Cataloging and Classification

Review of the Literature 2005-06

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This paper reviews library literature on cataloging and classification published in 2005-06. It covers pertinent literature in the following areas: the future of cataloging; Functional Requirement for Bibliographic Records (FRBR); metadata and its applications and relation to Machine-Readable Cataloging (MARC); cataloging tools and standards; authority control; and recruitment, training, and the changing role of catalogers.

The literature published in 2005 and 2006 devoted to cataloging and classification reveals a profession in transition. The future of the catalog and cataloging in the Web environment was the focus of several important discussions, presentations, white papers, reports, conferences, and articles. Another topic attracting attention was the emerging new cataloging standard, Resource Description and Access (RDA). The great importance of the Functional Requirements for Bibliographic Records (FRBR) was emphasized in a number of scholarly publications. Classification schemas, such as the Dewey Decimal Classification (DDC) and the Library of Congress Classification (LCC), continued as a topic in library literature. Other areas of interest included metadata, Machine-Readable Cataloging (MARC) and the flexibility of Extensible Markup Language (XML), authority control, recruitment, training, and the changing role of catalogers.

Research Method

A preliminary review of literature on cataloging and classification published in 2005 and 2006 was conducted in two library online databases: Library Literature and Information Science Full Text, and Library, Information Science, and Technology Abstract with Full Text. Other resources, such as the Web-based resources Google Scholar, Google Print, and Online Computer Library Center (OCLC) WorldCat, print library journals, and book reviews in library journals related to cataloging and classification, were also consulted. These resources were searched by keywords or subject headings, or both. The search strategy was limited to journal articles and books in English, and to 2005 through 2006 dates of publication.

The search produced a great number of citations (238 items). To deal with the volume of material and the range of topics covered, the author created a spreadsheet of topics derived from the preliminary literature search and the authors knowledge of the current trends in cataloging and classification. The author organized the topics into the following groups: future of cataloging,
Resulting citations were then entered under each heading in the spreadsheet. Citations under each topic were reviewed to determine if the sources of the publication were scholarly and peer reviewed. In limited cases, the author included non-peer-reviewed sources because they provided valuable and relevant information. Some topics, such as the LC decision about series and ISBN13, were not included because of insufficient scholarly literature.

The author read and analyzed the articles and wrote brief reviews for each item. Some articles fell outside the scope of this review and were excluded. The focus of this paper is on substantive contributions to the literature. In a few cases, less significant resources are referenced to provide a context for important themes covered during 2005 and 2006. Some articles may have been omitted unintentionally, for which the author apologizes.

The Future of the Catalog and Cataloging

The future of libraries in general and of cataloging in particular has been the focus of much of the research in recent years. Speculation about the directions that cataloging is taking, as well as suggestions for ways to revitalize and enhance the catalog and retool the cataloging workforce, filled the pages of many articles and reports in 2005 and 2006.

One of the more important contributions in this area was made by Calhoun, who prepared a provocative report for the LC addressing the function of the catalog. She noted that students and researchers seem to bypass the library catalog in their quest for information. She provided detailed analysis of the current situation, options for revitalizing the catalog, an assessment, and action to be considered. The first chapter of the report includes background, project objective, and research methodology. Chapter 2 offers ideas about the prospects of the library catalog. The appendixes provide detailed analysis of the current situation, key findings from the literature, and structured interviews.

Not all of Calhoun's premises can be accepted at face value or easily defended. When she states that "research library online catalogs reflect a small portion of the universe of scholarly information," the reader cannot help but wonder what that means. Although conventional wisdom seems to suggest that library catalogs now represent a shrinking portion of the universe of information in general, much of the information that is obtainable online cannot be classified as scholarly. Calhoun's report raised many important questions and is of great value to library planners and managers.

A report prepared by the University of California Libraries Bibliographic Services Task Force also addressed ways to improve library online catalogs to meet the needs of modern users. The task force analyzed existing literature and interviewed leading practitioners in the library community to develop a set of recommendations that would radically improve the catalog. The report provided four major recommendations to enhance search and retrieval, redesign the online public access cataloging (OPAC), adapt new cataloging practices, and support continuous development. An appendix listed examples of systems and prototypes that demonstrate some of the improvements that the task force recommended.

North Carolina State University was a leader in seeking new approaches to provide catalog information to users through the implementation of the Endeca ProFind platform.
Antelman, Lynema, and Pace described the new functionality enabled through Endeca and the implementation process and system architecture, assessed the new catalog’s performance, and considered future directions. The authors provided detailed discussion of the Endeca platform and its ability to provide access to a variety of formats and concluded that the software has potential for becoming a platform for library resource discovery.

Research methods employed by students and researchers and their preference for Google as a research tool was explored in an article by Marcum. She addressed the future of cataloging in the Internet era and the need for improved indexing and retrieval tools. She raised the question of whether detailed descriptive cataloging is justifiable in the era of massive digitization and in light of the costs involved in the creation of detailed catalog records. This is likely to be an issue that will be discussed in the future.

Reacting to Marcum’s article, librarians from Indiana University Libraries wrote a white paper on the future of cataloging at Indiana University. They provided an overview of current trends in libraries and technical, services, identified possible new roles for cataloging staff, and strategies aimed at revitalizing cataloging operations at Indiana University. Their well-researched and coherently organized report adds another dimension to the discussion of the OPAC. The report points to the new Google initiative aimed at digitizing large parts of academic library book collections and the impact this initiative might have on the future of the library catalog. This seems to be the key question that future library catalog planners have to take into consideration. Limitations of the OPAC have been a persistent topic in library literature. In "My Kingdom for an OPAC," Pace discussed limitations of the current systems and highlighted activities of some companies that are taking innovative approaches with the OPAC.

A series of discussions on the American Library Association TechSource blog initiated by Schneider addressed obvious limitations of the online catalog and focused on the weaknesses in OPAC searching from the user's point of view. In her first posting, she focused on the absence of relevance ranking in most online catalogs. In a subsequent posting, Schneider provided a checklist of some features that would benefit the OPAC. Among these features were ranking, stemming, field weighting, spell checking, refining original search, support for popular query operators, Boolean, flexible default query processing, in-line query limiters, duplicate detection, sort flexibility, character sets, faceting, advanced search, human suggestion, search logging and reports, and a well-rounded administrative interface. The third posting addressed the literalism of the catalog.

