nine chapters and lists and describes the areas of a work record. Each area, or element, gets its own chapter. Many of them, such as View Description (chapter 9) or Style (chapter 4), will be unfamiliar to the book cataloger; others, such as Title (chapter 1), will be familiar but have nuances and applications that are unique to art and visual resources cataloging. Each chapter begins with a description of the element in the context of art cataloging and discusses syntax, terminology, sources of information, and repeatable, required, and recommended elements. The rules for each element follow the introduction and are illustrated by copious examples. For areas such as Physical Characteristics (chapter 3), where the data can vary widely depending upon the object being described, specific recommendations are given for a wide variety of object types: paintings, drawings, prints, sculpture, furniture, glass, architecture, textiles, performance art, etc. Each chapter concludes with a full display of the entire work record, the linked authorities, and often an image of the work being described. Part 3, "Authorities," has the same format as part 2 but discusses the creation and function of authority records.

Cultural Cataloging of Objects: A Guide does not discuss technical or administrative metadata, but since these metadata are outside the scope of the standard this omission is not a flaw. Nor is it a flaw that CCO does not recommend a specific platform or database standard, since CCO was written to be used in a "variety of database settings and designs" (20). The first paragraph of part 1 discusses the mapping of CCO elements to metadata element sets such as VRA Core or the Categories for the Description of Works of Art (CDWA), which are in turn mapped to MARC and Dublin Core. The cataloging agency considering CCO might want to make use of published crosswalks, such as *Metadata Standards Crosswalks.*[1]

Cataloging Cultural Objects: A Guide gives the cataloger tools to describe art, images, and cultural objects consistently. By writing a descriptive cataloging standard that also addresses indexing, linking records, and display—in short, the use and re-use of descriptive metadata—the authors have also laid the foundation for a new, sustainable catalog. Beyond its very real value to the art and visual resources cataloger, CCO can be used as a model for evolving cataloging codes.—*Sarah E. Quimby, (squimby@artsmia.org), Minneapolis Institute of Arts, Minneapolis, Minn.*

References

1. Getty Research Institute, "Metadata Standards Crosswalks," Compiled by Patricia Harpring, Mary S. Woodley, Anne J. Gilliland, and Murtha Baca. J. Paul Getty Trust, www.getty.edu/research/conducting_research/standards/intrometadata/crosswalks.html (accessed Jan. 28, 2008).

Metadata and Its Applications in the Digital Library: Approaches and Practices. By Jia Liu. Westport, Conn.: Libraries Unlimited, 2007. $40.00 paper (ISBN 978-1-59158-306-6).

Using the Open Archives Initiative Protocol for Metadata Harvesting. By Timothy W. Cole, Muriel Foulonneau. Westport, Conn.: Libraries Unlimited, 2007. $45.00 paper (ISBN 978-1-59158-280-9/1-59 158-280-6).

With every book on metadata I encounter, I scrutinize it as if I were a neophyte in the field, for I firmly believe in the instructive responsibility of the writers to enlighten the reader in a deliberate, thorough, and engaging manner. I thus approached these two works with this perspective in mind.

First, numerous texts describing metadata in varying degrees of depth and breadth have seen publication over the past decade. Joining this assembly in 2007, *Metadata and Its Applications in the Digital Library* by Jia Liu provides yet another survey of metadata and its implementation in the electronic environments of libraries and archives.

Liu divides her work into two parts, delving first into the definitions, typologies, encoding, and related electronic aspects of metadata. The author's opening gambit "[s]imply put, metadata is data about data" (3) and her exegeses on other aspects of the topic presupposes a readership already experienced in the metadata field, whether in theory or in practice. As a result, newcomers may find themselves handicapped as they make their way through the text, although the exploration of some parts may still bear fruit. For example, chapter 4, "Metadata Implementation," examines the digital context of metadata with short and effective descriptions of terminology and practices common to the discipline: application profiles, namespaces, schemas, and crosswalks.

Another highlight in this chapter is Liu's fascinating but brief venture into the production workflow of metadata content, the case in point being descriptions of automated and manual processes for generating metadata such as the popular Web browser-friendly Dublin Core Metadata Template offered by the Nordic Metadata Project. I was gratified to encounter this important addition to the narrative that lies between the abstractions and particulars of metadata structure and the consequent public face of a digital library project. Metadata content production can easily get lost in the wealth of information concerning encoding, schemas, and application.

In part 2, "Metadata Projects and Their Applications in the Digital Library," Liu devotes thirty pages to international and institutional efforts to employ metadata for particular operations and communities. She reveals in the book's preface the international scope of her examination of

metadata, and in the last two chapters she illustrates this point through her selection of various European and Australian digital library and metadata projects for commentary. Considering the placement of digital libraries in the book's title, the author surprisingly sheds further light on these institutions only within the confines of the final chapter of the text.

