large red type that the guidelines are out of date, and that new guidelines are being developed on a wiki with a provided URL – as of the warning's date, which is 2011. The wiki itself appears unfinished and was last updated in 2011. The second link connects to a brief historical overview of Dublin Core by OCLC, which includes a small bibliography. Most of the listed references in the bibliography are from the 1990s and early 2000s. Some of the listed references offer use cases of Dublin Core, but not from a context that reflects practical usage in Omeka.

The second section of this page, Interpreting Dublin Core Fields in Omeka, offers Omeka's own perspective on Dublin Core implementation. This page provides brief definitions of each Dublin Core element; these are the same definitions as provided in the 2012 NISO standard. Many, but not all, element definitions also include a brief set of examples provided by Omeka. As a representative example of an element definition on this page, the Creator element information comprises the following:

Creator: An entity primarily responsible for making the resource.

Examples: Author/authors; artists; photographers; institutional authors or producers, such as university or federal agency.

The definition (the first sentence) is from the 2012 NISO standard. For reference, the Creator element definition in the 2012 NISO standard appears in its entirety as follows:

Label: Creator

Definition: An entity primarily responsible for making the resource.

Comment: Examples of a Creator include a person, organization, or service. Typically, the name of the creator should be used to indicate the entity.

On the Interpreting Dublin Core Fields page, only the examples (author/authors, etc.) are new information from Omeka. While the list of examples does clarify some kinds of information that might be placed in the Creator element, it does not clarify how that information is to be determined or expressed, nor does it present actual examples of

metadata usage (e.g. Creator = "William Shakespeare" or Creator = "Anonymous" or Creator = "Environmental Protection Agency"). These element definitions do not provide the level of guidance that a metadata professional would consider sufficient to enable reasonable implementation of Dublin Core according to accepted usage principles.

Occasionally, Omeka's additional information contradicts Dublin Core official guidance, without clarifying that this is the case. The Date element provides an example of this. Omeka's Date definition appears as follows:

> *Date* A point or period of time associated with an event in the lifecycle of the resource. Date may be used to express temporal information at any level of granularity. Recommended best practice is to use an encoding scheme, such as the W3CDTF profile of ISO 8601 [W3CDTF] Date is one of the trickiest fields to fill. You will want to decide how best to use it for your project for consistency. There is an open text field for date so that you can reflect the type of date information you have whether it is a very specific date MM/DD/YYYY or if it is "circa 1940."

For reference, the Date element definition from the 2012 NISO standard appears as follows:

> Label: Date
>
> Definition: A point or period of time associated with an event in the lifecycle of the resource.
>
> Comment: Date may be used to express temporal information at any level of granularity.
>
> Recommended best practice is to use an encoding scheme, such as the W3CDTF profile of ISO 8601 [W3CDTF].

Omeka's clarification (in italics in the Omeka Date definition) does not explain the reference to the World Wide Web Consortium's (W3C) interpretation of the ISO 8601 date standard (which is also unexplained in the Dublin Core materials). The W3C's interpretation of the ISO 8601 date standard would express a date as YYYY-MM-DD, and not as MM/DD/YYYY, the format used as an example in the Omeka clarification. More importantly, the Omeka clarification makes it seem as if dates might be expressed idiosyncratically, according to whatever seems right for a particular item. The Dublin Core definition, however, implies that varying "levels of granularity" should be expressed according to a clear, consistent, standardized format. In the Dublin Core understanding of date, values like "circa 1940" and "YYYY-MMM-DD" would not appear in the same project. Accordingly, for the Date element, Omeka's clarification makes the element more difficult to understand, not easier to understand.

The situation with the Date element illustrates a general trend with the Omeka documentation. While Omeka includes the 2012 Dublin Core definitions, these definitions are difficult for people without metadata expertise to fully comprehend. Even when definitions do not include references to arcane specifications (W3CDTF profile of ISO 8601), they sometimes assume unarticulated background knowledge. For example, the Dublin Core definition of Identifier as "an unambiguous reference to the resource within a given context" assumes an array of background knowledge to interpret with any precision: that a name or title is often an insufficient identifier; that there must be a clear process for constructing, managing, and applying identifiers to resources; that it can be tricky to establish just what an identifier refers to, because digital entities can exist in many versions and at multiple levels of abstraction.

