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Semantic Validity: Concepts of Warrant in Bibliographic Classification Systems

Clare Beghtol

This paper argues that the semantic axis of bibliographic classification systems can be found in the various warrants that have been used to justify the utility of classification systems. Classificationists, theorists, and critics have emphasized the syntactic aspects of classification theories and systems, but a number of semantic warrants can be identified. The evolution of four semantic warrants is traced through the development of twentieth-century classification theory: literary warrant, scientific/philosophical warrant, educational warrant, and cultural warrant. It is concluded that further examination of semantic warrants might make possible a rationalized approach to the creation of classification systems for particular uses.

In "CLASSIFICATION IN INFORMATION RETRIEVAL,"[1] Coates adopts Gardin's distinction between the syntactic and semantic axes of bibliographic classification systems[2] and argues that, although the syntactic axis has commanded much attention from theoreticians and researchers, there has been "no theoretical advance"[3] on the semantic aspects of subject retrieval systems. Coates' analysis of verbal systems such as thesauri and PRECIS assumes that the semantics of subject access systems, whether ultimately arranged alphabetically or structured on some classificatory principle, is entirely a function of the meanings and relationships of the words used in the system. In this view, semantic problems center primarily on maintaining terminological currency and on providing linkages to other systems by means of translations into other natural languages or into a switching language.

The bulk of classification research has, as Coates notes, focused on the syntactics of classification systems; this preoccupation probably results from the stress Ranganathan placed on the syntactic work of systematizing the principles of concept division and of standardizing citation orders.[4] Thus, syntactic analyses have predominated both in the work of

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classificationists actively engaged in inventing schemes and in the writings of critics and commentators on the systems. During the 1950s and 1960s the Classification Research Group (CRG), for example, was particularly conscious of Ranganathan's work and turned to his principles and terminology for guidance in developing a number of special schemes, some of which have merited revision.[5] In addition, the as yet unfinished second edition of the *Bliss Bibliographic Classification* (BC2) builds on the work of both Ranganathan and the CRG to produce a sophisticated, faceted classification system that incorporates syntactic devices for ensuring notational synthesis, for alternative collocations of classes and subclasses and for the provision of special phenomena classes.[6]

Critics of bibliographic classifications, too, have emphasized the syntactic elements of the systems. Cockshutt, for example, diagrams the cyclical chain of influence and re-influence that classification systems have had on each other.[7] She particularly examines the evolution of facet analysis from its primitive beginnings in the first editions of the *Dewey Decimal Classification* (DDC) and its eventual centrality in Ranganathan's work through its incorporation in the *Universal Decimal Classification* (UDC) and the *Colon Classification* (CC) to its place in the special faceted classifications created by members of the CRG, then back to DDC and the other major general systems. Bury, who compares DDC, BC2 and the *Library of Congress* (*LC*) systems on the basis of twelve criteria culled from a number of theories of bibliographic classification, includes just two criteria ("order of subjects" and "terminology") that might be thought to fall on the semantic side of the syntactic/semantic distinction.[8] In this way, both classificationists and commentators, including Coates himself, have assembled and highlighted research principally concerned with the syntactic aspects of classification systems.

If, however, we attempt to trace a different thread through the historical development of bibliographic classification theory and practice, we find underlying assumptions about how to infuse the necessary meaningfulness into classification systems that may clarify what has been happening, more or less consciously, on the semantic side of Gardin's basic distinction. These assumptions and their effects have been less often and less rigorously presented than the syntactic work on facet analysis, notation, and synthesis, but they can be seen as semantic elements that permit a bibliographic classification system to be used to organize a documentary world in a definite and meaningful way. One such underlying semantic rationale for a classification system may be identified in the concept of the *warrant* upon which the system is based.

In general, the warrant of a classification system can be thought of as the authority a classificationist invokes first to justify and subsequently to verify decisions about what classes/concepts to include in the system, in what order classes/concepts should appear in the schedules, what units classes/concepts are divided into, how far subdivision should proceed, how much and where synthesis is available, whether citation orders are static or variable and similar questions. Warrant covers conscious or unconscious assumptions and decisions about what kinds and

what units of analysis are appropriate to embody and to carry the meaning or use of a class to the classifier, who must interpret both the document and the classification system in order to classify the document by means of available syntactic devices. The semantic warrant of a system thus provides the principal authorization for supposing that some class or concept or notational device will be helpful and meaningful to classifiers and ultimately to the users of documents. The close correlation between meaning and function or use that is implicit in the concept of warrant can be philosophically justified by Wittgenstein's arguments that language has no a priori meaning, but attains meaning only through use. Frohmann criticized the semantics of PRECIS from a Wittgensteinian perspective and argued that PRECIS suffers from a commitment to an a priori semantic theory that renders it an intuitive, rather than a rational, system.[9]

A bibliographic classification is meant to convey meaningful subject relationships to users of documents that are classified by the particular system, and the fundamental meaningfulness and utility of the system derive initially from its warrant. In this sense, part of the semantic theory of a classification system is the warrant from which it arises and that is invoked to govern judgments about the value and validity of the subject relationships expressed by and embodied in the structure of the classification. What function does this class (formed either by enumeration or by a classifier's manipulation of the possibilities of synthesizing prenotated concepts) perform in this classification system? is ultimately the same question as What does this class mean in the context of the classification system as a whole? This question, which a classifier must answer in order to assign a document to an appropriate class, rests on the more general questions From what elements of precedent and usage do the logical and conceptual relationships expressed by this classification system acquire meaning? and What evidence can be adduced for supposing that these particular elements will bear consistently helpful meaning to the classifier and to the user of the documents classified by the system?

Although the most familiar kind of warrant is Hulme's "literary warrant,"[10] a number of other kinds of warrant can be discerned in both traditional hierarchical classifications and in more recent faceted systems. An exploration of the various semantic warrants that have guided the creation of bibliographic classification systems can start by identifying at least four basic kinds of warrant: literary warrant, scientific/philosophical warrant, educational warrant, and cultural warrant. These different warrants, which will be examined in the following sections of this paper, are not mutually exclusive; instead, they interact to produce the unique semantic theory and character of each classification system. In spite of the interdependence of the different warrants, however, it is helpful to consider them separately and to trace the historical roots and subsequent development of each in turn.

