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WHAT IN THE WORLD . . . CATALOGING ON AN INTERNATIONAL SCALE Papers from the ALCTS Preconference, June 26, 1998

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What in the World . . . Cataloging on an International Scale

Introduction

Daniel W. Kinney

Two important events in the field of cataloging occurred in the fall of 1997: the International Conference on the Principles and Future Development of AACR, which was held in Toronto in October, and the completion of the IFLA *Functional Requirements for Bibliographic Records*. The final report of the IFLA Study Group on the Functional Requirements for Bibliographic Records was approved by the Standing Committee of the IFLA Section on Cataloguing in September. These events and the focus on international librarianship that was planned for the 1998 ALA Conference gave impetus to the preconference "What in the World . . . Cataloging on an International Scale."

Dorothy McGarry, who was then chair-elect of the Cataloging and Classification Section (CCS) of ALCTS, suggested the theme of the preconference. The original intent was for CCS and the CCS Cataloging Committee: Description and Access (CC:DA) to present a program that featured presentations on the Toronto Conference and the IFLA *Functional Requirements*. At the 1997 ALA Midwinter Meeting in Washington, D.C., CC:DA agreed to sponsor the program with CCS, and Joan Swanekamp, chair of CC:DA, appointed the following committee members to the task force: Daniel W. Kinney, State University of New York at Stony Brook (chair); Brad L. Eden, North Harris Montgomery Community College District; Lynne Howarth, Faculty of Information Studies, University of Toronto; Laurel Jizba, Portland State University; Glenn Patton, OCLC; Cecilia Sercan, Cornell University; Barbara Tillet, Library of Congress; Patricia Vanderberg, University of California, Berkeley; and Martha Yee, University of California, Los Angeles.

So much was happening in cataloging at the international level that the CC:DA task force members found that they needed a large block of time to cover the essential aspects of the topic. When the program was proposed to the ALCTS Program Committee, the committee asked CC:DA to develop a preconference instead of a program. The CCS Executive Committee agreed to the preconference, but requested a summary program so that ALA members who were unable to attend the preconference would be able to hear brief reports on the Toronto conference and other international cataloging issues. The summary program was presented the day after the preconference during the ALA Annual Conference.

"What in the World . . . Cataloging on an International Scale" was held at the Washington Hilton, Washington, D.C., on June 26, 1998, from 8:00 A.M. to 4:30 P.M. CC:DA chair Daniel W. Kinney was the moderator. The preconference consisted of nine formal papers and a panel discussion with questions from the audience. Barbara Tillet moderated the panel. The preconference was a joint

presentation of CCS and CC:DA. It was cosponsored by the ALA International Relations Roundtable, the ACRL Western European Specialists Germanists Discussion Group, the ALCTS/CCS Committee on Cataloging Asian and African Materials, ALCTS/LITA/RUSA MARBI, and the LITA/ALCTS/CCS Authority Control in the Online Environment Interest Group.

ALA president Barbara Ford's theme for the 1998 Annual Conference was "Global Reach, Local Touch." A global perspective is familiar to catalogers, as they have long thought in terms of the global library. More than a quarter of a century ago, the theme of the IFLA 1973 conference was "Universal Bibliographic Control" (UBC). It is an ideal that Jewett put forth almost a century and a half ago in his *Smithsonian Catalogue System*. Jewett proposed to stereotype the titles of books separately and preserve the plates in alphabetical order. New titles could then be inserted in the proper place and the catalog reprinted. Other libraries could participate in this system by submitting their cataloging records to the Smithsonian to be stereotyped, thus making it possible to publish a general, or union, catalog, which would form a national bibliography. Jewett realized that uniformity was crucial, and that it would be necessary for all libraries cooperating in the program to use the same cataloging rules. An important aspect of Jewett's plan was the formation of an American bibliography, and he hoped that a copy of every book registered for copyright in the United States would be deposited in the Smithsonian. Jewett believed that his system could be adopted in other countries and that the aggregate of these catalogs would form a universal bibliography (Jewett 1985).

The essential elements of Jewett's plan for a universal bibliography—a system of international cooperative cataloging with uniformity of cataloging rules and the use of technology for wide-scale distribution of bibliographic records—was formalized in 1974 as IFLA's Universal Bibliographic Control Programme. Anderson's plan for UBC comprises a "network made up of component national parts . . . all integrated at the international level to form the total system" (Anderson 1974, 11). Anderson, like Jewett, recognized that standardization is essential for the development of UBC, and her plan included two levels of standardization: content and physical form. Kaltwasser defines these as standardization of cataloging rules and standardization of the organization of bibliographical information on machine data carriers (Kaltwasser 1972).

The *Statement of Principles* from the 1961 International Conference on Cataloguing Principles held in Paris provided the basis for standardization of choice and form of headings and entry words. Uniformity of the descriptive information in bibliographic records was accomplished through the International Standard Bibliographic Descriptions developed in the 1970s. In the 1980s, stan-

dardization of data structures was brought about by the development and promotion of the UNIMARC format for the exchange of machine-readable records among the national bibliographic agencies (Roberts 1989). The recognition of the interdependence of cataloging and automation and the two levels of standardization led to the merger of the UBC and International MARC Programme in 1987, which became the Universal Bibliographic Control and International MARC Programme.

Heymans (1982, 167) wrote: "In the last two decades, more efforts have been made and more results achieved in the field of international bibliographic control than in the twenty centuries before. Existing international standards and recommendations testify to librarians' willingness to work together." The 1990s witnessed continued and increased cooperation among librarians at an international level.

Both Jewett and Anderson saw UBC as an "ideal and an objective" (Anderson 1976, 4). The 1998 preconference papers included here describe projects and activities that have brought the library world closer to reaching the ideal and achieving the goal of Universal Bibliographic Control. The ALCTS Program Committee was correct in realizing the need for a preconference to cover all the exciting developments in international cataloging that were occurring at the time. The contributions to this volume deal with the two levels of standardization in Anderson's plan for UBC: cataloging rules and automation. As the preconference papers prove convincingly, the future of cataloging is at the international level.

Acknowledgements

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The Emerging Global Bibliographic Network

The Era of International Standardization in the Development of Cataloging Policy

John D. Byrum Jr.

Catalogers have become interdependent in their pursuit to provide bibliographic control and access. This interdependency has brought with it the need for greater agreement in applying common cataloging policies and rules. The expanded application of AACR2 is fostering greater uniformity in the provision of bibliographic description and access. The rules have been translated into numerous languages and used in European, Middle Eastern, and Latin American countries. Cataloging committees and individual libraries in Europe and South Africa have expressed strong interest in adopting, adapting, or aligning with AACR2. PCC is one of the most successful cooperative cataloging efforts and has a considerable international component, which encourages the use of AACR, LCSH, and MARC. AACR2 is successful on an international level because it is based in internationally developed standards, including ISBDs and the Paris Principles. ISBDs and the Functional Requirements for Bibliographic Records are examples of the contributions that IFLA has made to the internationalization of cataloging. IFLA sponsored the international conference that resulted in the Paris Principles as well as subsequent projects to craft international policy in relation to uniform headings for persons, corporate bodies, and titles.

The purpose of cataloging has always been to connect library users to the materials in which they have an interest. This goal has transcended time and place, extending from the past to the future and across geographic and cultural boundaries. This is not to say, however, that we have always shared the same principles by which we attempt to meet this goal.

Indeed, over the years, various cataloging codes, subject heading thesauri, and classification schemes have proliferated. Even within a single cataloging tradition—for example, that of the Anglo-American Cataloguing Rules and its predecessors—one finds authorized alternatives and options, in addition to which myriad local practices or institutional “interpretations” have flourished. Many explanations can be found to justify these “exceptions”—for example, the cataloging rules were considered too complex to apply as written, or they resulted in records that were felt to be too complex, or they did not entirely meet the users’ needs to the library’s satisfaction. Typically, catalogers’ copies of rule books, subject heading lists, and classification schedules were abundantly annotated to record such exceptions.

However, within the past century, and especially within the past twenty-five years, the profession has come to recognize more fully how interdependent catalogers have become in their pursuit to provide bibliographic control and access. This interdependency has brought with it the need for greater agreement in applying common cataloging policies and the same rules and interpretations in order to share cataloging.

This trend is well illustrated by the proceedings of a 1991 conference held at St. John's University titled "Cataloging Heresy: Challenging the Standard Bibliographic Product" (Weinberg 1992). As Gorman pointed out in a review of the publication:

[H]eresy is all very well in that it provokes thought and stimulates the young. The logical outcome of heresy—the setting up of an alternative church—seems very far away in the world of American bibliographic control. In fact, on the evidence of this volume, most would-be heretics remain firmly ensconced in the arms of Mother LC and of the sacred texts (LCSH, AACR2, MARC, etc.). For good or ill, one does not anticipate a Reformation in the near future (Gorman 1993).

This is not to underrate the value of enrichments to standard bibliographic records—for example, inclusion of table-of-contents information. Clearly the economics and technology of today's operating environment have made it exceptional for a library to be able to afford cataloging that routinely provides such enrichments or is extensively tailored to local policy. In short, most catalogers do not exceed the national standard and have come to accept the adequacy of this standard. Although most have been aware of this trend as catalogers within the American library community, these same developments and impacts have been occurring internationally as well.

For most of us, the expanding application of the Anglo-American Cataloguing Rules (AACR2) provides what is probably the most familiar illustration of how the emergent global bibliographic network is fostering greater uniformity in the provision of bibliographic description and access. (The growing international interest in the *Library of Congress Subject Headings* [LCSH] for subject access provides another example of where the strength of the system itself explains why librarians here and abroad are using it.) In the descriptive area, not only did this code bring into general conformance the cataloging practices of North America, the UK, Australia, and indeed, the English-speaking world, but AACR2 has been widely embraced elsewhere. Following publication in 1978, the rules were translated into numerous languages and adopted in several European and Middle Eastern countries. AACR2 has also been extensively applied in Latin America.

Since the mid-1990s, cataloging committees and individual libraries in Germany and Russia; the Baltic States; Eastern European countries such as Hungary, Czechoslovakia, and Poland; and South Africa have expressed strong interest in adopting, adapting, or aligning with AACR2. At the International Conference on the Principles and Future Development of AACR held in Toronto in October 1997, Natalia Kasparova, head of cataloging at the Russian State Library, distributed an open letter in which she spoke on behalf of the Interregional Committee on Cataloguing (ICC). In this communiqué, she stated:

The experts at the Russian State Library together with ICC have conducted a comparative analysis of the Russian and Anglo-American cataloguing rules. The analysis has confirmed the absence of any critical differences between the two cataloguing codes.

While this should not be taken to indicate that the Russian cataloguing code revision project now in progress will result in the adoption of AACR2, it does show a clear interest in seeking maximum comparability between them (Kasparova 1997).

As another example, Münnich, in her paper in this volume, describes in detail a project involving revision of the *Regeln für die alphabetische Katalogisierung* (Rules for Alphabetical Cataloging, RAK) to increase harmonization between the Germanic and Anglo-American traditions. Even ten years ago, how many of us would have foreseen the possibility of an initiative to seek to bridge these vastly different cataloging orientations?

There are many factors to explain the expanding utilization of our cataloging policies and practices. First, with regard to AACR2, the code itself must receive credit for its own success. If these rules did not embody effective principles for the bibliographic control of and access to library collections, long ago catalogers here and abroad would have moved on to another approach. Indeed, one of the objectives set out for the authors of AACR2 was to give particular attention to "international considerations" in preparing the second edition. As a result:

- AACR2 places greater emphasis on the use of systematic romanization rather than on romanized versions of words found on the item being cataloged.
- AACR2 authorizes a cataloging agency to substitute any standard romanization table prevailing in its country for the ALA/LC romanization that is used to illustrate examples.
- AACR2 recommends IFLA's publication *Names of Persons* for use as a source of information for names not treated by the rules.

- AACR2 provides an increased representation of foreign languages among the examples given to illustrate rule applications.
- AACR2 authorizes a cataloging agency that uses a language other than English to substitute this language throughout the rules whenever the rules give a preference for an English form of name.
- AACR2 deliberately refrains from referring to national library practices such as the Library of Congress Rule Interpretations in order to promote more universal interest in the rules.

In addition to the strength of its principles and to efforts to promote international interest in the code, the source of AACR2's success has been its ability to adjust to changing circumstances. In his article in this volume, Manning focuses on the continuous revision process and governance mechanisms by which AACR2 is improved and updated, with particular attention to the origins and outcomes of the International Conference on the Principles and Future Development of AACR. This maintenance process is often criticized as too slow and cumbersome, but it does have the advantages of decision making by consensus and of a conservatism that lends stability to the cataloging product.

Among the recommendations developed at the historical gathering in Toronto were several that recognized increased international interest in AACR2 and the need to encourage new stakeholders to participate more effectively in the revision process. Conference participants brainstormed this topic and offered several possible accommodations to international interests, including a recommendation that the Joint Steering Committee publicize its policies, procedures, and activities on its Web site, as well as posting the current process for submitting rule-revision proposals emanating from within or outside AACR author countries.

What are the implications of increased international interest for the future of AACR2? One possible direction would be accommodation of cataloging policies and practices that are important to new constituents abroad who are considering aligning their traditions with AACR2. If so, the overall effect of accommodating new and different practices might result in a greater number of alternatives and options than are now in the code. Some would think of such a trend as leading to a richer and more flexible code. Others who feel that AACR2 already has too many such options and alternatives might view it as a threat to the standardization.

Consider the outstanding success of cooperative cataloging during the past quarter century. Our shared cataloging programs provide clear evidence of the growing commitment to cataloging standardization. The Program for Cooperative Cataloging (PCC)—with a membership of more than 250 institutions annually producing many thousands of records—has emerged as the most successful of

these partnerships. Within the PCC, there is a considerable and growing international component that has had the beneficial effect not only of encouraging use of AACR, LCSH, and MARC, but also in furthering the development of these standards.

For example, in a recent and still unfolding effort to facilitate exchange of cataloging data, three of the national libraries that participate within the PCC—LC, the British Library (BL), and the National Library of Canada—have undertaken discussions for the purpose of reconciling differences in their MARC formats toward the goal of aligning USMARC, UKMARC, and CAN/MARC into a single MARC. These national libraries share a vision: that through harmonization of existing format differences, exchange of bibliographic information would become better, faster, and cheaper to achieve.

In this issue, McCallum examines the process by which this initiative has been pursued and reports the results to date. Suffice it to say here that this international effort provides compelling evidence of the value of bibliographic standardization to the library administrators who are promoting it.

As another example, the PCC can lay claim to providing the impetus for what has finally emerged as agreement between LC and BL in the application of AACR's provisions covering form of headings. This propitious development resulted in the signing of the Cataloguing Policy Convergence Agreement (CPCA) in 1996. BL's commitment to becoming a NACO partner was the factor that fostered these discussions. With the CPCA in place, the BL has greatly increased its contribution level and anticipates incremental growth with the volume already approaching 15,000 new records annually. Even in the few areas where the instances of existing records are so numerous that they can not be changed at this time, LC and BL have determined a common policy to follow when circumstances permit.

As a further step in this direction, the PCC is hopeful that LC and the National Library of Canada will prove able to reach a similar agreement once the combined MARC format is fully operational. However, PCC administrators do recognize that the process of cataloging policy reconciliation is labor-intensive and, indeed, not even practical except where practices are already reasonably aligned. Where major changes are involved, the agencies seeking convergence also will need automated systems that are able to accomplish the global updating—and of course, the approval and support of their constituents whose catalogs will also be impacted by these changes. Certainly, cataloging policy convergence is a much less likely approach to harmonizing cataloging rules that serve users with language and cultural values different from those addressed by AACR2.

Further regarding the PCC's international partnerships, the national libraries of Scotland and Wales along with Cambridge and Oxford universities are established NACO

contributors. Other institutions abroad are also preparing for cataloging convergence in order to join NACO: in September 1998 staff at the University of Sao Paulo, Brazil, received training in preparation for PCC participation, and the next year the University of Hong Kong Science and Technology followed suit, while nearly 20 libraries in South Africa received training soon after.

It is noteworthy that PCC has also had positive international impact in relation to subject cataloging policy through its SACO program by which partner libraries contribute to the development of LCSH. BL reinstated LCSH in 1993, began contributing to SACO, and has become the largest contributor to LCSH besides LC. Elsewhere in the British Isles, the national libraries of Scotland and Wales, Oxford and Cambridge Universities, and Trinity College, Dublin, have also joined SACO. Other international partners that regularly contribute to LCSH via the SACO program include the National Library of Canada, the American Academy in Rome, the Swedish Institute of Classical Studies, and the national libraries of Australia, New Zealand, and Lithuania.

In the few years that have followed inauguration of the PCC, international partnerships have increased to nearly fifteen in number. But, of course, like domestic members, international contributors participate in the PCC's programs selectively. Commitment to mutually agreed-upon standards is the hallmark of these programs, and some international partners are not in a position to commit broadly to the total package (CAN/US/MARC, AACR2, and LCSH) at the moment. Thus, the PCC faces two major challenges as it continues to promote increased international participation in its work. It must:

- facilitate a method to ease the exchange of cataloging data among existing partners and new partners who do not use the same cataloging formats
- find a way to broaden the current cataloging policies to accommodate non-English versions of authorized headings

Meeting these challenges will most likely entail work to map and link divergent standards, work that hopefully can be facilitated through advancing technology.

Also significantly contributing to increased internationalization of AACR have been the incredible successes of large bibliographic utilities in encouraging their worldwide constituencies to follow such well established standards. In this issue, Patton addresses this topic from the perspective of the Online Computer Learning Center (OCLC), whose WorldCat contains nearly 40 million unique records and whose constituency includes 26,000 participating libraries in 64 countries. The Research Libraries Group (RLG) is another large bibliographic utility that has a substantial interna-

tional membership and a database containing large numbers of records created by vendors, libraries, and national bibliographic agencies abroad. In addition to direct access to these records, RLG also offers Z39.50 connectivity to access a considerable number of European library catalogs.

In accounting for the successes of AACR2 as an internationally applied approach to bibliographic control and access, it is important to acknowledge that its strengths are based not only on well-established "Anglo-American" bibliographic practices, but also on internationally developed standards, including the Paris Principles and the International Standard Bibliographic Descriptions (ISBDs). This brings us to the programs of the International Federation of Library Associations and Institutions (IFLA).

The importance of IFLA's undertakings in the cataloging area, although taken for granted today, was not always fully appreciated by the American library community. This became especially apparent in the 1970s with the publication of International Standard Bibliographic Description for Monographic Publication (ISBD(M)), which introduced unfamiliar bibliographic conventions; for example, prescribed punctuation (e.g., the use of the slash, equals sign, and unconventional spacing between bibliographic fields). The ISBD(M) was first published as recommendations in 1971 and then as "first standard edition" in 1974. A "first standard editions revised" followed in 1978. The current version is the "revised edition" published in 1987.

There was something of an uproar when it became clear that AACR—through revision and separate publication of chapter 6, which deals with the bibliographic description for monographic publications—would adopt these practices, to which a vocal minority of both catalogers and reference specialists took exception. Shortly thereafter came the first ISBD for Serials (ISBD(S)). (The ISBD(S) was first published in 1974; the current version, the "revised edition" appeared in 1988). Among the many provisions disapproved here in North America was one that called for the use of the key-title as the basis for the bibliographic title recorded in area 1 (title and statement of responsibility), engendering yet another round of criticism aimed at the international community. Although these controversies might now be long forgotten, at the time they were strongly felt and quickly led to the realization that ALA needed to extend its official interests in international relations into the technical services areas.

Fortunately, the preparation of AACR2 ended what in retrospect might appear as ALA's isolationism with regard to international developments related to bibliographic control. Perhaps the event that mostly likely precipitated this about-face occurred when the Joint Steering Committee, which of course included ALA representation, formed a joint venture with IFLA to produce the International Standard Bibliographic Description (General) (ISBD(G)) to serve

thereafter as the "mother" of all ISBDs. (It was first published in 1977; the current "revised edition" appeared in 1992.) In the late 1970s, the Resources and Technical Services Division (RTSD)—what has become the Association for Library Collections & Technical Services (ALCTS)—established an International Cataloging Consultation Committee (ICCC) to participate effectively in the international arena. The ICCC proposed policies by which the RTSD/ALCTS board would approve appointment of official representatives to IFLA standing committees and commit to financial assistance for their participation. These policies also made it clear that these officially designated participants were responsible for obtaining input of and reporting to appropriate groups. Now, ALCTS's International Relations Committee (IRC) ably carries on the work begun by the ICCC. Today, through the appointment of representatives, including several who are authors of articles in this volume, ALA has emerged as a major player within that part of IFLA's arena devoted to cataloging standards. In a recent development, the ALCTS board appointed a task group to review ALCTS international activities and advise whether the amount allowed for them in the budget was sufficient. This task group issued its final report on February 23, 1998, including recommendations that reflected the "strong value [it places] on the importance of international activities."

The IFLA activities most relevant to the readers of this publication are assigned to the Division for Bibliographic Control. The Division of Bibliographic Control is the parent to the Section on Cataloguing, the Section on Bibliography, and the Section on Classification and Indexing. Obviously, the work agendas pursued by these groups—past, present, and future—have great implications for the world's cataloging communities.

IFLA sections establish their activities within what are called Medium-Term Programs, currently covering work to be pursued between 1998 and 2001 (McCallum 1998). Ingrid Parent, chair of the IFLA Section on Cataloguing, provides in her article in this issue a clear briefing on the agreed-upon agenda that unit will undertake. I will only briefly mention that the Classification and Indexing Section's objectives include a charge to promote standardization and uniform application of such tools by institutions generating or utilizing bibliographic records. For an excellent summary of the section's recent work, see Chan (1998).

The Section on Cataloguing completed its study of the Functional Requirements for Bibliographic Records (FRBR) in 1998; this momentous project is covered in depth by Olivia Madison in this volume. The outcome of this investigation resulted in the specification of minimum data elements recommended to national libraries and bibliographies as needed for "base level" records. This base level national bibliographic record provides a further impetus for

increased international standardization, establishing on a solid basis the descriptive and organizing elements that meet the needs of most users.

Related to Madison's article, the Library of Congress Cataloging Directorate recently prepared a study to compare the IFLA basic level national record with the LC core level standard (<http://lcweb/catdir/catmodes.html>). This study established that the LC core level met—indeed, exceeded—the IFLA recommendations with the exception that the LC core requires uniform titles only when known or readily inferred from the item. Subsequently, the Cataloging Policy and Support Office modified the LC core specifications to implement this recommendation so that full compliance has been achieved.

At the same time, IFLA's ISBD Review Group has begun comparison of the FRBR recommendations with the existing ISBDs; preliminary indications are that only minor amendments to existing International Standard Bibliographic Descriptions will be needed to bring them into conformance with FRBR.

The Section on Bibliography "is primarily concerned with the content, arrangement, production, dissemination and preservation of bibliographic information, especially (but not exclusively) where these pertain to national bibliographic services. It is also concerned with the promotion of the importance of the discipline of bibliography to library professionals in all types of librar[ies], to publishers, distributors and retailers, and also to end users" (McCallum 1998, 29). From this, it is clear that the section's activities are closely related to such other IFLA units as the sections on cataloging, information technology, and national libraries.

The projects that the section has chosen to pursue in connection with its Medium-Term Programme from 1998 to 2001 are to:

1. promote the production and publishing of bibliographic information for all kinds of documents, including those published by electronic means;
2. monitor and promote good practice in the preparation of bibliographic information through the use of international standards and guidelines and to take appropriate action when those standards need amplification or modification;
3. promote cooperation with the book trade in the preparation of bibliographic information;
4. monitor and promote publications of bibliographies in electronic form, e.g., on the Internet;
5. monitor and take action on new search methods and user interfaces; and
6. monitor and promote the inclusion of Internet resources in bibliographies and to promote the importance of bibliography at library and information schools.