The Interpreting Dublin Core Fields section also includes two outbound links to additional information sources. The first link connects to element definitions from the DCMI website, from Hillman's (2005) (deprecated) materials. The second link connects to the Carolina Exploring Culture and Heritage Online's (DigitalNC) Dublin Core usage page. This page provides DigitalNC's Dublin Core guidelines for its contributors. Omeka describes the DigitalNC information as "an example of Dublin Core interpretations," which is a reasonable assessment; the DigitalNC guidelines appear to be oriented toward digitized

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photographs and require some collection-specific conventions (for date formats, for example). In other words, the DigitalNC guidelines constitute the kind of project-specific, local documentation that an Omeka user might develop for a particular Omeka project. However, understanding the DigitalNC guidelines in this manner again requires a level of metadata expertise that many Omeka users presumably lack. This is the kind of technical knowledge that the Omeka platform aims to remove as a barrier to effective implementation. The DigitalNC guidelines presume other kinds of background technical knowledge as well: they refer to various controlled vocabularies without explanation (Library of Congress Subject Headings, the Art and Architecture Thesaurus). The metadata examples in the DigitalNC guidelines, moreover, violate the 1:1 principle (they include information for physical dimensions and a digital filename).

Overall, from the evidence of Omeka documentation for Dublin Core, the guiding ends provide insufficient support for the given ends. Omeka links to deprecated Dublin Core documentation and out-of-date descriptions; its own guidance is minimal and does not clarify what it does not include, so that Omeka users do not know the extent of missing information; the reasonable example of site-specific guidance that it links to, DigitalNC, requires metadata expertise to understand – and the DigitalNC materials violate an important, if commonly misunderstood, usage principle, the 1:1 principle. If Omeka's goal is to make it easy to be serious and standards based, its provided Dublin Core documentation does not accomplish this goal, at least in the way that the Dublin Core community would define serious and standards based.

Dublin core metadata from exemplary Omeka sites

The Omeka blog presents four Omeka projects that the Omeka team considers to be exemplary, or "Omeka powered" (Omeka, Omeka-Powered feature on Omeka blog, 2016). The blog includes an extended feature about each Omeka-powered installation, including interviews with project creators. In this section, we examine the Dublin Core metadata for these exemplary Omeka projects, to see if the metadata adheres to the quality standards of the Dublin Core community. Our sample was collected from the Omeka Powered projects available in the spring of 2016. (The Omeka website also includes a Showcase section that briefly describes ten Omeka projects; we selected the installations from the Omeka-powered section of the blog for our analysis because they were singled out for extraordinary treatment – a lengthy discussion of the project – by the Omeka team).

We select a representative item record from each Omeka Powered project site and ask the following questions:

- Does the metadata collected for these exemplary Omeka projects use Dublin Core elements according to their established definitions?

- Does the metadata collected for these exemplary Omeka projects violate the 1:1 principle?

- Is the metadata implemented idiosyncratically, or without clearly identifiable site-specific usage principles?

Omeka powered example no. 1: human computers at NASA

The Omeka project Human Computers at NASA was created under the direction of two professors of American history from Macalester College. The aim was to create a history of African-American women mathematicians at NASA who acted as computers, performing mathematical calculations.

The following table displays a metadata record for the plantation map where the NASA facility that the women worked at was located. The Omeka page that contains the metadata

also includes a digital representation of the described map. The page itself has the title Map, Chesterville Plantation (Table I).

The duplicate values for the subject and description elements, and for the creator, source, and publisher elements, suggest that these elements may not be used according to Dublin Core guidelines. The value in both the subject and description elements describes what the item is (a map of Chesterville Plantation) see Table 1 and not what the item is about (Subject). The proper element for describing the extent of the map, according to the Dublin Core element definitions, would be Coverage, which is not used here. The description element would extend or complement that information, not repeat it. The source element is properly used to contain a reference to another resource from which this resource is derived, e.g., if this record were for a digital representation of the map, the source element might contain the identifier for the original print version. The value in the source and creator elements (NASA Cultural Resources) seems likely to be the publisher, or the entity that is making the map available. It is unlikely that NASA cultural resources was the entity originally responsible for creating the 1951 map. This record additionally violates the 1:1 principle and conflates physical and digital versions of the resource: we know this because the date is given as 1951 but the format is a JPEG. The date is presumably for the original map, while the format is for its digital representation.