I kept in mind while reading this book the notion that currency is always a concern with print publications devoted to perpetually shifting and expanding topics such as metadata. Some minor dissociation is expected in this circumstance, and yet for a book published in 2007 I was surprised to come across one reference to the next revision of the Anglo-American Cataloguing Rules as "AACR3" (19) and another comment on the "forthcoming" PREMIS (Preservation Metadata: Implementation Strategies) project report (64). Compare these statements with events two years prior to the release of *Metadata and Its Applications*: the Joint Steering Committee for the Development of RDA essentially stopped development of AACR3 and rechristened the new cataloging code Resource Description and Access (RDA), whereas the PREMIS project saw publication of the *Data Dictionary for Preservation Metadata* together with the first version of its PREMIS Data Dictionary.[1]

This misalignment brings me to a major concern I have with this work. A surprising number of textual and layout errors appear; though for the most part minor in scope, they still summon frustration. These misprints take the form of missing letters from table headers, a mislabeled year in a citation, a pixelated image, and misdirected pointers to illustrations, among others. More serious oversights appear where a draft version of the text adjoins its final published form. Two adjacent paragraphs on page 124 effectively echo each other with regard to metadata crosswalks; the draft includes the erroneous term "crosswork." In another instance, a lengthy quotation is set forth twice within a few lines of each other on page 57, with a modest discrepancy in content between them.

How these and other gross inaccuracies survived the editorial process I cannot say, but it bears the poor impression of a work carelessly run to press despite its seemingly lengthy gestation period. (For the record, I base this review on the first printing of the text.)

But, beneath these problems, I find a worthy effort by Liu to provide a wealth of information on digital library metadata. Sifting through a myriad of source material to forge a generalist text on this topic is a notable feat. Nevertheless, from another editorial sweep through the text would emerge a better work and a commendable adjunct, if not successor, to the metadata guide I cut my teeth on: the now five-year-old *Metadata Fundamentals for All Librarians* by Priscilla Caplan.[2]

The half-page summary Jia Liu devotes to the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) finds full expression in Timothy W. Cole and Muriel Foulonneau's *Using the Open Archives Initiative Protocol for Metadata Harvesting* (hereafter *Using the OAI-PMH*). Their work is a rich and at times densely written examination of the protocol from historical, theoretical, and practicable perspectives.

OAI-PMH is a technological convention by which descriptive metadata for digital documents available on the World Wide Web is read and gathered (harvested) through automated means by data-collecting organizations, who in turn compile this information into large pools and make it available to the public for searching—in effect, a fashioning of union catalogs of digital library resources. The preceding statement is a fundamental definition and reflects the extent of my knowledge regarding the protocol when I received *Using the OAI-PMH* for review. This turned out to be a fortuitous happenstance, for the authors shaped their work with the student in mind. Like Liu's *Metadata and Its Applications*, Cole and Foulonneau build on their themes incrementally; moreover, to test the reader's grasp of the material, they cap each chapter with a series of discussion questions and suggested exercises. The authors explicitly aim their primer at those with prior knowledge of metadata, traditional library cataloging, and intermediate computer skills. In this light, *Using the OAI-PMH* is best suited to graduate students in advanced library systems or higher-level metadata courses. Yet the non-scholastic individual also can gain much from the reading whether through self-study or professional development opportunities.

After defining OAI-PMH and establishing the background for the development of the protocol in the first part of the work, including demystifying the notion that OAI-PMH employs only unqualified Dublin Core as a vehicle for metadata exchange, the authors set upon a studied trek through various technical matters in part 2, "Protocol Implementation." One such topic of exploration is the protocol-driven content of the metadata shared between its creators (whom Cole and Foulonneau call "data providers," like digital libraries) and those that harvest the metadata ("service providers"). Helped along by the authors' cogent, though at times challenging, presentation, this section brought to light many of the details missing in my loose notion of what defines the OAI-PMH.

Chapter 7, "Post-Harvest Metadata Normalization and Augmentation," and chapter 8, "Using Aggregated Metadata to Build Digital Library Services," characterize not only the user-centric end—"services that address user and institutional needs" (162)—that justifies the metadata-sharing means described in the previous chapters,

but stress as well the establishment of clear communication between the metadata providers and the harvesting agents. The authors point out that for OAI-PMH to work most effectively, each party must understand and acknowledge the motivations and processes of the other beyond the mere mechanical exchange of metadata. These collaborative activities include the recognition of collection development policies, encoding practices, and the correction, enhancement, and normalization of shared metadata. One outcome from this understanding is richer, more complex metadata that Cole and Foulonneau see as fueling the next generation of resource sharing projects and protocols; this future they summarize in their final chapter, "Concluding Thoughts."

In sum, *Using the OAI-PMH* is an excellent introduction to this most popular form of metadata exchange and I believe a suitable handbook for practitioners in the digital library and data harvesting fields.

I end with a final word on back matter. *Metadata and Its Applications* and *Using the OAI-PMH* provide end-of-chapter citations, many of which point to online resources; the former also incorporates a culminating comprehensive bibliography. Reflecting the generous amount of information all three authors present, the indexes in both texts are quite detailed, though I did discover an irregularity in Liu's work, namely, references to AACR2 and AACR3 as the second and third volumes, respectively, of the Anglo-American Cataloguing Rules rather

than as editions of the same. *Using the OAI-PMH* is ostensibly a textbook, and in that capacity I am of the opinion that it would benefit the reader had the authors included a glossary of most or all of the highlighted terms present throughout the text—*Mark K. Ehlert, (ehler043@umn.edu), MINITEX Library Information Network, Minneapolis, Minn.*

References

1. PREMIS Working Group, *Data Dictionary for Preservation Metadata,* (May 2005), www.oclc.org/research/projects/pmwg/premis-final.pdf (accessed Feb. 2, 2008).
2. Priscilla Caplan, *Metadata Fundamentals for All Librarians,* (Chicago: American Library Assn., 2003).