Types of Semantic Warrant

Literary Warrant

Hulme coined the term *literary warrant* in his paper "Principles of Book

Classification." According to Hulme, definition of a class heading should rest

> upon a purely literary warrant. . . . A class heading is warranted only when a literature in book form has been shown to exist, and the test of the validity of a heading is the degree of accuracy with which it describes the area of subject-matter common to the class. Definition, therefore, may be described as the plotting of areas pre-existing in the literature.[11]

A number of writers concur that Hulme's original idea of literary warrant has undergone change. Bury, for example, asserts that there is no choice but to base classification schemes on the way subjects appear in documents and remarks that literary warrant is often taken to mean "basing a classification scheme on the actual holdings of one library, and LC is cited as so based."[12] In her view, this usage differs from Hulme's original conception. Langridge calls literary warrant a necessary "practical check" on the multitude of theoretical distinctions that potentially exist between subjects and differentiates this view of literary warrant from Hulme's.[13] After noting that Hulme distinguishes book classifications from scientific or philosophical classifications of knowledge, a view that Langridge himself does not share, he notes that the term is also "occasionally used in the narrow sense of the *volume* of literature on a subject."[14]

Hulme's view of literary warrant actually encompassed the two elements that Bury and Langridge argue are not quite legitimately included in the term. Bury's contention that literary warrant excludes the idea of basing a classification scheme on the holdings of one library is undercut by Hulme's remark that, under the principle of literary warrant, "class and shelflist will tend to coincide" because the "unit of registration" (i.e., the book) should be treated by the library as indivisible. Although he believes that standardization of book classification would be desirable, such centralized cooperation is "sufficiently remote" to make it likely that a library will need its own classification scheme and that such a scheme, geared to each library's holdings, will tend to mirror its own shelflist.[15] In addition, Hulme himself suggested what Langridge calls a too narrow view of literary warrant when he qualified his definition to include different strengths of literary warrant that varied "with the number of works conforming to the type of each class definition."[16] Thus, Hulme's term appears to have a more comprehensive meaning than some writers have attributed to it.

Although Hulme's view of literary warrant as basic to a classification system was quite broad, his idea of subject classification was confined to literature published in book form. Later theorists such as the CRG, however, influenced by Ranganathan's distinction between the micro- and macrolevels of documents, realized that classifications for the subjects of whole books were not detailed enough for either the more specific subjects of periodical articles or for the more complicated interdisciplinary works that were becoming increasingly common. In response to the challenge of finding ways to express highly detailed and minutely interrelated ideas in a widening number of subject fields, the CRG adopted

facet analysis and refocused theories of classification from an emphasis upon what Wilson,[17] following Austin's terminology,[18] calls "universe of knowledge" systems to an emphasis on "universe of concepts" systems.

Universe of knowledge systems subdivide all knowledge hierarchically and deduce a number of equally valid classificatory hierarchies in which a single subject may appear at several places in the schedules in the context of a number of disciplines and with a variety of notations. In contrast, universe of concepts systems attempt to group concepts inductively into categories and to provide each concept with a unique notation that will accompany it into any category containing it. The process of facet analysis is, then, the process of concept analysis, and the CRG attempted to design faceted systems that would allow any single concept to be expressed by a unique notation in any context in which the concept might happen to appear in a document.

In designing a number of special faceted systems based on the universe of concepts premise, members of the CRG agreed with Hulme that classification systems should be based on the existing literature. Although members of the Group later tried to develop a general classification system for all knowledge based on the theories of integrative levels and general systems, their initial work assumed that universe of concepts systems should be based on the literature of a particular subject field, just as Hulme had assumed that a universe of knowledge system should be based on literary warrant. The CRG, however, narrowed Hulme's original idea from "literary" to what might be called "terminological" warrant. That is, instead of basing systems on the subjects of books, members of the Group based systems on the terminology of a subject field. To isolate facets appropriate for the subject field and to identify foci to act as the subdivisions of each facet, the CRG turned to the literature of the subject to discover the terms knowledgeable writers used to name the concepts with which they worked.

Rodríguez notes that Kaiser had tried to achieve specific index entries by extending "the point of acceptance of a term via literary warrant to the point of use of a term in logical relation to other terms" and that Kaiser took the study of terms and their interrelationships to be the first step in the development of a classification system.[19] It was not until the advent of facet analysis, however, that terminological warrant became firmly implanted in classification theory; there seems to be no evidence that the CRG was directly influenced by Kaiser's indexing theories. The Group appears to have arrived at terminological warrant independently as a result of their application of Ranganathan's general theories to special subject fields.

Vickery, in his handbook of procedures for making faceted classifications, writes that organizing a field into facets "can be achieved only by a detailed examination of the literature of the field" and suggests that the classificationist study textbooks, glossaries, and journals of abstracts to find terms that reveal the detailed structure of the subject.[20] Giving his own system for *Soil Science* as an example, he writes that he began by collecting more than three hundred fifty terms for analysis into categories that were eventually found to reveal five fundamental soil science

facets.[21] Similar advice on collecting current subject terms continues to be propounded by CRG members and appears in at least three of their recent major works, *Classification and Indexing in Science,*[22] *Classification and Indexing in the Social Sciences*[23] and *Classification and Indexing in the Humanities.*[24] In their reliance on terminological warrant, members of the CRG differ from Ranganathan, who argued against the need for special classifications, and who, postulating the existence of five universally applicable fundamental categories, based CC upon the traditional academic disciplines rather than upon categories initially revealed by a study of the specialized terminologies of various subject fields.[25]

Hulme, then, took the subjects of books as the semantic primitives of a classification system, but the CRG, concurring with him that the semantic primitives of a system must be extracted from the literature, narrowed the semantic base of classification systems from the subjects of documents to the terms that are found in the documents. In this way, the Group managed to move from traditional universe of knowledge systems to the universe of concepts (i.e., faceted) systems formalized by Ranganathan and, simultaneously, to retain a solid footing in published literature as the most meaningful warrant on which a bibliographic classification system can be validly based.

Scientific/Philosophical Warrant

Bliss maintained that bibliographic classifications

> should be *organized in consistency* with the *scientific and educational consensus*, which is *relatively stable* and tends to become more so as theory and system become more definitely and permanently established in general and increasingly in detail.[26]

To Bliss the general agreement of scientists and educators on an ordering of knowledge that was notably conducive to systematic study, scholarship, and research constituted the only acceptable warrant for a classification system, and he based his own *Bibliographic Classification* (BC) on this premise, while also allowing for alternative orders in special circumstances.[27] For the purposes of this paper, the two elements—scientific and educational—in Bliss' conception of consensus are considered separately. Although this separation is somewhat artificial in terms of Bliss' writings, the historical development of each kind of warrant in later classification theory can be traced more precisely if each element is treated alone.