Omeka powered example no. 2: Wearing Gay History
This Omeka project, initially created by a doctoral student at George Mason University and now supported by an additional team that includes staff with expertise in digital collections, libraries, and archives, curates gay-themed T-shirt images from various archives. The following table displays a representative metadata record. The page itself includes an image of the T-shirt and has the page title Feminista '92 (the Dublin Core record does not include a title) (Table II).

Element	Value
Title	Map, Chesterville Plantation
Subject	Survey Map of Chesterville Plantation in Virginia, 1951
Description	Survey Map of Chesterville Plantation in Virginia, 1951
Creator	NASA Cultural Resources
Source	A link to a website for NASA Cultural Resources A link to a website for Chesterville Plantation
Publisher	NASA Cultural Resources
Date	1951
Rights	Used with permission from NASA Cultural Resources
Format	JPEG
Language	English
Type	Map

Table I.
Record for map, Chesterville Plantation

Element	Value
Description	Green Tank Top, VII Encuentro Nacional Feminista. Del 1 A1 4 De Octubre. Acapulco, Gro. 1992
Date	October 1-4, 1992
Creator	None recorded
Source	IGLHRC Alumni International LGBT Activist T-Shirt Collection
Subject	Feminists
Identifier	None recorded
Contributor	Julie Dorf

Table II.
Record for Feminista '92

The value for the source element suggests that this element is not used according to Dublin Core best practices. The source indicates a resource from which the present resource is derived: examples include the dataset used to make a visualization, or the original printed text which is then scanned to produce a digital file. Here, the source element indicates the original collection from which the current resource has been extracted. Properly, this kind of collection-resource relationship would be indicated with the relation element. The usage of the source element here does, however, coincide with the way that the source element has been clarified in the Omeka documentation. The Omeka documentation examples for the source element include "a collection of objects" and "a division of an archive or library." This record thus follows Omeka's guidelines but not the Dublin Core's. Additionally, the values of "None recorded" for the creator and identifier elements seems idiosyncratic. Other elements in the standard Dublin Core set are not included in the metadata record for this item; it is unclear why creator and identifier are included with null values, instead of being omitted entirely. The meaning of the date element is also vague. It seems as if the date corresponds with the event commemorated on the T-shirt and not the date that the T-shirt was created. Similarly, the role of the contributor is also uncertain. Julie Dorf may have contributed the T-shirt to the originating archive, or she may have been involved in the creation of the T-shirt itself.

Omeka powered example no. 3: 2015 Baltimore uprisings (Preserve the Baltimore Uprising)
The Baltimore Uprisings library is crowdsourced and overseen by a history professor at University of Maryland- Baltimore. The following table displays a representative metadata record. The page includes an image of the described photograph; the image is a portrait of a man. The page title is The Spoken Word at Freddie Gray's 2015 rally! (the same as the title in the Dublin Core metadata) (Table III).

The value for the format element suggests that it is not used according to Dublin Core guidelines. The format should be a file format (JPEG) or the medium (e.g. the type of print) and dimensions of a physical photograph, not the apparatus used to capture the photograph. The subject value is a genre term, not a topic term.

Omeka powered example no. 4: the great society congress
This Omeka project, The Great Society Congress, was created by a collaborative organization, the Association of Centers for the Study of Congress. The project team includes scholars, librarians, and archivists.

The following table displays a representative metadata record. The page title is Correspondence with Representative Carl Albert from Ardmore, Oklahoma, regarding the Voting Rights Act (the same as the value in the Dublin Core Title element). The page includes an image of a scanned, handwritten letter (Table IV).