Numerous changes taking place in the library world in the last decade have had a profound effect on the library catalog. To address the impact of these changes on the future of bibliographic description, the LC established a working group to examine and discuss the future of bibliographic control. This working group was charged to present findings on how bibliographic control and other descriptive practices can effectively support management of and access to library materials in the evolving information and technology environment, recommend ways in which the library community can collectively move toward achieving this vision, and advise the Library of Congress on its role and priorities.

Although some library authors perceive the future of the catalog as radically different from its current form and question the need for the standards and rules of cataloging, Tillett pointed out that the future of the catalog is in understanding and adapting the FRBR.\(^\text{11}\) Tillett began her concise study with the discussion of the history of FRBR and moved on to its application in cataloging. She suggested that "this model provides a new perspective on cataloging that should influence the design of future systems, cataloging codes, and cataloging practices."\(^\text{12}\) She pointed out that libraries will continue to need codes and the new, revised AACR2, which will incorporate FRBR concepts. She described FRBR as a conceptual model of the bibliographic universe that is designed to meet specific user needs.

Hillmann focused her effort on the usefulness of cataloging and classification for research. She attempted to explain how these tools place information within a brows-able hierarchy of subject concepts.\(^\text{13}\) The National library of Australia: Austrian Committee on Cataloging hosted a seminar, "Beyond the OPAC: Future Directions for Web-based Catalogues," with presentations and sessions on a variety of topics including making RDA the new cataloging standard; the potential impact of RDA on OPAC displays; applying FRBR to library catalogs; and managing OPACs.\(^\text{14}\)

In her article on cataloging, Davis concentrated on the factors that contributed to the success of online libraries in the United States.\(^\text{15}\) She suggested that the "employment of experienced and professional librarians can also improve operations in online libraries. Moreover, libraries should be incorporated with the school organization to enhance academic decision making."\(^\text{16}\) Mann discussed the limitations of Google Print and how these limitations make cataloging and classification more important to researchers." He pointed out that searching the Internet using keywords does not provide scholars with the structured menus for research options that are available in the OPAC browse display. Mann observed that searching Google is not the same as doing research.

Bair provided an important contribution to the profession of cataloging and to the body of literature on the subject of cataloging in "Toward a Code of Ethics for Cataloging."\(^\text{18}\) Her article should be read by anyone interested in the profession. Bair provided an overview of publications on this subject and concluded with a proposed set often commandments of cataloging. This set of ethical guideposts sets out the responsibilities of each cataloger whose job is to provide unfettered access to information.

**Changes in Cataloging Units and the Role of Catalogers**

The future of cataloging and catalogers remained a focal point of discussion. The very purpose of cataloging was under scrutiny, as was the question of whether catalogers will continue to have a role in the future of information organization, especially in the metadata arena. The number of practicing catalogers is predicted to drop significantly in the next few years due to aging and retirement. In 2003, "Wilder reported that catalogers in Association of Research Libraries (ARL) member libraries constitute one of the oldest categories of an aging librarian population and predicted that one third of the catalogers working in ARL libraries in the year 2000 would retire by 2010.\(^\text{19}\) Leysen and Boydston built on Wilder's research and conducted a survey of the heads of cataloging at the ARL libraries to determine the number of professional catalogers employed, their responsibilities, projections for demand for catalogers, and thoughts about their roles.\(^\text{20}\) Their study revealed that the number of professional catalogers remains...
constant or is decreasing supported Wilder's projections for retirements. They reported that the role of catalogers in ARL libraries is changing as catalogers become more involved in management and less focused on cataloging activities. Leysen and Boydston suggested that a serious depletion in the ranks of catalogers may pose a threat to the libraries’ ability to continue to provide access to scholarly resources, and concluded by calling for a better recognition of the value of catalogers.

Boydston and Leysen continued their study of catalogers' roles in a subsequent article in which they examined the issue of catalogers creating metadata in terms of the cost, supply of catalogers, and the need for further training. Constant changes in libraries have had great effect on staff morale and productivity. While some library staff could adapt to changes very easily, others found it difficult to cope. Curzon's Managing Change: A How-to-Do-It Manual for Libraries can prove a useful resource in this area. The first part of this book, "Managing Change Successfully," provides instructions for conceptualizing the issues, planning, preparing, making decisions, controlling resistance, implementing changes, evolutions, and tips on how to succeed. Part 2 provides practical guidance for dealing with technology's impact on libraries, applying the latest research in change management, and developing new strategies for coping with changes.

**Functional Requirements for Bibliographic Records**

Interest in the concept of FRBR continued to gain momentum among librarians and researchers. Numerous articles on the subject have appeared. Gonzales provided a simple description of FRBR and its function, and cited major projects that implemented FRBR, such as the Research Libraries Group's RedLightGreen and the OCLC Fiction Finder. Tillett presented general background information on the development of FRBR from 1992 to 1995 and explained the model and its impact on cataloging rules and bibliographic structure.

One of the most significant contributions to the FRBR literature is *Functional Requirements for Bibliographic Records (FRBR): Hype or Cure-All?,* edited by Le Boeuf. This collection of eighteen articles brought together many debated issues related to FRBR's concepts, ideas, and practical applications. It provided an introduction to the topic and offered thorough descriptions and analyses of current FRBR projects. The book included a chronological section that explained how FRBR was developed and how it will evolve in the future; a theoretical section that reviewed how FRBR analyzes different types of library materials; a "Practical Aspects" section that examined how some systems actually use FRBR; and a final section that explained the XML Organic, Bibliographic Information Schema project, an alternative to FRBR, which shows that other solutions are possible to meet future cataloging challenges. This book is a valuable source of information on FRBR and can serve as a reference tool for various information users.