Despite the detailed criticisms of philosophical and scientific systems of knowledge that appear in *The Organization of Knowledge*, Bliss believed that, over time, philosophical inquiry had produced generally valid conclusions about how knowledge arises and should be organized and that scientific advances following in the wake of the explorations of philosophers had confirmed the general principle that knowledge becomes more stable and consensual (i.e., more scientific) as scientific principles come to be applied to the study of various knowledge fields.[28] In Bliss' view, all knowledge, including religious and aesthetic knowledge, tends toward the scientific and evolves progressively through higher and higher levels of consolidation to a state of near-equilibrium in which details may

change, but the overall outline remains fairly constant.

Bury considers the principle of consensus to be the same as that of literary warrant because both are based on a reading of the literature.[29] Rodríguez, however, in a more perceptive analysis of Bliss' thought, points out that the idea of consensus arises not from a reading of any one literature but from "a philosophical construction, a synthesis of all historical thought on the subject of classification."[30] Fiering, writing on the epistemological and moral philosophy of Samuel Johnson (president of King's College, now Columbia University, in New York City from 1754 to 1763), notes that few histories of the philosophy of the classificatory relationships among the sciences have been written and praises the scholarliness and depth of theoretical understanding Bliss displayed in *The Organization of Knowledge*.[31] Fiering's description of Bliss as a "modern encyclopedist"[32] supports Rodríguez' view that *consensus* is not a mere restatement of *literary warrant*, but is theoretically based on Bliss' lifelong erudite research into the history of the philosophy of science.

Bliss, then, believed that the fundamental authority that infused meaning into a bibliographic classification system was the best philosophical and scientific consensual thinking that was available to the classificationist and that only on this foundation could a classification system be created that would have relatively permanent validity and usefulness. In his view, the philosophical system of the sciences ideally mirrored the orderly system of nature; as scientific scrutiny of nature had increased in accuracy, then, so could the classification of knowledge in libraries reproduce more exactly the judicious conclusions reached by scientists and philosophers.

Bliss' reliance on the concept of scientific/philosophical thought as the semantic warrant for bibliographic classification systems, although most extensively developed in *The Organization of Knowledge* and *The Organization of Knowledge in Libraries*, never altered fundamentally from opinions he had expressed much earlier.[33] Although Ranganathan later argued at length that classification systems should be based on scientifically systematic principles of division and combination (i.e., upon his own analytico-synthetic principles), his conception of science was less broad than that of Bliss and arose from his primarily mathematical, not philosophical, intellectual training and inclinations. Thus, classification theorists appeared to have abandoned the philosophy of science as a warrant for a bibliographic classification until the CRG tried to create a general system based upon the biological theory of integrative levels as explicated by Needham and by Feibleman[34] and later to incorporate into their analyses elements of general systems theory as propounded by von Bertalanffy.[35]

The CRG's exploratory excursions into the philosophies of biology and of general systems for the purposes of a general classification system failed to advance beyond preliminary "speculative" work,[36] and their joint search for a viable, nondisciplinary basis for a general system succumbed to the loss of their NATO grant in 1968. With the exception of Mills, who undertook the revision of Bliss' BC and, while retaining BC's

original philosophically oriented framework, has incorporated into the new BC2 the syntactic work of Ranganathan and the CRG, the CRG does not seem to have been particularly inspired by Bliss' idea of consensus as a semantic warrant. Nevertheless, just as the CRG narrowed the concept of literary warrant to permit the creation of special faceted systems, so the Group can also be seen as attempting less successfully to narrow the concept of scientific/philosophical warrant to permit the creation of a general system. Such a general system would accord with the principles of facet analysis but would not, as was CC, be predicated on traditional academic disciplines. From Bliss' application of the whole history of philosophical thought to bibliographic classification systems, the CRG moved to a consideration of only two modern philosophies, one specifically designed for biology and the other, admittedly more general in intent, concerned mainly with the nature of systems and not with the pursuit of a more wide-ranging philosophical validity.

The CRG's work on a general classification system from 1963 to 1968, then, can be seen as attempting to limit Bliss' idea of the validity of a scientific/philosophical consensual warrant for classification systems. Members of the CRG, taken singly or as a group, appear to have lacked both Bliss' familiarity with the history of philosophical and scientific classifications of knowledge and also his impassioned conviction that philosophical and scientific inquiry alone could impart the certainty of meaning and ultimate usefulness needed to underpin a potentially successful classification system. In contrast, the CRG, looking for practical, idea-generating guides, tried to use integrative levels theory to organize a general analytico-synthetic scheme and general systems theory to establish a standard citation order for such a system. In this, they turned to philosophy not for any unique value of its own in lending helpful intellectual power to the potential system, but only for the possibility that it might negate the need for the discipline-based classification systems they eschewed and for which they wished to find an alternative. Austin later wrote that the Group "tried too hard to instil a kind of respectability into our researches by setting them into a philosophical framework" and that philosophical theories should henceforth be used for "practical purposes without regard for their antecedents or the impeccability of their philosophy."[37] Thus, the CRG confined its inquiries to areas they believed suited their immediate purposes and did not try to develop a general scientific/philosophical basis for their new system.

Educational Warrant

Although Bliss' characteristic phrase "scientific and educational consensus" is here separated into its two elements, Bliss himself considered that the scientific and the educational consensus, if not completely synonymous, were so closely intertwined that a library classification, in order to be both meaningful and practical, should reflect the educational as well as the scientific consensus. To make this point, Bliss argued that the pedagogic order of knowledge closely parallels the natural, logical, and developmental orders. For example:

The pedagogic order . . . would comprise the logical, the scientific, the historical, the social, the ethical, the religious, the political, the economic, the aesthetic, and the philological, and would therefore be closely correlated with the natural and logical order and with the developmental order.[38]

To substantiate this argument, Bliss produced five synoptic tables representing the natural order, the developmental order, the pedagogic order, the logical order and the order by specialty.[39] The many correspondences among these tables demonstrated to him that educational thinking about the organization of knowledge for study was closely related to the other organizations of knowledge and that library classifications should adhere to the correlations among these various orders:

There are indeed two kinds of classification, on the one hand the logical, natural, and scientific, on the other hand the practical, the arbitrary, the purposive; but for library classification we should join these two hands; the two purposes should be combined. To make the classification conform to the scientific and educational organization of knowledge is to make it more practical.[40]

For Bliss, then, part of the authoritative semantic warrant of a library classification rested on its conformity to the practical needs of educational institutions and this practical utility rendered a library classification relatively permanent by responding to the best consensual thinking of the scientific and educational communities.