Here is a sampling of activities to support the goals to which the Section on Bibliography is currently committed and which are relevant to international cataloging issues that the section is pursuing:

- The section arranged for the International Conference on National Bibliographic Services, which was held in November 1998 in Copenhagen. This meeting reviewed and updated the recommendations of a similar 1977 gathering under UNESCO sponsorship; these recommendations covered the full range of activities considered appropriate for a bibliographic agency, including coverage and distribution.
- They are continuing efforts to follow up on separate studies to survey organizations responsible for creating national bibliographies and establish the characteristics of their products. These follow-ups will seek to identify national bibliographies that are especially effective and the features that make them so. These efforts also will identify those bibliographies that do not feature introductions, indexes, classification schemes, etc., and consider ways to encourage their improvement.
- The section has long sought to improve cooperation between the book-trade and national bibliographic agencies—for example, to improve Cataloging-in-Publication (CIP) programs.
- The section plans to undertake a survey to assess effectiveness of the searching interfaces for online bibliographic services and to participate in a project focused on online catalog displays being pursued by the Section on Cataloging.
- The section sponsored a survey of bibliographic coverage of electronic resources in national bibliographies, with questionnaires distributed in May 1998 to more than 125 national libraries to gather information to determine the extent to which these agencies are providing cataloging for digital and digitized material. The results of this survey are available (Byrum 2000).

The activities of the Division for Bibliographic Control and its sections are supported by the UBCIM Programme, an operation with full-time staff now located at the Deutsche Bibliothek, which acts within IFLA as “focal point for the promotion of standards for bibliographic control at the national level and the international exchange of data” (McCallum 1998, 12). The program has long served as secretariat for the Permanent UNIMARC Committee, promoting the various UNIMARC formats by assisting with their development and maintenance and by sponsoring workshops and seminars for UNIMARC users. The UBCIM office also contributes administrative support to other proj-

ects by circulating drafts for worldwide review and is responsible for preparation of material publications issued by K. G. Saur in the *UBCIM Publications—New Series*. The office produces *International Cataloguing and Bibliographic Control*, a quarterly journal now in its twenty-ninth volume.

Even from this brief review, it is clear that IFLA brings a results-oriented approach in addressing the problems of bibliographic control both through its Division of Bibliographic Control and the infrastructure provided by the UBCIM Programme. Given this focus and the accomplishments of the many working groups of experts that have been formed over the years, IFLA merits credit for impressive contributions to the internationalization of cataloging.

Following are a few examples of particular and ongoing relevance to cataloging practitioners, teachers, and administrators. In presenting them, the focus is on the direct benefits of these contributions to *our* cataloging orientation.

The concept of the International Standard Bibliographic Description (ISBD) has now endured for nearly twenty-five years and has proved to be IFLA's most successful effort at promoting the cause of cataloging standardization. Indeed, one might argue that no other standard has enjoyed such a high degree of acceptance as that accorded to the ISBD concept, which is now nearly universally applied. AACR2 was among the first codes to implement the full range of the ISBDs.

In the 1980s, all existing ISBDs underwent editorial review and revision to incorporate improvements—to harmonize provisions, achieving increased consistency; to improve examples; and to make the provisions more applicable to catalogers working with materials published in nonroman scripts. The basic provisions of all the ISBDs have remained intact since this initial overall revision—with the exception of changes necessitated by the emergence of electronic publications that resulted in creation of the International Standard Bibliographic Description for Computer Files (ISBD(CF)) (published in 1990) and subsequently in the publication of the International Standard Bibliographic Description for Electronic Resources (ISBD(ER)) (IFLA 1997). AACR2 has kept abreast of these developments and is mostly in conformance with the ISBDs.

IFLA's interest in furthering efforts to deal with the problems of cataloging multiscript and multilingual material is probably underappreciated. In 1986, 1993, and 1995, IFLA sponsored preconferences, seminars, and international workshops to provide a focus for discussion of these issues, resulting in publication of proceedings (Bossmeier and Massil 1987; McCallum and Ertel 1994; Byrum and Madison 1998).

Throughout the meetings that IFLA has arranged to consider this topic, one constant has been to better the representation of vernacular characters. With IFLA's support

(and also strongly promoted by the International Standards Organization), Unicode has emerged as the standard that most experts regard as the best response to this concern. In this volume, Aliprand fully discusses Unicode's development, content, and potential for international cataloging.

IFLA's contributions to cataloging standardization go beyond matters of bibliographic description. However, reaching international consensus on aspects of bibliographic access is a much more difficult venture, given the linguistic and cultural differences that are necessarily embodied in national cataloging codes.

In this area IFLA's greatest success was the outcome of the international conference that formulated the Paris Principles—the success for which the profession owes enormous gratitude to Lubetzky and Verona. Published in 1961, these principles were partially incorporated into the first edition of AACR but much more fully in AACR2 (as Gorman frequently reminds us!). The Paris Principles are not only now clearly represented within our rules, but also are a part of many other modern cataloging codes (Verona 1971).

IFLA has sponsored subsequent projects to craft international cataloging policy in relation to uniform headings for persons, corporate bodies, and titles. One project of particular interest at this time is being pursued by a Working Group on Minimal Level Authority Records in consultation with the committee to revise the Guidelines for Authority and Reference Entries (GARE). Tillett reports more fully on this and other authority related projects in her article in this volume. The impetus for the project provides further evidence of the theme pursued in this overview, as it provides yet another example to illustrate increased international recognition in the cost-benefits of sharing cataloging products.

One of the interesting outcomes of this project came about from its early realization that the fundamental concept of Universal Bibliographic Control (UBC) has proved ill-suited to the practical considerations of national cataloging codes. According to the principles of UBC, each national bibliographic agency "should establish the authoritative form of a name for its country's authors, both personal and corporate." But as Danskin has pointed out (1997, 31): "In contrast to the success IFLA has enjoyed in encouraging the creation of national bibliographies and the exchange of bibliographic data, the effort devoted to encourage the extensions of these principles to authorities has borne little fruit."

In today's operating environment, while standardization in the area of bibliographic description has not only proved possible but is also widely practiced, such has not been the case in the area of headings for persons, corporate bodies, and geographic entities.

Kasparova (1997) spoke to the same concern when describing the cataloging code revision currently being pursued in Russia:

[W]e . . . hope for further cooperation . . . with IFLA and national libraries in Europe and the USA. . . . On the other hand, we would like to stress . . . some positions that should be retained [in the Russian cataloging rules]. . . . [T]he problem of variant forms and disparity of the names of persons and corporate names should be solved mainly by creating multilingual authority files in which all existing name forms for persons and corporate bodies, including the authorized ones, will be linked . . . to facilitate retrieval.

Thus, in this area an alternative to standardization seems to be a practical necessity, and perhaps through the provisions of linkages and equivalencies, the purpose of standardization will be served.

This article has sought to introduce the topic of the pre-conference whose proceedings are presented in this publication and to indicate how each author's contribution will help to produce an integrated and fairly full discussion of the topic "Cataloging on the International Level." If one would like to draw a simple conclusion regarding the complexities at issue in these papers, it might be: When the history of cataloging in the twentieth century is written, one of the most important themes to be recognized will be the steady advancement of international standardization—a development necessitated by the need to capitalize on the cost-benefits of cataloging cooperation and made possible by the advent of the electronic era and with it the emerging global bibliographic network.

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REUSE or Rule Harmonization

Just a Project?

Monika Münnich

German academic libraries acquire a large number of books from British and American publishers. The bibliographic records of the Library of Congress and the British National Bibliography are offered in most German library networks. Thus, projects REUSE and REUSE+ were undertaken when there was a demand for harmonization of Germany cataloging rules with AACR2. Experts in the United States and Germany systematically analyzed bibliographic data and compared the codes on which the data were based. Major and minor differences in cataloging rules were identified. The REUSE group proposed German participation in international authority files and changes in RAK, the German cataloging rules. In REUSE+ the different types of hierarchical bibliographic structures in USMARC and MAB2 and other German formats were analyzed. The German project group made suggestions concerning both the German formats and the USMARC format. Steps toward rule alignment and harmonization of online requirements were made when the German Cataloging Rules Conference made decisions on resolutions prepared by the Working Groups on Descriptive Cataloging that dealt with titles, encoding of form titles and conference terms, prefixes in names, hierarchies, entries under persons and corporate bodies, and the conceptual basis of RAK2 in the context of harmonization. Although problems remain, German rule makers have made progress toward internationality.

German academic libraries acquire more than 60% of their books abroad; 90% of this material is provided by Anglo-American publishers. The bibliographic records of the Library of Congress (LC) and the British National Bibliography are offered in most of the German library networks. However reuse of these records without considerable manual and intellectual intervention is appallingly low, especially in the context of networks with linked files. Former retrocon projects of OCLC and the German Library Institute showed the same results (Report 1993). And vice versa: LC came to similar conclusions when trying to import German records to their system as Thomas (1996) reported at the German "Bibliothekartag."

So the REUSE projects emerged in a time when changes toward harmonization with AACR not only were accepted but demanded. This was not only due to resources rapidly getting scarcer but I think just as well due to the fact that the Internet is a mighty international factor that we librarians have to keep up with by using common standards.

At the same time in Germany the call for online alignment of cataloging rules was at least as strong as the claim for internationality. So we catalogers tried to serve both aims, which apparently turned out easier than expected or at first feared.

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Table 1. Germany Library Landscape

German Regional Networks (Verbünde)	
Bayerischer Bibliotheksverbund: Bavarian Library Network (Munich)	www.opac.bib-bvb.de
Bibliotheksverbund Berlin-Brandenburg: Berlin-Brandenburg LN (Berlin)	www.dbi-berlin.de/de/ibas/bvbb/bvbb_00.htm
Hessischer Bibliotheksverbund: Hessian LN (Frankfurt)	www.hebis.de/hebis
Gemeinsamer Bibliotheksverbund: Common LN (of Central and Northern Germany) (Göttingen)	www.brzn.de
Hochschulbibliothekszenrum: University Library Center of Northrhine-Westphalia (Cologne)	www.hbz-nrw.de
Südwestdeutscher Bibliotheksverbund: Southwest German LN (including Saxony) (Constance)	www.swbv.uni-konstanz.de/index.htm
National Networks	
Zeitschriftendatenbank: Serials Data Base (Berlin)	www.dbilink.de
Verbundkatalog: Union Catalog (Berlin, combining all regional LN in one file—no active LN)	www.dbi-berlin.de
National and State Libraries	
Die Deutsche Bibliothek: the German Library (Frankfurt/Leipzig)	www.ddb.de
Bayerische Staatsbibliothek: Bavarian State Library (Munich)	www.bsb.baw-muenchen.de
Staatsbibliothek Preussischer Kulturbesitz: Berlin State Library	www.sbb.spk-berlin.de
National Authority Files	
National Authority File for Corporate Bodies at the Berlin State Library (Berlin)	
NAF for Names of Persons (Frankfurt)	
NAF for Subject Headings (Frankfurt)	

Before I discuss the contents of REUSE and its results, let me delineate the German landscape of rule-making committees and the main rule application forum: the regional library networks (LN) and the Authority Files (see table 1). In Germany all university libraries (in most cases including their campus institutions) and state libraries are members of regional library networks. In addition many special collection libraries participate. Serials are cataloged in the Serials Data Base in Berlin and the regional records and holdings are imported (weekly) into the regional LN.

In 1997 the organization of cataloging rules committees was changed (see table 2). We now have:

- a working level—the Working Group for Descriptive Cataloging consisting of ten members representing the regional library networks, the Serials Data Base, the German Library, and the Library Supply Center (mainly for public libraries) and the Austrian LN; and
- a decision level—the Cataloging Rules Conference (i.e., for descriptive and subject cataloging).

To complete the German landscape: Four library networks (Bavaria, North-Rhine-Westphalia, the Southwest

Table 2. German Rules Landscape

Institutions	Members Working Level (WG Descriptive Cata)	Members Decision Level (Cat. Rules Conf.)*
Bavaria (Munich)		
LN	Gaby Messmer	Friedrich Geißelmann
State Library	Gaby Messmer	Klaus Haller
Berlin		
LN (Berlin/Brandenburg)	Günter Franzmeier	Monika Kuberek
State Library	Günter Franzmeier	Günter Hädrich
German Libraries Inst.	Hella Braune	Dieter Höchsmann
Central+North. G. LN (Göttingen)	Feruzan Akdogan	Reiner Diedrichs
Hesse (Frankfurt)		
Hessian LN	Sieglinde Korell	Sabine Wefers
German Library	Kristina Zimpel	Reinhard Rinn
Northrhine-Westf. LN (Cologne)	Luise Hoffmann	Heinz-Werner Hoffmann (Chair)
South-West G. LN (Constance)	Monika Münnich (Chair)	Marion Mallmann-Biehler
For the Public Libraries Supply Center for Libr. (Reutlingen)	Petra Friedmann	Albrecht Fischer
German Library Association/ Section 1-3**		Ute Scharmann Peter Petsch Angelika Hesse
Austrian LN (Vienna)	Johann Winkler	Wolfgang Hamedinger (Guest)
Conference of German Swiss Univ. Libr. (Bern)		Hans Lehmann (Guest)

* Subject Working Groups are not part of this table.

** Three sections of the German Library Association (Deutscher Bibliotheksverband) representing different sizes of public libraries supplying towns from fewer than 100,000 to more than 400,000 inhabitants.

with Saxony, and the Serials Data Base) migrated to Horizon at the beginning of 1999. This has been and still is a major factor of rapid progress in rule changes, at least for rule changes that can be carried out automatically.

REUSE

REUSE and REUSE+ were projects in which bibliographic data were systematically analyzed in several work packages and codes that underly these bibliographic data were compared.

The close cooperation of rule experts in the United States and Germany made the analysis possible. In this context I would like to thank above all Barbara Tillett of LC and Glenn Patton of OCLC.

The close cooperation (and partly personal union) with German rule experts was the prerequisite for realization of rule changes and harmonization. I would prefer to summarize the projects from the point of view of rule alignment and not delineate the methods. The reports of the project can be found at www.oclc.org/oclc/cataloging/reuse-project/index.htm.

REUSE

From the standpoint of rules, minor and major differences were defined as follows:

- Minor rule differences
 - ISBD: a few alignments will be necessary
 - Main and added entries:

We do have major differences in this context. But regarding the online world, we kept the topic as minor. The Toronto Conference, though, showed the difference. Thus the solution of the German Rules Experts might be of interest.
- Major rule and format differences

Headings for persons, corporate bodies, and titles are different, in some cases definitions differ and in many cases entities do not match, a few examples:

 - Main differences in headings for persons:

Modern names are similar though there are still some decisive differences:

 - prefixes within a surname are written without any spaces,
 - above all, identical names are not differentiated by qualifiers

Ancient names differ considerably, as we use the Latin or the original form.
- Main differences in headings for corporate bodies
 - executive and information agencies are not entered as subdivisions (they are omitted)
 - conferences of organizing corporate bodies are not entered as subdivisions (their publications are entered under the organizing body)
 - geographic names are always entered under the original and official name, etc.
 - Within the corporate bodies many entities will not be matched.

A comparison of corporate bodies in AACR2 and RAK has been made by colleagues in Cologne based on a check of all RAK examples by LC colleagues in NAF (see www.oclc.org/oclc/cataloging/reuse-project/comparison.htm).

- Main differences in headings for titles
 - In many cases in RAK the title is not entered as it occurs in the item, especially as hyphens, slashes, and other marks are concerned—spaces are added or omitted differently.
 - The so-called “Ansetzungssachtitel”: a kind of a filing title for e.g. volume and author statements at the beginning or the end of a title. In case of author statements AACR-catalogers sometimes enter under a uniform title.
 - Multivolume records are treated considerably differently: we use hierarchies and links; I'll refer to these below.
 - Romanization in non-Latin languages is considerably different.

As a result of their work the REUSE working group proposed a number of actions to be taken immediately in Germany:

- Active participation of German libraries and library networks in international authority files. In this context differentiation of identical personal names should be mandatory. The entities of corporate bodies should be equalized as well.
- Changes in the bibliographic record section of RAK
 - The title proper should be the main title. The title should be entered as it appears in the item.
 - All form titles (as *festschrift*, treaties, constitutions, and “*Sammlung*”—collected works etc.) should be encoded. An international standardization should be the aim.
 - Multivolume works should be analyzed in a further project (REUSE+). Within this context the hierarchy of separate records for subseries (*Abteilungen*) should be abandoned.

REUSE +

In REUSE+ the different types of representations of hierarchical bibliographic structures in the formats USMARC and MAB2 (including the formats of the Goettingen and Constance Library Networks) were analyzed.

As the final project report is written in German, with only an English summary available, I will give some details and examples. In German library networks we create records for the whole and the parts, i.e., for every volume of a multivolume work regardless whether the title is distinctive or not. Thus it is done once in the central database as a master record for all participants. Local systems reuse these records.

Thus we dutifully follow AACR in applying hierarchies in multivolume works:

AACR 13.6A: Divide the descriptive information into two or more levels. Give at the first level only information relating to the item as a whole. Give at the second level information relating to a group of parts or to the individual part being described. If information at the second level relates to a group of parts, give information to the individual parts at a third level.

To import German data into USMARC should not be difficult as we differ between parts without distinctive titles (so called *Bandaufführung*) and with distinctive titles (*Stücktitel*). The last have the same record structure as monographic series, the first could be imported to 505 with or without further information. The difficulty is to extract the information for multivolume works from American records, especially when using the tags 300 and 505, as 505 is used for other information as well (e.g. TOCs, contents works). The information indicating multivolume works now can only be retrieved by the “v.” in 300. Illustrations are shown in figures 1 and 2.

The context of the project includes statistical material from OCLC concerning the occurrence of variant fields for multivolume records: a statistical evaluation regarding the use of the combinations USMARC tag 300 (including the v. for volume) with tag 505, or tag 490 with 8XX. In both types tag 245 is used in different ways. In the first case tag 245 contains the collective title and in the second case mostly the distinctive title is put in tag 245. The group could not recognize a reliable pattern in which way the subfields of tag 245 for the part of an multivolume work are used and what is the difference of using the combination 300 with 505 by multivolume items, which do not have distinctive titles.

A term difference is to be stated in the use of “series” which is obviously applied for finite multivolume works as well as for ongoing monographic series. We differentiate between multivolume (finite) works and monographic (ongoing) series.

A further problem are the differences of specific coded terms (monographic component part, monographic series, multipart item) which makes it difficult to convert the bibliographic information of the coded fields of USMARC into the German context.

McCallum described several models of linking-concepts in a paper presented to the REUSE Project for multi-level structured items in USMARC by using tag 773 and 774 in addition to the known tags and combinations of these. New are the ideas to make a link from the particular volume to the collective title by the record identification number and to integrate more than one level.

Concerning German formats (MAB2 and others), the German REUSE Project Group suggests:

- revising the deep hierarchical structure in German data models and integrating all levels in the volume record;

1st level: Collective title record:
(item as a whole) = this record is always made, regardless whether the volumes have distinctive titles or not

author / corporate body (links to authority files)
title proper
statement of responsibility
publ. place : publisher
notes etc.

2nd or further level:
subseries volume record*
(if existing)

title of subseries
...
linkages to volumes

the volumes:

a) volumes with weak, general, or no titles
(*Bandaufführung*)
authors/corp. bodies (if existing, linked to authority file)
general/weak title (if any)
statement of responsibility
edition statement
publication year
physical description
collective title; volume

b) volumes with distinctive titles
(*Stücktitel*)
authors/corp. bodies (if existing, linked to authority file)
title proper
statement of responsibility
edition statement
publication year
physical description
collective title; volume

(upward link to collective title record by ID number)

* Only created for multivolume works without continuous numbering. This level will be given up.

Figure 1. Structure of Multivolume Records in Germany

- standardizing the different structures for multivolume works and series in German systems;
- aligning the English expression “series” in RAK; and
- reducing the physical volume record statement on the bibliographical area in cases like the German encyclopedia “Brockhaus” (vol. 1–21).

Concerning the USMARC format, the German REUSE Project Group suggests:

- using an indicator in tag 505 that indicates a multivolume item, if possible;
- examining the use of the tag 245 in combination with 300 and 505 or in combination with 490 and 800; and
- examining Sally McCallum’s draft and the possibility of introducing a linking structure in American network systems.

Concerning the international discussion platform, the German REUSE Project Group suggests:

Records for a Multivolume Work with Weak Title (Type A)**OCLC-1 record**

001 ocm28254594
 ...
 100 1 aYarwood, Doreen.
 245 14aThe architecture in
 Europe /cDoreen
 Yarwood
 260 aLondon :bBatsford,1992-
 300 av.<1-3 > ;c25 cm
 ...
 505 1 av.1 The ancient classical
 and Byzantine world,
 3000 ... --v.2. The Middle
 Ages, 650-1550
 -- v.3 Classical architecture,
 1420-1800

Southwest German LN-4 records
1st level, collective title record

idn 2993008
 BND 3
 200eYarwood, Doreen
 320*_The_ architecture in Europe
 359 Doreen Yarwood
 410 London
 412 Batsford
 574 mb (indicates the
 multivolume work)

2nd level-1st volume

idn 2993032
 ...
 440 442 (2993008) _The_
 architecture in Europe ; 1
 445 The ancient classical and
 Byzantine world, 3000 ... -
 1992. - VII, 166 S. : zahlr. Ill.,
 Kt.
 ...
 574 od (indicates that it is a
 volume record type a), without
 a distinctive title)

records for the 2nd and 3rd
volume are equivalent**Records for a Multivolume Work with a Distinctive Title (Type B)**

In this case, a monographic series which is treated identically as finite multivolume records in most German LN

OCLC-1 record

001 ocm13063011
 ...
 100 1 aBrazier, Paul.
 245 10aArt history in education
 :ban annotated ...
 /cPaul Brazier ; introduction . .
 .
 260 aLondon . . . ,c1985
 300 acii, 72 p. ;c22cm
 ...
 490 1 aStudies in
 education,x0458-2101 ; vnew
 ser. 15
 ...
 830 0a aStudies in education
 (London, England);vnew ser.
 15

Southwest German LN-2 records
Record for the collective title:

idn 642075
 ...
 320* Studies in education
 ...
 410 London
 574 se (Indicator for an - infinite
 - series)

Record for the part:

idn 1395340
 ...
 200*Brazier, Paul
 320 Art history in education
 335 an annotated ...
 359 Paul Brazier
 410 London
 412 Heinemann Educational
 Books
 425 XII, 72 S.
 440 442 (0642075) Studies in
 education ; N.S., 15

- standardizing coded terms on an international scale; and
- standardizing ongoing publications on the basis of Hiron and Graham (1998).

What Happened after REUSE

The lucky personal union and the close connection and cooperation of the German project participants and expert members in the Working Group, the conference, and the regional networks certainly had a positive influence on a quick realization of all measures that had to be taken. And last but not least, in cases of doubt as far as AACR2, LCRI, or practices in American networks are concerned, our American colleagues in LC and OCLC and others have always been of utmost help in providing support.

Major steps toward rule alignment on the one side and toward harmonization with online requirements on the other have been made in the meantime.

The Cataloging Rules Conference then decided upon the first six resolutions prepared by the Working Group Descriptive Cataloging.

Titles

The first resolution refers to titles:

- The RAK term "Titel" comprises the title (Sachtitel) and the statement of responsibility. The conference accepted the reduction of the term according to international usage.
- The title proper will be the primary title. The Ansetzungssachtitel (filing title) will be an additional title and will be used in rare cases. The title generally will be entered as it appears in the item (exceptions have to be defined).

Encoding of Form Titles and Conference Terms

The encoding of certain terms is supposed to improve catalog searching and at the same time to simplify the international exchange as codes provide a multilingual bias:

- The German form titles Festschrift, Vertrag (treaty), and Verfassung (constitution) will be encoded. The dates of treaties and constitutions will be entered in an authorized form in a different tag, not as qualifiers.
- The encoding of "Sammlung—Collection" (partly equivalent to the uniform title of Works though not differentiated according to Collected Works, Selection etc.) is referred back to the Working Group. The conference sees no need to use that term in online catalogs.

