acre of floor space, featured almost 60,000 vacuum tubes, and used up to three million watts of electricity. In 1967, during the installation of a single remote terminal at the Ames Research Center Technical Library, workmen had to remove part of an exterior wall and use a crane to hoist the machine to its new second floor office. Software of the time also required accommodation. The online system MEDLARS, a precursor to MEDLINE, suffered from lag times of fifteen to forty seconds between entered commands. But for all that, early online experiments were surprisingly sophisticated. Systems using Boolean operators, left and right truncation, cited reference searching, wild cards, and more were all available by the late 1960s.

Demand for services caught many pioneering services by surprise. Like the Internet, the impending success of online searching was not apparent to even the most discerning. One professor, speaking at a conference on the small potential of growth for online services, asked, "After all, how many bibliographies can the world absorb?" (371). But by the mid-1970s, enthusiasm for the service was occasionally intense. Bourne and Hahn tell a story of one trainer's experience while conducting a class in Corvallis, Oregon: "About 25 [participants] jammed into a training room designed for ten people. The earliest to arrive grabbed one of the few terminals and would not let go. With the noise, heat, and congestion, an exasperated and sweaty [trainer] could not make himself heard or understood." Online services at the time were not designed to handle large numbers of simultaneous users. Because of their popularity, the service's lag times were severe during peak operating hours. To compensate, MEDLINE began raising fees to curb demand. User groups reacted angrily, predicting that the number of searches would decrease, which did occur and was precisely the point.

Then, as today, systems with superior usability tended to succeed. DIALOG emerged as a leader because of its intuitive system of commands. That may seem odd to the contemporary Internet surfer until Bourne and Hahn show you that one competing system, MOLDS, featured thirty-four commands, many of them appearing very similar: "find, extract, define, chain, fetch, and select" (73). If the modern librarian is suspicious that some online services may be harboring anti-user tendencies, there are precedents for that type of behavior. For example, the English online system RIOT featured an automatic cut off that stopped users' searches if they were selecting too few items to be printed from the displayed result sets. "The point of this feature was to economize on computer search time. [They] did not want searchers to use expensive computer resources to browse for serendipitous discover of references" (109). Despite all of this, enthusiasm for online services was high, even though with services like MEDLARS users could expect a turnaround time of several weeks for the final search results to be returned.

Librarians played a key role in the emergent online industry. In order to understand the new medium, online services conducted many studies using interviews, questionnaires, focus groups, and so on. Even LEXIS, the online service with the stated goal of "crack[ing] the librarian barrier" (302) by enabling attorneys to do the searching themselves, found that the majority of users were librarians. This is because searches were expensive and, without the precision brought to bear by experienced information professionals, inefficient. For example, connecting to MEDLINE at one point cost an institution $45 an hour. Despite this, librarians were loyal allies who trained searchers and used and promoted the online services themselves, even while fearful of the potential for job loss due to the new technology.

There is nothing in the literature today with the breadth and depth of Bourne and Hahn's history of early online services. The value of the work stems from the devotion the authors have for the subject and their evident empathy for the spirit of the times. Occasionally, however, some punches are pulled unnecessarily. For example, a list of harsh ground rules for searchers using DIALOG is attributed to a government agency who is "mercifully [kept] anonymous" (401). Such omissions are a disservice to scholars, but are luckily not a common occurrence. What is common is a thorough retelling of who did what and why during this exciting time. Readers of this book will certainly come across stories which resonate with direct correlations to the recurring difficulties faced by information professionals today. One significant insight is that librarians, who may perceive themselves as at the mercy of changing technology, benefit substantially from the exponential growth in available information that online services bring.—*Steve McCann (steve_mccann@ncsu.edu), North Carolina State University, Raleigh.*

Organising Knowledge in a Global Society: Principles and Practice in Libraries and Information Centres. By Ross Harvey and Philip Hider. Wagga Wagga: Centre for Information Studies, Charles Sturt University, 2004. (Topics in Australasian Library and Information Studies, no. 23) 375p. cloth Aus$71.50 (ISBN 1-876938-66-8).

Knowledge Organization and Classification in International Information Retrieval. Ed. Nancy J. Williamson and Clare Beghtol. Binghampton, N.Y.: Haworth Pr., 2003. cloth $49.95 (ISBN 0-7890-2354-7); paper $29.95 (ISBN 0-7890-2355-5). Published simultaneously as *Cataloging and Classification Quarterly* 37, no. 1/2.