Bliss clearly articulated the principle of educational consensus and consciously created BC for the needs of the Library of the City College of New York, where it was used until his death in 1955. In addition, a number of other systems have been designed expressly for academic institutions and the systems' creators have assumed, perhaps unconsciously, that an educational warrant would be universally valid for the helpful organization of knowledge. For example, Dewey developed DDC for Amherst College. The UDC, although designed as a bibliographic, not a book, classification, was originally based on DDC and thus by extension on the needs of an academic library. LC, developed for the Library of Congress itself, is usually thought[41] to have been at least partially based on the *Expansive Classification* that Cutter began developing at the Boston Athenaeum.[42] Osborn, however, writes that Franklin Currier at Harvard gave Charles Martel, the classification schedules for the Harvard College Library; that Martel "had the classes they covered serve as the basis for the new L.C. scheme"; and that Currier later incorporated some LC schedules into the Harvard classification, so that "the Harvard and L.C. classification schemes became true cognates."[43] Although Osborn gives no source for this information, LC may thus have been at least partially based on an academic warrant. CC, too, was originally created for the needs of the library of an educational institution, the University of Madras.

In the same way that we have traced in the work of the CRG the narrowing of Hulme's literary warrant to terminological warrant and of Bliss' general scientific/philosophical warrant to the more restricted

warrant of two specialized philosophies, we may also trace the narrowing of Bliss' idea of a general educational warrant to an individualized warrant arising from the needs of specific noneducational institutions. The CRG rejected a discipline-based academic warrant for classification systems, but the special classifications members of the Group developed were in many cases based upon the particular needs of an individual noneducational institution. Unlike Ranganathan and Dewey, who believed their systems could be used or adapted for any library or for classified bibliographies or catalogs, the CRG initially believed that special subject areas, often represented by the institutional libraries or organizations to which its members were attached, demanded classifications governed by the more restricted warrant of a specialized situation.

Kyle, for example, developed her *Social Science Classification*[44] while working on bibliographies for the UNESCO International Committee on Social Sciences Documentation. Farradane, Scientific Information Officer at Tate and Lyle, began to create his relational indexing system, which he believed would serve as the foundation for a classification scheme,[45] for use in the technical library of a commercial enterprise. D. J. Foskett developed a scheme for *Container Manufacture* while at the Metal Box Company.[46] Another, D. J. Foskett's scheme for *Community Development*, was commissioned for the Community Development Clearing House of the University of London Institute for Education.[47] Coates developed the *British Catalogue of Music Classification*[48] while working for the British National Bibliography. D. J. Foskett remarks that this wide spectrum of early schemes stimulated energetic discussion at CRG meetings by providing "the experimental data that were required"[49] for testing various classificatory techniques, primarily syntactic ones.

These special classifications were custom-designed for noneducational institutions because the CRG believed that a general educational consensus, which had automatically yielded discipline-based schemes, was insufficiently precise for the needs of other kinds of organizations. Thus, once again the CRG narrowed the semantic warrant of classification systems, in this case from a broad academic warrant that had been assumed to have general applicability to a limited institutional warrant that was suitably refocused for individual institutions or for special purposes.

After failing to create its own general scheme, the CRG did not try to invent another general classification. Coates, however, working for UNISIST, has recently based a general scheme on what he calls "concrete institutional warrant."[50] *Broad System of Ordering* (BSO), which was first published in 1978 and explained more fully in 1979,[51] is designed to be a general switching language for proliferating specialized subject access systems. For this reason, BSO uses as a minimal "block" of information

> overall subject fields of the most narrowly specialized organizations functioning as information sources. In other words, a subject which had an actual organized information source devoted exclusively to it was to be given its own code in BSO.[52]

According to Coates, concrete institutional warrant produces classes

that are mostly discipline-based, but also others, phenomenon- or mission-based, that can accommodate institutions oriented toward a certain phenomenon or guided by a certain mission. Researchers engaged in the creation of BSO first collected about four thousand terms from a number of information organizations and studied these terms in order to identify subject and category relationships that could underlie such a special purpose general scheme.

We may say, then, that BSO tries to combine in one general classification system the ideas of terminological warrant and of institutional warrant both of which emerged from the CRG's early work on special classification systems. In this way, the original ideas of both Hulme and Bliss, moderated by the CRG, have influenced the semantic warrant by which a new general classification system is governed. Justification of the potential semantic validity of BSO as a switching language can be said to be grounded in terminological and institutional warrant, while at the same time depending upon the advances in syntactic theory and technique identified by Ranganathan and refined by the CRG.

Cultural Warrant

Lee, in a discussion of Austin's view that "the semantic or categorical basis of a given classification is the product of the culture which produced it; there is no common underlying structure of the kind [i.e., syntactic ordering of concepts] considered above"[53] suggested that this idea might be called *cultural warrant*.[54] Austin's point was that, although linguistic research into transformational grammars may have identified a universal syntax upon which to base classificatory citation orders, there is no such thing as universally applicable cultural content. Lee sees Austin's concept of cultural warrant as an extended manifestation of Hulme's literary warrant because a library classification system rooted in the existing literature will necessarily reflect the intellectual tendencies and preoccupations of the society in which the literature is published. In making this connection, Lee seems unaware that Hulme himself, although he did not name the concept, recognized and wrote on the cultural warrant of classification systems.