Figure 2. Examples of the Structure of Multivolume Works

- All conference proceedings will be encoded as “conferences” regardless of whether they are named or unnamed. The qualifiers will be replaced: the conference place will be entered under a different tag and should be linked with the Authority File of Corporate Bodies in Berlin to provide all the references as well. The numbering and the year will be entered—in an authorized form—in a new tag.

Thus we allow the user to search a conference in a certain year at a certain place not knowing any title or named or unnamed corporate body.

The Working Group has to revise the rules for conference proceedings in this context. So far named and unnamed conferences are treated differently: the first are entered monographically, the second as serials. Conferences of organizing corporate bodies so far are not entered subordinately. The publications are entered under the parent corporate body. I am not sure if an agreement can be reached in the Working Group and the Rules Conference. At least the encoding will improve the exchange.

- Exhibitions will be encoded in the same way. With the revision of the conference rules we hopefully will introduce the LCRI regulation concerning exhibitions, i.e., to enter exhibitions as corporate bodies if they are named and ongoing. This will be a considerable reduction for German catalogers.
- All language qualifiers (of uniform titles and collected works) will be entered in separate tags according to ISO 639-2—the Alpha 3 code.

Prefixes in Names

In RAK the prefix and the surname are treated as one filing word (without any spaces). Even names in titles were entered in the same manner. This has led to much confusion for patrons and catalogers as well. The working group proposed a change and it was accepted. It's a harmonization with AACR as well. We expect that corrections in our Name Authority File can be made automatically.

Hierarchies

As delineated above in the German exchange format hierarchies for subseries (Abteilungen) within finite multivolume works are entered as separate records. The Conference accepted the abolition of these hierarchies. This means that subseries statements are entered in the area of the volume statement.

Entries under Persons and Corporate Bodies

The question of main and added entries has been a very con-

troversial topic—if we remember the aacrconf-list. In Germany most of the catalogers think it doesn't make any sense in the online world. On the other hand, scholars' bibliographic citation of a work must be taken into consideration. Thus we found a wonderful compromise—at least to our minds:

- The first author is marked.
- The author definition is expanded considerably (all persons that do not have a distinctive function, as e.g. editor). In cases of doubt the person is an author. In present RAK the author term is defined narrowly (e.g., if you can assign parts of a work to different authors they are not “authors” anymore). With this change we have come very close to the AACR definition, and as the first author is marked, the exchange of bibliographic records will be considerably improved.
- An almost revolutionary decision and extension of the present number of entries was made by the conference: All authors that appear prominently on the item may be entered, except for authors in anthologies, collections, conference papers, etc. (they could be entered as analytics). In former card catalogs the number of entries and cards enlarged a catalog. In online catalogs this deserves no consideration—however, authority work has to be done. The information for the patrons was considered to be more useful. The same is recommended for persons with functions. The basic standard for entries is three. Though this measure exceeds AACR it will not impede the exchange. Perhaps it could be an encouragement?

Conceptual Basis of RAK2 in the Context of Harmonization

The last resolution I had to present and defend was the conceptual basis of RAK2 (still a working title).

RAK2 pursues the following aims:

- adaption to online conditions;
- high international compatibility; and
- consideration of economic aspects.

Thus the basic rules will be adapted according to the changes mentioned above.

No changes will be made as far as fundamental international terms are concerned as work, edition, etc. We do hope and wait for the functional requirements.

Within the section of general rules, statements concerning the card catalogs have to be revised, online instructions have to be introduced. ISBD will be kept as a presentation form, the regulations will not be primarily in

online cataloging, though the necessity of reconstruction of an ISBD record has to be ensured.

The codes for entering the title proper are going to be aligned (i.e., as stated on the item).

Entries under names of persons and corporate bodies will not be changed in general, as the existing authority files forbid that. On the other hand, if we strive for an international authority file on the basis of what Tillett termed access control, a general alignment of names is not needed. But the identity of entities is a prerequisite for a common file (Tillett 1990; 1995).

In this context a notable tendency has to be stated: We will introduce differentiation of equal names on a voluntary and feasible basis, which is a major step for German catalogers, but the only means for international authority participation.

We have made adaptations in the case of prefixes as reported before, an adaptation useful in Germany as well.

We will try hard to harmonize at least the entities as far as corporate bodies are concerned. The headings for conference corporate bodies will hopefully be harmonized; at the very least the encoding will improve data exchange.

The headings under formal titles have been improved on the basis of encoding.

And last but not least, entries under persons and corporate bodies have been expanded:

- the first author is marked and the author term is changed closely to that of AACR; and
- the number of headings is increased: American standards will be served, in some cases exceeded.

Problems Left

One problem has not been solved in the projects: the different way of romanization. We should keep this in mind. If we achieve all the alignments that have been identified many problems still remain. But I think we better get started.

Immediate Steps or Starting the Dream

German rule makers have made a considerable step, at least to our minds. The new code was intended to be almost completed by the end of 1999. Nevertheless this is a very moderate step towards internationality as I mentioned before.

To conclude, our dream of internationality could be started right away and from the German perspective the steps could look like this:

- The Germans should realize all proposed code changes.
- American and German librarians should talk about participation of the German Library and/or German Regional Networks in LCNAF on the basis of access control as soon as possible.
- Germans would like to talk about a slight alignment in the treatment of multivolume works—possibly not only a German plea but a European one as well.
- Data exchange under the new perspectives should be tested.
- Cataloging on an international scale should be promoted, e.g.:
 - The functional requirements should be integrated in international cataloging. The Toronto Conference has shown interesting approaches.
 - Ongoing publications should be treated equally worldwide. Hiron and Graham (1998) is worth a worldwide discussion. Within this context the key title problem should be solved.
- A basis for an international discussion forum should be realized to reach the aim of international cataloging as soon as possible.

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The Anglo-American Cataloguing Rules and Their Future

Ralph W. Manning

The past, present, and future development of AACR2 is outlined with particular emphasis on the directions provided by the International Conference on the Principles and Future Development of AACR held in Toronto in October 1997. International cooperation as a significant element in the development and future of the code was highlighted. The Toronto conference, an invitational meeting attended by 65 cataloging experts, was undertaken by the Joint Steering Committee (JSC) as part of its ongoing mandate to respond to changing needs. Among the actions and recommendations resulting from the conference, the following were approved by JSC for immediate action: develop a mission statement for JSC; create a list of the principles of AACR2; pursue the recommendation that a logical analysis of the principles and structure on which AACR2 is based be undertaken; establish an AACR Web site; determine whether there are surveys on the use of AACR2 outside the Anglo-American community, and if no such survey exists, conduct such a survey; formulate the recommendations on serials endorsed during the conference and introduce them into the revision process; publicize and reaffirm JSC policies, procedures, activities, and the current process for submitting rule revision proposals; and solicit a proposal to revise rule 0.24. The international conference has helped JSC to develop an plan of action, which will test the applicability of AACR in current and future environments and balance the need for a sound and workable cataloging code with the cost of cataloging and change.

The Anglo-American Cataloguing Rules (AACR2) are situated in the midst of a continuum of constant revision. This revision has sometimes been sudden and jarring, and sometimes gradual. Smiraglia (1992) outlined the continuous revision process that is now in place for the coordination and development of the cataloging rules.

The continuous process of revision can be taken as far back as the 1839 rules developed by Panizzi for the catalogs of the British Museum. In looking at the sequence of major cataloging codes that eventually led to AACR2, we can see an early series of codes that were very much influenced by individuals (Panizzi 1839; Jewett 1853; Cutter 1876). Cutter (1876) included the statement of the objectives of the catalog that has been very important to the development of cataloging codes since then.

At the beginning of this century, international cooperation was introduced into the process of catalog code revision. In 1904 the American Library Association (ALA) and the Library Association agreed to cooperate on the development of a new code. ALA was in the process of a seven-year committee study that eventually began close communication with a counterpart committee in the United Kingdom that was also working on a revised cataloging code. Each of the two committees had a mandate to cooperate closely with a view to publishing a joint code. The British and American committees developed their codes separately, but

endeavored to resolve all differences. Because of the distances and publishing requirements, the resulting joint code was published in distinct U.S. and British editions in 1908. In a 1910 review, Bolton said: "The day of standardization, of centralization, and of co-operation is rapidly dawning, and with these, conformity to prescribed rules and professional methods . . . will become all but compulsory" (Bolton 1910, 389). Downing presented a very interesting perspective on the 1908 rules at the International Conference on AACR2 in 1989; he expressed amazement that seventy years later librarians were still pursuing the objective of standardization contained in Bolton's prediction (Downing 1980). I think it is still fair to say that now, ninety years later, we have not achieved the objective and are still striving toward it.

From 1901 when the Library of Congress (LC) began to distribute printed catalog cards, libraries recognized the great cost savings that could accrue by using LC's cataloging. We have learned over the years that common cataloging systems also allow us to share each other's cataloging. This spirit of cooperation has been easier in the concept than in the implementation, however, and we are still working toward a seamless sharing of cataloging information across international borders. Even in North America, where we have shared a common cataloging tradition for more than a century, differences have developed in our applications of cataloging codes and cataloging systems. The two most evident examples were the trend for many Canadian libraries not to follow LC's lead in abandoning AACR2 chapter 11 for microform reproductions and the requirement in Canada for a bilingual approach to bibliographic control. In a closely related effort to enhance international compatibility, efforts have been underway for several years now to harmonize MARC formats; McCallum's article in this issue describes these efforts.

The Anglo-American Cataloguing Rules were under development for many years following the strong criticism to the 1949 ALA cataloging rules (ALA 1949). During this period, the International Conference on Cataloguing Principles was held in Paris in 1961 with a true international representation from more than fifty countries. The resulting Paris Principles provided a strong base for international cooperation in the development of cataloging rules. Cooperation between the United Kingdom and the United States was initiated in the early 1960s, shortly after the Paris Conference, but in the end, complete agreement on a cataloging code could not be reached and, lamentably, once again a British text and a separate North American text were published.

These rules were considered in many ways to be a major improvement over previous codes. Compromises were made, however, to reduce cataloging costs, and these compromises eventually led to the need for the separate editions. Other major changes from previous practice were, however, embedded in the code, which led to significant conflicts with existing catalogs. This in turn created considerable difficul-

ties for libraries who could not afford to recatalog the entries in their existing catalogs. As a result most libraries adopted the provisions of the new code only for names and entries being established for the first time. This of course created a chaotic situation, particularly for library users who had a difficult time understanding the conflicting practices.

After the publication of AACR in 1967, the IFLA Committee on Cataloguing organized the International Meeting of Cataloguing Experts in Copenhagen in 1969. The following resolution was passed:

Efforts should be directed towards creating a system for the international exchange of information by which the standard bibliographic description of each publication would be established and distributed by a national agency in the country of origin . . . The effectiveness of the system would depend upon the maximum standardization of the form and content of the bibliographic description (Report of the International Meeting 1970, 115–16).

This was the origin of the International Standard Bibliographic Description (ISBD), a vital element in the effort to reach the ideal of Universal Bibliographic Control. The first ISBD was published in 1971 and the First Standard Edition of the ISBD for Monographs was published in 1974.

I began this article with the observation that the Anglo-American Cataloguing Rules are in a process of constant revision. This is not only an observation, but has become formalized in international agreements. In 1966 a "memorandum of agreement" was signed between ALA and the Library Association to provide a means of continuing review after publication of AACR. From 1969 to 1974 this continuous review was accomplished through regular meetings of the Descriptive Cataloguing Committee of ALA (Resources and Technical Services Division), which included formal representation of the Library Association's Cataloguing Rules Committee, the Canadian Library Association, and LC.

By 1974 events had reached a point where it was clear that a new direction needed to be established for the future. International standardization and LC's decision to abandon its practice of "superimposition" (whereby obsolete forms of name were perpetuated in catalogs) were two of the driving forces behind the organization in 1974 of a tripartite meeting "consisting of one delegate each from the three 'Anglo-American' countries, representing in each case both the library association and the national library—to draw up a new memorandum of agreement and to complete the planning of the project for a second edition of AACR" (AACR 1978, vi). From the point of view of international cooperation, two of the objectives established by this meeting are particularly important:

- to reconcile in a single text the North American and British texts of 1967; and
- to provide for international interest in AACR by facilitating its use in countries other than the United States, Canada, and the United Kingdom.

As a matter of fact, a condition of funding by the Council on Library Resources was that an objective of rule revision include a contribution to the development of an international cataloging code.

At this point, a Joint Steering Committee for Revision of AACR was established consisting of the five participating organizations (ALA, the British Library, the Canadian Committee on Cataloguing, the Library Association, LC) and two editors. After a great deal of consultation and collaboration, particularly with the International Federation of Library Associations and Institutions (IFLA), the second edition of AACR was published in 1978. Although there was controversy and there were implementation difficulties, AACR2 became firmly established as a cataloging standard. By the time the 1988 revision was published, AACR2 had found general acceptance in most English-speaking countries. Interestingly, this begins to fulfill the objective expressed by Melvil Dewey at the turn of the century when he suggested that the United Kingdom and the United States should "unite in the production of an Anglo-American Code with a view to establishing uniformity of practice throughout the English speaking race" (Committees of the Library Association and of the American Library Association 1908, iii).

International cooperation continued to mark the development of the rules through its ongoing process of revision. In 1986 the Australian Committee on Cataloguing was made a full participant in the Joint Steering Committee for Revision of AACR in recognition of its regular contributions since 1981.

In 1989 an agreement was established between ALA, the British Library, the Canadian Library Association, the Library Association, and LC in order to clarify the responsibilities and relationship of the various bodies charged with the production and publication of the AACR. In 1991 the National Library of Canada also became a party to the agreement. These six organizations became known as the Principals of AACR and form the Committee of Principals. The key functions of this committee are oversight of the Joint Steering Committee and of the publication of the code itself.

As noted above, JSC is the committee that ultimately approves rule revision. It is made up of representatives from ALA, the Australian Committee on Cataloguing, the British Library, the Canadian Committee on Cataloguing, the Library Association, and LC. It meets approximately once per year and deals with proposals for rule revisions that come to it formally from any of the constituent bodies or

from the chair. In considering proposals for rule revision, JSC has been very conscious of the cost of change while at the same keeping in mind the need for flexibility and responsiveness to continuing developments.

When I say that rule revision proposals can come from the chair of JSC, I should point out an important element of the procedures followed by JSC. Whenever a proposal is received by the chair from within one of the participating countries, the submitter is asked to take the proposal to the appropriate national committee for review and eventual formal submission to JSC if deemed appropriate. But over the years we have grappled with the question of proposals coming from outside the author community. Although it does not happen frequently, it has become procedure that such proposals are vetted and submitted by the chair. In the past this has not been widely known and JSC with the support of the Committee of Principals will be looking at mechanisms to encourage suggestions from anywhere in the world. This might bring to a head the challenges that international cooperation might introduce into the rule revision process.

In the continuum of constant revision that I mentioned at the beginning of this article, 1998 marked a turning point. A new revision to the second edition of the Anglo-American Cataloguing Rules was published, and it incorporated all rule revisions and corrections that were identified since the 1988 revision. The 1998 revision coincided with a major new development in the history of AACR2: it was published concurrently in print and electronic form. The content of the two formats were identical except for those changes in formatting that were dictated by the requirements of the electronic medium.

Over the past century, cooperation has been well established between the United Kingdom and the United States, and the inclusion of Australia and Canada has recognized a wider sphere. But AACR2 has had considerable influence in many other parts of the world. As noted above, the majority of the English-speaking world has adopted the code. However, it has also been translated or is being translated into eighteen other languages. This would appear to mark a distinct tendency toward an international cataloging code, meeting the requirement established in the mid-1970s to make a contribution to such an international code. The sharing of cataloging among libraries has become an essential component of management planning, particularly in national libraries, and this has continued to encourage international cooperation and harmonization of cataloging practices beyond national boundaries.

With these thoughts in mind, and as we prepared for the International Conference on the Principles and Future Development of AACR that I shall describe in more detail below, I wrote to the international cataloging community in 1996 to solicit input on AACR2. I did this through the expediency of the mailing list of the Conference of

Directors of National Libraries and I received twenty replies, representing every region of the world. In addition to some very specific suggestions from some countries, most of the replies pointed out problems with the various rules that stipulate that English should be used as the preferred language in certain rules; problems of cataloging in a bilingual or multilingual environment were noted and in one case, a formal rule revision proposal was submitted by the Malaysian Committee on Cataloguing and Classification for the rules on Malay names.

One of the most interesting comments came from the Bulgarian national library. The author emphasized that AACR2 should continue to be developed for the English-speaking world. The author felt that this would ensure a high professional standard of cataloging while still providing a sound theoretical base for librarians around the world who use a different language. I quote from the letter: "No quality cataloging can be done without . . . the preparation of a national standard, based on ISBD and national rules, reflecting national practice and specific linguistic features" (Lyudskanova 1996). Clearly, internationalization of AACR will engage a challenging debate.

Now let us begin to look at the future. A number of continuing issues affecting implementation of AACR have been compounded in recent years by the fast-moving pace of technological development with its concomitant impact on publishing patterns. Some of the issues date from the beginning days of implementation of AACR, such as the early decision by LC not to implement chapter 11 for microform reproductions. In the years since then we have witnessed the creation of a considerable opus of specialized manuals that were developed to enhance or improve AACR for certain types of material. More recently we have seen the publication of cataloging interpretations outside the structure of AACR2, such as ALA's *Guidelines for Bibliographic Description of Interactive Multimedia* and *Guidelines for Bibliographic Description of Reproductions* (ALCTS 1994 and 1995). Such trends led to the need for an in-depth consultation and review of AACR2.

As part of its ongoing mandate to respond to changing needs, JSC undertook, with the support of the Committee of Principals, the International Conference on the Principles and Future Development of AACR. This invitational conference was held in October 1997 in Toronto and generated a number of action items that will be dealt with by JSC and the Committee of Principals over the next months and years, always balancing the need for change with its impact on libraries and their catalogs.

The idea of holding an invitational meeting of cataloging experts to deal with issues facing the Anglo-American Cataloguing Rules was first discussed by JSC at its March 1994 meeting. Interest in such a meeting continued to increase, particularly as momentum grew. In the United

States, many of the issues surrounding AACR were the subject of the 1995 ALA preconference "The Future of the Descriptive Cataloging Rules" (Schottlaender 1998), held in Chicago. In Canada, the development of the Rules for Archival Description (1990–), which were closely based on AACR2, gave rise to an expressed need for clear direction for the cataloging rules. The Canadian Committee on Cataloguing, a member of JSC, prepared a formal proposal that was discussed at the May 1995 meeting of JSC. This resulted in the development of an initial framework for a conference that was enhanced by the Committee of Principals; the final proposal was approved and detailed planning began in the summer of 1996.

A Web site was established to publicize the conference and to make the conference papers available online. This was felt to be particularly important because of the decision to tightly limit the number of participants at the conference. From January to November 1997 the site received more than seven thousand visits. In addition, a preconference discussion list was established with the objective of stimulating discussion on the issues presented in the conference papers in order to bring out different points of view. The list was established in early July 1997 and had approximately 650 subscribers at its peak, with about 500 posted messages from all over the world.

The conference was held in October 1997 in Toronto, Canada. The objective was to provide the Joint Steering Committee for Revision of AACR with guidance on the direction and nature of future cataloging rule revision. Sixty-five cataloging experts, primarily from the "author countries," were invited to contribute their views on many issues, including, for example, the principles of AACR2, how to handle serials, the question of "content versus carrier," internationalization of the rules and amendments to the rule revision process. The conference proceedings have been edited by Jean Weihs, former chair of JSC, and were published jointly by ALA, the Canadian Library Association, and the Library Association.

A number of actions and recommendations resulted from the conference and the JSC has established a plan to be implemented in conjunction with the Committee of Principals. The following items for immediate action were approved during the JSC meeting held immediately following the conference:

- Develop a mission statement for JSC. In order to clarify the role of JSC, particularly in an international context, it was recommended that, in conjunction with some of the other recommendations below, JSC formalize and publicize its ongoing role by means of a mission statement. The Library Association representative to JSC agreed to arrange for a facilitator to help develop this statement at the meeting of JSC

scheduled for November 1998. [Editor's note: JSC developed the following mission statement in November 1998: "In support of effective cataloging practice, the Joint Steering Committee develops and maintains the Anglo-American Cataloguing Rules according to established principles for bibliographic description and access. To this end, the Committee works in a timely and proactive manner to formulate a cataloging code that is responsive to changes in the information environment and that results in cost-effective cataloging."]

- Create a list of the principles of AACR2. One of the goals of the 1997 conference was to identify and record the principles upon which AACR2 is based. This was not accomplished during the conference, and at its October 1997 meeting, each member of JSC was asked to record a list of these principles for discussion at the November 1998 meeting.
- Pursue the recommendation that a logical analysis of the principles and structures on which AACR is based be undertaken. In his presentation at the conference, Delsey (1998) recommended that such an analysis be done, noting that it would provide a framework for evaluating the end product of the cataloging code against the criteria of accuracy, flexibility, user-friendliness, compatibility, and efficiency.

Delsey noted that the environment within which AACR2 exists has changed and continues to change. There are also new opportunities presented by the same technologies that generate much of this change. Delsey introduced the concept of modeling in the following way:

Several of those who have advocated a reexamination of conventional data structures have endeavored to illustrate and test the value of reconceptualizing the bibliographic record by sketching out (and in a few cases, developing in considerable detail) conceptual models for the restructuring of bibliographic records and databases. Not long after the publication of the second edition of AACR, Michael Gorman posited a new schema for the logical restructuring of bibliographic data into a number of "linked packages" of information in use in what he envisioned as the "developed" catalog. More recently, that same notion has been further developed by Michael Heaney, who has "deconstructed" the MARC record using the techniques applied in object-oriented analysis, and by Rebecca Green, who has used an entity-relationship analysis technique for the same purpose. Building on work done by Barbara Tillett on the representation of relationships in bibliographic databases, Gregory

Leazer and Richard Smiraglia have developed a conceptual schema for modeling derivative relationships within "bibliographic families" of works. And in what is in some respects the most comprehensive undertaking of this kind to date, the IFLA Study Group on Functional Requirements for Bibliographic Records has used the entity-relationship analysis technique to develop a model designed to serve as a framework for relating bibliographic data to user needs.

With the approval of the Committee of Principals, JSC asked Delsey to proceed with the development of a formalized schema to reflect the logical structure underlying AACR2. The objective is to use the schema as a tool to assist in the reexamination of the fundamental principles underlying the code and in setting directions for its future development. In the meantime, as noted above, JSC is developing a list of the principles that it believes underlie the code. Eventually, that list will help to inform the discussion when the Delsey study reveals the true logical structure underlying the data in the record. A comprehensive analysis of the logic of the code will be essential in order to satisfy ourselves that its theoretical underpinnings are sound, that it is capable of accommodating change, that it can continue to be responsive to user needs, that it can interface effectively with other systems for bibliographic control, and that it is cost effective.

Delsey completed the logical analysis of part one of AACR2 and presented it to JSC at a special meeting in July 1998. JSC agreed that wide consultation on the issues and recommendations contained in Delsey's conclusions was necessary and made the Delsey study and recommendations available for comment during the summer of 1998. Delsey undertook the logical analysis of part two and presented it to JSC at its meeting in November 1998 (www.nlc-bnc.ca/jsc). He made the following recommendations:

Establish an AACR Web site that will build on the success of the site created for the conference. In June 1998 arrangements were made for assistance in designing and improving the existing Web site originally established for the 1997 conference. A much improved and more informative site was available by the fall of 1998. The National Library of Canada has hosted the site.

Determine whether there are surveys on the use of AACR2 outside the Anglo-American community and, if no such surveys exist, conduct such a survey. The Australian representative to JSC has agreed to pursue this recommendation and preliminary research has begun.

Formalize the recommendations on serials endorsed during the conference and introduce them into the rule revision process. In their proposal to the International Conference, Hiron and Graham recommended that the concept of "serial" be redefined by removing the requirement for numbering

and successive parts. The definition of "serial" used in AACR2 is "A publication in any medium issued in successive parts bearing numeric or chronological designations and intended to be continued indefinitely."