The contributor element is used here in a manner inconsistent with Dublin Core guidelines. The value for this element seems to indicate the collection that holds the original letter; an originating collection is properly identified with the relation element. (A Contributor is someone who contributes to the resource itself, e.g. the illustrator of a book). As with Omeka

Element	Value
Title	The Spoken Word at Freddie Gray's 2015 rally!
Subject	Portrait
Description	One Freddie Gray's rally speakers […]
Creator	Lionel Turner
Date	May 2, 2015
Format	Nikon D300 SE

Table III.
Record for photograph, the spoken word at Freddie Gray's 2015 rally!

Element	Value
Title	Correspondence with Representative Carl Albert from Ardmore, Oklahoma, regarding the Voting Rights Act
Subject	Civil rights. USA. Voting Rights Act of 1965
Description	ALS with enclosure describes constituent concerns about the constitutionality of the Voting Rights Act and the need to follow the Constitution. TL from Representative Carl Albert (D-OK) expresses his confidence that debate about the bill will determine if it is constitutional
Creator	Albert, Carl, 1908-2000
Source	Carl Albert Congressional Papers, Legislative Series, Box 89, Folder 83, Carl Albert Center Congressional Archives, University of Oklahoma
Publisher	Association of Centers for the Study of Congress
Date	1965
Contributor	Carl Albert Center Congressional Archives, University of Oklahoma
Rights	Materials on this site are provided for educational use under Fair Use outlined by U.S. Copyright law. This item may be protected under copyright. It is the responsibility of the user to obtain permission from the copyright holder before publishing or reproducing materials. For assistance, please contact the contributor of this material
Format	image/jpeg application/pdf
Language	English
Type	Document
Identifier	cac_0001.jpg cac_0002.pdf
Coverage	Oklahoma (TGN: 7007707)

Table IV.
Correspondence with representative carl albert from Ardmore, Oklahoma, regarding the Voting Rights Act

Powered Example no. 2, usage of the contributor element this way does match the examples given in the Omeka documentation, but this usage does not align with Dublin Core instructions. The use of the Coverage element to indicate Oklahoma is idiosyncratic. The letters were sent from Oklahoma, but they discuss the Civil Rights Act, which is federal legislation (applies to the entire USA).

This record violates the 1:1 principle in multiple ways. If the record is describing a digitized version of the original letter, then the source and publisher elements have been used correctly to indicate the original letter (source) and the provider of the digitized version (The Association of Centers for the Study of Congress, which sponsors this Omeka project. However, the date value is 1965, which must be for the original letter. On the other hand, the format and identifier elements refer to digital files and formats – two different digital files and formats (one for an image, one for a PDF), another violation. Overall, the focus of the record is uncertain.

Summary of Omeka's argument
The projects selected as exemplary Omeka sites and discussed here represent a range of domains, goals, and personnel. All of the projects represent some level of collaboration between scholars (faculty or doctoral students) and people with some expertise in digital collections (as librarians, archivists, museum professionals, or digital media consultants). But the nature of involvement for digital collections staff is uncertain, and, given that three of the four projects were begun by scholars and initiated as informal, grassroots initiatives, with work performed by students or volunteers, the extent of technical knowledge available to the project staff responsible for describing Omeka items on an ongoing basis – in this case, metadata expertise in the form of awareness and understanding of usage principles for Dublin Core and the rationale for these principles – was probably minimal. This represents precisely the situation described by the Omeka team as part of their overt given ends: to enable "serious" and "standards based" online publishing for people without deep technical knowledge.

As such, while it is perhaps not surprising that the Dublin Core metadata found on these featured Omeka sites does not adhere to the official definitions and usage principles

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of the Dublin Core community, it is nonetheless significant. Omeka's apparent rhetorical argument – the given ends – suggests that Omeka supports the Dublin Core community's goals for metadata quality and reliability. But Omeka's support for that argument – the guiding ends – undercuts Omeka's apparent position of support for the Dublin Core. Both forms of material-discursive elements – what Omeka does with Dublin Core, not merely what it says about Dublin Core – suggest that Omeka values Dublin Core more in the appearance of adoption than in actual implementation. Omeka provides scant, confusing, contradictory documentation for Dublin Core, and the Omeka sites that it features do not employ Dublin Core according to the usage principles endorsed by the Dublin Core community.

Omeka's argument and the Dublin core community

This section addresses our second research question:

RQ2. How does Omeka's argument about Dublin Core align with the goals of the Dublin Core community regarding metadata quality.