Several researchers have addressed the inability of current online catalog interfaces to find and collocate all versions and variations of a title and showed how FRBR can solve this problem. Mimno, Crane, and Jones explored this issue and showed that some FRBR research focused on the creation of tools that would experiment with the model, but no research addressed the implementation of FRBR in the catalog. In their research, they used the Perseus Digital Library catalog to explore implications of hierarchical catalog records for searching and browsing. Yee addressed the problems that users are having when searching the OPAC and how a better understanding of AACR2R/MARC 21 authority, bibliographic, and holdings records would allow
for FRBR-izing current OPACs using existing records. In her study, Yee described title difficulties with combining the search by author and title because variant name information is isolated in authority records. She also found that the catalogs cannot display the full range of relevant items that the library holds because of the problem of variations in items. Both problems, she said, could be addressed by making the catalog more aware of connections between author information and work information and between versions of the same work.

In "FRBR- Coming Soon to Your Library," Bowen pointed to FRBR's potential to improve access to library materials and reported the intention of the Joint Steering Committee for Revision of AACR, that is assisted, by the work of the Format Variation Working Group, to explore ways of incorporating FRBR into the next edition of AACR2. She mentioned several vendors of library systems that are already adding FRBR-based functionality to their systems. She emphasized that the FRBR concept is not totally new to the library community, and that most FRBR entities and attributes are already present in library catalog records. This article received the Best of LRTS Award for 2005.

Carlyle explored the FRBR conceptual models and focused in particular on group 1 entities (work, expression, manifestation, and item); which is the most difficult aspect of the FRBR model. In her discussion, she presented definitions of the word model and a variety of examples of model types and functions. She described models used prior to FRBR and compared them to it. The author contributed an interesting point when she suggested that the most important changes that FRBR may bring will occur in the consciousness of catalogers and in online catalog displays.

Rapid changes, increase in electronic content, and the difficulty with managing this content in a way that the user can find, identify, select, and obtain needed information and resources, were addressed by Madison. She described four emerging discovery tools: portals, digital image management systems, institutional repositories, and instructional or learning management systems. Madison emphasized that the methodology and framework of FRBR are useful tools in building expanded access and content systems. She stressed the need for academic libraries to cooperate with the teaching faculty to build a new integrated platform that will access a variety of library resources.

As the volume of digital materials increases significantly, identifying and accessing these materials becomes more difficult Weng and Mi addressed these issues in 'Towards Accessibility to Digital Cultural Materials: A FRBRized Approach.' The authors emphasized the importance of providing better access to cultural collections in digital form and expressed hope that applying FRBR principles in cataloging these collections will provide improved access. The National Library of Norway's Paradigma Project is one of several projects seeking to preserve its digital cultural heritage and provide researchers with full-text Internet access. Van Nyúst et al. provided a description of this project and explained how the FRBR entity level's work, expression; manifestation, and item are used in the archive design. The project systematically harvests Norwegian digital documents from the Web and archives them for present and future access.

Ercegovac reported her findings from an experiment that applied FRBR to a science fiction title, Edwin A. Abbott's *Flatland A Romance of Many Dimensions*, as represented in the OCLC WorldCat. The study revealed that applying the FRBR relationship model improved access to the item studied here and improved its accessibility in networked digital libraries. The FRBR concept has gone beyond bibliographic records to authority data. Patton reported on the activities of the Functional Requirements and Numbering of Authority Records (FRANAR) working group that is reviewing all the entities from group 2 and 3 to extend the model to the
authority data. Issues related to FRBR and serials were addressed in several articles. Shadle presented an overview of the model he used as the basis of entity-relationship of FRBR to model serial publications.

Application of the FRBR model to continuing resources was discussed by Jones. The author identified four broad areas of concern and proposed tentative solutions that could make the FRBR model more suitable for use with continuing resources. Application of FRBR has found its way into international literature. Cho presented a study on the application of FRBR to the online public access catalog in Korean libraries. She pointed out that a set of algorithms to automatically convert a bibliographic database into FRBR is already available, but the Korean catalogs have difficulties with authority records. This makes automatic conversion impossible. Cho presented a method for extracting work sets from the Korean union catalog using a semiautomatic mechanism and proposed methods to allow local libraries to apply FRBR to their own OPAC using work sets that result from the union catalog. She proposed using the cluster work sets for the union catalog and sharing the resulting work sets with local libraries.

FRBR-related literature of the last two years is moving beyond the descriptive phase and looking at applications of the FRBR principles in various environments. Much of the work is centered on digital collections that exist in silos or are harvested from the Internet. Researchers are looking at special issues, such as serial collections, foreign-language collections, and others. Most researchers expressed hope about the effect FRBR will have on providing access to materials and several pointed out the need to enhance displays in library catalogs.

**Metadata**

Metadata, through no longer new, continues to attract attention and to be a topic at library and information science conferences and in professional literature. Two publications taken together can be viewed as a comprehensive metadata reference for catalogers. The first publication, *Metadata: A Cataloger's Primer*, is a collection of articles edited by Smiraglia. This volume provides a learning resource about metadata for catalog librarians and students. It first addresses the theoretical foundations of metadata structure and creation, then focuses on specific metadata schema: Dublin Core, Encoded Archival Description (EAD) and Encoded Archival Content (EAC), XML, Metadata Encoding and Transmission Standard (METS), and how a cataloger would apply them. The book includes exercises that teach catalogers how to mark up a simple document in HTML. This volume is an excellent source for catalogers who want to learn about the theory and practice of metadata. Chapters that deal with practical applications of the metadata standards provide easily understood and applied examples. The more theoretical parts of the book offer a framework that can be helpful in planning and management. The second publication, *Metadata and its Impact on Libraries*, by Intner, Weihs, and Lazinger, is an excellent text that provides guidance to both students and librarians for preparing metadata. The authors provide an introductory description of metadata, an overview of some schemas, and information on creating bibliographic records as metadata for electronic monographic materials and continuing resources. They also explore metadata's effect on current developments in online reference, choice of metadata schemes, archiving and digital preservation, professional education, and future innovations. Samples of bibliographic records as metadata and exercises with answer keys for practice are included.