It is unusual for two books concerned with knowledge organization to appear within a short chronological span, and the fact that they have serves to emphasize the growing importance that the organization of knowledge is assuming in our global intercommunicating society. They are aimed at somewhat different audiences, the collection of essays edited by Williamson and Beghtol appealing to a much wider and more varied readership than the work by Harvey and Hider, which is clearly aimed primarily at students.

Harvey and Hider's work is based on Harvey's earlier book *Organising Knowledge in Australia* (1999), and the Australian element is clearly present in this revised, expanded, and updated version. It is unusual for a work that is primarily intended for an Australasian readership to reach the shelves of libraries in the United Kingdom or the United States, and this provides an interesting angle on the problems of bibliographic control. It should be noted, however, that the Australian context is firmly marked by being enclosed in blocks highlighted in grey so the reader who finds this irrelevant can easily skip these sections. Another useful feature of the book, especially for students who are reviewing for examinations, is the provision of summaries of the content of each section and each chapter at the beginning of each relevant part as well as at appropriate intervals throughout.

The book is divided into five parts, the first providing a general overview of the requirements for bibliographic organization, the users of bibliographic data and their needs, and the systems that have been devised to satisfy those needs, drawing the distinction between bibliographies, catalogues, and indexes. The second part is devoted to bibliographic description dealing mainly with standards such as AACR2 and ISBD and briefly referring to other standards, such as the German Regeln fur die alphabetische Katalogisierung (RAK), the Japanese Nippon cataloguing rules, and standards used by sister professions such as *General International Standard for Archival Description (ISAD-G),* and *Content Standard for Digital Geospatial Metadata (CSGDM)* as well as standards dealing with special classes of material such as the Library of Congress's *Descriptive Cataloging of Rare Books.* At this stage, it is simply the descriptive standards that are handled, while technical standards such as MARC and Dublin Core are reserved for a later part of the book. In terms of a student audience this is a very sensible distinction, since students seem to have great difficulty in distinguishing the difference in intention and function of, for example, AACR2 and MARC.

Part three deals with subject access, drawing the distinction between natural language systems and the use of a controlled vocabulary, whether in the form of subject headings, the thesaurus, or a classification scheme. The advantages and disadvantages of each approach are helpfully summarized in a table, one of the many distributed throughout the work that enhance its value to students. All the major general classifications are discussed, including lesser used ones, such as Bliss and Colon. A passing glance at national schemes, such as those of Sweden and the Netherlands, also is provided. One or two special schemes, such as the *British Catalogue of Music Classification* and the American Institute of Physics *Physics and Astronomy Classification Scheme,* are briefly dealt with, the formerly very sensibly being used as an example of a fully faceted scheme (although it has now ceased to be used in actual practice, it remains an excellent example of how things should be done). The advantages and disadvantages of reclassification are also discussed, with examples from the Australian environment, all, interestingly, being moves to the Library of Congress Classification (LCC), either from the Dewey Decimal Classification (DDC) or the Bliss Classification. The use of classification on the Web is also noted, with examples from BUBL Information Service, illustrated by a screen dump and reference to the use of LCC by Cyberstacks, as well as examples using subject headings such as LCSH and MeSH.

Alphabetical subject access mechanisms follow the section on classifications with understandable emphasis on LCSH. A strange omission in the section on "Making LCSH more useful" is the Faced Application of Subject Terminology (FAST) project, which has received extensive treatment in recent literature. Thesauri are also given reasonable space, again with a summary of the pros and cons of these versus subject headings, and with ERIC selected as an example. A notable omission from any mention in the work is the *Art and Architecture Thesaurus,* probably one of the most generally used sources for vocabulary as well as a valuable retrieval tool in its own right for use in the humanities. The problem of language is not raised in relation to the use of subject headings, thesauri, and free text, and the value of being able to search across material in a range of different languages. Presumably, the assumption is that everyone wishes to search on English terms, and this is patently not the case. The Multilingual Access to Subjects (MACS) Project is just one current attempt to address this problem. PRECIS and COMPASS are also discussed; the latter could perhaps have been omitted since although it is described as being phased out, its use actually ceased in 1995 and it was far from successful as a means of retrieving information. Keywords and automatic indexing are also given due prominence. Subject access on the Web is discussed in a separate chapter, and the special requirements of Web access, whether to catalogs or to other sources of information, via search engines and

subject directories or through more traditional means such as classification schemes and subject headings, are given clear treatment, amply illustrated by means of screen dumps. Some attention is given to the work of the OCLC Office of Research.