While this definition is consistent with other internationally accepted definitions, including the one in the *ALA Glossary of Library and Information Science*, the ISBD(S), ISDS, and ISO 5127, Hiron and Graham felt that it needed to be modified to accommodate ongoing publications that did not strictly meet the current definition. In their subsequent consultations, however, they have discovered that a more encompassing approach would be superior and they are now investigating an alternative approach that would embrace the concept of "ongoing entity" as the overarching concept under which other categories of entities such as "serial" "loose-leaf," and "database" will fall. Hiron presented a new model to sessions of ALA's Annual Conference in June 1998 and to JSC at its special meeting in July the same year. It was noted that many of the directions being pursued were compatible with the conclusions of the Delsey study and JSC asked Hiron to proceed with the intensive consultation that she planned to undertake during 1998. JSC received a report on her findings in the spring of 1999 and will determine the best course of action in view of the consultation that took place on the Delsey analysis. The chair of JSC initiated contacts with the international community to ensure that pending changes to the ISDS Guidelines and ISBD(S) are fully informed by developments within AACR2.

Publicize and reaffirm, on the AACR Web site, JSC policies, procedures, activities, and current processes for submitting rule revision proposals emanating from within or outside AACR author countries. This work is underway and was posted on the revitalized Web site in the fall of 1998.

Solicit a proposal to revise rule 0.24 to advance the discussion on the primacy of intellectual content over physical format. Rule 0.24 in AACR2 is known as the "cardinal principle" that requires primacy of the physical carrier over the intellectual content when cataloging an item. It has been identified as a major obstacle to a number of new formats, particularly electronic documents that do not reside permanently on a fixed carrier. The ALA representative to JSC was asked to pursue this recommendation and subsequently a task group was struck. The task force is examining a wide range of options from simply deleting references to "physicality" in rule 0.24 to completely reorganizing the code.

Conclusion

The International Conference on the Principles and Future Development of AACR has helped JSC to develop a plan of action that will test the applicability of AACR in the current and future environments and balance the need for a sound

and workable cataloging code with the cost of cataloging and the cost of change. Before deciding on any change to the cataloging code, JSC will give careful consideration to the implications of such change, particularly on the costs of cataloging. As is its ongoing policy, JSC will undertake wide consultation and further use will be made of the JSC Web site.

The JSC action plan and other relevant information are available from the AACR Web site: www.nlc-bnc.ca/jsc.

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Harmonization of USMARC, CAN/MARC, and UKMARC

Sally H. McCallum

The Library of Congress, the National Library of Canada, and the British Library began discussing the harmonization of their respective MARC formats in 1994. The differences between USMARC and CAN/MARC were primarily in details rather than general specifications. Changes were made to CAN/MARC that eliminated many of the differences between CAN/MARC and the other two formats (USMARC and UKMARC). In addition, changes in USMARC that aligned USMARC and CAN/MARC were approved in 1997. The nature of the differences between UKMARC and CAN/MARC has necessitated a different process of harmonization. The differences between these two formats are many in extent, details, and approach to some requirements. Although total harmonization of USMARC-CAN/MARC with UKMARC is not feasible at this time, the British Library's program to add USMARC-CAN/MARC fields to UKMARC has increased the congruency of these formats. The National Library of Canada and the Library of Congress have begun to work on joint maintenance procedures and plan to have joint documentation.

Over the last four years the Library of Congress (LC) and the United States library community have been pursuing harmonization of the USMARC format with the formats used in Canada and the United Kingdom. At the outset of this project, harmonization of the USMARC, CAN/MARC, and UKMARC formats was regarded as highly possible because these formats were already similar in many respects. In the late 1960s, when USMARC was under development in the United States, under the direction of Henriette Avram at LC, consultation was carried out with colleagues in Canada and the United Kingdom. Among others, Ed Buchinski from Canada and Richard Coward from the United Kingdom visited LC and discussed the MARC Pilot Project and features of the emerging data exchange format. With similar cataloging traditions, Canadian and British librarians were very interested in these American developments.

This interaction had an impact on the final specification of the "MARC II" format that emerged at the end of the MARC Pilot Project, and colleagues in both Canada and the United Kingdom began follow-on efforts to develop versions of MARC in their own countries. Those formats today use many of the same tags for similar data: for example, IXX tags for main entries, tag 245 for title, tag 260 for imprint, tag 300 for collation, 5XX tags for notes, 6XX tags for subjects, 7XX tags for added entries, and tag 008 for coded data. In addition, developers in Canada made a commitment to minimize the divergence of CAN/MARC and USMARC, even at the detailed level.

With this degree of collaboration the logical question is, why did the formats diverge? Several general conditions "encouraged" differences in the formats. One such condition was national needs. For example, the National Library of Canada had to accommodate bilingualism from the outset in CAN/MARC and

the British Library centered its development around support for the British National Bibliography rather than a general catalog. Other factors were cataloging traditions and interrelationships that, while similar, differed in significant ways. It is difficult and disruptive for cataloging agencies to give up established practices; thus the format was adapted to their needs.

Another major factor that made format congruence less critical across country borders was the environment of the late 1960s and early 1970s. Because there were essentially no networks, files of records were moved from institution to institution on tapes sent through the mail. Tapes received could be put through a conversion program, which added very little extra time to the movement of a set of records from one agency to another. Also, there were no systems with large resources of records where libraries could obtain cataloging copy. Thus commonality of format was not an obvious critical need.

In the 1990s, a total transformation of the technical environment vastly increased the potential for international interchange and networking. Today there are enormous bibliographic record resources such as OCLC, RLIN, WLN, and AG Canada from which records are sought worldwide. Records are constantly retrieved and received from databases in other countries. The user's expectation and need is to view the record and be able to incorporate it immediately into a file and continue manipulations. Examples are the sets of records that come today via ftp from book vendors around the world, which might even arrive before the bibliographic items. LC's experience is that receipt of these records in USMARC saves resources and time in making them immediately available to acquisitions specialists. Another example is the Z39.50 Information Retrieval protocol, which supports responses in various record formats including MARC. MARC has been widely used in Z39.50 implementations because systems are often able to screen MARC records as if they came from the internal system, adding to the seamlessness of the retrieval. International connectivity has led to increased activity and expectations from international cooperative programs, making format conversions an obstacle to today's real time transfer needs.

Harmonization Meetings

With this setting, LC, the National Library of Canada, and the British Library began exploratory discussions in 1994 concerning harmonization of their respective formats in the present environment. During 1995 and 1996, staff from the three libraries held several meetings and discussed the costs, benefits, and possible impacts, and got down to a more detailed analysis of the changes that might be needed. Discussions of the benefits of harmonization raised the following points:

- cataloging copy would be easier to obtain and use, and more records would be available earlier;
- maintenance of costly conversion programs could be eliminated;
- earlier information from national bibliographies could benefit collection development;
- enhanced cross catalog searching would benefit reference and cataloging staff and users;
- the range of automated vendor cataloging and online catalog systems might increase, resulting in more choice in "size and shape" and competition that could stimulate innovation and provide price stability;
- system vendors would not have development costs associated with multifformat support; and
- format maintenance would be reduced when three separate formats were no longer maintained and documentation preparation shared.

The costs of changes associated with the harmonization effort were recognized as potentially serious. Any format changes cause the networks and utilities, which libraries depend on as cost-effective sources of records, to make costly system changes. Libraries that use the utilities ultimately pay for these system changes through their fees. Local systems, not just the large record stores, also need adjustment when the format changes, and libraries are dependent on system vendors to make those alterations. Some organizations might need retrospective record changes to their databases. The cost for retraining and new documentation for the changes, which will affect most format users, is often overlooked.

Thus it was clearly recognized by the three national libraries that the work on harmonization would require extensive consultation among all users of the three formats and careful procedures for making decisions and implementing any changes. Implementation would probably be a lengthy rather than brief process.

In 1995 the consultation process with constituencies began. The National Library of Canada held meetings with the Canadian Committee on MARC (CCM), looking at the differences between USMARC and CAN/MARC in detail. In the United States, the MARC Advisory Group and ALA's MARBI committee began investigating the possible changes and impacts. And a consultancy meeting and paper was prepared by the British Library for the UKMARC users to consider.

USMARC and CAN/MARC

While work proceeded simultaneously between USMARC and the other two formats, because USMARC and CAN/MARC had fewer differences, the project progressed

more quickly. The differences with CAN/MARC were primarily in details rather than general specifications. The National Library of Canada decided to make the first review and identified all the differences between the formats; it found more than 70 differences. The United States MARC Advisory Group viewed these differences in a June 1995 discussion paper, and the CCM held intensive meetings on them in June and October of 1995. After the CCM review, only 30 to 40 changes were presented to the United States and United Kingdom for consideration, as Canada had been able to eliminate the other differences. Another discussion paper went to the Machine Readable Bibliographic Information Committee (MARBI) in January 1996 with the reduced number of possible changes and a request that impact be carefully considered by USMARC format users. A formal proposal was made and considered in June 1996 and completed in January 1997.

Resolving Differences

An example of the types of differences and the process for resolution is illustrated by the proposal to align the Map 008 coded values for prime meridians. CAN/MARC had 38 values and used two character positions to code the meridians; USMARC had seven values and used only one character position. The overlap in values defined was five. Representatives of the Canadian map community and the United States community conferred on this sticky issue, and decided to take a fresh approach to the coding of prime meridian. They noted that actually any city can be a prime meridian for a map, so no list of values would be adequate. They also discussed other places in the record where the prime meridian is always recorded in textual form. The map specialists agreed that the coded prime meridian is not really needed and the formats could be harmonized on this point by making both obsolete. This characterized the "harmonious" give-and-take of the discussions over various differences.

There were several areas of differences between USMARC and CAN/MARC that required special attention. One dealt with archival material fields and the other with the Canadian bilingual requirements. The Canadian archival community developed new cataloging standards in the early 1990s. They are similar to, yet have some differences from, those used by the United States community. As a result of trying to accommodate the new rules, CAN/MARC had in 1995 adopted a number of new features for archivists that greatly increased the difference with USMARC. Archivists on both sides of the border took the initiative on this problem and organized a special meeting in Toronto of representatives from the Society of American Archivists' Committee on Archival Information and Exchange (SAA's CAIE) with Canadian counterparts to discuss these archive-related differences. As a result the differences were minimized and all

the remaining archival changes were eventually accepted in the harmonized format.

The bilingual requirements for Canada were a more difficult issue, consisting of two basic needs: (1) equivalent French and English headings were needed in bibliographic records and they had traditionally been carried in 9XX fields in CAN/MARC; and (2) a bilingual flag was required for authority records. The use of the 9XX fields for defined fields was especially problematic for USMARC users since reservation of the 9XX fields for local definition has long been a format principle. Most USMARC users have defined various 9XX fields for local needs. While CAN/MARC had the same philosophy on the 9XX fields, CAN/MARC had used them for equivalent headings partly because the equivalent heading fields were not needed in USMARC and they wanted to avoid any future clash with a non-9XX tag added to USMARC. After a great deal of discussion, an agreement was reached to include the CAN/MARC 9XX fields in an appendix of the harmonized format, clearly indicating that they are defined for a special situation and do not preclude other format users from having the same 9XX tags defined for local purposes in a different manner. In the future, when local tags are needed, this action will encourage users to consider using other tags than these, even if they do not expect any Canadian records. CAN/MARC users were satisfied with this solution.

The bilingual flag in authority records presented a different type of problem. Canada uses the bilingual flag to indicate whether a name or title authority is appropriate for use in a French language catalog, English language catalog, or can serve either. The United States, as well as USMARC users in other countries, might need to treat other languages as the Canadians do French and English. For example, in Switzerland, catalogs may be needed for French, English, Italian, or German, and in Finland, Finnish and Swedish are both official languages. In the United States, Spanish is more likely to be a language for which alternative language headings are needed. The 008 fixed field position used to indicate language(s) of catalogs for this information was very limited for accommodating additional languages. The United States community felt that if language were going to be accommodated, then a more universal technique was needed. Fortunately, it was determined that there already existed a subfield in the USMARC-CAN/MARC field 040 (Cataloging Source) subfield \$b (Language of Cataloging) where multiple languages could be recorded to indicate the languages for which the heading and cross reference structure might be valid. In addition, the character position in the 008, traditionally used by Canada for the English/French information, was also approved for the harmonized format, since it has been used in all Canadian authority records.

The changes to USMARC that aligned the two formats, USMARC and CAN/MARC, were finally approved in

January 1997, and the July 1997 update to USMARC included those changes. CAN/MARC has also distributed an update document that brings the two specifications into a separate-but-equal status. The changes to USMARC may be summarized as follows:

- There were minor changes to coded data—some elements were made obsolete and others enhanced.
- Field 016 for any National Library Record Identifier was added.
- Special changes were made to several fields to accommodate archival needs.
- Multilingual accommodation was improved.

USMARC and UKMARC

The process between UKMARC and USMARC has been quite different from that with CAN/MARC, primarily because of the nature of the differences between the formats. The foundations for harmonization with UKMARC are, of course, the common roots and the many similarities between the formats. USMARC and UKMARC have the same ISO 2709 (or ANSI/NISO Z39.2) structure, which governs the general layout such as the record leader, directory system, fields, indicators, and subfield codes. In places where choices could be made, such as the number of indicators per field, USMARC and UKMARC are certainly aligned. Also, as was noted earlier, many of the tags are the same or nearly so, and especially the 008 is used for the coded data in UKMARC.

The differences are many, however, in extent, detail, and approach to some requirements. UKMARC supports only one published format, for bibliographic data, and an internal British Library format for authority data, whereas USMARC-CAN/MARC has five related formats: bibliographic, holdings, community information, authority, and classification. Prior to the beginning of the harmonization process, UKMARC had never been filled out with a full complement of fields to fully accommodate nontextual material. In many fields UKMARC has different subfielding and data recording specifications from that of USMARC-CAN/MARC, and unfortunately they are the key fields that appear in all records, such as title, author, imprint, and collation. Another major difference is the way multilevel items are handled in UKMARC.

Before the harmonization process began, UKMARC had only a single 008 field with limited coded data for non-print material and many specialized fields were missing among the variable fields. The British Library therefore viewed harmonization as an opportunity to add specialized fields they needed without going over the same ground as the USMARC and CAN/MARC users had in order to develop the fields. This has been a successful area of collaboration. UKMARC was able to adopt a number of

USMARC-CAN/MARC coded and textual fields, adjusting them to fit the needs of the British Library systems.

Subfield Differences

The "ISBD area" of the record was a special problem on further investigation of the differences between USMARC and UKMARC. This includes the "transcription fields" such as title (245), edition (250), imprint (260), series statement (490), and collation (300). In those fields, UKMARC focuses on support of ISBD formulated data, providing subfield markers for each piece of ISBD punctuation and then omitting the punctuation from the field. The UKMARC approach creates the need for many more subfields in those fields—seven additional ones in the title 245 field, six in the imprint 260 field, eight in the collation 300 field—leading the British Library itself to take some liberties with subfield use in recent years.

In USMARC, rules other than ISBD/AACR have always needed to be accommodated, therefore subfield markers are generally used only to identify and delineate access points. Whatever punctuation an agency wants is included with the data. In the title-imprint-collation area, the information is not usually formulated for access, but is recorded as it appears on the item. A common convention (endorsed by AACR) is to repeat important names and places in the record in other fields in controlled access point form. An example is the author statement that appears in the \$c subfield in field 245, transcribed with other statements about joint authors, illustrators, etc. The 1XX and 7XX fields are used to give the names of these creators from the 245 in inverted and controlled form for access, but the title and subtitle are separate subfields as they are not repeated but access occurs from the 245 field. The differences in approach are illustrated in figure 1.

Adopting the UKMARC approach to the transcription fields would be a very costly change to USMARC-CAN/MARC users, with enormous impact. It would also be costly for the British Library to adopt the practices of USMARC-CAN/MARC, so it was agreed that the ISBD area content designation would not be useful to pursue for harmonization at the present time.

Multilevel Techniques

Another area that contained major differences in approach was multilevel records and linking. In USMARC-CAN/MARC each record has a target item that is described in the record, and whose title is in the 245 field. All hierarchically related items are linked to that item using the 4XX/8XX series fields or the 7XX fields. The USMARC-CAN/MARC format supports and AACR2 cataloging rules allow use of a single record for multiple volumes of a multi-volume work where the individual volumes have "weak"

USMARC 245 Title field	UKMARC 245 Title field	UKMARC British Library 245 Title field
\$aWildlife of the world /\$cBent Jorgensen ; illustrated by Gabriele Pozzi ; translated from the German by Anthea Bell	\$aWildlife of the world\$oBent Jorgensen\$riillustrated by Gabriele Pozzi\$mtranslated from the German by Anthea Bell	\$aWildlife of the world\$rbent Jorgensen\$riillustrated by Gabriele Pozzi\$rttranslated from the German by Anthea Bell
USMARC subfields only the title for access/indexing and display; a 1XX field provides access by the author's name and 7XX fields provide access for the illustrator and translator, if desired by the cataloging agency.	UKMARC subfields for punctuation; as with USMARC, separate 1XX and 7XX access points are provided for the creators, if desired.	The British Library reduces subfields, thus ISBD punctuation is supplied by tracking the occurrences of the \$r subfield.

Figure 1. Sample 245 Fields in USMARC and UKMARC

titles. In this case, the higher level (and stronger) title is in the 245 title field with the weak volume titles recorded in the 505 contents field.

In UKMARC whether the title of the individual item is “weak” or strong, the title of the item will be carried in a 248 field and titles higher in the hierarchy for the item title will be in other 248 fields with the highest in the 245 field. There can be other information pertaining to any of the title levels in the record, which is linked to the appropriate title through an indicator and subrecord technique.

The UKMARC technique is complex and not possible in USMARC-CAN/MARC without a great deal of change to basic areas of the format, affecting large numbers of records. So again, it was agreed that this area was not ready for harmonization at this time. There are several other significant differences between USMARC-CAN/MARC and UKMARC that make full alignment difficult.

Harmonization

Despite these problems, advances in harmonization have been made between USMARC-CAN/MARC and UKMARC. One seemingly minor but important change was to make the multiple surname indicator in personal name fields obsolete in both formats. Application of the indicator followed different rules in the two formats, resulting in a significant barrier to name authority cooperation between our countries. It was determined that very few organizations claimed to have indexing or sorting routines that used the indicator.

In addition, as noted above, the British Library has had a program to add a significant number of USMARC-CAN/MARC fields to UKMARC, going through its consultative process for several groups of fields over the last few years. This has increased the congruency of the two formats.

Next Steps with UKMARC

The major differences cited above and several other significant differences have, after careful analysis, made total har-

monization of USMARC-CAN/MARC with UKMARC not feasible at this time. Alignment has been boosted, however, by the adoption of USMARC-CAN/MARC fields that the British Library has undertaken in the last few years. With closer consultation on change proposals at the technical level, it is planned that the formats can perhaps move closer and certainly not continue to diverge in significant ways. Continuing work on joint programs, such as the successful NACO-sponsored authority cooperation, will be a catalyst for keeping the formats as close as possible. There is agreement that, if opportunities arise, specific fields and areas will be aligned in the future.

Next Steps with CAN/MARC

Maintenance Procedures

Now that full alignment has been achieved, the National Library of Canada and LC are looking at the next steps to sustain this progress. Already work has begun on joint maintenance procedures. For USMARC the preharmonization maintenance procedure was the following. Proposals and discussion papers originated from any users. They were developed into MARBI documents by the Network Development and MARC Standards Office at LC with review by LC staff. These proposals and discussion papers were then published on the Web for wider discussion and taken to a meeting of the ALA MARBI committee and the USMARC Advisory Group, held at each ALA meeting. Following the meeting LC made the final decision on the change, usually agreeing with the consensus of the MARC Advisory Group and vote of the MARBI committee. The National Library of Canada has a similar process between the National Library's MARC office and the Canadian Committee on MARC.

In the future, and as has been done for the last two USMARC Advisory Group meetings, LC, and the National Library of Canada will consult and both will conduct internal reviews while the proposals are being developed. They will begin their broader reviews with the advisory committees

and MARC users simultaneously when the proposals are posted on the Web. After separate national consultation processes, LC and the National Library of Canada will together make the final decision. Past experience has indicated that there would seldom be differences in consensus and certainly not critical ones, but in some cases a change might go back to the consultation stage if agreement cannot be reached or the National Library of Canada and LC see other reasons for further consideration of a change.

Because the format is used worldwide, international consultation will continue to be supported as it has been through the MARC listserv, which has more than 900 members, primarily from North America, and includes participants from over 35 other countries. An announcement goes to the list when the proposals and discussion papers are posted and available for electronic access. Anyone can comment over the listserv either before the Advisory Group meeting or by attending the open MARC Advisory Group/MARBI meetings during ALA.

Joint Documentation

LC and the National Library of Canada are planning to have joint documentation published in a variety of forms as USMARC is now: full version in print (and later on the Web), concise version on the Web and in print, and field list on the Web. The joint bibliographic format and the joint authority format were published, with the other three formats issued in 1999. For both CAN/MARC and USMARC, these will just be new editions of the same specification with a new name, as all changes to the bibliographic and authority formats needed to align USMARC and CAN/MARC have already been issued in a previous update.

The Network Development and MARC Standards Office will take advantage of the Web for some material previously found in the formats' printed appendixes. Dynamic appendixes would be better accessed from the Web than print. Also the descriptions in the format are being careful-

ly reviewed for United States-specific and Canada-specific language, so the new editions will reflect the harmonization. LC has agreed to take primary responsibility for the English edition of the format, while the National Library of Canada will take responsibility for a French version. This provides a convenient division of the work.

Implementation

LC and the National Library of Canada were not in a position to implement all of the format changes until LC completed installation of its new automated system in mid-1999 and the National Library of Canada updated its still relatively new AMICUS systems. Thus implementation was planned for 1999 to give vendors of systems and networks or utilities ample time to make local and network changes and carry out any data conversions.

Conclusion

The harmonization process has been difficult but successful in a number of ways. With Canada, we have achieved full harmonization. There are many cooperative programs between Canadian and American institutions that will benefit from a common format, making procedures simpler and more cost effective. The Library of Congress can cease to maintain its CAN/MARC to USMARC conversion programs. And the National Library of Canada and the Library of Congress MARC offices are looking forward to sharing documentation responsibilities. Although full harmonization was not possible with UKMARC, the opportunity has been taken to move the USMARC-CAN/MARC and UKMARC formats closer together. The differences between the formats are also better understood, which will enable the MARC offices in the three countries to identify opportunities to increase compatibility and minimize divergence.

Local Creation/ Global Use

Bibliographic Data in the International Arena

Glenn Patton

OCLC has grown from the original group of Ohio academic libraries to 27,000 libraries located in North America, Europe, Asia, Latin American, and South Africa. Each of the records in WorldCat (the OCLC Online Union Catalog) is a local creation that is available for use across the globe for different purposes. Common issues that must be faced with the expansion of a bibliographic utility include cataloging standards, subject access in languages appropriate to the user, local needs versus global usefulness, and character sets. Progress has been made with the cooperative creation of an international name authority file and the uniform application of ISBD principles. A method of linking various subject vocabularies and an improved infrastructure of MARC formats and character sets are needed. Librarians need new automated tools to provide preliminary access to data available in electronic form and to assist them in organizing and storing that data.

At one point, I had thought of titling this article "It Takes a Village to Build a Bibliographic Database." Although I eventually rejected the title, I find the "village" metaphor still useful as I attempt to put the varied topics of the other articles in this volume into the practical context of a bibliographic service and its member libraries. As I am writing this from OCLC's perspective, my comments may or may not apply to other bibliographic services.

In OCLC's case, that village has become progressively larger as we have grown from the original Ohio academic libraries to 27,000 libraries in 64 countries. Each of the 39 million bibliographic records in WorldCat (the OCLC Online Union Catalog) is a local creation—the work of catalogers in one of those libraries—that can be enriched by catalogers in other institutions. These records are available for use across the globe for many different purposes, the same "generic tasks" that are the foundation of the IFLA Functional Requirements described by Madison in this volume.