In a series of lectures delivered at the University of Cambridge in 1921 and 1922, Hulme outlined and illustrated the potential usefulness of examining the cultural warrant of classification systems.[55] If the historical development of book classification is explored, Hulme wrote, "it presents for each period a bibliographical counterpart of the corresponding growth of the activities of the human mind."[56] Hulme's thesis in the lectures was

> to ascertain and illustrate by bibliographic data various stages in the development of the mechanics of civilization. Hence while philosophers treat civilization as an end product I deal with it as an organic growth so far as this growth can be correlated with the recorded intellectual activities of the several periods.[57]

Hulme first illustrates his thesis with a chart reproducing a "Classification of Scientific Manuscripts in the British Isles Prior to 1500" and with a "Tabular Survey of the Literature of Architecture" in the sixteenth, seventeenth, and eighteenth centuries. From these, Hulme de-

duces the characteristic interests of the societies that produced documents that were to be classified by these systems. He then turns to detailed analyses of the statistics of patented inventions in the British Isles from 1449 to 1921 and in the United States from 1880 to 1921. From these, he concludes that the Industrial Revolution can be precisely dated to have begun in 1779 and that further statistical treatment of the bibliographic output of various eras could contribute to an increasingly precise understanding of historical trends. An example of what Hulme considers an outstanding contribution of this type is Cole and Eales' analysis of the literature of comparative anatomy between 1550 and 1860;[58] Hulme concludes that oscillations in the numbers and types of comparative anatomy publications would, if further studies were done, find parallels or contrasts in other branches of science.

Hulme thus appears to have been the first to identify, although not to name, cultural warrant as one of the semantic bases of a bibliographic classification system and to suggest that the study of classifications can add an extra dimension to the historical study of a field of knowledge, a culture or an epoch. Eric de Grolier credits Bliss with being the "first author—to my knowledge—who attempted a quantitative study of library classifications," but Bliss' purpose was to decide how to apportion notation in BC, not to examine the Zeitgeist of an era.[59] De Grolier seems unaware of Hulme's lecture series, but he concurs with Hulme that the study of document classifications yields insights into societal trends. He attempts, with examples ranging from the Middle Ages to the present, to show that the number of divisions a classification system allots to a knowledge field can be used to show cultural developments and preoccupations. De Grolier compares the percentage of categories covering science and technology to the percentage of categories covering the humanities and social sciences in a number of schemes and draws tentative conclusions about the cultural matrices each scheme mirrors. He concludes that "the relationship of library/bibliographic classifications with their contemporary literary output has been more or less demonstrated" and suggests that similar studies of classification systems as cultural artifacts could be used to provide quite detailed evidence of cultural phenomena.[60]

Between Hulme's early lectures on the potential of book classifications as historical evidence and de Grolier's essay on the practicability of the comparative study of classification systems for the purpose of drawing broad historical inferences, few, if any, sociologically rigorous analyses of bibliographic classification systems appear to have been done, although the cultural biases in bibliographic systems have often been intuitively recognized.[61] In particular, the American middle-class biases of DDC have been noted and attempts to remove them praised.[62] Nevertheless, with the exception of Hulme and de Grolier, writers have not systematically analyzed the large-scale influence of cultural components, assumptions, and trends on bibliographic systems. It has generally been thought (by, for example, Dewey, Bliss and Ranganathan) that a relatively permanent classification system could be developed. Each of these classificationists advanced arguments showing that his own system was more likely to be permanent than the others and each

argued that the kind of semantic warrant he himself favored was the most suitable to govern a permanent system; but none considered that a cultural bias jeopardized his system's overall usefulness.

Cultural warrant is an umbrella concept that covers and at least partially explains the developmental changes in the kinds of semantic warrant that have been outlined here. Changes in the conceptions and uses of literary warrant, scientific/philosophical warrant, and educational warrant can all, then, be viewed as detailed case studies of the more general concept of cultural warrant. As presented here, the CRG's theoretical and practical investigations into the possibilities of faceted classification restricted and modified previously established semantic warrants for classification systems.

The CRG's changes in the various warrants emerge as reactions to users' demands upon libraries and information services for more precisely delineated and rationally justifiable information retrieval systems. One may speculate that direct responses to users' demands may result in increasingly theoretical investigation of the concept of *enquiry warrant* that was discussed at the CRG's two hundred and fiftieth meeting in December 1984.[63] Enquiry warrant may be identified as the semantic rationale behind the creation of such systems as the Detroit Public Library *Reader Interest Arrangement*[64] and Pejtersen and Austin's *Analysis and Mediation of Publications* multiple-entry classification scheme for fiction.[65]

Detailed studies of cultural changes reflected in the work of the CRG or of other classificationists would need to include analyses of the increase in scientific and social scientific research done outside academic institutions by private industry and other public and private institutions; the predominance of periodicals instead of books as the major communication vehicle among researchers, particularly in scientific and technological areas; the increasingly complicated interdependence of traditionally unrelated academic disciplines upon each other; and the rise of computer technology in all areas of intellectual inquiry and social interaction. These and similar cultural changes, which first appeared in an affected society as a whole, were ultimately reflected in the CRG's conviction that neither academic library collections nor academic disciplines nor academic scientific/philosophical constructs could provide adequate semantic bases for all classification systems. From this perspective, the work of the CRG provides one example of how cultural warrants influence the underlying operational rationale upon which classification systems depend for meaningfulness and utility. To investigate cultural warrant beyond the intuitive or observational level, the techniques and findings of such fields as sociology, the sociology of knowledge and social/cultural anthropology would have to be applied to the study of bibliographic classification systems. For example, the study of ethnosemantics may provide a fresh perspective on the universality of cognitive classification systems in human thought and culture.[66]

Conclusion

The semantic axis of bibliographic classification systems can be seen as those elements of theory and practice by means of which a classificationist tries to guarantee that a classification system will provide a mean-

ingful and useful organization for the contents of documents. Absence of such a semantic theory produces an arbitrary and idiosyncratic melange of concepts; examples of arrangements lacking a semantic framework are found in alphabetical lists of terms or subjects. In such cases, attempts to compensate for the nonsystematic nature of the alphabet are made by incorporating syndetic elements that will, it is hoped, infuse helpful relational clues into an arrangement that is fundamentally irrational by nature and by definition. For example, some research has shown that, if a thesaurus is not established upon classificatory principles, a classificatory structure will not automatically emerge from its syndetic elements.[67] Thus, Coates' assertion that the syndetic structures of thesauri contain only "classificatory fragments" is confirmed.[68]

Classification systems, in contrast, are predicated on the assumptions that (1) pre-defined principles and priorities will allow the reasoned establishment of meaningful relationships both among the elements in the system and between the system and the world of documents it seeks to organize and (2) that the presence of such principles will be beneficial to the users of the system. Whatever these nonarbitrary principles may be, they constitute the semantic warrant of the classification system, whether or not the warrant is completely and explicitly recognized by the classificationist. Although writers have generally concentrated on the syntactic aspects of classification systems, the semantic axis of classification systems exists in the various semantic warrants that have been used to justify their utility. A semantic warrant inevitably governs syntactic techniques and devices, just as in natural language the intended meaning of a sentence must be understood before an appropriate syntax can be chosen. The semantic elements of both natural language and of classification systems, however, are not as easy to isolate and to examine as are the syntactic elements.