Omeka's given ends state that Dublin Core is supported as a standard; in reality, the guiding ends contradict this and show that only the appearance of following a standard is supported. But why does applying a standard "correctly" matter? In the example Omeka sites that we present, the metadata of digital objects seems relatively comprehensible, and it appears to be adequate for the goals of the Omeka users. Should not this be sufficient? To return to the example of women's clothing sizes from the beginning of this article, what does it matter if "vanity sizing" is implemented, and a woman who "correctly" wears a 6 fits into a size 2 dress? If that makes her feel good, and both customer and manufacturer are happy, what's the harm in violating the standard?

For clothing sizes, difficulties ensue when clothing that employs size differently is aggregated, because the variation in sizing can be great. As the size of the collection increases, the level of uncertainty rises. Accordingly, it is difficult to identify, select, and purchase clothing efficiently. The same situation obtains with metadata. When a descriptive standard like the Dublin Core is used with excessive variability, so that definitions of elements are unclear, and it is impossible to predict what kinds of information will be associated with which element, or to understand which statements apply to which versions of a resource, this especially affects the utility of metadata in aggregated collections. The variation present in the Omeka examples that we describe here – which we suggest are representative of Omeka metadata generally – prevent the metadata from being interoperable via Dublin Core-sanctioned protocols for metadata exchange like the Open Archives Metadata Initiative-Protocol for Metadata Harvesting (OAI-PMH).

Interoperability has always been a key goal of Dublin Core, which has been intended to facilitate data aggregation. This is why Dublin Core elements have become the lingua franca of the metadata world. Dublin Core elements form integral parts of the data models for large-scale metadata aggregation efforts such as Europeana and the Digital Public Library of America. The 1:1 principle is a necessary component of such aggregation efforts, even as the complexity of implementing the 1:1 principle is acknowledged (Urban, 2012).

Omeka, also, claims to support Dublin Core's interoperability goals. In service of interoperability and aggregation efforts, Omeka offers a plug-in to turn an Omeka instance into an OAI-PMH harvester (which can take Dublin Core metadata from other Omeka instances or outside repositories via a set of HTTP-compliant verbs) and a plug-in to make an Omeka instance into a data provider (which makes an Omeka instance metadata-harvestable) (Omeka, Plugins page, n.d.).

We have already argued that merely providing a technical implementation of the Dublin Core is not sufficient to support Omeka's rhetorical argument regarding Dublin Core adoption. Similarly, we argue that merely providing plugins to enable metadata harvesting

and provision is not sufficient to support a rhetorical argument regarding support for interoperability and aggregation. Hillmann encapsulates Dublin Core usage rules this way:

- Obey the 1:1 principle.
- Employ appropriate values. Here, Hillmann clarifies that best practice for a particular element may vary by context, but the implementer needs to recognize the ultimate user of metadata is unpredictable: it may be a human, or it may be a machine (Hillmann, 2005).

Hillmann's emphasis on a "machine" user – indeed, Hillmann describes the machine as the default user – of Dublin Core is indicative of Dublin Core's close relationship to linked data – the next frontier of metadata interoperability for the Core beyond OAI-PMH. The DCMI team writes that implementers of Dublin Core will support linked data:

> But "Dublin Core metadata" is about more than fifteen elements. It is best described as a style of metadata that has evolved from efforts to put the fifteen elements into the context of a coherent approach to metadata on the World Wide Web generally. Since the late 1990s, the Dublin Core style has evolved in the context of a Dublin Core Metadata Initiative (DCMI) […] in tandem with a generic approach to metadata developed in the World Wide Web Consortium under the banner "Semantic Web" (Rühle *et al.* n.d.).

So, according to DCMI documentation, Dublin Core metadata should be consumable as linked data via the Resource Description Framework (RDF), a conceptual model that evolved the same time as the Dublin Core. In RDF, there is no metadata "record"; there are only independent statements that link a subject (the resource) a predicate (the Dublin Core element) and an object (a value, or a reference to another resource). If this sounds familiar, it's the mode of description made possible by the 1:1 principle: each statement needs to be "about" one, and only one, resource.