Several articles covered general aspects of metadata. Coyle's "Understanding Metadata
and its Purpose" defined metadata and discussed XML and Resource Description Framework. The author looked at metadata for document like objects and introduced the Dublin Core, Metadata Object Description Standard (MODS), and METS. She also discussed the meaning of metadata for library cataloging. In her conclusion, Coyle suggested that metadata is devoid of the rigorous standards that characterize cataloging and that in time it may evolve into real cataloging. Chopey presented an introduction to the purpose of metadata and how it was developed. He discussed a wide variety of elements of the data delivery process from the point of view of their impact on data retrieval. He offered a set of proposals for the steps needed to plan and implement metadata strategies that would lead to effective resource discovery in a local digital repository. Beall provided a different opinion of metadata and its applications in "The Death of Metadata." He expressed his concerns about the number of metadata schemes that are being created and implemented, and how sharing these standards among professional communities is becoming increasingly difficult. He emphasized that the implementation of the MARC format in libraries has been the most successful metadata implementation in history. He suggested that MARC is the established comprehensive metadata standard that has withstood the test of time and is the metadata schema of the future. The theme of enhanced metadata becoming more like traditional cataloging is echoed in Gorman's keynote address to the Canadian Metadata Forum in 2005. Gorman expressed skepticism about the usefulness of existing metadata schemes and suggested that controlled vocabularies and detailed designators will have to become part of metadata to make it more effective.

Rapid growth of electronic resources over the past decade has been accompanied by much development and application of metadata schemas. Following the release of the draft Guidance on the Structure, Content, and Application of Metadata Records, for Digital Resources and Collections in 2003 by the International Federation of Library Associations and Institutions (IFLA) Cataloguing Section Working Group on the Use of Metadata Schemas, Howarth discussed responses to the draft and outlined next steps taken by the working group. Howarth reported that most of the respondents rejected the concept of the "Core of Cores" that was proposed by the IFLA group. They considered it a watered-down version of Dublin Core and redundant at best. With the reinstitution of the IFLA group, the work of developing core metadata sets will continue.

Opening Web content to automated classification using metadata in the context of library groupware or portals was the thesis of an article by Fox. Fox pointed to the emerging user-developed taxonomies — known as folksonomies — and their potential usefulness when applied in conjunction with traditional controlled vocabularies. Matusiak explored the use of social classification in describing digital collections. Citing examples such as Flickr, she studied the pros and cons of folksonomies. Her study revealed that user-generated metadata offered flexibility, but was too varied to provide permanent solutions to the challenges of image indexing. Along with Fox and other authors cited here, Matusiak proposed a combined use of informal social tagging with more structured controlled vocabularies. Cantara introduced Simple Knowledge Organisation System (SKOS) Core, a new encoding standard for developing semantically rich controlled vocabularies that will enhance the searching of digital content. SKOS is still a work in progress but promises to offer searching flexibility for specific user communities. It offers semantic cluster searching capability that goes beyond the keyword and controlled vocabulary searches.
**Metadata Applications**

Many metadata schemas were created to meet specific needs or for a specific community. Several articles and reports were published in 2005 and 2006 on metadata applications. The University of Pennsylvania Library and the Taylor-Schechter Genizah Research Unit at Cambridge University Library in England started a project to digitize their joint holdings of manuscript fragments from the Cairo Genizah. Their goal was to create an online catalog and an image database for this collection. A report by Lerner and Jerchower described the project, how the staff developed preliminary guidelines for standardized descriptive metadata, and why they adopted MARC tagging.49

Westbrook et al. described the creation of the Union Catalog for Art Images (UCAI, a centrally managed database of art image metadata) and the ARTstor project (a centrally managed database of art images), two projects funded by the Andrew W. Mellon Foundation and underway at the University of California at San Diego.50 The aim of UCAI is to automate processes that will facilitate interoperability in the union catalog.

Banush, Kurth, and Pajerek described Cornell University Library's largely automated method for providing title-level catalog access to electronic journals made available through aggregator packages.51 This approach to e-journal cataloging bypasses the vendor record option in favor of the creation of a separate bibliographic record for each version of the e-journal. They used externally supplied metadata to create a brief bibliographic record. The authors cautioned that Cornells solution may not be a universally acceptable answer for all libraries.

Abe and Greenberg analyzed resource authors' use of a metadata-creation application at the National Institute for Environmental Health Sciences.52 They provided insight into how resource authors approach metadata software and studied how interface design can encourage interest in metadata creation among resource authors.

**MARC 21 and XML**

The MARC standard remains an important tool for encoding bibliographic data. The LC's Network Development and MARC Standards Office is developing a framework for working with MARC 21 data in an XML environment. This framework is intended to be flexible and extensible to allow libraries to use MARC data in ways specific to their needs. The LC Web site (www.loc.gov/standards/marcxml) on MARC 21 and XML schema provides valuable information about the MARC XML architecture; MARC XML schema and documentation, examples, tools and utilities'; MARC Document Type Definition, presentations; and related XML formats.

Several conferences and workshops addressed using MARC 21 with XML. A major meeting devoted to this topic was held at the World Library and Information Congress in Oslo in 2005. Papers from the congress included a detailed report on the need for MARC/XML to support search and retrieval protocols presented by Taylor and Didcmeiss; a discussion on the principles of XML and its advantages for bibliographic data; a description of a parallel schema to XML that was developed by the Center for Computer Technologies of the Ural State University at Ekaterinburg, presented by Skvortsov, Pashkova, and Zhlobinskaya; Carvalho's presentation on the full power of XML and its use of style sheets to convert XML documents to other formats; and McCallum's report reviewing the development of an XML schema for MARC 21 and the MARC/XML tool kit of transformations.53 McCallum cited examples of the successful
implementation of MARC/XML that support the notion of MARC/XML being a tool that makes use of standards while offering flexibility necessary to deal with the demands of modern information retrieval mechanisms.