A historical treatment of the development of various principles of classificatory semantics has been used to show that changes in the underlying semantic warrant will produce radically different classification systems, even when the same kinds of syntactic devices are used to express relationships among subjects both within and between documents. As we have seen, the priorities that different classificationists have assigned to various semantic elements dictate the eventual character of the classification system. Research into the evolution of classificatory semantic theory has previously been overshadowed by concentration on syntactics. More detailed examination of the interrelationships among various kinds of semantic warrant is needed before the underlying semantic theories of bibliographic classification systems can be clearly defined and their effects and advantages exploited with confidence.

References

1. Eric J. Coates, "Classification in Information Retrieval: The Twenty Years Following Dorking," *Journal of Documentation* 34:288–99 (Dec. 1978).
2. J. C. Gardin, *Syntol* (New Brunswick, N.J.: Ruters State Univ., Graduate School of Library Science, 1965).
3. Coates, "Classification in Information Retrieval," p.296.

4. S. R. Ranganathan, *The Colon Classification* (New Brunswick, N.J.: Rutgers Univ. Pr., 1965).
5. For example, Douglas J. Foskett and Joy Foskett, *The London Education Classification. A Thesaurus/Classification of British Educational Terms*, 2d ed. (London: Univ. of London Institute of Education Library, 1974); and K. D. C. Vernon, *The London Classification of Business Studies*, 2d ed. (London: Aslib, 1979).
6. Jack Mills and Vanda Broughton, *Bliss Bibliographic Classification* 2d ed. (London: Butterworths, 1977–).
7. Margaret E. Cockshutt, "Dewey Today: An Analysis of Recent Editions," in *Major Classification Systems: The Dewey Centennial; Papers Presented at the Allerton Park Institute . . . 9–12 Nov. 1975* ed. Kathryn Luther Henderson (Urbana-Champaign, Ill.: Univ. of Illinois Graduate School of Library Science, 1976), p.22–46.
8. Susan Bury, "Comparison of Classification Schemes for Libraries," *Library Science with a Slant to Documentation* 17:73–82 (Sept. 1980).
9. Bernard P. Frohmann, "An Investigation of the Semantic Bases of Some Theoretical Principles of Classification Proposed by Austin and the CRG," *Cataloging and Classification Quarterly* 4, no. 1:11–27 (Fall 1983).
10. E. Wyndham Hulme, "Principles of Book Classification," *Library Association Record* 13:354–58, 389–94, 444–49 (14 Oct., 15 Nov., 15 Dec. 1911) and 14:39–46, 174–81 (15 Jan., 15 Mar. 1912).
11. Ibid., p.447.
12. Bury, "Comparison," p.74.
13. Derek Langridge, *Approach to Classification for Students of Librarianship* (London: Bingley, 1973), p.56.
14. Ibid., original emphasis.
15. Hulme, "Principles," p.448.
16. Ibid., p.447.
17. Thomas D. Wilson, "The Work of the British Classification Research Group," in *Subject Retrieval in the Seventies: New Directions*, ed. Hans Wellisch and Thomas D. Wilson (Westport, Conn.: Greenwood, 1972), p.62–71.
18. Derek Austin, "Development of a New General Classification: A Progress Report," *The Information Scientist* 1:95–115 (Nov. 1969).
19. Robert D. Rodríguez, "Classification and Subject Indication: Highlights of the Anglo-American Debate, 1850–1950," *Libri* 31:323–40 (Dec. 1981).
20. Brian C. Vickery, *Faceted Classification: A Guide to Construction and Use of Special Schemes* (London: Aslib, 1960), p.20.
21. See Brian C. Vickery's soil science classification in his *Classification and Indexing in Science* 1st ed. (London: Butterworths, 1958), Appendix B, Examples of Faceted Classifications, p.146–54.
22. Brian C. Vickery, *Classification and Indexing in Science*, 3d ed. (London: Butterworths, 1975).
23. Douglas J. Foskett, *Classification and Indexing in the Social Sciences*, 2d ed. (London: Butterworths, 1974).
24. Derek Langridge, *Classification and Indexing in the Humanities* (London: Butterworths, 1976).
25. S. R. Ranganathan, "General and Special Classifications," in *Classification Research*, ed. Pauline Atherton (Copenhagen: Munksgaard, 1965), p.81–93.
26. Henry Evelyn Bliss, *The Organization of Knowledge in Libraries and the Subject-Approach to Books*, 2d ed. rev. (New York: Wilson, 1939), p.42–43, original emphasis.
27. Henry Evelyn Bliss, *A Bibliographic Classification* (New York: Wilson, 1940–53).
28. Henry Evelyn Bliss, *The Organization of Knowledge and the System of the Sciences* (New York: Holt, 1929).
29. Bury, "Comparison," p.74.
30. Rodríguez, "Classification," p.336.
31. Norman S. Fiering, "President Samuel Johnson and the Circle of Knowledge," *William and Mary Quarterly* 28:199–236 (Apr. 1971).
32. Ibid., p.217.
33. Henry Evelyn Bliss, "A Modern Classification for Libraries with Simple Notation, Mnemonics and Alternatives," *Library Journal* 35:351–58 (Aug. 1910).
34. Joseph Needham, "Integrative Levels: A Reevaluation of the Idea of Progress," in