In the linked data paradigm, the metadata consumer is precisely what Diane Hillmann pointed out it would be: the machine. For linked data to be aggregated and used properly by computers, Dublin Core must be used according to the standards laid out by DCMI. If Dublin Core metadata is used incorrectly, Dublin Core predicates reify misinformation in RDF graphs. More simply: The Dublin Core metadata produced in some Omeka repositories will not make sense for linked data. If Dublin Core metadata is used idiosyncratically within digital library collections, this ossifies Dublin Core's twin goal of being the lingua franca for resource description on the Web and acting on behalf of linked data/RDF as a standard.

Guiding ends, the rhetorical craft, must be performed well for the given ends to be met successfully. Much Omeka library metadata is idiosyncratic, and if metadata use is evidence of guiding ends, this indicates a mismatch between given and guiding ends in Omeka. Omeka argues that adopting Dublin Core is good for us and users, whereas DCMI says using it well is good for us and its users. There is a difference between these two positions. The way that standards creators (Dublin Core) understand what it means to "adopt a standard" is different from the way that standards users (Omeka) understand what it means to "adopt a standard."

Conclusion

As its given ends, Omeka articulates a position as "serious" and "standards based." In our summary of Omeka's guiding ends – the material-discursive evidence that should underlie Omeka's contention of being serious and standards based – this position is not well supported. In terms of actions regarding Dublin Core, Omeka does not enable its implementation according to established best practices. Accordingly, Omeka installations do not produce interoperable metadata that is suited for aggregation as linked data.

But Omeka's position as being "serious" and "standards based" is shaky only from the perspective on those qualities adhered to by the Dublin Core community. The Dublin Core community values metadata that aligns with a certain understanding of quality and

reliability, one that produces interoperable metadata that can be efficiently aggregated as linked data and subject to automated processing by computers. However, while Omeka's argument for being serious and standards based in the manner of metadata implementation that the DCMI would endorse might be weak, Omeka's argument for being serious and standards based may support the goals of many of its current users perfectly well. For these users – say, a scholar who wants to obtain a grant to enable a project to describe historical photographs for pedagogical purposes – the appearance of adopting a standard may be perfectly sufficient. These users can use the imprimature of being "standards based" to enable the fulfilment of their own particular goals – goals that do not, actually, require the adoption of a standard in the way that the Dublin Core community would understand adoption. These Omeka users might not envision their individual projects as providers of metadata to aggregated collections, or as harvesters and users of aggregated metadata themselves.

The challenge here is that such Omeka users, with apparently self-contained individual projects, are not aware of any misalignment in these conceptions of being "serious" and "standards based." Accordingly, if their project goals evolve, as several of the example projects that we surveyed seem to have done, these Omeka users will not realize that their understanding of "Dublin Core implementation" and the Dublin Core community's understanding of "Dublin Core implementation" are different. This incongruence may cause a variety of problems downstream, as providers assume that the metadata they are contributing is acceptable for all contexts, and not just the context in which it was generated. To again return to the example of clothing sizes, it is not necessarily a problem to have a dress with the same measurements be given a size of 2, 4, 6, or 8 in different contexts. Indeed, this might be the very approach to make different customers happy! But when all of these dresses with different sizes are aggregated in the same system with a variety of customers, the effects are very different, and problems emerge. For Omeka, it may serve many of its users quite well not to support best practices of metadata implementation as envisioned by the Dublin Core community. But if Omeka is declaring that it is "serious" and "standards based," it is important to recognize that there is a rhetorical mismatch in argument construction. Omeka is not serious and standards based according to the way that the Dublin Core community understands these terms.

Acknowledging the rhetorical mismatch helps us to consider a broader problem for Dublin Core's two goals of being interoperable and being a vocabulary for linked data. In 2017, Omeka introduced a beta version of a new Omeka implementation, Omeka S. Omeka S describes itself as "a next-generation platform for digital cultural heritage web publishing." "Next generation" here means alignment with Dublin Core goals. Omeka S is oriented toward "institutions that want to publish linked open data and integrate their collections with the scholarly communications ecosystem" (Omeka S website, n.d.).

