Metadata Standards and Web Services in Libraries, Archives, and Museums. By Erik Mitchell. Santa Barbara, CA: Libraries Unlimited, 2015. 290 pp. Bibliography, index. Softcover. $75.00.

In the author's introduction, Erik Mitchell states that *Metadata Standards and Web Services in Libraries, Archives, and Museums* is "oriented toward those immersed in the LIS world needing to have at least a cursory understanding of the role of metadata in information services and information communities" (p. 13). The author has supplemented this book with a website[1] with a course packet, worksheets for each chapter, and tutorials and answer keys for a semester-long, once-a-week program.

The worksheets provided online are Word documents that can be downloaded and include "hands on activities" that convey the flavor of the textbook, but the classroom activities do not always follow the organization or emphasis of the book's chapters. For example, the second class as represented online and the second chapter of the book share a title and a similar focus, but the first class concentrates on "Information Infrastructures and Institutions," while the first book chapter is an "Introduction to the World of Digital Information Organization." Given 9 chapters and 14 classes, clearly the material in some chapters is explored in more than one class. The last class in particular, which is more in line with library-school testing and capstone practices, including discussing "professional paths for different areas of interest," does not mirror the subject matter of the last chapter, "Future Trends in Information Systems, Metadata, and Information Use."

The material in the book is detailed and technical, and it proceeds historically, with introductions to the topic of each chapter and summaries and notes at each chapter's end. For instance, in chapter 4, "Information Organization Models," Mitchell presents a bridge to previous chapters as well as an explanation of how this chapter will relate to later ones. Then he lays out models; conceptual, structural, and technical elements or organization and service design; and data models and organization. Taking up cataloging principles, he uses catalog cards as an example of structured data. Following this is a discussion of the Paris Principles, the International Standard Bibliographic Description (ISBD) principles, and the Functional Requirements for Bibliographic Records (FRBR). From there, he moves to other standards, including the General International Standard of Archival Description or ISAD(G); the Cataloging Cultural Objects (CCO) guidelines; and systems of content rules such as Resource Description and Access (RDA), the second edition of Anglo-American Cataloging Rules (AACR2), and Describing Archives, a Content Standard (DACS), among others. With all these, he offers lists, tables, examples, definitions, and graphical representations.

Given the jungle of acronyms above, I have only one criticism to offer. The book (and the course) could use an acronym list or glossary. The index is inconsistent in offering help for those who may lose track of the meaning of an acronym. For "API," the index offers "Application program interface," but for "JSP," Google is the reader's best hope. Most of the definitions lacking are related to programming languages or computer technology, but in the case of XML, for instance, the index does provide "eXtensible Markup Language." Acronym finders and dictionaries abound on the web, but one must look through lists to find a relevant definition. A glossary with each acronym spelled out and a brief

description of context and/or relevance would be a very valuable addition to the website for the book, especially for those of us less handy with acronyms.

Much of the book is highly technical and contains many pages of XML, JAVAscript, and other code. But these are examples only, used to make points about infrastructure and as an introduction to coding. On the whole, the book retains its logical structure and vector to the end, introducing the reader to a number of types of and procedures for the organization, display, contextualization, and serialization (encoding) of information without disappearing down any number of possible rabbit holes by tunneling through to specialties.

Specialties and valuable further reading are partly represented in the informative bibliography. While most of the online sources are linked to a URL, a few, like Vannevar Bush's 1945 essay, "As We May Think," are not.[2] Perhaps Mitchell stuck with persistent URLs and refused to list ephemeral ones? The distinction is unclear.

The last chapter essays take on the very difficult, if not impossible, task of predicting the future. The essential nature of Mitchell's subject matter is current and ephemeral. He makes the point that the information business is in a period of transition, migrating information from one infrastructure to the next as if jumping from one rock to another across a pond, as the technologies change. Therefore, the future, whether predicted or not, will probably be explained in subsequent editions of this very book. However, one trend placed in the future is most immediate: "Currently, the LAM [libraries, archives, and museums] world, particularly libraries, is sitting on a mountain of non-linked bibliographic metadata. Literally billions of MARC records are held in databases all over the world, all of which would have to be converted to linked data at some point in order for the transition [to RDA] to be successful" (p. 258). The huge effort and loss of metadata involved in the conversion of catalog cards to online catalogs comes to mind but is not discussed in this book except as related to the technologies involved.

At the end, Mitchell remarks that "it is absolutely certain that the present is an exciting time for those involved in the creation, management, and development of software systems and standards in LAM institutions" (p. 264). To paraphrase Lemony Snicket, if by "exciting" it is meant "challenging and requiring lots of expertise," then so much is clear from this book.

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NOTES

1. Erik Mitchell, "Metadata Standards and Web Services in Libraries, Archives and Museums," *Erik Mitchell*, blog, May 30, 2015, accessed September 10, 2016, http://www.erikmitchell.info/2015/05/30/metadata-standards.
2. Vannevar Bush, "As We May Think," *The Atlantic*, July 1945, accessed September 10, 2016, http://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/.