**Cataloging Tools and Standards**

### Anglo-American Cataloguing Rules

An update of AACR2 was published in 2005. The update includes instructions for capitalization of single letters used to represent words, and for multiple-letter prefixes in compound terms; changes arising from the preparation of the new edition of *Cartographic Materials* and a checklist of changes.

AACR2 continued as a topic of interest in 2005 and 2006 library literature. Bowman presented a study of the development of description in cataloging from a historical development point of view, before International, Standard Bibliographic Description (ISBD). She compared 150 years of Anglo-American cataloguing codes and practices for description to the ISBD. The author's findings suggest that the general order of title, edition, and publications have been stable throughout the period. Physical description has undergone many changes, especially in relation to the title page as a source of information. Bowman pointed out other problems related to the copyright date and multiple places of publications that need to be solved, and concluded that knowing what was done in the past is important to avoid making the same mistakes.

During 2005 and 2006, suggestions and proposals were introduced to revise parts of the AACR2 to accommodate certain situations and to eliminate confusion and redundancies in the record-retrieval process. Procházka discussed a 1994 rule interpretation issued by LC that directed cataloged how to establish uniform titles for choreographic materials. He explored the value of these rules, their difference from prior rules, and the origins of the concept behind the rules. Hider and Turner investigated AACR2's special rules that apply to personal name headings in certain foreign languages (rules 22.21-22.28). Their study discussed four of these rules that pertain to Indonesian, Malay, and Thai name records contributed to the Australian National Bibliographic Database. Hider and Turner conducted a survey and found that because of the difficulty of the rules, many of these headings were generated without consulting them. The authors recommended that these rules be dropped and that rules in this chapter be revised to be even more general. To eliminate redundant entries in bibliographic records, which will help users find resources by "heads of state (etc.)" through the authority structure of the catalog, Jin suggested that AACR2 21.4D1 and 21.4D3 rules be revised to allow entering only one name in the same bibliographic record.

Important changes to AACR2 have been suggested and introduced in the last few years. These changes are paving the way for the introduction of *Resource Description and Access*, which will replace the AACR.

### Resource Description and Access

The first edition of AACR2 was published in 1978, and the review process managed by the Joint Steering Committee for the Revision of AACR (JSC) has produced many updates and revisions. AACR2 was designed for an environment dominated by the card catalog, an
environment that has changed significantly over the years. The International Conference on the Principles and Future Development of AACR, held in Toronto in 1997, identified substantive problems with AACR2. Although the updates issued in the years following that conference addressed some of these problems, a fundamental rethinking of the code was required to respond fully to the challenges and opportunities of the digital world.

As part of its strategic plan, JSC is working toward a new edition of AACR (scheduled for publication in the spring of 2009) that will carry the name Resource Description and Access (RDA). In December 2004, a draft of part 1 of AACR3 (as it was then called) was made available to constituencies for review. At the April 2005 meeting, in response to this constituency review, the JSC and Committee of Principals decided to take a different approach to the new edition. As part of this, the decision was made to use a new working title: RDA: Resource Description and Access.60

The library community anxiously awaits the new rules, and predictions and speculations about the new codes have already begun. Medeiros initiated a discussion about the goals of RDA and described its potential uses by a large community of information providers.61 The author posed important questions about the ability of RDA to meet its objectives, as stated by the JSC. Practical problems that are likely to arise with implementation of the RDA were addressed by Intner, who pointed out that the main problems with RDA are that its terms are not easily understood (although it is intended to simplify cataloging practice) and that catalogers may not be inclined to accept its complexities without some assurance that it can become a successful alternative to current practice.62 Hillmann also expressed her concerns about RDA, particularly in the areas of transcription and specified sources of information, reliance on notes, and multiple versions.63 Weiss and Larkin provided a context for this new standard and explained the work that has been done by the JSC.64 They covered the rationale behind the new standard, the process for development of a first draft, reaction to that draft, and the direction of the JSC’s work.

Most of what has been written about RDA falls into the broad categories of prediction or general information and updates. As the official release of the new code draws near, many more articles on the implementation and various aspects of the RDA can be expected.

Library of Congress Subject Headings

Chan's Library of Congress Subject Headings: Principles and Application, 4th ed., was published in 2005 and covered important changes since the previous edition.65 This publication remains a major tool for teaching LC subject headings. The Library of Congress Cataloging Distribution Service issued two updates: Library of Congress Subject Headings, 29th ed. Free-floating Subdivisions: An Alphabetical Index, 18th ed., was issued in 2006.66

Library of Congress Subject Headings (LCSH) remains a standard in academic libraries, and many public and special libraries. This is reflected in substantial research that continues to be published on LCSH and other forms of subject and keyword access. Library practitioners continue to apply LSCH subject headings to their materials, but this, commitment to the old standard is facing criticism because of the limitation, inflexibility, inadequate syntactic structure, currency or bias of the headings, and lack of specificity in the subject-headings list.

Many leaders in the library field have suggested that subject keyword searching can be more effective than using controlled vocabulary such as LCSH. Debate continues about the viability of replacing the controlled vocabulary (LCSH) used in, the library catalog by subject
keywords. Gross and Taylor conducted research on what proportion of records retrieved by keyword searching has a keyword only in a subject heading field and thus would not be retrieved if no subject headings were present. The study found that if no LC subject headings were assigned to catalog records and searchers were to rely on keyword searches alone, more than one third of the records could not be retrieved. In some cases, these numbers would be even higher. Other advantages of using controlled vocabulary, such as cross-referencing and the reduction of irrelevant hits, would be lost as well.

Fischer collected and analyzed twelve years of literature on LCSH published from 1990 to 2001. She pointed out that LCSH has been consistently criticized over the last six decades, and the critics insist that LCSH must become more flexible and easier to use. But the consensus is that no better or more comprehensive controlled vocabulary tool exists.

In 1971, Berman published *Prejudices and Antipathies: A Tract on the LC Subject Heads Concerning People*, in which he focused on the issue of biased subject headings in LCSH. Some of Berman's recommendations and proposals for change were implemented while others were rejected. Knowlton's article sums up Berman's recommendations and includes a compilation of all of his predecessor's suggestions, including the resulting changes in LCSH. In addition, the author included a brief analysis of the remaining areas of bias.