The development of Omeka S provides another perspective on Omeka's rhetorical performance. Omeka S entails the use of linked data, which relies on the implementation of Dublin Core usage principles, which are not supported through guiding ends of classic Omeka. If, in Omeka S, Omeka intends its "adoption" of Dublin Core as a standard to be understood differently, it will need to communicate this position differently to its users: it will need to revise its given ends to match its guiding ends. In a linked data world, it is impossible to presume a particular context for any descriptive statement. The development of Omeka S may necessitate a reconciliation between the different understandings of Dublin Core adoption currently at play in the Omeka ecosystem.

More broadly, this case study makes a contribution in illustrating how claims of standards adoption may, in fact, represent different arguments regarding the standard. Omeka is a typical example of a standards user with multiple stakeholders, who may ultimately be at odds with the goals and preferences of a standards creator (here, the Dublin Core). Our analysis suggests that, if standards creators value a particular form of standards adoption, they may need to understand, and perhaps intervene, in the practices that arise around standards use.

To understand what a rhetorical claim entails, it is necessary to examine actions regarding the standard as a complementary form of discourse to statements about the standard. Accordingly, our study also makes a methodological contribution. We show how rhetorical analysis of both textual and material-discursive elements can reveal discrepancies in stakeholder values.

This case study also surfaces how ambiguity in what "standards adoption" means for different stakeholders may complicate efforts that rely on a coordinated agreement to succeed, such as Omeka S. For classic Omeka, however, the situation is more complicated. For many Omeka stakeholders, Omeka's rhetorical position on Dublin Core – that the appearance of standards adoption is more important than actual adherence to best practices – appears to be perfectly acceptable. It is only in certain situations – when projects evolve past their initial local bounds – that Omeka users might find themselves unwittingly unprepared to achieve their goals. To mitigate these sorts of situations, any institution adopting a descriptive standard might clarify, for itself and its user community: when we say that we are adopting this standard, what exactly do we mean? If we look at standards adoption as making a rhetorical argument, do our guiding ends match our given ends? Do our actions support our words? This does not mean that local practice *must* align with best practice; for this case study, it does not mean that Omeka practice must align with Dublin Core usage guidelines. But local practice should clarify its position regarding best practice, to enable its stakeholders to understand their activities in the context of the broader standards community.

References

Black, E. (1965), *Rhetorical Criticism: A Study in Method*, The University of Wisconsin Press, Madison, WI.

Dublin Core Metadata Initiative (DCMI) (2018), "Dublin Core web site", available at: http://dublincore. org/ (accessed June 20, 2017).

Eyman, D. (2015), *Digital Rhetoric: Theory, Method, Practice*, University of Michigan Press, Ann Arbor.

Feinberg, M. (2012), "Synthetic ethos: the believability of collections at the intersection of classification and curation", *The Information Society*, Vol. 28 No. 5, pp. 329-339.

Foss, S. (2008), *Rhetorical Criticism: Exploration and Practice*, Waveland Press, Long Grove, IL.

Garver, E. (1994), *Aristotle's Rhetoric: An Art of Character*, University of Chicago Press, Chicago.

Hillmann, D. (2005), "Using Dublin Core", available at: http://dublincore.org/documents/usageguide/ (accessed June 20, 2017).

Human Computers at NASA project (2015), "Map, chesterville plantation", available at: http://omeka. macalester.edu/humancomputerproject/items/show/51 (accessed June 20, 2017).

Lawrence, E. (2015), "Everything is a recommendation: Netflix, altgenres, and the construction of taste", *Knowledge Organization*, Vol. 42 No. 5, pp. 358-364.

Lee, J.H., Clarke, R. and Perti, A. (2015), "Empirical evaluation of metadata for video games and interactive media", *Journal of the Association for Information Science and Technology*, Vol. 66 No. 12, pp. 2609-2625.

NISO (2013), "ANSI/NISO Z39.85-2012 The Dublin Core Metadata Element Set", available at: https:// www.niso.org/publications/ansiniso-z3985-2012-dublin-core-metadata-element-set (accessed April 18, 2018).

OCLC (2010), "OCLC research and the Dublin Core metadata initiative", Historical overview, 1994-2009, available at: www.oclc.org/research/activities/dublincore.html (accessed June 20, 2017).