Time, the Refreshing River (London: Allen and Unwin, 1943) and James K. Feibleman, "Theory of Integrative Levels," *British Journal for the Philosophy of Science* 5:59-66 (May 1954).
35. Ludwig von Bertalanffy, "An Outline of General System Theory," *British Journal for the Philosophy of Science* 1:134-65 (Aug. 1950).
36. Derek Austin, "The CRG Research into a Freely Faceted Scheme," in *Classification in the 1970s: A Second Look*, ed. Arthur Maltby (London, Bingley, 1976), p.174.
37. Derek Austin, comments following Sarah Ann Scott Huckaby, "An Enquiry into the Theory of Integrative Levels as the Basis for a Generalized Classification Scheme," *Journal of Documentation* 28:105 (June 1972).
38. Bliss, *The Organization of Knowledge and the System of the Sciences*, p. 227.
39. Ibid., p.232-35.
40. Bliss, *The Organization of Knowledge in Libraries*, p. 36-37.
41. For example, Antony C. Foskett, *The Subject Approach to Information*, 4th ed. (London: Bingley, 1982) and Langridge, *Approach* (see ref. 13).
42. Charles Ammi Cutter, *Expansive Classification* (Boston, Mass.: C. A. Cutter, 1891-1904?).
43. Andrew D. Osborn, "From Cutter and Dewey to Mortimer Taube and Beyond: A Complete Century of Change in Cataloguing and Classification," *Cataloguing Australia* 2:3-11 (July-Dec. 1976), p.4.
44. Barbara Kyle, "Towards a Classification for Social Science Literature," *American Documentation* 9:168-83 (July 1958); and "Guide to the Use of the Kyle Social Science Classification," *American Documentation* 9:320-21 (Oct. 1958).
45. J. E. L. Farradane, "Fundamental Fallacies and New Needs in Classification," in *The Sayers Memorial Volume*, ed. D. J. Foskett and B. I. Palmer (London: Library Assn., 1961), p.120-35.
46. Douglas J. Foskett, "Container Manufacture" [abbreviated schedules] in Brian C. Vickery, *Classification and Indexing in Science* (see ref. 21), p.158-61.
47. See Douglas J. Foskett's classification for community development in his *Classification and Indexing in the Social Sciences*, 1st ed. (London: Butterworths, 1963), Appendix, p.177-84.
48. Eric J. Coates, *British Catalogue of Music Classification*, (London: BNB, 1960).
49. Douglas J. Foskett, "The Classification Research Group 1952-1962," *Libri* 12:127-38 (1962), p.131.
50. Eric J. Coates, "The Broad System of Ordering (BSO)," in *New Trends in Documentation and Information*, ed. Peter J. Taylor (London: Aslib), p.260.
51. Eric J. Coates and others, *The BSO Manual: The Development, Rationale and Use of the Broad System of Ordering* (The Hague: Fédération internationale de documentation, 1979).
52. Coates, "The Broad," p.260.
53. Derek Austin, "Citation Order and Linguistic Structure," in *The Variety of Librarianship*, ed. W. Boyd Rayward (Sydney: Library Assn. of Australia, 1976), p.45.
54. Joel M. Lee, "E. Wyndham Hulme: A Reconsideration," in *The Variety*, (see ref. 53), p.111.
55. E. Wyndham Hulme, *Statistical Bibliography in Relation to the Growth of Modern Civilization* (London: Butler and Tanner, 1923).
56. Ibid., p.5.
57. Ibid., p.7.
58. F. J. Cole and Nellie B. Eales, "The History of Comparative Anatomy. Part I: A Statistical Analysis of the Literature," *Science Progress* 11:578-96 (Apr. 1917).
59. Eric de Grolier, "Classifications as Cultural Artefacts," in *Universal Classification I*, V.2, ed. Ingetraut Dahlberg (Frankfurt: Indeks Verlag, 1982), p.34.
60. Ibid., p.33.
61. For example, C. David Batty, "Christopher Robin and Cutter: An Animadversion on American Cataloguing and Indexing," *Catalogue & Index* 14:4-6 (Apr. 1969) and Ian C. S. Britain, "Classification and Culture," *Australian Academic and Research Libraries* 6:31-44 (Mar. 1975).
62. For example, Ron Linden, "Some Thoughts on the Dewey Decimal Classifica-

tion," *Library Resources & Technical Services* 26:183-87 (Apr./June 1982).
63. "U.K.: CRG 249 and 250," *International Classification* 12, 1:31-32 (1985).
64. Detroit Public Library, *The Reader Interest Book Arrangement in the Detroit Public Library* (Detroit: Home Reading Services, Detroit Public Library, June 1955).
65. Annelise Mark Pejtersen and Jutta Austin, "Fiction Retrieval: Experimental Design and Evaluation of a Search System Based on Users' Value Criteria," *Journal of Documentation* Part 1, 39:230-46 (Dec. 1983) and Part 2, 40:25-35 (Mar. 1984).
66. For example, Ronald W. Casson, "Ethnosemantics," in *Language, Culture and Cognition: Anthropological Perspectives,* ed. Ronald W. Casson (New York: Macmillan, 1981), p.75-91.
67. Constance May Mellott, "Analysis of an Alphabetical Subject Heading List to Determine Elements of Classification," Ph.D. diss., University of Pittsburgh, 1977. Diss. Abstracts No. 78-09123.
68. Coates, "Classification in Information Retrieval," p.297.

Crerar/Chicago Library Merger

Paul M. Cairns

Sample survey work undertaken by the John Crerar Library and the University of Chicago Library in the summer of 1980 is described. The sample survey, which supplied information for the contemplated merger of the two libraries, estimated the number of volumes and titles at Crerar and estimated the duplication between the Crerar collections and the science collections at Chicago. Steps in the survey project are described, and the survey's findings for volume duplication are presented, analyzed by subject groupings and further analyzed by books and serials. Subsequent counts, which have tended to confirm the early estimates, are also given.

In the spring and summer of 1980 the John Crerar Library and the University of Chicago Library undertook survey work

- to estimate the number of volumes and titles in the John Crerar Library and in the science collections of the University of Chicago Library, analyzed by subject groupings, and further analyzed by books and serials;
- to estimate the duplication of volumes and titles between the two collections, analyzed by subject groupings, and further analyzed by books and serials; and
- to categorize the binding conditions of Crerar volumes, and to estimate the number of volumes in each condition, analyzed by subject groupings, further analyzed by books and serials, and separated between volumes duplicated at Chicago (termed *duplicate volumes* or *duplicated volumes*) and volumes not duplicated at Chicago (termed *unique volumes*).

This work was undertaken to provide information essential to the contemplated merger of the collections of the John Crerar Library with the science collections of the University of Chicago, a merger which has come to pass between that time and this, and which has brought about the construction of a new library building, the John Crerar Library, on the campus at Chicago. The library's first day of public service was Monday, September 10, 1984. From the beginning, this contemplated merger appeared to offer impetus for construction of a new library building to house the merged collections, and information from the survey was to be used

- to determine space requirements for the new building (and hence to some extent the cost of the new building);

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- to estimate costs of creating card catalogs describing the merged collections;
- to estimate potential costs to convert card cataloging data describing both collections to machine-readable form, including costs to provide current authorities work within a single authorities structure, and reclassification costs for Crerar items within a unified classification scheme and shelflist scheme;
- to estimate moving costs;
- to estimate processing costs to identify and deaccession duplicate volumes for eventual sale;
- to estimate the potential sale value of duplicate volumes; and
- to estimate costs of a possible one-time project to permanently bind all Crerar unique unbound books and serials, and volumes that were in semi-stiff, impermanent bindings.