Ashman took on the topic of LC subject headings and their use in the online catalog after they were changed. He examined bibliographic records from academic libraries' online catalogs to determine whether old subject heading were in use after they were changed by LC. His study revealed that the old headings were regularly found in library catalogs even after the examined libraries had started to use the new replacement headings. According to the author, libraries do not check and replace superseded subject headings in all of their records.

Many studies on LCSH pointed out that the syntax of the schema is complex and requires highly skilled catalogers to assign subject headings. To make the schema easy to use and understand, the OCLC initiated the development of Faceted Application of Subject Terminology (FAST). The new schema is based on the LCSH vocabulary. Wolfe reported, on the Association for Library Collections and Technical Services (ALCTS) Cataloging and Classification Section Forum held to discuss the OCLC FAST initiative. ALCTS and its sections continue to play a vital role in the ongoing discussion of the subject-headings issues. The Cataloging and Classification Section Subject Analysis Committee (SAC) "has established a subcommittee to evaluate the significance of FAST subject headings to the library community based on the users' perspective." Miller, Olson, and Layne reported on the important work the Subject Analysis Committee has done on subject access and controlled vocabularies. SAC subcommittees have worked for nearly ten years on subject access indexing and display issues; their findings and recommendations were analyzed by the authors.

Research on issues surrounding LCSH continues and librarians are identifying solutions to a variety of problems. Denda discussed the increasing number of interdisciplinary fields in higher education and the need to identify relationships within them. The author used the example of women's studies to examine the effectiveness or ineffectiveness of LCSH in satisfying the needs of an interdisciplinary researcher. Denda concluded that libraries would do well to provide tools that would better match the user and the resources.

Anderson and Hofmann argued in favor of implementing a fully faceted syntax approach as a solution to the main problems facing LCSH. The authors demonstrated how this might be accomplished and how the new syntax could be integrated with existing headings. Jin explored ways to help users efficiently access works through the OPAC when corporate bodies have
changed names over time, and recommended that catalogers follow the rules outlined in *Library of Congress Subject Headings: CSH: Principles of Structure and Policies for Application* to deal with issues concerning corporate name changes. Assigning subject headings to theses and dissertations can be a challenge to catalogers because they usually represent a very specific concept or subject. Hoover presented a guide for beginning catalogers with humanities or social sciences backgrounds. This guide will help catalogers with assigning subject headings to theses and dissertations on the basis of LSCH.

Applying a form or genre to nonprint media has attracted attention from scholars. Ho summarized a discussion about applying form or genre headings to foreign films that occurred on two electronic discussion lists (AUTOCAT and OLAC) and described the local policy at Texas A&M University Libraries. Miller reported on a workshop, Improving Access to Audio-Visual Materials by Using Genre/Form Terms, held at the 2004 Online Audio-Visual Catalogers Conference, in Montreal, Quebec.

Assigning subject headings is not simple. In some cases, the day-to-day process of subject cataloging does not correspond entirely to theoretical descriptions in textbooks and international standards. Sauperl compared the practice of assigning subject headings by the Slovenian Public Library catalogers to the ones assigned by the American catalogers. She addressed the issue of whether catalogers who have not received formal training perform subject cataloging differently from their trained colleagues.

**Classification Schema**

**Dewey Decimal Classification**

DDC, the world's most widely used library classification system, received attention in several articles in 2005 and 2006. These publications analyzed various aspects of the schema. *Dewey Decimal Classification, 22nd Edition: A Study Manual and Number Building Guide* is a comprehensive guide to the 22nd edition changes by Scott. This monograph includes an introductory chapter, a detailed summary of the DDC's publication history, controversial editions, and popular additions, and can serve as a useful guide for training students and classifiers.

A 2006 double issue of *Cataloging and Classification Quarterly*, edited by Mitchell and Vizine-Goetz, was devoted to DDC. Papers in this special issue explored the history of DDC, its application internationally, teaching DDC, users' browsing behavior in a DDC Web service, using DDC to organize Web resources, mapping terminologies to classification system, Dewey Browser, and other topics. It is an excellent compilation of articles for general readers and scholars who are exploring current issues and new development of DDC.

Some authors also considered the use of DDC in Europe and elsewhere. Landry described the work of three national libraries (Switzerland, Germany, and Austria) to adopt and use DDC to provide access to their national bibliographies and their approach to publish the German language version of DDC in 2006. Dal Porto and Marchitelli analyzed three blogs (Biblioatipici, Letture, and Marchitelli's) to demonstrate that different contents may be classified using the appropriate scheme. The authors determined that DDC is also a suitable classification scheme for Web-based resources.

The question of why libraries still use Dewey was the focus of an article by Shorten, Seikel, and Ahrberg. The authors explained why libraries in the 1960s and 1970s were
reclassifying their collections from DDC to the LCC. They surveyed those academic libraries still using DDC and asked if reclassification is something they had considered or were considering. Some of these academic libraries reported that they would convert to LCC and that the patrons do not have any preferences over which classification systems are being used by the library.

**Library of Congress Classification**

In 2005 and 2006, LC updated several LCC schedules: G Geography, Maps, Andrology, Recreation (2005); H Social Science (2005); J Political Science (2006); K Law in general (2005); K Law Tables (2005); KF Law of the United States (2005); L Education (2005); P-PZ Tables for Language and Literature (2006); PB-PH Modern European Languages (2005); PJ-PK, Oriental Philology and Literature, Indo-Iranian Philology and Literature (2005); PL-PM Languages of Eastern Asia, Africa, Oceania, Hyperborean, India, and Artificial Languages (2006); PR-PS-PZ English and American Literature, Juvenile Belles Letters (2005); PT German, Dutch, and Scandinavian Literature (2005); and Z Bibliography (2005). 87

Taylor published the tenth edition of *Introduction to Cataloging and Classification*. It incorporates revision to AACR2, enhancements to MARC 21, DDC, LCC, LCSH, and Series Subject Headings. The glossary, bibliography, and all chapters have been revised. Examples throughout the text help illustrate the rules and the concepts. This publication remains a classic resource on cataloging and classification.