Those many different purposes, which bibliographic data in large, shared databases serve, mirror the "cradle-to-grave" life cycle of a village. Bibliographic records are used for initial collection development and selection decisions—that is, bibliographic conception, to support the acquisitions process, and to provide the basis for cataloging and for recording holdings. Bibliographic and holdings data also support resource-sharing activities and can support collection management decisions that lead to weeding—bibliographic death, if you will.

As with life in any village, life in this "bibliographic village" has its ups and downs. There are disagreements; there are conflicts. The village may grow (sometimes dramatically). The environment can change. I'd like to look at

aspects of village life and identify some common threads in how the village has adapted that relate to what we have heard today.

The Village Is Ohio

The original OCLC village consisted of a group of Ohio academic libraries who came together to share bibliographic data in hopes that they would reduce their costs. Even within that relatively homogenous group, there were needs for both shared, standardized data and individual, local flexibility. Those needs were reflected in various ways. Advisory committees formed to set standards for input of records, and fairly early on committee members identified the need for various levels of record content. They also identified the parallel need for the ability of one library to add to and to enhance records created by another library when those additions and enhancements would support the common good of other village members.

The strong emphasis on building a shared database to support both cataloging and resource sharing also brought with it efforts to convert older cataloging into machine-readable form. Village members spent much time discussing how to integrate cataloging created under older rules, as well as older classification numbers and subject headings, with current cataloging as efficiently as possible and without requiring complete recataloging.

The need for local flexibility manifested itself in the ability to make local copies of master records that could be edited as the library saw fit. Flexibility was also evident in the formatting of catalog cards—still the primary record delivery mechanism in those early days—with literally hundreds of options for call numbers with associated locations and oversize stamps.

The Village Is the United States

As the village expanded to include both U.S. libraries outside of Ohio and libraries other than academic ones, these sometimes-conflicting needs for standards and for flexibility continued to grow. Other types of libraries introduced the need for support of additional classification and subject heading schemes. Other types of libraries and other geographic areas brought different viewpoints to the discussions of advisory committees.

The Village Is North America

In the mid-1970s, OCLC member libraries began to encounter Canadian serial records as part of the CONSER

Program, which introduced the element of bilingualism to the village. This was especially evident in name headings for corporate bodies in both English and French.

The Village Expands to Europe

In early 1981, the village was in the midst of the implementation of AACR2, a significant environmental shift that made fundamental changes in village culture. During that same period, OCLC opened an office in Birmingham, England, and began to work with libraries in the United Kingdom. The expansion of the village, coming as it did at the same time as the implementation of AACR2, was perhaps somewhat less traumatic than it would have been under earlier cataloging rules because we were no longer dealing with two different sets of rules. Nonetheless, differences in cataloging practices and differences in the implementation of options present in the rules proved, to paraphrase the poet Dylan Thomas, that we were a village “up against the barrier of common cataloging rules” (Rees 1993).

Addition of records from the British Library to the shared database brought this “separation” to the attention of a broader range of villagers and consternation ensued. Because of differences in cataloging practices and variations in the applications of the rules, these records did not fit well into existing workflows for copy cataloging and thus were in conflict with village goals. After much discussion (some of it heated) and evaluation, calm was restored and villagers adapted their workflows to suit the characteristics of these records.

As OCLC subsequently began to work with a group of university libraries in France, we were able to take advantage of their decision to use the French translation of AACR2 to provide a common ground. Integrating records from these libraries into the shared database, however, brought some new challenges to the village in the form of notes and subject headings in the “language of the cataloging agency,” French. One portion of the village of course, had encountered this challenge before in the Canadian serial records that I referred to earlier, but the effects of the challenge had not really been evident outside the “serials” portion of the village. Records for current European publications created by the French academic libraries were more likely to be used by other village members. Again, some consternation ensued but villagers adapted and incorporated these records into their workflows.

More recently, the village has expanded into central and eastern Europe and villagers have encountered cataloging rules other than AACR2. Since those rules are, however, founded in the principles of the International Standard Bibliographic Description, the transition has been fairly easy. Expansion into this area also brought with it the need

to deal with records in UNIMARC format and in different Latin-alphabet character sets. While making that transition in the structure of the record was not as easy to deal with as the content, the shared database is now richer. More about the character set issue below.

The Village Expands to Asia

As the village expanded to include Asian libraries in 1986, villagers came into contact with non-Roman scripts and other aspects of that “barrier of a common language.” At this point, the village encompasses at least four meanings of the term “football”!

This expansion also moved the village into twenty-four-hour operation. Since village boundaries now covered so many time zones, round-the-clock operation became essential.

The Village Expands to Latin America

More recently, in 1995, OCLC began to work with libraries in Latin America. Here, too, the advantage of having existing translations of AACR2 already in use in Latin American countries has helped tremendously in integrating the descriptive portion of bibliographic records into the village database. New village members, however, continue to point to the need for name headings and subject access in the “language of the cataloging agency”: Spanish or Portuguese. Longtime village residents, who can also benefit from these bibliographic descriptions, want to use them most efficiently with headings in the language of their cataloging agency: English.

The Village Continues to Expand

As the village continues to expand to encompass catalogers in South Africa, it is perhaps too soon to tell what additional challenges may appear on the horizon. After more than twenty-five years, however, villagers have probably encountered some version of the challenge before. These new village residents are already using AACR2 and have recently adopted USMARC so it is likely that they will feel at home in no time.

Further expansion continues to introduce character set challenges. Village catalogers have dealt with some of these challenges by a combination of vernacular data and transliteration or by transliteration only. Other villagers have been more or less patient with this in the past, given that technology up to a few years ago has not been easily able to display either non-Roman script or to print it on cards. Users have, however, been bemused that librarians cannot agree even

on transliteration systems—as is demonstrated by the “U.S.-versus-the-rest-of-the-world” split between Pinyin and Wade Giles and the various transliteration schemes for Cyrillic that are in use in the United States and Europe.

Common Issues

How do these little snippets of village history relate to the topics discussed in the other articles in this volume? Let’s pull out some common threads for consideration.

Cataloging Standards

Since the introduction of the International Standard Bibliographic Description in the 1970s, it has been widely adopted both as a set of cataloging rules and as the “foundation” for national cataloging practice. What has not always been obvious is that, while many sets of cataloging rules (including AACR2) acknowledge that foundation, the ISBD principles have actually been mixed with other practices carried over from previous rules and extended in various ways.

The result is subtle variations and minor differences that often have major impact in automated systems. In the “good old days,” a catalog card with a minor typo might well have been filed in the right place simply because the filer’s eye read the heading as if it had been typed correctly. Similar variations in a machine-readable records—for example, a word that can be abbreviated according to one set of cataloging rules but not according to another set—might well result in the two records not being recognized as representing the same bibliographic item.

Subject Access

Another common thread in the village history that we read about in this volume is the need for subject access, as well as name headings and descriptions, in languages appropriate to the user and using terminology appropriate to those users. Thus far, village members have accomplished that by maintaining multiple parallel subject access points appropriate to the language and terminology of their users. That method works but it is certainly not the most efficient one to make appropriate relationships and distinctions.

Local Needs vs. Global Usefulness

I began this article by noting the distinction, recognized by the original Ohio villagers, between shared standardized data and individual local flexibility. This model (that is, the master bibliographic record and local copies modified to suit each villager’s needs) has served the village well. It is, however,

stretched thinner and thinner by the need for information in multiple “languages of the cataloging agency” and the desire to share that information with other groups of villagers.

Character Sets

MARC has facilitated transliteration by providing parallel fields where data can be represented both in the original and transliterated forms. Technology, however, moves on, in this case fueled more by global business interests than by bibliography. Microsoft now issues software to work with different scripts, and as a result, users of the village’s catalogs are less willing to accept transliteration in the library. Villagers also encounter materials in languages that cannot be represented in character sets currently implemented in USMARC.

What Do Villagers Need for the Twenty-First Century?

Finally, I would like to consider the question “What do villagers need for the twenty-first century?” In a paper for the 1990 Seminar on Bibliographic Records held in conjunction with the IFLA General Meeting in Stockholm, I listed a number of areas in which progress would be of benefit to OCLC villagers (Patton 1992). When I reviewed that brief list recently, I was both pleased that some progress has been made but also sobered by the fact that topics covered in the preconference papers have created a longer list. So here is today’s version of that list:

- International name authority file

On top of my 1990 list was “cooperative creation of authority records.” We have certainly made progress with that effort with more and more villagers participating in the Name Authority Cooperative Program. We are also beginning to make progress toward ways in which the established forms of name appropriate to various languages can be linked and manipulated to produce displays appropriate for various languages.

- Continued reliance on the structure of the ISBDs

Second on my list was “uniform application of ISBD principles.” I noted in my 1990 paper that, as my OCLC colleagues and I had gained experience in working with and evaluating bibliographic data created under rules other than AACR2, we had become convinced that the degree of conformity to ISBD principles was an accurate measure of how well that data could be integrated into the shared database. If anything, the experience of Project REUSE and of the “rules harmonization” project currently underway with the Russian Library Association and our colleagues at the National Library of Russia reinforces

the validity of this view. Further work to align national cataloging rules more closely with the ISBDs and with the IFLA Functional Requirements, while not perhaps the most exciting work, will certainly lead to bibliographic data that is more readily transferable in the global environment.

- Method of linking subject headings

The need for a way to link various subject vocabularies was not included in my 1990 list, but I realize now that it certainly should have been. The techniques described in Tillett’s article in this volume for linking established forms of name headings should be investigated for subject thesauri as well.

- Improved infrastructure of MARC formats and character sets

Also on my 1990 list was the “continued exploration of MARC format capabilities to handle multilingual data.” Much work had already been done at that point to accommodate both vernacular and romanized data in the same record, and Aliprand shows in her article in this volume how the future use of UNICODE can assist us. A logical extension of that capability might be a way of storing data in several languages that share the same character set with coding to allow manipulation. This kind of capability could allow a system to display, based on a single bibliographic record, a record with Spanish notes and subject headings or French notes and subject headings, as appropriate to the user.

- Automated tools

Since 1990, villagers have witnessed an explosion of data available in electronic form. Some villagers have joined to try to provide the controlled access of cataloging rules and subject vocabularies to the flood of information. However, the flood continues to grow faster than they can attempt to provide that controlled access and the “digital indigestion” that Madison described is a result.

Villagers need new tools to help them harvest data that is of use to the village, to provide preliminary access to that data, and to assist them in organizing and storing it for the village’s use.

Conclusion

Each of us could probably make a similar list based on what we have read in the other articles in this volume. You might even have already considered topics that seemed to you to be worth further investigation or functionality that would make life in your village easier.

Many of you as villagers might remember some of the events that I described above. Some of you may well

remember that initial “grass hut” that was the foundation of the village: the shared database that has grown to become the WorldCat we know today. Villagers recognize it as their greatest asset as they enter the twenty-first century.

That initial group of Ohio villagers probably did not foresee that the village would grow to international proportions in only a generation and a half. In another generation or two, will we consider “What in the Universe . . .

Knowledge Access Management on the Intergalactic Level”?

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IFLA Section on Cataloguing

“Why in the World?”

Ingrid Parent

The Bibliographic Control Division of the International Federation of Library Associations and Institutions (IFLA) consists of three sections: bibliography, cataloging, and classification. The cataloging section, which focuses on descriptive cataloging, is one of the oldest within IFLA, having been founded in 1935 as the IFLA Committee on Uniform Cataloguing Rules. It became the Committee on Cataloguing in 1970. The committee played a key role in planning and convening the International Conference on Cataloguing Principles held in Paris in 1961 and the International Meeting of Cataloguing Experts held in Copenhagen in 1969. The Copenhagen conference provided the impetus to develop the International Standard Bibliographic Descriptions (ISBD). The Committee on Cataloguing established a systematic process for the revision of the ISBDs. The cataloging section focuses on traditional cataloging standards and on the impact of electronic resources and technology on these standards. The section has initiated several projects at the international level to facilitate access to information.

Why in the world do we need an international committee on cataloging when we in the United States and Canada have our own very strong cataloging code and other bibliographic standards that we have developed? My objective here is to try and answer this question and to describe not only *what* the Section on Cataloguing does but *why* it has been and continues to be an important part of the cataloging environment.

But before I get to the Section on Cataloguing, I would first like to give you a brief overview of IFLA itself. IFLA stands for International Federation of Library Associations and Institutions. IFLA's main objectives are to encourage and promote research and development in all aspects of library activities and to share its findings in order to advance the cause of librarianship worldwide. You can see from its name that IFLA is basically an association of associations and libraries. Of the 1,564 total IFLA members from 146 countries, only about 20% are personal members. There are 138 national association members and close to 1,100 institutional or library members (see figure 1).

While IFLA is perhaps not among the largest international organizations, it covers a lot of ground and deals with many topics of interest to the membership. Eight divisions coordinate the professional work of IFLA (see figure 2). These divisions are grouped by type of library, by library activities, by types of material, or by geographic divisions. Directing the work of the eight divisions is the Professional Board, which is composed of the chair of each of the divisions, along with a former member of the board as its chair, and the IFLA professional coordinator, who is situated at IFLA headquarters in The Hague.

Under the divisions are about 46 subgroups, including many sections and round tables. Division IV, Bibliographic Control, is one of the most homogeneous divisions. It consists of only three sections: the Section on Bibliography, the Section on Cataloguing, and the Section on Classification and Indexing. The issues that we deal with as catalogers are generally divided among these three sections, and the Section on Cataloguing focuses on descriptive cataloging. Even authority control does not entirely belong to the Section on Cataloguing. Its development internationally is under the responsibility of several sections and programs.

I cannot leave a discussion of the structure around bibliographic control activities in IFLA without mentioning the contribution of another part of the association's professional structure: the UBCIM Programme—the Universal Bibliographic Control and International MARC Office—which is one of five IFLA Core Programmes. The UBCIM Programme was formed in 1987 from the merger of the IFLA International Office for UBC and the International MARC Programme. The UBCIM Office is housed in Die Deutsche Bibliothek in Frankfurt, and the program officer is Marie-France Plassard. The UBCIM Programme provides overall coordination of bibliographic control activities. It organizes regional seminars and assists in the organization of international conferences such as the one held on National Bibliographic Services in Copenhagen in November 1998. It oversees the development of the UNIMARC format and coordinates activities related to developments in the authority control area. It runs an active publications program for reports and proceedings related to bibliographic standards and guidelines. All these parts of the IFLA structure work together to cover the various aspects of bibliographic control activities.

Section on Cataloguing

Now I would like to turn to the Section on Cataloguing to try to answer the question: why in the world do we need it? In doing some background research on the work of this section, I have come to the conclusion that our cataloging theory and principles, not only in North America but all over the world, would be much less advanced without the intervention over the years of this international group of very dedicated people.

The section is one of the oldest within IFLA and was founded in 1935 as the IFLA Committee on Uniform Cataloguing Rules (see figure 3). According to a former chair of the committee in the 1960s, nothing much happened in this section for the first twenty years. Members of the section met once a year during IFLA conferences and reported on new cataloging developments and talked about the problems of coordination, nationally and internationally. But its practical impact was negligible (Chaplin 1974).

Membership Categories	No. of Members
International Association Members	17
National Association Members	138
Institutional Members	1,075
Personal Affiliates	284
Sponsors	36
Bodies with Consultative Status	14
Total Registered Members	1,564
Total Countries Represented	146

Figure 1. IFLA Membership Information (as of January 1, 1998)

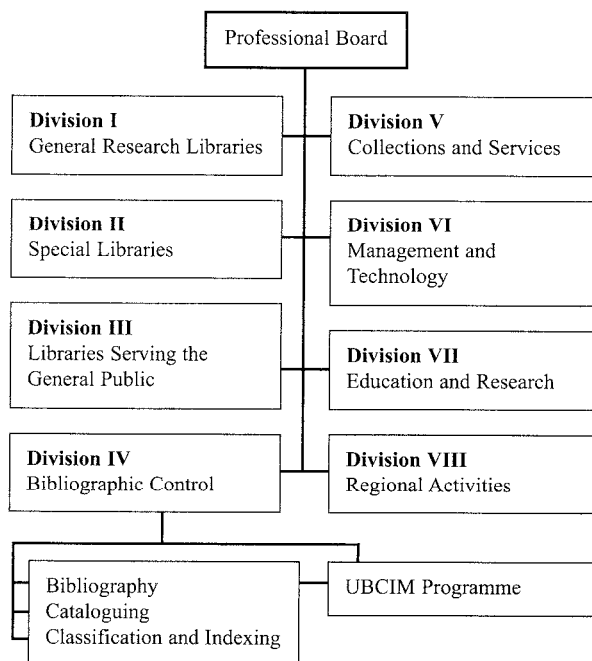


Figure 2. IFLA Divisions

1935	Committee on Uniform Cataloguing Rules
1954	Working Group on the Coordination of Cataloguing Principles
1961	International Conference on Cataloguing Principles, Paris (ICCP)
1969	International Meeting of Cataloguing Experts, Copenhagen (ICME)
1970	Committee on Uniform Cataloguing Rules becomes Committee on Cataloguing
1976/77	Committee on Cataloguing becomes standing committee of the Section on Cataloguing as a result of an IFLA reorganization

Figure 3. IFLA Section on Cataloguing Development and Milestones

However, all that changed in 1954 when the committee established the Working Group on the Coordination of Cataloguing Principles. In a world where national cataloging rules were undergoing a fundamental rethinking in several

countries, the time seemed to be right to consider whether there could be convergence of some of the ideas around the establishment of main entries, in particular for anonymous works and works of corporate authorship. At the same time, of course, Lubetzky's views on cataloging principles and Ranganathan's "canons" also were being widely discussed. There appeared to be great willingness and enthusiasm on the part of the working group members as they participated in the first international cataloging project set up by IFLA (Verona 1980).

The working group's report was well received and led to the proposal that an International Conference be held to consider cataloging principles from an international point of view. IFLA accepted this proposal, and the result was the celebrated International Conference on Cataloguing Principles held in Paris in 1961. The objective of this conference was to develop basic principles governing the choice and form of entry in alphabetical catalogs. After much discussion and work, international consensus was achieved on a logical basis for choosing and creating entry points, an agreement that provided the foundation for cataloging codes to follow.

However, even as the principles were published and being applied, other factors began to appear that pointed out the inadequacy of agreement only on catalog entry points. The 1960s ushered in an era of great expansion in library collections, and with it, the need to create more catalog records. In order to save time and resources, some shared-cataloging programs were initiated nationally, and there was an expressed desire to share records internationally as well. With the growing use of electronic data processing to manage bibliographic data rapidly and efficiently, it soon became apparent that catalog records for the same publication didn't look the same, because the descriptive elements in the records were not standardized between countries and often within countries.

Figure 4 shows four catalog entries created by four national agencies in 1959. Although the heading is the same in all four examples, the descriptions and the punctuation vary considerably. It would be difficult to share these records internationally through any automated system.

So once again the IFLA Committee on Uniform Cataloguing Rules was instrumental in planning and convening another international conference to focus on the standardization of descriptive data. This conference was called the International Meeting of Cataloguing Experts, and was held in 1969 in Copenhagen. It was smaller than the Paris conference, and as its name implies it was attended by cataloging experts rather than by national delegates as was the case in 1961. If I can summarize years of preparation and work in a few sentences, the Copenhagen meeting was a historic event, and it resulted in the recommendation that a standard bibliographic description that determined the

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Figure 4. Examples of Descriptive Cataloging, 1959

order of data elements and the punctuation to be used. The resolutions discussed during the conference led to the development of the concept of universal bibliographic control (UBC), whereby bibliographic data about all publications issued in all countries would be made widely available in a standard descriptive form. Emphasis now shifted to the importance of national bibliographies as the source of the definitive bibliographic records for the national imprint that would be shared promptly and universally. The directions developed at this conference thirty years ago still underlie the range of bibliographic work we do today and account for the tremendous successes we all have had in disseminating bibliographic information around the world.

My point in providing this historical overview is not to debate the merits of cataloging principles and description, nor Universal Bibliographic Control, but to try to illustrate the key role that the predecessor to the Standing Committee of the Section on Cataloguing played in making all this happen.

International Standard Bibliographic Descriptions

As I've just mentioned, out of this Copenhagen conference came the impetus to develop what I think is the most important achievement of the work of the Section on Cataloguing:

the development and the almost universal adoption of the various International Standard Bibliographic Descriptions (ISBDs).

By 1972 several national bibliographic agencies and national cataloging codes had adopted the preliminary edition for books of the Standard Bibliographic Description, and many more were to follow. Aside from the obvious benefits that came through standardization, the rapid adoption of the ISBD for books and then for other formats of material showed that international standardization was achievable. However, it was not a simple process, and many meetings, negotiations, and draft texts were necessary before consensus was reached on each of the different ISBDs.

There is a whole family of ISBDs, and countries either use these ISBDs directly as their cataloging standard, or incorporate the guidelines for description into their national cataloging codes (see figure 5).

The Section on Cataloguing thus has a lot of children to look after. A systematic process of revision was established in 1978 when the Cataloguing Committee decided that ISBDs should come up for review every five years in order to maintain their currency but also to provide a certain degree of stability for libraries trying to follow the ISBD provisions.

As you can see from the publication history of the various ISBDs, it usually takes about ten years to produce a revision. Over the years the Committee on Cataloguing has had an almost permanent working group to decide on which revisions are necessary. They may even recommend that a particular ISBD be abandoned or that a new one be developed for some new format of material or for a part of an existing type of material.

Two revisions that I would like to mention relate to Electronic Resources (ER) and to Serials (S). The ISBD for Computer Files (CF) was almost out of date as soon as it was published in 1990. After a few years the process of revision was begun. Editor Ann Sandberg-Fox did most of the drafting of the revised text and an international working group with expert commentators provided the input. Once the group was satisfied with the revised text, it was sent out for a six-month worldwide review, which is a general practice within IFLA. The responses were generally positive because the working group had done its preparatory work very well, and the revised ISBD(ER) was published in 1997.

The review of the ISBD(ER) excluded consideration of electronic serials, maintaining they were more properly in the domain of the ISBD(S). This was one of the reasons why the Cataloguing Committee decided to activate the revision of ISBD(S). The development of this particular standard caused much discussion and criticism in the mid-1970s, not only because the working group was dealing with a notoriously difficult type of material to describe bibliographically. At the same time the United Nations Educational, Scientific and Cultural Organization (UNESCO), through UNISIST,

ISBD(M)—Monograph Publications: 1st ed. 1974; rev. 1978; rev. 1987
 ISBD(G)—General: 1st ed. 1977; rev. 1989
 ISBD(S)—Serials: 1st ed. 1977; rev. 1988; under revision
 ISBD(NBM)—Non-Book Materials: 1st ed. 1977; rev. 1987
 ISBD(CM)—Cartographic Materials: 1st ed. 1977; rev. 1987
 ISBD(ER)—Electronic Resources (formerly Computer Files): 1st ed. 1990; rev. 1997
 ISBD(A)—Pre-1801 Monographs: 1st ed. 1980
 ISBD(PM)—Printed Music: 1st ed. 1980; rev. 1989
 Guidelines for the application of the ISBDs to the description of Component Parts: 1st ed. 1988

Figure 5. The Family of ISBDs

was setting up the International Serials Data System (ISDS), and was developing cataloging guidelines and a format to describe the same serial publications. The dilemma for the ISBD(S) Working Group was whether to align itself with ISDS developments or to stay in the family and follow ISBD. While the primary purpose of ISDS is the identification of a serial, most notably through the assignment of a key title and the ISSN number, the primary purpose of ISBD(S) is standardized description of the title in hand. However, it was a difficult decision, but after much and probably often painful debate, ISBD(S) followed the standardized description pattern. With hindsight, we can say that here was a missed opportunity to develop one bibliographic descriptive standard for serial publications.