Bibliographic data and exchange management are the theme of part four, which examines the requirements for user effectiveness with regard to input, processing and user requirements and output requirements. The opposing requirements of recall and precision are noted. It opens with outlining the available technical standards and highlights the benefit of standardization, including protocols such as Z39.50 and the Open Source Initiative (OSI) and format standards such as MARC, Dublin Core, and Resource Description Framework/Extensible Markup Language (RDF/XML). Having traced what exists, the authors then move on to arrangements for the exchange of bibliographic data. The impact of bibliographic utilities, such as OCLC and RLIN (the latter replaced by the RLG Union Catalog), are given detailed treatment, and there is an extensive case study of the Australian situation. Local systems and OPACs conclude this part of the book.

The final part explores current issues in organizing knowledge and includes a brief section that attempts to identify future trends in bibliographic description, subject access, and the possibilities that stem from the Semantic Web. The work is accompanied by a useful glossary and an extensive bibliography, although there are omissions of standard handbooks, such as Lois Chan's *A Guide to the Library of Congress Classification* (1999) and this reviewer's *Universal Decimal Classification: A Guide to Its Use* (2002) (although the guide to the DDC is listed). It is always easy to see additional themes that might have been noted, but this work is a valuable compendium of information, produced in an easily readable and even more easily quick-referenced style, and fills a much-needed gap, especially in the literature available for students. Its claim to global coverage is perhaps more attributable to the worldwide availability of information on the Web rather than to any specific geographical slant.

The collection of papers edited by Williamson and Beghtol providing a range of insights into *Knowledge Organization and Classification in International Information Retrieval* is truly international, with contributors from no fewer than six countries and three continents, and in the way it handles multilingual difficulties, those of translating classifications from one language to another, and the related difficulties of mapping different information languages onto one another. Inevitably, being a collection of individual papers rather than a compact work by two authors, it covers a much broader geographical canvas, though it does exclude Australia and in this way contrasts with the previous book. The collection is divided up under four headings: general bibliographic systems; information organization in knowledge resources; linguistics, terminology, and natural language processing; and knowledge of the world and the world of knowledge.

The first section looks at the future of general classification systems, with an introductory think-piece by Jens-Erik Mai on the future of general schemes and giving special attention to the problems of interoperability. This is followed by examinations of how dominant classifications can be adapted to particular contexts and the problems of stretching conceptual structures in classifications across languages and cultures. The final paper in this section uses a case study of the implementation of a multilingual thesaurus based on UDC drawing upon the author's experience in the Central University Library of Bucharest.

The second section moves on to the specific challenges of the Web, looking at the problems that the networked environment presents to traditional retrieval methods and the extra demands it has created for librarianship. Special cases are then examined in the context of global exchange—education, by Michèle Hudon; text mining and data mining, exemplified by two case studies from India; and ways to organize information in nonbibliographic databases, again illustrated by case studies. The third section deals with the problems of language in information access and management and discusses natural language processing and approaches to using machine translation and automatic indexing. Research into lexical patterns and the impact that different language varieties have on them is surveyed by Bowker, and Howarth concludes the third section looking at metadata schemas and crosswalks, mapping, and terminology gateways. The final section opens with a discussion of the International Flow Framework designed for organizing the information that appears in digital information and digital libraries. The two final papers look at managing knowledge in organizations and the classification of international economic data for bibliographic and statistical purposes.

The work is marred by a few misprints, especially in Mai's contribution, and some oversimplifications with regard to language families in the article by Kwasnik and Rubin (which are discussed more fully in *Update* 3, no. 10 [2004]: 46, a more variable work than that discussed above). However, the modern situation makes the need for knowledge organization even more imperative than ever. This is emphasized in the coverage from the traditional classification scheme, through thesauri, to the classification's more recent descendant, the ontology. The contributors show how these tools have adjusted to the role of providing the individual with access to the information he or she needs without regard

for extraneous material, at his or her fingertips, rather than the organization of a collection of material in an order that will be helpful to a large and unpredictable audience—to use the words of Kent: "a new library idea is emerging, a shift from the public space phenomenon . . . to a private space phenomenon" (188).