To determine the level of consistency of LCC class numbers within and across American libraries, Subrahmanyam examined how they were assigned in fifty-two American library systems. Her study found an unexpectedly high level of consistency, and the author provided some explanation for the inconsistencies. She concluded her article with a recommendation for libraries to use the preferred class number and an alternate class number for local library information. Subrahmanyam asserted that this approach would provide enriched subject access through local and union catalogs.

Chandler and LeBlanc described the Columbia University project aimed at using the LCC data from their catalog to provide subject access to the library's electronic resources using their newly developed Hierarchical Interface to LC Classification (HILCC). They also looked at the possibility of using the Columbia HILCC scheme as developed (or in modified form) to create a virtual undergraduate print collection outside the context of the traditional online catalog. Wartzok and Hernandez explained the complexity of reclassifying official records of the United Nations in the Green Library at Florida International University. The project's purpose was to unify the collection under one LC class (JZ).

**Authority Control**

Authority control is a challenging aspect of cataloging. Wolverton published two articles on authority control. His "Authority Control in Academic Libraries in the United States: A Survey" reported on a survey demonstrating that authority control was valued and used by most respondents. Wolverton recognized the important role that authority control plays in cataloging. His decision to gather current information through the survey was prompted in part by the need to update existing scholarship and to fill the gaps in authority-control research. Wolverton's "Becoming an Authority Control: An Annotated Bibliography of Resources" appeared in 2006.
The publication is an annotated bibliography that includes monographs, articles and papers, electronic discussion groups, and Web sites related to professional conferences, training, and a discussion of current trends and expected future developments in authority control. This bibliography is a very useful educational tool for librarians and libraries.

Description of authority control processing and measuring its successes was another topic of interest. Simpson and Williams described the University of Florida's experience with the Name Authorities Cooperative (NACO) program. They reported how their institution increased its contribution to the national authority database by managing and refocusing the objectives of the program. They concluded with ten useful tips and suggestions for libraries to consider as they plan to grow their NACO contributions. Weber, Steely, and Hinchcliff described the implementation of a grant-funded authority control project in the Keystone Library Network, an eighteen-member library consortium in Pennsylvania. The authors described in detail the grant process and the authority control project. Topics covered included staffing and staff training as well as database maintenance.

Another contribution to the topic of consortial authority projects was made by Larmore, who reported on a new Program for Cooperative Cataloging NACO funnel project in four academic libraries' and one state library in South Dakota. A funnel project is a group of libraries that have joined together to contribute authority records to the national authority file. In a funnel project, one institution serves as coordinator, and LC deals solely with this coordinator, who is then responsible for disseminating information to all the funnel participants. The desire to start the North Dakota project originated from the South Dakota State Library, where cataloging staff wanted training on authority record creation in order to create and update authority records for state agency names. The article details the process of creating a funnel project and the staff-training process.

Hickey, Toves, and O'Neill worked with the NACO authority files to study the implementations of NACO normalization rules. They found numerous inconsistencies that resulted from ambiguities in the rules. After studying causes of the inconsistencies, the authors, created a publicly available NACO Normalization Testbed that will assist the community in the consistent implementation of normalization rules.

Extending the FRBR concept to authorities was discussed in Pattori's update on the work of the IFLA Working Group on Functional Requirements and Numbering of Authority Records. Patton provided an updated description of the entity-relationship model being developed by the working group to extend the FRBR model to cover authority data. Miller explored the use of XML Organic Bibliographic Information Schema (XOBIS), which, falls somewhere between the complexities of MARC and the simplicity of the Dublin Core. XOBIS is designed to reorganize bibliographic and authority data elements into a single, integrated structure.

Authority Control and Multiscripts

Library users have experienced difficulties with searching the online catalog for materials written in nonroman scripts. Catalogs with only romanized access points are not adequate for those users. The development of the Unicode Standard allowed users to search by the original script rather than the romanization. The Unicode Standard is a global character set for worldwide computing covering the major modern scripts of the world as well as the classical forms of Greek, Sanskrit, and Pali. Aliprand discussed the use of Unicode in developing library systems with multiscr ipt capability. This development would then offer the prospect of multi-script
authority records. She addressed restrictions on the structure and content of a MARC 21 authority record and described alternative structures containing languages written in nonroman scripts. Other studies addressed the issues of using the language scripts in the LC NACO authority file and enhancing authority records with nonroman scripts. In her article on the use of other scripts in LC’s Name Authority File (NAF), Lerner examined the options of using Hebrew script in MARC 21 authority records, and considered the prospect for cooperative work between American and Israeli libraries.101 Khairy described the Bibliotheca Alexandria methods of authority control of Arabic old names and creating a bi-script Arabic-roman file using the VTLS/VIRTUA integrated library system as a first step toward cooperative projects involving union catalogs and authority files.102

The topic of authority control for foreign corporate authors was addressed by Jin, who conducted a study that compared forms of corporate entries in LC NAF and the Web.103 The study showed that more than 70 percent of names in LC NAF created between 1998 and 2002 exactly matched corporate names as they appeared on the Web.

**Vendor-supplied Authority Records**

Authority control is a time consuming and labor intensive process for libraries. Several studies have shown that outsourcing authority work is less expensive than doing the work in house. Libraries are using automated authority control systems to clean up existing databases, provide ongoing authority control for current cataloging, and keep databases synchronized with changes in headings. As libraries make the decision to rely on vendor services for authority control, they must be aware of the limits of vendor-provided service and the responsibility of the library itself. Zhu and Seggem discussed both realistic and unrealistic expectations for vendor-supplied authority control.104 Van Pulis reported findings regarding authority records for name headings in relation to vendor processing of bibliographic records and subsequent catalog.105 She examined the “first time use” of name headings in the context of outsourced authorities processing and NACO participation.