However, twenty-five years later, we again have a historic opportunity to align these standards. A formal revision of ISBD(S) began in 1998 with a working group consisting of members from the cataloging committee and other serials experts. Our plan is to have a revised standard ready in the year 2000. What is making us move rather quickly is the fact that the Joint Steering Committee for the Revision of AACR has undertaken a major review of the code. A large part of that review deals with basic questions related to seriality. The cataloging experts who met in Toronto in 1997 had the foresight to look beyond AACR to other international standards for serials such as the ISDS and ISBD(S) and to suggest that we work toward compatibility of the standards. Communication lines among the three groups are very much open, and I hope that this time we will seize the opportunity to come up with one standard for describing serial publications, or at a minimum, to ensure that the standards for serials cataloging are compatible.

While we have accomplished so much with standardizing description through the development of the ISBDs, there is still a lot of work to do to make these standards truly international. Even though they have been translated into dozens of languages, the ISBDs do not adequately cover the needs of non-Roman scripts or the different nature of publications in some parts of the world such as the Middle East, Asia, and Africa. This was recognized as a serious problem

twenty-five years ago, and it is still a problem and a challenge for the IFLA cataloging committee today.

The development of the ISBDs is just one example to show how the Standing Committee of the Section on Cataloguing has been and will continue to be a leader in developing and promoting cataloging standards and guidelines (see figure 6). Its scope of work is described in its Medium Term Programme, which runs from 1998 to 2001. The section focuses on both traditional cataloging standards and on the impact of electronic resources and electronic technology on these standards. We are involved in the meta-data debate and will continue to ensure that appropriate guidelines for the cataloging of electronic resources exist.

In line with its mandate, the Standing Committee of the Section on Cataloguing has also initiated several projects at the international level to facilitate access to information (see figure 7).

First I would like to mention the Study on the Functional Requirements for Bibliographic Records. The Section on Cataloguing was charged with the task of implementing a recommendation from the 1990 Stockholm Seminar on Bibliographic Records to do a functional study of bibliographic data so that logical decisions would be made on what data should be included in a catalog record to meet national and international bibliographic needs consistently. The study was published in early 1998.

Members of the Cataloguing Committee are also involved in revising and updating three international guidelines related to standardized headings. *Anonymous Classics* will be reviewed in phases and will be expanded to include non-European headings. *Form and Structure of Corporate Headings* will update a work first published in 1980. And *Guidelines for Authority and Reference Entries* is being revised and expanded to cover legal and music headings. These guidelines are highly valued in many parts of the world and are used as cataloging standards in several countries.

I would also like to briefly mention a new task force that the Section on Cataloguing has initiated to develop guidelines for online catalog displays. It was felt by several members of the committee and elsewhere that libraries internationally would benefit from having general guidelines that they could use in developing their catalog displays, taking into account the possibilities offered by new Web interfaces. While this task force is being led by the Section on Cataloguing, a catalog display is by no means a "cataloging-only" issue, and input is being solicited from other IFLA sections, including Information Technology, and from the user communities. This activity points out that IFLA projects are becoming more "interdisciplinary" where sections and divisions cooperate on a particular project or standard. Even though IFLA has a very hierarchical structure, communication is increasingly moving horizontally to form a convergence of views, which I think is a very positive development.

Scope

The Section on Cataloguing analyzes the functions of cataloguing activities for all types of material and media, including both bibliographic and authority information, for the benefit of all users. The Section proposes and develops cataloguing rules, guidelines and standards for bibliographies information taking into account the developing electronic and networked environment in order to promote universal access to and exchange of bibliographic and authority information. The Section has close relationships with many organizations and institutions including national cataloguing and standardization committees, various multinational organizations, various committees of ISO, especially with TC46, with the Sections on Bibliography, Classification and Indexing, and Information Technology, and in particular with the UBCIM programme office of IFLA.

Figure 6. Section on Cataloguing Medium Term Program, 1998–2001

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- ISBD family
 - Functional Requirements for Bibliographic Records: Final Report. 1998
 - Anonymous Classics, 1978, revised: 1996–
 - Form and Structure of Corporate Headings, 1980, revised 1997–
 - Guidelines for Authority and Reference Entries, 1984, revised 1997–
 - Guidelines for OPAC Displays, 1997–
-

Figure 7. Major Projects

All of these projects and standards that we have developed and are developing rely on people to make them happen. This might sound rather simplistic but I think we sometimes forget that there is only a small group of people who are responsible for achieving the goals that we have set.

The Section on Cataloguing within IFLA had 146 members in 1998 (see figure 8). That number has remained relatively stable for several years. The Standing Committee of the section consists of twenty members, which is the maximum number allowed according to IFLA Statutes. Members are nominated and then appointed, or elected if there are more than twenty, for a period of four years. They can be reappointed for an additional four years, to a maximum of eight years. Every two years, some of the membership changes as terms come to an end, which ensures rotation but also continuity. We have a good mix of members from fourteen countries, although these members represent countries mainly in Europe and North America. We also have corresponding members in Australia, China, and Fiji.

The section has had much success over the past fifty years in providing leadership in the development of bibliographic standards that have made possible the implementation of universal bibliographic control and have brought tremendous benefits for all libraries and all countries. But standards development has not always been a smooth and timely activity. It is a very slow process getting international consensus, but there are very legitimate reasons behind this, reasons that are just as valid today as they were fifty years ago.

The first consideration relates to the people themselves. Most of us within IFLA volunteer our time to undertake these international responsibilities in addition to doing our regular work in our own countries. The people are generally full of enthusiasm, intelligent, and willing to work. But the reality is that there is not enough time to do everything that is required as quickly as we would like. Revolving membership, where a person with particular expertise in an area might leave the committee before a project is finished, is also a problem. However, in recent years we have begun the practice of inviting former members to sit on project teams to finalize some work if their expertise is still required.

An even greater problem is communication. The Cataloguing Committee meets twice during each annual IFLA conference, which is barely enough time to say hello and go through the business portion of our activities. Our various project teams try to fit in some meetings between program sessions, but it is not easy to fit in quality time together. Communication mechanisms have improved over twenty-five years, through the use of fax machines and e-mail. However, these methods are not perfect, and we spend many frustrating hours trying to transmit attached documents electronically to each other around the world.

The other aspect of communication that I would like to mention is language. IFLA has five official languages—English, French, German, Russian, and Spanish—but the working language of meetings is generally English, and to a lesser extent, French. Simultaneous translation during the Annual Conference is available only for plenary sessions and for a few program sessions. The language of our committee meetings is English and for many members whose first language is not English, it must be difficult to participate in our technical discussions and to understand the nuances of English words within the cataloging context. An example would be our discussion of the Functional Requirements study where, even for native English speakers, it was difficult to understand the differences between terms such as “expression,” “manifestation,” and “presentation.”

While language is not as much a barrier to meaningful discussion as it once was, lack of English skills might make someone hesitate in taking on the chair of a project team or the committee itself. I researched the names and nationalities of the former chairs of the Cataloguing Committee, and although the information in the early years is rather sketchy, I think the list shows quite clearly the predominance of Anglo-American chairs (figure 9). Only Eva Verona from Yugoslavia broke the pattern. There could be other reasons why certain people are elected as chairs, but I think that a lack of confidence in English-speaking skills might factor into why some people do not put their names forward for consideration.

The third and most important factor that delays the development and implementation of international biblio-

graphic standards through IFLA, in my opinion, is funding, or rather the lack of it. This was a problem fifty years ago, and it is still a major problem today. The 1961 Paris conference and the 1969 Copenhagen conference would not have succeeded to the extent they did, and might not even have been held, without the funding provided by external organizations such as UNESCO and especially by the Council on Library Resources (as it was known then). The funding allowed for adequate preparation time leading up to the two conferences; it permitted cataloging experts to attend even if they came from a have-not country; and it sustained the follow-up reports and work needed to transform the recommendations from the conferences into concrete action.

IFLA is not a rich association. It relies on volunteers to do the work and on libraries and library associations to host meetings and support staff participation. If a working group needs to hold a meeting more than once a year, it must secure funding to ensure that its members will be able to attend. UNESCO is no longer a sure source of funding. The European Commission funds library projects, but generally only for European libraries. The Soros Foundation is a source of funding for eastern European countries. We have also received funding for particular projects from the National Commission on Libraries and Information Science and the Council on Preservation and Access and from bibliographic utilities such as the Research Libraries Group and

Zohreh Alavi (Iran)	Dorothy McGarry (USA)
Nadine Boddaert (France)	Monika Münnich (Germany)
Paul Bunn (UK)	Anne Munkebyaune (Norway)
Kerstin Dahl (Sweden)	Ingrid Parent (Canada)
Zlata Dimec (Slovenia)	Glenn Patton (USA)
Assumpció Estivill (Spain)	Isa de Pinedo (Italy)
Ton Heijligers (Netherlands)	Reinhard Rinn (Germany)
Lynne Howarth (Canada)	Ljudmila Terekhova (Russia)
Natalia Kasparova (Russia)	Barbara Tillett (USA)
Mona Madsen (Denmark)	

The Section on Cataloguing has 146 members.

Figure 8. Section on Cataloguing Standing Committee Members, 1997–99

1995–99	Ingrid Parent	Canada
1993–95	Olivia Madison	USA
1989–93	Nancy John	USA
1985–89	Tom Delsey	Canada
1981–85	Peter Lewis	UK
1978–81	Lucia Rather	USA
1974–77	Eva Verona	Yugoslavia
1969?–74	A. H. (Hugh) Chaplin	UK
1950s	Sir Frank Francis	UK
	Dorothy Anderson	UK

Figure 9. Section on Cataloguing Chairs

the Online Computer Library Center. We are finding that increasingly funding is directed more toward particular libraries, or regional groups of libraries. Therefore, to hold one specific meeting, it is often necessary to approach several agencies for financial resources.

There are valid reasons why the international development of bibliographic standards takes time. But I think that the results speak for themselves, and that the IFLA Section on Cataloguing has developed into an effective mechanism for organizing international cooperation on bibliographic control issues, and persuading member countries to put bibliographic standards and guidelines into practice. The Section on Cataloguing is truly international and consists of dedicated professionals, working for the benefit of the

whole, and that is why it is needed. Other regional or even international bibliographic projects can be initiated and funded by international organizations or government agencies or by bibliographic networks. That is certainly an increasing trend. Therefore continued dialogue and cooperation among all parties will be essential for the future of cataloging in the world.

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The IFLA Functional Requirements for Bibliographic Records

International Standards for Universal Bibliographic Control

Olivia M. A. Madison

The formal charge for the IFLA study involving international bibliography standards was to delineate the functions that are performed by the bibliographic record with respect to various media, applications, and user needs. The method used was the entity relationship analysis technique. Three groups of entities that are the key objects of interest to users of bibliographic records were defined. The primary group contains four entities: work, expression, manifestation, and item. The second group includes entities responsible for the intellectual or artistic content, production, or ownership of entities in the first group. The third group includes entities that represent concepts, objects, events, and places. In the study we identified the attributes associated with each entity and the relationships that are most important to users. The attributes and relationships were mapped to the functional requirements for bibliographic records that were defined in terms of four user tasks: to find, identify, select, and obtain. Basic requirements for national bibliographic records were recommended based on the entity analysis. The recommendations of the study are compared with two standards, AACR and the Dublin Core, to place them into pragmatic context. The results of the study are being used in the review of the complete set of ISBDs as the initial benchmark in determining data elements for each format.

Within the past few years, several major international efforts focused on the extent and nature of bibliographic control and access. This international attention underscores the continuing and expanded need for cooperative bibliographic control—both visionary and economical. The first effort I want to mention is the International Conference on the Principles and Future Direction of AACR held in Toronto, Canada, in October 1997. At this conference, librarians sought to examine the future international viability and direction of the Anglo-American Cataloguing Rules and how the rules might be revised given the rapidly changing environments in bibliographic access, emerging and changing formats, and human resource issues. Another important development has been the emergence of what is called the Dublin Core and its standard metadata for electronic resources that are accessible in a networked environment, such as the Internet. This standard for metadata represents a core bibliographic description whose elements can be used to find, identify, select, and obtain resources. The last significant international development that I will mention, and the topic of this article, was the approval and

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This paper is partially based on a paper presented at the IFLA-sponsored seminar "The Function of Bibliographic Control in the Global Information Infrastructure" held in Vilnius, Lithuania, June 17–19, 1998. The title of the paper was "Standards in Light of New Technologies: Functional Requirements for Bibliographic Records."

publication of a long-awaited report of a multiyear IFLA study that focused on international bibliographic standards. This report recommends a set of standards for the components of a bibliographic record based upon the functions it performs through its essential bibliographic entities and the relationships important to those entities within a record and to other records. Based upon the results of the study, the report recommends how the bibliographic record should assist the user within the bibliographic universe and what minimum data and relationships should be required for a basic national bibliographic record.

During the summer of 1998 I attended a thought-provoking IFLA-sponsored regional seminar held at the National Library in Vilnius, Lithuania. The seminar topic was international bibliographic control issues, and it was primarily intended for librarians in the Baltic countries of Lithuania, Latvia, and Estonia. In addition to the Baltic speakers, "external" speakers came from the United Kingdom, Finland, Norway, the United States, and Croatia. Many papers were given, including "Digital Indigestion—Is There a Cure?" "Authority Control in an International Context in the New Environment," and "Traditional Communication Formats Versus SGML; Metadata; Dublin Core." Other papers were given on such topics as UNIMARC, Project BIBLINK in the Netherlands, OCLC's Project Use MARCON, and the IFLA functional requirements study. I was impressed by the clear interest of the participants in using international bibliographic standards and their obvious understanding that standards are essential for cooperative sharing of bibliographic data for resource sharing, cataloging, and authority work.

What do these examples of international standards development mean in terms of the international cataloging community? The need for quality bibliographic control continues to be of prime importance. The international information world has geometrically grown and has become more diverse, more convoluted, and more confusing. Those of us involved in international standards development must continue our efforts to assist those desperately wanting to access this world in an orderly, comprehensive, and logical fashion and thereby ensuring their success in identifying and obtaining those resources of interest.

With this backdrop to my article, I will first review briefly the formal study charge for this IFLA study involving international bibliographic standards. The scope and method used for this study will then be described as well as its conclusions and recommendations for a national bibliographic record. In order to place the report's recommendations into pragmatic context, I will next compare them with two standards—AACR, an international cataloging code, and the Dublin Core, a rapidly emerging international standard for new electronic technologies. The conclusion will

include a brief discussion of some of the next steps that the IFLA Section on Cataloguing's Standing Committee is taking based upon this study's recommendations and its general method. Please note that various parts of this article discussing the IFLA study come directly from or are paraphrased from the study group's final report (IFLA Study Group on the Functional Requirements for Bibliographic Records 1998).

Study Charge

Serious issues related to universal bibliographic control, primarily involving escalating costs of cataloging and authority control as well as the interest of maintaining quality, are not new. However, they are even more apparent now than they were ten years ago—particularly to the users of information resources and the creators of bibliographic systems. This IFLA study arose from a 1990 IFLA seminar on bibliographic control held in Stockholm, Sweden, and from the corresponding interests of the Conference of Directors of National Libraries to commission a study to define the functional requirements for bibliographic records.

In response to these developments, the IFLA Section on Cataloguing and the Division of Bibliographic Control approved strategies for a study expressed in a document entitled "Terms of Reference for a Study of the Functional Requirements for Bibliographic Records" (IFLA Standing Committee of the Section of Cataloguing 1992). The study's final working group consisted of six members and four consultants. The consultants were responsible for directing the study and were the primary authors of the various draft reports and the final report.

As stated in the "Terms of Reference," the purpose of this study was to delineate in clearly defined terms the functions that are performed by the bibliographic record with respect to various media, applications, and user needs. The study was to cover the full range of functions for the bibliographic record in its widest sense—that is, a record that encompasses not only descriptive elements, but access points (such as name, title, subject, etc.), other "organizing" elements (such as classification, etc.), and annotations. The functional requirements should pertain to all media and formats commonly represented in bibliographic databases and the defined functions of the record should be derived from the full range of uses that might be made of the record. Also of primary importance was the application of those functional requirements with the development and revision of cataloging standards, guidelines, and codes and the measurement of their effectiveness.

The Terms of Reference further specified that the working group should develop a framework that identified and clearly defined the entities of interest to users of biblio-

graphic records, the attributes of each entity (or what are its parts or elements), and the types of relationships that can operate between entities. The framework would serve as the basis for identifying and placing value on the specific attributes and relationships required to support the various tasks that users perform when using bibliographic records. In other words, the study group was asked to carefully identify entities, dissect them, and place value on each entity as well as the entity's component parts. This was a method never before used on this international scale.

Based upon the resulting conclusions, the study group was charged to propose a basic level of functionality and data requirements for records created by national bibliographic agencies. The criteria for deciding this functionality and basic data requirements would be drawn directly from the study results. The group hoped that this set of recommendations could meet many of the central concerns expressed at the 1990 Stockholm seminar and the Conference of Directors of National Libraries—namely a core-level standard for bibliographic records that could facilitate international sharing of bibliographic records. If approved and used by national bibliographic agencies, this standard could then assist in reducing duplication of efforts and drive down the rising costs of cataloging through greater cooperative cataloging arrangements. Furthermore, such a standard could promote better universal bibliographic control, a central goal for the IFLA Division of Bibliographic Control.

As part of the process, the study group wrote a draft report based upon its examination of potential data elements of bibliographic records in the context of the potential uses of those records. Following a worldwide review of the draft report, the study group incorporated, as feasible, the majority of all commentary into its final report. The final report was approved by the Standing Committee of the IFLA Section on Cataloguing at the 1997 IFLA conference, and K. G. Saur published it as volume 19 of its *UBCIM Publication—New Series*.

Study Method and Results

The study's framework was built on the ways data contained in bibliographic records are used through a variety of user tasks, namely to find, identify, select, and obtain. While the study is described as being based on user needs it did not involve studies of how actual users approach and make use of bibliographic records. Rather, functions that any one or more potential users might perform were examined carefully. In other words, the study group endeavored to define exactly what information a user might expect to find in a bibliographic record and how that information might be used.

Another key element of the study group was the recognition that bibliographic records are used by a broad spectrum of users within and outside traditional library settings. The study group also took into account the wide range of applications in which bibliographic records are used—such as information retrieval, purchasing, cataloging, circulation, interlibrary loan, preservation, and reference. As a result, the study group recognized the broad use for bibliographic information and the importance to users of both content and form of the materials described in bibliographic records.

The study group defined a bibliographic record as the aggregate of data that is associated with entities—often but not exclusively described in library catalogs and national bibliographies. The group defined the functional requirements for bibliographic records as being those generic tasks that are performed by users when searching and making use of national bibliographies, library catalogs, bibliographic databases, Internet, etc. They are as follows:

- using the data to find materials that correspond to the user's stated research criteria;
- using the data retrieved to identify an entity;
- using the data to select an entity that is appropriate to the user's needs; and
- using the data to acquire or obtain the entity described.

The consultants used the entity relationship analysis technique as their method, and began their study by isolating the entities that are the key objects of interest to users of bibliographic records. Three groups were defined.

The first and primary group contains four entities:

- a. Work: the distinct intellectual or artistic creation. This is an abstract entity that enables us to give a name and draw relationships to the abstract intellectual or artistic creation. When we speak of *David Copperfield* by Charles Dickens as a work, we are not referring to a specific edition or text, rather the intellectual creation.
- b. Expression: the intellectual or artistic realization of a work. It encompasses the specific words, sentences, paragraphs, etc., that result from the realization or expression of a work and provides distinction in intellectual content between one realization and another of the same work. For example, a French translation of the original English text of Shakespeare's *Richard III* and the original text represent two expressions of the same work.
- c. Manifestation: the physical embodiment of an expression of work. In other words, the expression that is issued or published. It represents a wide range of all

the physical objects that bear the same characteristics, in respect both to intellectual content and physical form such as manuscripts, videotapes, journals, etc. The manifestation permits us to describe the shared characteristics. For example, within a library's catalog there could be two manifestations of *The New Yorker*—the print edition and the microform edition.

- d. Item: a single exemplar of a manifestation. It is in many instances a single physical object. This is the physical object you have or have access to in your actual or virtual collection. An example might be two copies of the same book, with only one having the author's autograph.

The second group includes entities responsible for the intellectual or artistic content, the production, or ownership of entities in the first group (e.g., persons and corporate bodies). Examples of these entities are George Gershwin, UNESCO, and Cambridge University.

The third group includes entities that represent concepts (such as metaphysics), objects (such as the subject the Eiffel Tower), events (IFLA 1996 Conference in Istanbul, Turkey), and places (Barcelona, Spain). In this study, entities in the third group as well as those in the first two groups may form the subject of a work.

The study group then identified the characteristics or attributes associated with each entity and the relationships between entities that are most important to users. The attributes provide the means by which users formulate queries and interpret responses when seeking information about a particular entity. The attributes were expressed as a user might view them. As their starting point, the consultants used internationally defined attributes found in International Standard Bibliographic Descriptions (ISBDs) and the Guidelines for Authority and Reference Entries (GARE). Figure 1 presents two examples of entities with their possible attributes: a manifestation and a person.

The study group then described logical relationships among the various entities and then defined the relationships associated with the four primary entities (work, expression, manifestation, and item) that operate between designated instances of entities. For example, a manifestation-to-manifestation relationship could involve a microform reproduction of a print edition or it could represent the third volume of a historical three-volume set, with each volume having a unique title as well as a collective title.

In order to assess the relative value of each of the attributes and relationships associated with the various entities, the study group next focused on the importance of each attribute or relationship to the user's efforts to find, identify, select, or obtain a particular entity or group of entities. In doing so, the study group recognized that bibliographic records are used by many different types of users

Manifestation

(this list of attributes includes typical examples—the report includes a more complete list of potential attributes)

- title of the manifestation (there could be more than one—title page, cover title, and/or a spine title)
- statement of responsibility (this appears on the manifestation and often is a person or organization)
- edition/issue designation (examples are large-print edition or Braille edition)
- place of publication/distribution (a city such as London or Toronto)
- publisher/distributor (usually an organization such as the commercial publisher Reed Elsevier)
- date of publication/distribution (normally the year of release)
- series statement (the statement can have a numbering and there could be more than one series statement)
- extent of the carrier (quantification—number of pages, volumes, discs, etc.)
- physical medium (type of material from which a carrier is produced)
- dimensions of carrier (size)
- manifestation identifier (ISBN or ISSN number)
- source for acquisitions/access authorization (source of purchasing or access—for example, remote access through the Internet)

Person

- name of person (name by which a person is known)
- dates of person (usually birth and/or death dates)
- title of person (word or phrase describing rank, nobility, or term of address)
- other designation associated with the person (usually a phrase or abbreviation indicating succession with a family or dynasty)

Figure 1. Entity/Attribute Examples

who collectively are interested in a wide range of applications and all types and forms of materials and media. The group also drew on a wide range of sources and identified data pertaining to a broad spectrum of media such as text, cartographic material, audiovisual, film, and digital recording modes.

The study group then mapped the attributes and relationships to the four user tasks: to find, identify, select, and obtain. In doing so, the attributes and relationships were rated as to the importance to each user task. This was a thorough effort and was the basis of the recommendations for the essential components of a national bibliographic record. It is important to note that at a national or institutional level, these values could change dramatically due to the mission of any given collection of resources. Furthermore, decisions regarding the importance of a given attribute, such as title for a work, expression, and manifestations, varied as to the find, identify, and select functions. However, in all cases when the value for a given attribute, such as title, was rated as high or moderate for any function, that attribute was deemed a required component of a national bibliographic record.

The study group also examined a wide variety of potential relationships among entities within the context of find, identify, select, and obtain for possible inclusion in the national bibliographic record. As with attributes, if a relationship type had a high value for one or more functions, it was deemed as a necessary relationship to document in the national bibliographic record. An example of such a required relationship is that between an expression and another expression when one expression represents a dependent part of a whole/part relationship (e.g., a volume with a unique title that is published as part of a series). The results for the find and identify functions were rated as high values, and the select function was rated as a low value. Because of the high values for the find and identify functions, the study group recommends that the national level bibliographic record reflect this whole/part relationship.