The collection of papers will appeal to a wide range of interests. Some, especially those dealing with the general classification schemes (Mai, Olson, Neelameghan) and with problems of interoperability, mapping, and other techniques for accessing a variety of sources, not least those on the Web, fill a gap for students on those recent developments that have not yet reached the textbooks. The articles on the application of linguistic and mathematical techniques (Kent, Mustafa) will appeal to the researcher, while the full bibliographies and notes form an excellent source for both teacher and researcher. The scope goes beyond the approaches to knowledge organization familiar to the library world to include such global abstractions as classification for statistical purposes. There is something for everyone from the student to the advanced scholar of knowledge organization.

These two works serve to emphasize the vital need for knowledge organization in today's networked information world. They will appeal to different audiences, the first being primarily aimed at the student, but providing useful summaries for the working librarian and the teacher, while the second collection of papers addresses a much wider audience and is more varied both in scope and presentation. Both are welcome additions to the literature of our discipline. —*I. C. McIlwaine (i.mcilwaine@ucl.ac.uk), University College, London*

Digitizing Collections: Strategic Issues for the Information Manager. By Lorna M. Hughes. London: Facet Pub., 2004. 327 p. cloth $75 (ISBN 1-85604-466-1)

The title of Lorna Hughes' *Digitizing Collections: Strategic Issues for the Information Manager* gives a strong indication of the audience that would benefit most from this book. The introduction states "*Digitizing Collections* is intended primarily for librarians, archivists and museum professionals, as well as for students of these subjects . . ." ([xi]). The focus of the book is on examining the breadth of the topic, rather than its depth. It will therefore be of the most use to managers giving direction to digitization efforts, instead of those designing day-to-day workflows. The examples throughout the book cover the entire cultural heritage sector, including libraries, archives, and museums.

Digitizing Collections is divided into two parts. "Part 1, Strategic Decision Making," is particularly effective in describing the many areas of digitization projects requiring careful planning. Chapter 1, "Why Digitize? The Costs and Benefits of Digitization," does an excellent job framing the discussion of digitization projects in a larger organizational context. Hughes balances a long section on "Advantages of Digitization," covering access, support of preservation activities, collection development, institutional benefits, and research and education with realistic qualifications such as "there are no short-term cost savings to be realized by digitizing collections" (7). Chapters in part one covering "Selecting Materials for Digitization," "Project Management and the Institutional Framework," and "The Importance of Collaboration" are similarly valuable in outlining large-scale issues.

Chapter 3, "Intellectual Property, Copyright, and Other Legal Issues," is not as effective as the rest of part one. Coming from a British publisher, this book appropriately treats its subject with an international scope. Legal issues such as copyright, however, must be understood in a more local context. Despite national differences in intellectual property law, this chapter focuses upon some commonalities between them, including the concepts of the public domain, fair use (or fair dealing), and obtaining permission to use copyrighted materials. Hughes favors obtaining permission over fair use as an approach to legal digitization of materials. The value of fair use as a legitimate, viable, and legal means for digitization is overshadowed and occasionally misrepresented. For example, immediately after introducing the four factors considered for a fair use claim under United States copyright law, Hughes gives an example that recounts permission for one student to use material being denied by an artist's estate "on the grounds that hers was a 'for profit' enterprise" (63). There are two problems with this example. First, it is not for a copyright holder to determine if a specific use is fair or not under United States copyright law. Second, the student's "profit" was supposedly her grade, which the author fails to question as inappropriate. A copyright holder may deny permission if asked, but if fair use applies, no permission is needed. A final determination would be made by a court in the event a fair use claim has been challenged. Hughes characterizes fair use as "a flimsy concept to hide behind" (63), but in the United States, fair use is used frequently for digitization in libraries, especially for activities such as electronic reserves. A fair use claim forms the backbone of nationally endorsed policies, such as ALA's *Statement on Fair Use and Electronic Reserves.*[1] This chapter appropriately concludes that "protecting and managing copyright, and avoiding infringement, is ultimately more a question of risk management than it is of the law" (76–77), yet it does not acknowledge that many institutions with expert legal advice consider dig-