Omeka (2016), "Omeka powered featured sites", Omeka blog, available at: http://omeka.org/blog/ category/omeka-powered/ (accessed June 20, 2017).

Park, J.R. (2009), "Metadata quality in digital repositories: a survey of state of the art", *Cataloging and Classification Quarterly*, Vol. 47 Nos 3/4, pp. 213-228.

Powell, A., Nilsson, M., Naeve, A., Johnston, P. and Baker, T. (2007), "Dublin Core abstract model", available at: http://dublincore.org/documents/abstract-model/ (accessed June 20, 2017).

Preserve the Baltimore Uprising (2015), "Archive project. the spoken word at Freddie gray's 2015 rally!", available at: http://baltimoreuprising2015.org/items/show/9991 (accessed June 20, 2017).

Rühle, S., Baker, T. and Johnston, P., "Dublin Core wiki user guide", available at: http://wiki.dublincore.org/index.php/User_Guide (accessed June 20, 2017).

Savolainen, R. (2014), "The use of rhetorical strategies in Q&A discussion", *Journal of Documentation*, Vol. 71 No. 1, pp. 93-118.

Shreeves, S., Knutson, E., Stvilia, B., Palmer, C., Twidale, M. and Cole, T. (2005), "Is 'quality' metadata 'shareable' metadata? The implications of local metadata practice on federated collections", in Thompson, H. (Ed.), *Proceedings of the Twelfth National Conference of the Association of College and Research Libraries*, April 7-10, Association of College and Research Libraries, Minneapolis, MN and Chicago, IL, pp. 223-237, available at: http://hdl.handle.net/2142/145

Sillars, M. and Gronbeck, B. (2001), *Communication Criticism : Rhetoric, Social Codes, Cultural Studies*, Waveland Press, Inc., Prospect Heights, IL.

Urban, R. (2012), "Principle paradigms: revisiting the Dublin Core 1:1 principle", Doctoral dissertation. available at: www.ideals.illinois.edu/handle/2142/31109 (accessed June 20, 2017).

Urban, R. (2014), "The 1:1 principle in the age of linked data", *Proceedings of the International Conference on Dublin Core and Metadata Applications*, pp. 119-128.

Weagley, J., Gelches, E. and Park, J.R. (2010), "Interoperability and metadata quality in digital video repositories: a study of Dublin Core", *Journal of Library Metadata*, Vol. 10 No. 1, pp. 37-57.

Wearing Gay History (n.d.), "Feminista '92", available at: http://wearinggayhistory.com/items/show/3124 (accessed June 20, 2017).

Windnagel, A. (2014), "The usage of simple Dublin Core metadata in digital math and science repositories", *Journal of Library Metadata*, Vol. 14 No. 2, pp. 77-102.

Further reading

American National Standards Institute (2013), ANSI/NISO Z39.89-2012. Dublin Core Metadata Element Set.

Association of Centers for Study of Congress (n.d.), "The great society congress. correspondence with representative carl albert from Ardmore, Oklahoma, regarding the voting rights act", available at: http://acsc.lib.udel.edu/exhibits/show/political-env/item/20 (accessed June 20, 2017).

Bruce, T.R. and Hillmann, D.I. (2004), "The continuum of metadata quality: defining, expressing, exploiting", in Hillmann, D. and Westbrooks, E. (Eds), *Metadata in Practice*, American Library Association, Chicago, IL, pp. 238-256, available at: http://ecommons.library.cornell.edu/handle/1813/7895

North Carolina Digital Heritage Center (Digital NC) (n.d.), "Describing your materials", available at: www.digitalnc.org/about/participate/describe/ (accessed June 20, 2017).

Omeka (n.d.), "About page", available at: http://omeka.org/about/ (accessed June 20, 2017).

Omeka (n.d.), "Omeka S", available at: https://omeka.org/s/ (accessed June 20, 2017).

Omeka (n.d.), "Plugins", available at: https://omeka.org/s/ (accessed June 20, 2017).

Omeka (n.d.), "Working with Dublin Core", available at: https://omeka.org/codex/Working_with_Dublin_Core (accessed June 20, 2017).

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