Basic Requirements for National Bibliographic Records

Based on careful entity analysis, the study group recommended in its report that the basic national bibliographic record should assist the user to do the following:

- Find all manifestations embodying:
 - the works for which a given person or corporate body is responsible
 - the various expressions of a given work
 - works on a given subject
 - works in a given series
- Find a particular manifestation:
 - when the name(s) of the person(s) and/or corporate body(ies) responsible for the work(s) embodied in the manifestation is (are) known
 - when the title of the manifestation is known
 - when the manifestation identifier is known
- Identify a work
- Identify an expression of a work
- Select a work
- Select an expression
- Select a manifestation
- Obtain a manifestation

The report concludes by listing the proposed minimum data requirements, all of which had high user values, for a basic national bibliographic record for all identified formats. The list is arranged in two broad groupings: descriptive and organizing elements. For illustrative purposes, I have provided in figures 2 and 3 the recommended descriptive and organizing elements for the basic national bibliographic record for books and electronic resources accessible through a networked environment such as the Internet. I

Title and Statement of Responsibility Area

- title proper (including number/name of part)
- statement(s) of responsibility identifying the individual(s) and/or group(s) with principle responsibility for the content

Edition Area

- edition statement
- additional edition statement

Publication, Distribution, Etc. Area

- place of publication, distribution, etc.
- name of publisher, distributor, etc.
- date of publication, distribution, etc.

Physical Description Area

- specific material designation

Series Area

- title proper of series

Notes Area (Required)

- note on distinguishing characteristic of the expression
- note on use/access restrictions
- standard number

Figure 2. Descriptive Elements for Books

Name Headings

- Name heading(s) for person(s) and/or corporate body(ies) with principal responsibility for both the work(s) and expression(s)

Title Headings

- title heading(s) for the work(s)

Series Headings

- heading for the series

Subject Headings/Classification Numbers

- subject heading(s) and/or classification number(s) for the principal subject(s) of the work(s)

Figure 3. Organizing Elements for Books

did not include those elements that are required only under unique or special circumstances.

How revolutionary are these data requirements? How does this standard differ from other international standards for a book's core description? I chose to compare the IFLA standard with the first level of description from the *Anglo-American Cataloguing Rules* (AACR2) (*Anglo-American Cataloguing Rules* 1988). The IFLA standard parallels the

AACR2 elements except in two instances—the IFLA standard also expects a place of publication and a series statement (if present on the manifestation). I believe that the study largely validates, from a theoretical basis, the first level of AACR2 description and it suggests adding these two elements to the AACR2 standard.

The basic level national bibliographic record also contains standards relating organizing data elements that correspond to relevant descriptive elements such as authors and series as well as subject access.

Descriptive and Organizing Elements for Electronic Resources

One pertinent question that was raised in the study discussions at the 1997 IFLA conference was whether or not the recommendations were flexible enough to deal with “emerging” materials, particularly electronic ones. In preparing this article I thought it would be of interest to see how these basic data elements might describe manifestations of works accessible through the Internet. But with what current standards, if they exist, might I test or compare them? One emerging international standard for this type of networked material is the Dublin Core, which has been developed to describe what I will call electronic Internet manifestations through the use of metadata. The Dublin Core was “intended to facilitate discovery of electronic resources” and “originally conceived for author-generated description of Web resources” (*Dublin Core Metadata* 1997). Its concept has been expanded to meet networked access needs in a more organized context for libraries and museums. Dublin Core metadata are often referred to as a bibliographic description whose elements may be used to find, identify, select, and obtain networked resources available through the Internet. Currently the Dublin Core includes fifteen data elements: title; creator (author); publisher; other contributor; date; resource type; format; resource identifier; source; language; coverage; rights management; and subject and keywords (Lynch 1998). These elements describe a broad variety of information objects and are designed to provide a core or basic form of description. The Dublin Core documentation also discusses the critical issue of relationships to other works, expressions and manifestations, much in the same way as the IFLA standard does.

However, in brief, what are the differences between these two standards? In comparing the two standards for description and organizing elements, I included those IFLA data elements defined as important or significant to the medium. I found that fourteen of the fifteen Dublin Core elements were “loosely” in common with the IFLA data elements. Only one Dublin Core element is missing in the IFLA standard, the specific element of resource type, which

represents a textual description of the content of the resource or content description in the case of visual resources (e.g., poem, dictionary, or musical recording). While the IFLA study group recognized its importance to the selection function as an attribute of an expression, it had given it a low core value. In the future, as the pertinent IFLA standards such as the ISBDs are reviewed in terms of format specificity, the inclusion of this element might represent a potential revision.

Areas for Further Study

Several important studies are now underway by the Standing Committee of the IFLA Section on Cataloguing in which the results of this study are being used. This study was designed to direct future focus on the ongoing needs and challenges of international bibliographic control. The report's conclusions and recommendations were deliberately general in nature and were not meant to provide detailed applications for specific media or for the various methods of accessing and displaying bibliographic records. In particular, the study group believed further examination would be necessary by the international cataloging community, particularly with the definition of seriality and as well as the dynamic nature of electronic formats and their universes.

One significant set of studies is the review of the complete set of ISBDs using the results of the study as the initial benchmark in determining appropriate data elements for each format. The Section on Cataloguing is close to completing its review of the ISBD for serials, which takes into account electronic serials, metadata, and, as mentioned earlier, the notion of seriality itself. Other ISBDs under review are those covering audiovisual, nonbook, and cartographic materials. Beyond the ISBDs, other international and national standards might benefit from the type of analysis this model supports.

The study might also represent an initial step toward the creation of a fully developed international conceptual data model for all bibliographic entities. The study did not cover the relationship of bibliographic records to authority control nor did it define what should be the minimal requirements for authority control by national bibliographic agencies. This is the next important step towards a full conceptual data model, and the IFLA Section on Cataloguing has underway a similar study on authority control data. A working group is defining the functional requirements and numbering needs for authority records. Furthermore, the section is promoting the method of the functional requirements study in library schools.

In conclusion, the actual recommendations for the basic requirements for a national bibliographic record were formally presented and accepted at the 1998 International

Conference on National Bibliographic Services in Copenhagen, Denmark. These requirements now represent an essential component of future international cooperative sharing of catalog data.

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The Unicode Standard

Its Scope, Design Principles, and Prospects for International Cataloging

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The Unicode Standard is a global character set for worldwide computing covering the major modern scripts of the world as well as classical forms of Greek, Sanskrit, and Pali. The history and implications of Unicode Standard are discussed. The principles underpinning the design of the Unicode Standard are described with reference to those principles that also are present in USMARC and UNIMARC. Unicode give the potential to support every script. Expanding the character set would have consequences for transcription. Faithfulness of transcription has implications for retrieval. The addition of more characters to support more exact cataloging affects the economic cost of cataloging. The need for characters should be related not to the production of a surrogate for the physical item that has been cataloged, but to facilitating retrieval.

A common question about the Unicode Standard is “Is my script there?” The Unicode Standard covers the major modern scripts of the world and also classical forms of Greek, Sanskrit, and Pali. It includes more than 21,000 East Asian ideographs—7,000 more than the East Asian Character Code (EACC) used in USMARC (American National Standards Institute 1990)—and the full complement of modern Korean *hangul* (EACC has only a fifth of these.)

Figure 1 shows the content of version 2.1 of the Unicode Standard. The content of the entire code space is on the left. The enlargement on the right shows alphabetic scripts in more detail.

Version 2.1 of the Unicode Standard is made up of the published book, *The Unicode Standard*, version 2.0, augmented by Unicode Technical Report number 8 (published on the Web). The characters added in version 2.1 were the Euro currency sign and the object replacement character that marks the position of data that cannot be used in a plain text context.

The latest version, 3.0, includes 11 more scripts (Burmese, Canadian Syllabics, Cherokee, Ethiopic, Khmer, Ogham, Runic, Sinhala, Syriac, Thaana, and Yi), as well as symbols for Braille and an additional 6,000 East Asian ideographs.

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Where Did Unicode Come From?

In 1988 Joe Becker of Xerox and Lee Collins and Mark Davis of Apple started to think about a better way to perform multilingual computing: a character set as simple and basic as ASCII that met the needs of the whole world. Becker called it “Unicode.” Other companies joined the project. The Research Libraries Group (RLG) came in very early, because it developed the EACC.

Version 2.1

Codespace Allocation

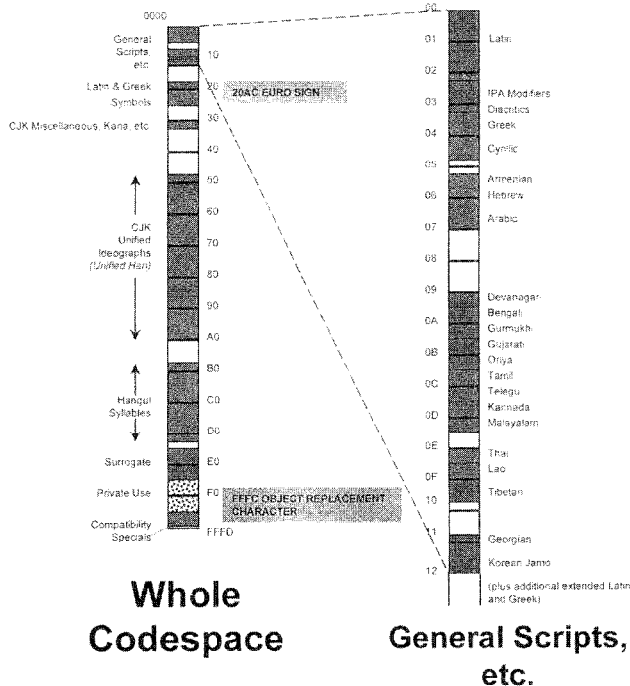


Figure 1. The Unicode Standard, Version 2.1

The Unicode Consortium, founded in 1991, is an international organization responsible for the development and promotion of the Unicode Standard. A list of full and associate members can be found on the Web at www.unicode.org/unicode/consortium/memblogo.html. Full members have voting privileges and so determine the content of the Unicode Standard.

Around the same time that work on the Unicode Standard began, Joint Technical Committee 1 (JTC 1) of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) were also developing a global character set. The project's identification number was "10646."

JTC 1 has established procedures for the development of the standards for which it has responsibility. The content of ISO/IEC 10646 is determined by the representatives of national standards bodies, which have declared their intent to participate in the work (ISO/IEC 1993). The library and publishing part of ISO, Technical Committee 46 (TC 46), has no direct role, but can provide comments as a liaison organization.

In 1992 version 1.0 of the Unicode Standard and the second DIS (draft international standard) of ISO 10646

merged. Ever since then, the character repertoire and encoding of the Unicode Standard and ISO 10646 have been kept in sync. The difference between the two standards is that Unicode also specifies character properties and implementation rules that are required if applications are to be mutually consistent.

Who Is Using Unicode?

You'll still hear comments such as, "Unicode is all very well, but who is actually using it?" I think the question should be: "Who's not using it?" Let me drop a few names of Unicode users: Java from Sun, Windows NT and Internet Explorer from Microsoft, Netscape Navigator, database products from Oracle and Sybase, Mac OS 8.5 from Apple . . . the list goes on and on and grows constantly.

More significantly, standards are beginning to reference Unicode and ISO 10646. Have you looked at the specification for HTML 4.0 (W3C 1998a)? How about XML 1.0 (W3C 1998b)? The UTF-8 form of Unicode (Unicode Consortium 1996) has been endorsed as "best current practice" by the Internet Architecture Board (IETF 1998).

What Are the International Implementations?

Unicode can be used for any application—single script, multiscrypt, or fully global—so I'm not sure why international implementations should be singled out. The Web knows no boundaries either.

Library Issues

Now it's all very well having the prospect of Unicode and ISO 10646, but the key question is: How are we going to take advantage of it? And this leads to thinking about how we are going to use Unicode data in the machine-readable records that we exchange.

I stress "exchange" here. What you do internally is your own business. Indeed, there are library systems in operation today that use Unicode internally but do not send it out because the exchange formats do not yet specify how to do that.

Part of the task we are faced with is "how to get from here to there." The ultimate goal is to be able to use Unicode data in library records. But we have an enormous legacy of records encoded in 7- and 8-bit character sets that cannot be abandoned. One of the essentials is to define mappings between today's character sets and the character repertoire of Unicode/ISO 10646.

How Will Unicode Be Used in Library Records?

There are two families of MARC records today: USMARC and its derivatives, and UNIMARC and its offspring. Each MARC defines the character sets that are legitimate for its records (Network Development 1994; Holt and McCallum 1994).

ALA's MARBI Committee, which advises the Library of Congress (LC) on the USMARC formats, delegated work on the use of Unicode in USMARC records to its Subcommittee on Character Sets and special task forces.

Mappings have been defined for all the single-byte character sets and approved by MARBI. They were published on LC's Web site (*USMARC to Universal Character Set Mappings* 1998).

Mapping of the multibyte EACC is underway. Ideographs are being finalized. Drafts for Japanese *kana* and Korean *hangul* have been prepared. When the work is complete, a proposal will be submitted to MARBI.

Proposal 98-18: *Unicode Identification and Encoding in USMARC records*, prepared by the MARBI Unicode Encoding and Recognition Technical Issues Task Force (1998), was on the agenda for MARBI's June 1998 meeting. A key recommendation in this proposal was the use of UTF-8.

Other issues are still open, and will be addressed by MARBI. For example, Discussion Paper 111 (1998) considered continuing use of the 880 field, *Alternate Graphic Representation*.

A similar mapping process for the character sets used by European libraries (including those specified for UNIMARC) was undertaken by the CHASE committee, part of the European CoBRA project (Fisk and Brickell 1997; CoBRA+ Computerised Bibliographic Record Actions 1998).

In both the MARBI project for USMARC and the CHASE project, compromises had to be made in defining the mappings. Perfect round-trip mapping for every character is not possible unless values in the Private Use Area are utilized.

What about Z39.50?

And what about Z39.50? Version 3 of Z39.50 provides for character set negotiation between the origin and target systems (*Character Set and Language Negotiation* 1998). The system-to-system negotiation is based on ISO/IEC 10646 conventions, but does not appear to have incorporated its more recent amendments. The specification for character set negotiation does apply only to the protocol, and does not determine whether a record is transmitted (on the basis of its character content). The issue of unknown or undisplayable characters is discussed below.

How Should I Sort Multiscript Data?

Another topic of great concern to librarians is sorting. The ISO working group that deals with internationalization of computer systems has been developing a default ordering for the character repertoire of ISO 10646; the latest version is designated "ISO FCD (Final Committee Draft) 14651" (ISO/IEC JTC1/SC22/WG20 1997). Unfortunately, there are defects in FCD 14651; for example, rules for some scripts are lacking.

The Unicode Consortium has published a draft of the Unicode Collation Algorithm to provide a complete, unambiguous, specified ordering for all characters in the Unicode Standard, version 2.1 (Davis and Whistler 1999). The consortium is actively involved with the ISO effort through its membership in ANSI/NCITS Technical Committee L2.

An aspect of "how to get from here to there" is defining Unicode equivalents for the characters we currently use. The two main sources of character sets specifically for library use are LC and TC 46. LC specifies character sets to be used in USMARC records. TC 46 has developed various character sets for bibliographic data exchange. UNIMARC specifies use of certain ISO character sets developed by TC 46.

This does not mean that a particular MARC format can only use USMARC or TC 46 character sets. The character sets to be used in a particular MARC format are determined by the specification for that format, and can dictate use of another character set (e.g., a character set widely used in a particular country). USMARC and TC 46 Unicode and existing library character sets are discussed here because they are of international interest.

The Unicode Standard and ISO 10646 do not include every character encoded in library character sets. This has become apparent in the MARBI and CHASE work on use of Unicode in library records.

The MARBI work on mapping between the current USMARC character sets and Unicode identified seven additional Arabic script characters. These have been accepted by the Unicode Technical Committee and are proceeding through ISO balloting. At the time of writing, their code assignments were tentative. They were outside the scope of version 2.1 of the Unicode Standard, but are in version 3.0.

Differences between EACC and the Unified ideographs of Unicode/ISO 10646 require Private Use values if the integrity of certain EACC characters is to be preserved, although EACC contains a unified set of ideographs that can be used for Chinese, Japanese, and Korean (CJK).

Working Group 1 (WG1) of Subcommittee 4 of TC 46 is responsible for library character sets. The TC 46 character sets specified for use in UNIMARC are listed in table 1. WG1 has identified a number of characters in its character sets that are not in the Unicode Standard or ISO 10646. The

Irish National Standards body has proposed their addition to ISO 10646. The Unicode Technical Committee and Technical Committee L2, the United States body that deals with coded character sets, considered them when they met in July 1998. (RLG is a member of L2, and a voting member of the Unicode Technical Committee.)

The Unicode Standard and ISO 10646 both include a private use area that has to be used when the integrity of specific characters cannot be compromised. The library community needs to coordinate its use of private use values: this has been suggested for European libraries through the CHASE project. But library data is exchanged globally, so it needs to be done not just independently for a particular group of users, but on a worldwide basis.

User Concern: Doesn't 16 Bits Mean Doubling of Disk Space?

The next set of questions addresses concerns that surface quite regularly. One worry that comes up again and again has to do with disk space: 16 bits is twice the size of 8 bits, so won't disk space requirements be doubled?

This question ignores the technical side of things. If UTF-8 is used as the encoding form, the space requirements will be different and will relate to the character content of your data. If the Unicode Compression Algorithm is applied, space requirements will be lessened (Wolf et al. 1998).

But what I find strange about this question is that no one seems concerned about the far larger quantity of disk space needed for digitized images and multimedia. And the hard bottom line is: like it or not, library vendors are moving to Unicode. You either stay with what you have forever, without the scripts you want; or, at some stage, you upgrade to a new system that does the scripts you want and you pay the going price.

User Concern: How Will 16 Bits Affect the Speed of Data Transfer?

Another worry is that 16 bits will affect the speed of data transfer. If you've downloaded any multimedia clips, you'll find that images, sound, and video are the bandwidth hogs,

not textual data. Furthermore, UTF-8, where all Basic Latin characters are represented in 8-bits, is recommended for the Internet.

User Concern: How Do I Cope with Unknown Characters?

When we talk about the problem of unknown characters, we need to take the scope of the problem into account. The inability to see a run of text (perhaps the bulk of a record) is a lot worse than the occasional unknown character (possibly caused by an encoding error). USMARC addresses the inability to see a run of text by appending the original script (in 880 fields) to a completely romanized record, so that a system lacking multiscript capability can at least display the romanized equivalent. Any system should have a graceful way to cope with an undisplayable character; each system will have its own convention.

Inability to display a character has two possible causes: the system has no information or it lacks the tools to display a known character

If the system has no information, either the character code value has not yet been assigned to represent a character, or it is a value in the private use area and the system has no information about the private agreement establishing a meaning for that value.

The other cause is not lack of information about the character but lack of the tools to display it. Most commonly, this is due to lack of a font. But just having a font does not guarantee satisfactory presentation for some scripts. Complex scripts such as Arabic or Devanagari require rendering software in addition to a font with an adequate collection of images (which is much larger than the number of characters for the script shown in the Unicode Standard).

How do we want to cope with such a situation? Should there be a requirement to code script information in the record so that a user can be forewarned about the need for script support? Or should an error message be presented instead of the record? Should undisplayable characters simply be presented as mysterious boxes? Should their Unicode value be shown to identify them?

The Unicode Consortium has designed a font containing a typical character for each script, to give a little more information about an undisplayable character. There might not be an elegant solution to this situation, but we need to consider the tradeoffs between the options, and, in particular, whether a strategy imposes any additional work on the cataloger.

Design Principles of the Unicode Standard

To provide a better understanding of the Unicode Standard, I'd like to illustrate some of the principles underpinning its

Table 1. TC 46 Character Sets Specified for Use in UNIMARC

Identification	Name
ISO 646	Basic control set and basic Latin set
ISO 6630	Bibliographic control set
ISO 5426	Extended Latin set
ISO Registration #37 (revised 1983)	Basic Cyrillic set
ISO 5427	Extended Cyrillic set
ISO 5428	Greek set
ISO 6438	African language set

design (shown in figure 2). If you understand the design principles, you can understand why some things that you would call “characters” have not been coded.

Quite a few of the Unicode design principles are also present in USMARC and UNIMARC.

Characters, not glyphs. The USMARC Arabic set encodes the conceptual letters, not the positional forms used to write Arabic (Network Development 1994).

Plain text. Both MARC formats are for minimally legible data. Neither allows for “rich text” features such as typeface, font size, color, and so forth.

Logical order is used in USMARC, which is important when scripts run in opposite directions, for example, English mixed with Arabic.

Unification is exemplified in the EACC, developed by RLG and later adopted as a U.S. standard. In fact, unification applies to character sets for most languages: Basic and Extended Latin, Basic and Extended Cyrillic, USMARC Hebrew, USMARC Arabic. (In USMARC, Basic Latin is ASCII [ANSI X3.4] and Extended Latin is ANSEL [ANSI/NISO Z39.47]. In UNIMARC, Basic Latin is ISO 646, the International Reference Version of ASCII, and Extended Latin is ISO 5426. Both USMARC and UNIMARC specify the same Cyrillic characters sets: Basic Cyrillic is ECMA Registration No. 37, and Extended Cyrillic is ISO 5427).

LC developed *dynamic composition* of accented letters in the 1960s (Rather 1968).

Of the other design principles, the most interesting is *semantics*. Because Unicode characters have well-defined semantics, they have defined properties. For example, the properties of character U+0663, ARABIC-INDIC DIGIT THREE include its decimal digit value 3 and the bidirectional category *arabic number*.

The principle of semantics and the definable properties that devolve from this principle are what distinguishes the Unicode Standard from its counterpart, ISO 10646, Universal Character Set. Both publications are consistent in character repertoire and code point assignments.

ISO 10646 is a normal international character set. It defines characters and the codes which represent them, but says nothing more. Implementers need additional information about the character properties to produce consistent software. The Unicode Standard includes this information.

Software that conforms to the Unicode Standard is required to support normative properties. So with respect to USMARC and UNIMARC, it should be assumed that platform software used for library applications will include rules based on Unicode properties.

Another Unicode principle that needs examination in the context of international cataloging is *characters, not glyphs*. One's first reaction is to think about characters as equivalent to the exact glyphic form, because that is what we

Sixteen-bit character codes

=> Unicode character codes are 16 bits. (Not two bytes, but an indivisible 16 bits.)

Full encoding

=> The entire codespace is available to encode characters.

Characters, not glyphs

=> The Unicode Standard encodes conceptual characters, rather than the elements of text that we see.

Semantics

=> Unicode characters have semantics, that is, name, representative glyph and normative properties.

Plain text

=> Plain text is a pure sequence of character codes.

Logical order

=> Logical order underpins the correct presentation of text. (For most alphabetic scripts, it is equivalent to the keystroke order of a perfect typist.).

Unification

=> Unification of characters across languages avoids duplicate encodings.

Dynamic composition

=> Creation of accented forms from a sequence of characters. (Libraries have done this since the beginning of automation.)

Equivalent sequence

=> A precomposed form maps to a sequence of other characters.

Convertibility

=> Character identity is preserved for interchange with a number of widely-used standards.

Figure 2: Design Principles of the Unicode Standard

see and it also agrees with the tradition of the catalog entry as a surrogate for the item being cataloged. But that isn't always the case.

A couple of examples will help explain the distinction between *character* and *glyph*. The lower case form of the Latin letter “g” can be written in one of two ways: with one bowl or two (as shown in figure 3). We are perfectly satisfied using the two forms interchangeably, depending on the type design we happen to be using.

Arabic letters can have up to four positional forms (as shown in figure 4). The letter's shape depends on where it is relative to spaces and other letters. Unicode encodes the underlying conceptual letter; the correct glyph for display can be determined by an algorithm.