**Subject Authority Control**

Subject authority headings are becoming more important in the Internet environment. Subject authority control is intended to help users browse easily and more efficiently using their terminology to the controlled vocabulary used in the system. The consistency and maintenance of the subject authority file is a concern. After analyzing key aspects of FRBR and FRANAR models, Delsey suggested ways of approaching the refinement and extension of the models.106 Lei Zeng discussed global sharing of subject access and subject authority data that have been used in information organization, storage, and access in libraries and archives.107

The Subject Authority Cooperative (SACO) program is a component of the Program for Cooperative Cataloging (PCC). Cristan reported on SACO activities in Latin America and provided a brief history and background of the PCC and the SACO program and participation in SACO.108 She concluded with an update on the current activities taking place in Mexico in the development of a bilingual subject headings list based on LCSH.
Recruitment and Training of Catalogers

Recruiting and training of cataloging staff remains a topic of interest. Anderson and Shelton provided a sample test to help the employers with successfully screening and hiring support staff for cataloging positions. Anthony and Garbs studied the results of recruiting efforts of academic libraries to fill cataloger positions. The authors created and distributed a survey to college and research libraries that advertised for full-time cataloging positions between July 2000 and July 2002 to determine outcomes of the hiring efforts. The survey revealed that libraries continued to experience difficulties recruiting catalogers for academic libraries. To determine common aspects of employers expectations, Hall-Ellis conducted two studies related to recruiting and hiring. In her first paper, she studied 150 entry-level cataloger-position announcements published in American Libraries and posted by AutoCat and the Colorado State Library during a three-year period. She identified employers' expectations and requirements among all types of libraries. The second study looks at employer expectations of filling technical service managerial positions. The study revealed that employers expect prospective managers to have experience in cataloging, classification, authority control, acquisitions, supervisory and training abilities, bibliographic control tasks, technical understandings, and familiarities with a theoretical basis for organization technical skills (bibliographic utilities, tools) and nonlibrary specific competencies.

In another survey, Hristov investigated current trends among the ARL member libraries in cross-training cataloged to provide reference services. Her research revealed that approximately one third of ARL libraries are engaging in cross-training. She reported perceptions that cross-training can enhance the services libraries provide; but thoughtful planning and coordination between, technical services and reference were recommended to ensure the success of the program.

DeZelar-Tiedman, Camden, and Uhl reported on a project to address concerns regarding recruiting catalogers into professional librarian positions. They traced the development of a mentoring program for aspiring catalogers, sponsored and administered by the ALCTS Cataloging and Classification Section Committee on Education, Training, and Recruitment for Cataloging. The authors provided background information on the program as well as results and an assessment on the pilot programs.

Many libraries use non-MLS professionals to perform cataloging. Developing materials to help train new catalogers, whether they are librarians, paraprofessional, or student assistants, is increasingly important. The second edition of Fergusons MARC/AACR2/Authority Control Tagging: A Blitz Cataloging Workbook can be used when teaching and training new catalogers. This book offers a simplified presentation of cataloging rules with practical examples in a workbook format. Unlocking the Mysteries of Cataloging: A Workbook of Examples, by Haynes and Fountain, can be used in teaching and training new catalogers on description, classification, subject analysis, and MARC 21. It includes a discussion of problems that arise during cataloging and presents examples and exercises in a workbook format.

Education for Library Cataloging: International Perspectives, edited by Sun and Carter, is a collection of articles that examine cataloging and classification training programs around the world. "library school faculty and professional librarians from Europe, Africa, Asia, Australia, Latin America, and the Middle East presented case studies and overviews of library and information-school programs. Hill identified three factors that contribute to the challenges of training newly hired catalogers: library and information science programs, the increased
complexity of cataloging, and the capacity of libraries to carry out training. She described possible approaches to a solution. In another article, Hill discussed the characteristics and skills that catalogers will need in the area of acquiring and organizing electronic resources and applying metadata standards, and how the catalogers will acquire these skills. Hider studied how the catalogers and metadata specialists acquire their continuing professional education. His study showed that catalogers are undertaking a broad range of activities. They indicate a preference for short cataloging courses, but also are looking for more formal and long-term programs to upgrade their skills and knowledge in both traditional and nontraditional cataloging. Many catalogers expect their employers to provide support for advancing their careers.

Summary

Analysis of the cataloging and classification literature of 2005 and 2006 showed the future of catalog and cataloging standards to be a persistent topic. Dissatisfaction with the current OPAC systems and their functionality was clearly expressed. The potential of the FRBR model to improve bibliographic access and OPAC’s display continue to be a hope and libraries are experimenting with the model. Issues about applying current cataloging tools and standards were raised, and this continues to be an area of concern. The role of catalogers is still in transition, and research in this area demonstrated a definite shift from performing cataloging to a greater focus on management and creating metadata.

The review of authority control literature reveals important recent contributions to the field. Case studies and survey-based articles provide valuable data on current practice. Authority control for multiple scripts and subject headings and the development of the Unicode Standard were the theme of several works. Ability to browse in nonroman scripts continued to be important issue for Internet users. More studies are needed to better determine how authority records perform in the Web-based environment. Library scholarship also needs to address the relative importance of authority control in general.

Libraries and the cataloging community will be facing a series of challenges in the next few years. Development of RDA and changing the cataloging rules to include the FRBR are likely to have a profound effect on library operations. Misgivings about the functionality of RDA and the timing of its implementation find expression in the current library literature.

Library literature dealing with cataloging issues is diverse and exciting to follow. The volume and quality of research encountered suggest that the community is responding quickly to the changes that are on the horizon. Librarians are more critical of some of the decisions being made, even when those decisions come from LC. Simultaneously, case studies and surveys are examining current trends in libraries and seeking new and better ways to provide the library user with quality cataloging that continues to be the backbone of effective research, be it via the library catalog or the Internet.

More studies on the future of the online catalog and its accessibility can be expected. The library community will continue researching cataloging and classification standards and their applications in the current Web environment. As the cataloging community declines in numbers and cataloging and classification training remains in short supply, some thought should be given to the future of the discipline of cataloging and its role in the organization of information.
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