The important point to remember is that what is encoded in the data doesn't necessarily correspond exactly to what you see as text. And this applies to USMARC and UNIMARC as much as to Unicode.

Unicode gives us a great many more characters than we have had hitherto in any cataloging environment. While not all platforms support every script properly yet, use of Unicode gives the potential for this support. I want you to think about how this new development interacts with transcription, an essential part of cataloging, and what the consequences would be if we expanded the character repertoire to provide for ever more exact transcription.

Back in the days of the unit catalog card (which some of us still remember) it was possible to write in a letter or symbol that was not available on our typewriters. The underlying principle was faithful transcription, that is, the catalog entry that stood for the work should reproduce the information from the work as exactly as possible.

We compromised on this when we automated. Until now, most online catalogs have been limited to Latin script. Now our immediate reaction is to ask for the addition of all the various typographical things that we see to the universal character set.

But before we do this we should stop and think about what is truly necessary, and if what we are proposing conflicts with Unicode design principles. We need to bear in mind that we have always made exceptions to exactitude, even when the typographical facilities were available.

We have to compromise when the text that appears on a title page is extremely long, as in the eighteenth century work shown in figure 5.

We also have to compromise when transcription is impossible, as in the mathematical formula in figure 6.

We don't transcribe all the ligatures and other calligraphic flourishes that are found in scripts such as Arabic, but replace them with regular letter-forms. The book shown in figure 7 is in Turkish, which was written in Arabic script in the days of the Ottoman Empire.

LC practice is to always transcribe Hebrew unvocalized, even when vowels and marks of pronunciation (which are positioned on consonantal letters) appear on the source of information. Figure 8 shows a Hebrew translation of Longfellow's poem *Evangeline*. Vocalization can be seen on the author's name (above the line) and the title (in the middle). The information at the foot of the title page is unvocalized. So we've never been 100% faithful.

Faithfulness of transcription has implications for retrieval. This was true in the days of the card catalog. What was the alphabetical order for that strange letter or symbol we inked in on the unit card? And how did a user know where we had filed it?

Ideographs provide an excellent example of the conflict between assigning a unique encoding to every glyphic form and how that affects retrieval. The character for "longevity" can be written in more than one way. Indeed the hundred forms of *shòu* that were used in antique writing is still a motif in Chinese art (see figure 9).

U+0067 LATIN SMALL LETTER G

g One bowl form
Arial

g Two bowl form
Century Schoolbook

Figure 3. One Bowl or Two? The Latin Letter g

U+0067 ARABIC LETTER GHAIN

ع isolated

غ initial

ج medial

ح final

Figure 4. The Positional Forms of the Arabic Letter ghain

Typographical Antiquities.
HISTORY, ORIGIN, AND PROGRESS,
OF THE
ART OF PRINTING,
FROM ITS
FIRST INVENTION IN GERMANY
TO THE END OF THE SEVENTEENTH CENTURY;
and from
ITS INTRODUCTION INTO ENGLAND,
BY CAXTON, TO THE PRESENT TIME;
Including, Among a Variety of curious and interesting Matters,
ITS PROGRESS IN THE PROVINCES,
with chronological Lists of
EMINENT PRINTERS
IN ENGLAND, SCOTLAND, and IRELAND;
TOGETHER
With Anecdotes of several curious and literary CHARACTERS, who
have honoured the ART by their Attention to its IMPROVEMENTS;
ALSO A PARTICULAR AND COMPLETE HISTORY OF THE
WALPOLEAN PRESS,
ESTABLISHED AT STRAWBERRY HILL;
With an accurate List of every PUBLICATION issued therefrom,
and the exact Number printed thereof;
AT THE CONCLUSION IS GIVEN
A CURIOUS DISSENTATION ON "THE
ORIGIN OF THE USE OF PAPER;
Also, a complete HISTORY of the ART of
WOOD-CUTTING AND ENGRAVING ON COPPER,
From its first Invention in ITALY to its last Improvement
IN GREAT BRITAIN;
concluding with the Dedication of
LITERARY PROPERTY;
Or the LAWS and TREATIES to which Authors, Designers, and
Publishers, are separately subject.
With a Catalogue of remarkable BIBLES and COMMON PRAYER-
BOOKS, from the infancy of Printing to the present time.
EXTRACTED FROM THE BEST AUTHORITIES,
BY HENRY LEMOINE, BISHOP. LOND.
LONDON, 1707:
Printed and Sold by S. FISHER, No. 10, St. John's Lane,
Clerkenwell; also sold by Lee and Hurst, No. 31, Paternoster Row,
BY STEWART & LEACHMAN, BISHOP. LOND.
LONDON, 1797:
Printed and Sold by S. FISHER, No. 10, St. John's Lane,
Clerkenwell; also sold by Lee and Hurst, No. 31, Paternoster Row.

Figure 5. Shortening Long Title Page Data

THEORY AND APPLICATION OF $\int_0^z e^{-x^2} dx$ AND $\int_0^z e^{-p^2 y^2} dy \int_0^y e^{-x^2} dx$

Part I. Methods of Computation

by

J. Barkley Rosser

Figure 6. A Mathematical Formula in a Title

But even in modern times there are several ways to write longevity (shown in figure 10): with seven pen strokes (the conventional Japanese form, which is also used as an abbreviated form in Chinese handwriting), with fourteen strokes (the traditional Chinese form), and with fifteen strokes (a Chinese variant that is used symbolically).

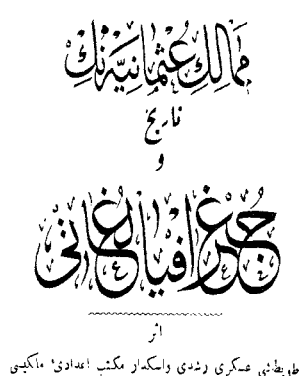


Figure 7. Ottoman Turkish Book on Geography



Figure 8. Henry Wadsworth Longfellow's *Evangeline* in Hebrew

If each form was to be uniquely encoded, as some people insist, what is the effect on searching and retrieval? If you are searching for *longevity* as a concept and don't care how it's written, can the system help you? Retrieval based purely on character encoding would require you to enter all the different forms for this kind of search. What if you only knew one of them? What about cross-catalog searching using Z39.50?

This issue is not restricted to ideographs. A library character set, ISO 5426-2 contains a selection of Latin contractions found in early printed works that emulate the manuscript tradition (IOSID 1996). Later editions of the same works do not include contractions. Are added entries or uniform titles the answer to such retrieval conundrums? If added entries are used, how should a result with both forms be sorted? Where does a contraction file relative to the spelled out form?

The British Library character set that was the basis for ISO 5426-2 was appropriate for the technology of its time, to meet the goal of representing the work as accurately as possible in the bibliographic record. The distinction between character and glyph had not been published. At that time, you encoded what you saw and what you needed.

But how much exactitude is needed in a cataloging record today and why? If the body of the entry is intended to be a surrogate for the work, a digital reproduction is a much more faithful representation.

The economic cost of adding variant forms includes: more elaborate input strategies; more complex software to match the variants; more time to create the record if additional access points have to be included; and more complexity in retrieval, for both the interface designer and the user.

So we need to think about our needs for characters at a different level, related not to production of a surrogate for the physical item that has been cataloged, precise in every typographical detail, but to facilitating retrieval. What infor-

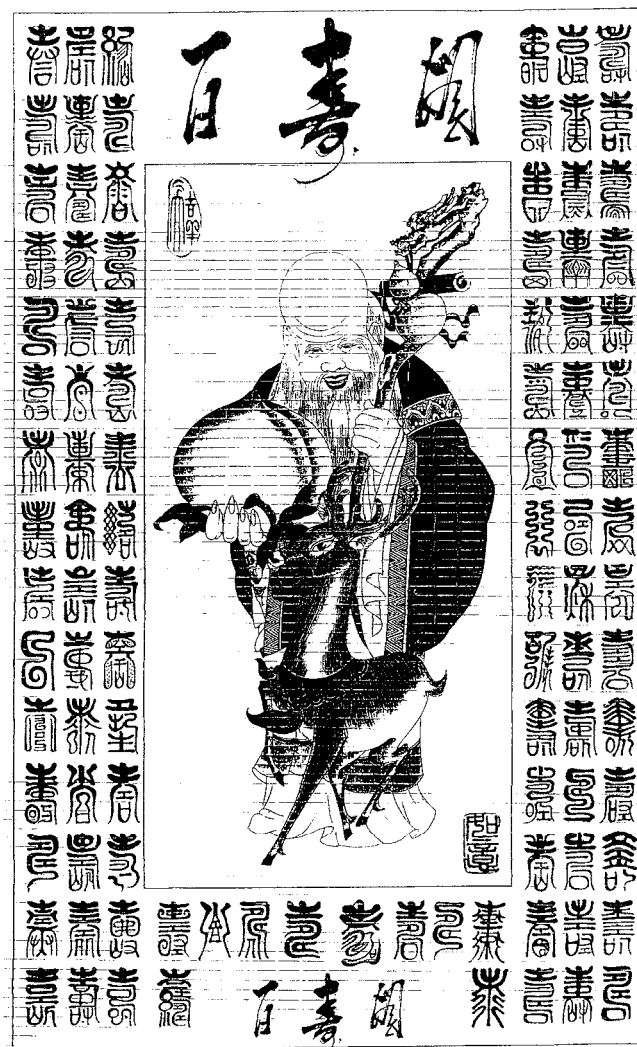


Figure 9. The Hundred Forms of *shòu*

寿

Japanese form

壽

Chinese form



Alternative Chinese form

Figure 10. Three Common Ways to Write "Longevity"

mation has to be searchable? Will the user be searching for exact graphic forms, or is a less exact “generic” or “normalized” substitute, supplemented by digital images, sufficient? How do the new text encoding standards (e.g., SGML) relate to traditional cataloging? What sorting order do our users expect? Is it possible to define expectations for the amount of typographic detail that should be captured in a transcribed representation? That is, to define when the digital image will have to be examined? What are the implications for cross-catalog searching when there are different levels of typographic detail in different catalogs?

A cataloging record is generally equivalent to the “plain text” of Unicode. But sometimes it incorporates aspects of rich text: for example, the Latin contractions in ISO 5426-2 or variant ideographs that are differentiated in EACC but represented by a single character in Unicode.

Rather than proposing the addition of ever more characters to Unicode and ISO 10646 to support ever more exact cataloging, we need to define specific needs and identify the best technologies to fulfil them. In particular, we need to examine the potential of SGML and XML, and their relationship to MARC formats.

Needs can be broadly defined as: (1) identification and retrieval, and (2) bibliographic scholarship. The catalog record has to meet the first need. With regard to bibliographic scholarship, a “plain text” catalog record cannot provide all the required detail. A “rich text” form (such as an SGML transcription) or a digital image is called for, and, in some cases, only examination of the actual item will meet the scholar’s needs.

I hope this article has answered some of the questions about the Unicode Standard. We need to think long and hard about the characters needed for library catalogs. We need to think about where the balance point is between exact transcription on the one hand and optimized retrieval and sorting on the other. And we need to think about which technologies are appropriate for which user needs.

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Authority Control at the International Level

Barbara B. Tillett

International efforts to provide authority control include the work of IFLA, the AUTHOR Project funded by the European Commission, and related work conducted under the auspices of the ICA/CDS. IFLA developed the guidelines Form and Structure of Corporate Headings, documented the formulation of names along the lines of national origin in its publication Names of Persons, and published Guidelines for Authority and Reference Entries. Attention has shifted from a single authority record for each entity that would be shared internationally through the exchange of records to linking parallel authority records for the same entity. The "access control" of the future will account for difference in cataloging rules, transliteration standards, and cultural differences within the same language as well as for the need for different languages and scripts and will enable users to display the script and form of a heading that they expect. Project AUTHOR is a shared set of resource national authority files that used selections from the authority files of France, the United Kingdom, Spain, Portugal, and Belgium. The prototype tested an adaptation of Z39.50 server software for authority records and displays for user interface. An international standard for authority control records has been developed for corporate bodies, persons, and families. Through joint meetings efforts have been synchronized to develop authority control at the international level.

After the success of international agreement on the 1961 Paris Principles for cataloging rules, there was what Dorothy Anderson of IFLA called a "welcoming climate of opinion in the 1970s for international work" (Anderson and Myall 1998). Members of IFLA envisioned the potential for further international cooperation and cost savings through sharing bibliographic and authority records worldwide. The concept of Universal Bibliographic Control (UBC) was the focus of several IFLA initiatives during the 1970s and early 1980s, including the programs to set up International Standards for Bibliographic Description (ISBDs), UNIMARC format, and *Guidelines for the National Bibliographic Agency and the National Bibliography*.

Universal Bibliographic Control

UBC is based on these principles:

- each country is responsible for the bibliographic control of publications from its own country; and
- each country is responsible for making its records available to all other countries for cataloging those same publications.

The IFLA UBC principles for authority control are parallel, namely:

- each country is responsible for the authorized headings for its own personal and corporate authors (it didn't mention uniform titles, series, or subjects), and
- the authority records created by each national bibliographic agency would be available to all other countries needing authority records for those same authors.

Tom Delsey of the National Library of Canada chaired the 1970s IFLA committee that explored the possibility of an infrastructure to support effective international exchange of authority data and to promote national responsibility for the creation and dissemination of authority records. Unfortunately, technology had not yet advanced to make such sharing practical on an international level in the 1970s. In addition, the lack of funding for an international center to manage such a program prevented that visionary concept from becoming reality.

Other IFLA Activity

IFLA did focus attention on authority control of corporate headings and names of persons. For the former, IFLA set up guidelines for the form and structure of corporate headings (*Form and Structure of Corporate Headings*, first published in 1980), building on the work of Verona (*Corporate Headings: Their Use in Library Catalogues and National Bibliographies* issued by IFLA in 1975). This document is currently under review for revision in IFLA, and I currently serve as recorder for the chair, Ton Heijligers from the Netherlands.

A different approach was taken for personal names. Rather than standardizing the cataloging conventions, IFLA instead documented the formulation of naming persons along the lines of national origin in its publication *Names of Persons* (a new edition was recently released). The idea here again was UBC—that each country would establish the name of its own authors and that form would be universally used.

IFLA also established guidelines for bibliographic agencies to use in creating authority references and entries (*Guidelines for Authority and Reference Entries*, 1984, also known as *GARE*), which is also now under review for revision, and I am also serving on that working group, chaired by Isa de Pinedo from Italy.

UBC Principles

The UBC principles, of course, presume that there is a national bibliographic agency creating a national bibliography of the publications of its own authors, and that the form

and structure of the authorized heading is accepted worldwide. This concept unfortunately does not apply in the United States, where we do not create a national bibliography of our national authors' works and our national authority file is created cooperatively by many libraries and maintained and distributed by the Library of Congress (LC) for authors and publications worldwide.

The UBC model also originally assumed that the single exchanged authority record for each entity would follow the UNIMARC format and only one record for each entity would be needed. Canada, with its bilingual requirement, quickly realized it needed an English and a French authority record for the same entity, linked.

When the UBCIM Working Group on Minimal Level Authority Records (MLAR) began its work, it was clear that some of the UBC assumptions did not match reality. We felt that perhaps with the current advances in technology, we could take a fresh look and adjust the UBC concepts to facilitate international cooperation. We could shift our attention from a single authorized form that everyone in the world had to accept and could instead share parallel or complementary records through the Internet—moving more into what I've called for years "access control."

We now recognize that there are legitimate and necessary reasons why a single form of name is not necessarily acceptable worldwide. These include national differences in cataloging rules, transliteration standards, the need for different languages and scripts, and even within the same language the need to respect cultural differences in vocabularies of different audiences (see figure 1).

There are national differences in cataloging rules and communication formats used to share bibliographic and authority records. Several countries have begun the work to explore how we might get closer to harmonizing our cataloging rules and our communication formats; as noted in other articles in this issue, these countries include Germany, Russia, Canada, United Kingdom, and the United States. Cataloging rules in different countries have different perspectives on when to consider entities the same or not. There are different answers to the questions of when a name is a variant form and when it becomes a new entity; the

National Differences

- Cataloging rules
 - Boundaries of entities
 - Transliteration standards
- Languages
 - Cultural differences
 - Audience's vocabulary
- Scripts

Figure 1. UBC vs. Reality

boundary for a work becoming a new work; and if the relocation of a corporate body headquarters constitutes a new entity.

Cataloging rules also have differences in their transliteration standards. The United States follows the ALA-LC transliteration tables; other countries follow ISO transliteration standards or variations of the ISO standards.

There are also legitimate differences related to languages; even for the same language cultural differences prefer one name variation to another for the same entity. This is most apparent when we look at authority records for subject heading terminology (e.g., the term “football” is self-evident in the United States, but has several meanings in other countries, often referring to soccer; see figure 2). But this is also true for geographic names or spelling or orthographic differences in countries supposedly using the same language (e.g., Cataloging Program vs. Cataloguing Programme).

We need to consider variations to provide the users of a library catalog with a form they would expect to find: variations that result from the age or scholarly level of the intended users of the catalog (elementary school children versus scientific researchers). The vocabulary of the audience is very important, and we should be able to tailor our authorized headings to the audience. An example of this is the Getty's authority lists for author's names, which provide variant forms and explain in what context the variations are to be used as authoritative forms.

Still another legitimate and important difference besides language is the script in which that language is conveyed (see figure 3). In order to be of most use to each country's library users, the scripts should be the scripts they can read. What a novel idea! Transliteration might serve as a way for some users to be able to decipher records, but the accuracy of using original scripts can't be beat. We should now provide cross-references for variant forms of headings in variant scripts when appropriate. In the United States, MARBI is starting to explore this possibility and more work needs to be done. We should eventually be able to display the script and form of a heading that the user expects and wants.

I'm jumping ahead to the future and access control. But for now we can acknowledge the value of parallel authority records that allow us to set up the syndetic structure of

cross-references and authorized forms of headings to be used in catalogs intended for a specific audience and include variants in alternate scripts at least as cross-references.

UBCIM Working Group on Minimal Level Authority Records

Those of us on the MLAR Working Group recognized that we were at a point in technological advancement that allowed us to move beyond thinking we needed a single authority record for each entity that would be shared internationally through exchange of records. We could instead move on to linking parallel authority records for the same entity.

We no longer need to exchange records, which requires having a local database of the foreign authority file that has to be maintained locally and updated. Instead we can now arrange to use the authority records from other countries and select records for local use as needed to incorporate when appropriate into our own authority files or use as the basis for our own local authority records.

The MLAR Working Group recommended a minimal set of essential data elements that should be in any national authority record to enhance its usefulness as a shared resource—to identify those elements that one could come to expect to find in a “national” authority record. We envisioned linking records for the same entity when that is appropriate rather than requiring everyone to use the same authority record. Once again there are legitimate reasons why we need to keep a cross-reference structure that fits the language and cataloging rules of the catalog into which the authority record will be used.

Rather than exchanging authority records with the overhead of locally maintaining such a file, we would instead create a virtual database on the Internet that allowed simultaneous searching of multiple national authority files. The Europeans decided earlier to test this out with a prototype system and got funding from the European Commission as part of the Computerised Bibliographic Record Actions (CoBRA) Programme activities. This prototype was tested from January 1995 to December 1997.

Each country or library that wished to participate made its authority files available through the Internet. Links were

<u>United States</u> football	<u>UK, Australia, Canada</u> American Football, Soccer, Rugby, etc.
<u>United States</u> Cataloging	<u>UK, Australia, Canada</u> Cataloguing

Figure 2. Language Variations

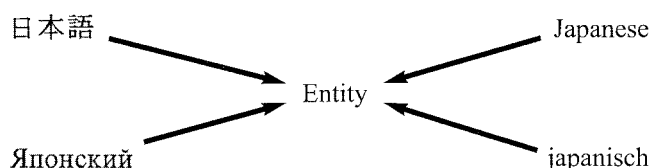


Figure 3. Same Entity/Variant Scripts

made to the related records when there was a match on a cross-reference, or there was an explicit linking field that indicated the form and authority record number and source. In the future, computer systems will be able to use these records for switching the display forms of headings.

Let's say the United States created an authority record for some international committee—the record on the left in figure 4. Then let's say the Bibliothèque Nationale de France created an authority record for the same entity and found the U.S. record on the Internet. It could use some of the notes and source information and add its authorized form that followed its cataloging rules and also possibly add a parallel heading field for the form of authorized heading used in the United States. This field could then act as a link for future displays of these authority records in the virtual international authority file.

Project AUTHOR

This idea of a shared set of resource national authority files was explored in Europe and in 1997 finally was proven in a prototype funded by the European Commission called Project AUTHOR. The project used selections from the authority files of five countries: France, the United Kingdom, Spain, Portugal, and Belgium.

This prototype included a sampling of records from each country with overlap to show the parallel records when they existed. The numbers shown here reflect the total numbers of records from each national authority file that were included in the prototype (see figure 5).

The prototype tested an adaptation of Z39.50 server software for authority records and displays for the user interface: both a UNIMARC tagged display and a labeled display. Although each country in this cooperative test actually keeps its own authority records in its own communication format, it used a conversion software package called USEMARCON to translate them all into UNIMARC. Bourdon and Zillhardt reported their results at the Bibliothèque Nationale de France (Zillhardt and Bourdon 1998).

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Figure 4. MLAR Model

Archival Efforts

Beyond libraries and national bibliographic agencies, international authority control has also been an issue recently for the archival community. The International Council of Archives (ICA) and IFLA held joint meetings and continue the liaison between the MLAR Working Group and the ICA Committee on Descriptive Standards (ICA/CDS) to synchronize efforts.

ICA/CDS developed an international standard for archival authority records, the ISAAR (CPF) for corporate bodies, persons, and families. It also wished to establish an international standard number for each entity, which is what the MLAR Working Group also considered early on, as had been recommended by the earlier IFLA committee. For each entity, a number could be used that was language- and script-neutral and recognized by computer systems to display whatever form was desired. The MLAR Working Group decided to table the idea of an ISADN (International Standard Authority Data Number) since technological advances seem to preclude the need for such a number, and we could possibly avoid the overhead of setting up and maintaining an international infrastructure to manage such numbers. We instead prefer just to provide links between authority records (a neutral number still can be present, but it represents the record not the entity) and matching and switching can work on the text string. IFLA continues to explore this issue in the Functional Requirements and Numbering of Authority Records (FRANAR) Working Group.

Next Steps

What are the next steps toward international authority control? At the 1998 ALA conference, MARBI meetings were held to review discussion papers on including references in non-Roman character sets in USMARC authority records. Considerable work remains to be done, but the introduction of Unicode and its international standard usage will enable us to make great progress in providing non-Roman access.

At the 1998 IFLA meeting in Amsterdam, the next version of the report of the MLAR Working Group was

FIVE NATIONAL LIBRARIES

UK, France, Portugal, Spain, Belgium

- British Library—41,764 records
- Bibliothèque Nationale de France—41,370 records
- Biblioteca Nacional (Portugal)—11,024 records
- Biblioteca Nacional (Spain)—22,244 records
- Bibliothèque Royale Albert Ier (Belgique)—7,196 records

Figure 5. Project AUTHOR

discussed. The essential data elements were agreed upon. IFLA plans to identify those bibliographic agencies that are willing to share their authority records as an international resource and will establish use agreements to enable international access to these records. As with Project AUTHOR, we will need to establish Internet protocols, starting with Z39.50 and later exploring whatever future protocols emerge for searching and displaying the shared resource authority records.

As our computer systems continue to mature, we will have the ability to display a user's preferred form of heading anywhere in the world in whatever script and language the user wants or whatever default form was selected for the catalog. The heading will still be controlled for consistent access to the same entity—to gain all the advantages of authority control that maximize precision and recall in online searching and to provide cross references from variant forms and related headings that fit the structure of the catalog.

It's not such a distant future anymore; the Internet and Web capabilities make it closer than ever before. The Project AUTHOR prototype has shown it can be done with current technologies, and we need to continue to develop those capabilities for the benefit of our future users and for the economic benefits to libraries everywhere.

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