The range of needed information, the relatively large size of the collections, and the limits of time (all information was needed in about eighteen weeks) combined to recommend the techniques of a sample survey.

The focus of the survey was determined by two overriding considerations. First, Chicago uses Library of Congress (LC) classification schemes, LC-authorized name headings and LC-authorized subject headings, and presents comprehensive cataloging data to the public in a card catalog where names, titles, and subjects are interfiled alphabetically, while Crerar used the Dewey classification scheme, used name headings and subject headings according to locally devised schemes, and presented all cataloging data to the public in a divided catalog, with one section arranging name and title cards alphabetically, and the other section arranging "subject" cards in classified Dewey number order. Secondly, Chicago's collections are largely bound in permanent bindings, while Crerar's collections were to some important but unknown extent either unbound or bound in impermanent bindings.

In view of these circumstances, the libraries resolved near the beginning of the project (1) to continue use of LC classification schemes, LC-authorized name headings and LC-authorized subject headings in cataloging prospective additions to the merged collections; (2) to provide, at a minimum, a single public card catalog for LC-classed materials (a growing collection) in any new building, and a second single (though divided) public card catalog for Crerar Dewey-classed materials (a no-growth collection) in that same building; (3) to convert Crerar and Chicago cataloging data to machine-readable form (involving both rigorous authorities work and reclassification of Dewey-classed materials to LC) according to staff-set priorities and within the limits of special one-time merger funds; and (4) to bind and mark Crerar unbound and impermanently bound materials as monies within these one-time merger funds permitted. Given these intents, the survey focused on the parameters of the Crerar collections as set against the Chicago collections.

The libraries considered two sampling approaches. One approach lay through a selection of records from Crerar's shelflist (a card file) for comparison against Chicago's general (public card) catalog and other files, notably Chicago's serial record (also a card file) for serial bound-volume

holdings and unbound receipts. A second approach lay through a selection and brief description of Crerar volumes as they stood on the shelves for later combination with photocopies of Crerar shelflist cards and subsequent searching against Chicago's files. With the advice—always to be gratefully remembered—of a member of the faculty of the University of Chicago Graduate Library School, the second approach was judged more likely to yield the best possible information on the true state of Crerar's collections, and the second approach was therefore adopted.

The first imperative of the survey work was simply to describe Crerar's collections in terms useful to survey design and execution—a challenge from the outset, as the shelving situation at Crerar looked initially complex to those at Chicago charged with the management of the survey's work and results. Reason? There were twenty shelving sequences for Crerar materials (see table 1). Many of these shelving sequences were further divided to provide sequences of shelving for large volumes and sequences for small or regular-sized volumes. Materials within a given Dewey class might be found in as many as fifteen of these shelving sequences. Holdings of a given serial run might be found in as many as four shelving sequences. Many Crerar holdings were not permanently bound, but were shelved either loosely in backfile boxes, or were combined with light cord between semi-stiff coverings in what are sometimes called *Gaylord bindings*. With the information presented in table 1 as a starting point, two reports were issued in fairly quick succession (late April and May 1980).

The first report, entitled "Class-Stratified Census of Shelves in Use for John Crerar Library Holdings and Locations," provided Dewey-block-by-Dewey-block analysis of the occupied shelves within each of nineteen of Crerar's twenty shelving sequences (Crerar rare books being excepted). This report gave expanded coverage to Crerar's holdings in the 500s (Pure Sciences) and the 600s (Applied Sciences), and presented information according to the format of table 2 which lifts information directly from the report itself. This report concluded that there were 31,729 shelves in use (all filled virtually to capacity) at Crerar.

A second report, entitled "Subject Shelf Profile," double-checked the information presented in the first report, and rearranged the information of the first report from one of shelving sequence order to one of Dewey class organization. This report identified shelving sequences which contained materials within each Dewey block of interest to the survey, and further identified the exact shelving ranges at Crerar where those holdings would be found. Table 3 gives just enough information from a page of this report to illustrate the method. The report affirmed that there were 31,729 shelves in use at Crerar.

From the second report determination was made to identify a sample of 466 shelves, stratified by subjects of greatest interest to the two libraries, and to compare records for the holdings on these shelves with Chicago's files. Table 4 presents some of the pertinent details of this stratified random shelf selection.

TABLE 1

THE JOHN CRERAR LIBRARY:
SHELVING SEQUENCES IN MAY 1980*

1. Cataloging/processing/circulation/etc. (main floor)
2. Quick reference (main floor)
3. Bibliography (main floor)
4. Selected nonmedical current periodicals, 1960 through 1978 (main floor)
5. Selected medical periodicals in Dewey block 610 through 619, 1960 through 1978 (main floor)
6. General reference collection (main floor)
7. Selected current books, 1960 to date (main floor)
8. Selected current periodicals (medical and nonmedical), 1979 to date (main floor)
9. Unselected serials in Dewey block 000 through 549, 1946 to date (basement)
10. Storage: Books in Dewey block 000 though 549, pre-1950; and serials in Dewey block 000 through 549, pre-1946 (warehouse—about two miles from the main collection)
11. Selected serials in Dewey block 000 through 999, 1946 through 1959 (basement)
12. Selected books in Dewey block 000 through 999, 1950 through 1959 (basement)
13. Small books in Dewey block 550 through 629, pre-1950; large books in Dewey block 550 through 620, pre-1950; unselected small serials in Dewey block 550 through 629 to date; and unselected large serials in Dewey block 550 through 620 to date (basement)
14. Small books in Dewey block 630 through 678, pre-1950; large books in Dewey block 621 through 659, pre-1950; unselected small serials in Dewey block 630 through 678 to date; and unselected large serials in Dewey block 621 through 659 to date (basement)
15. Small books in Dewey block 679 through 699, pre-1950; large books in Dewey block 660 through 699, pre-1950; unselected small serials in Dewey block 679 through 699 to date; and unselected large serials in Dewey block 660 through 699 to date (basement)
16. Books in Dewey block 700 through 999, pre-1950; and unselected serials in Dewey block 700 through 999 to date (basement)
17. Folio volumes (basement)
18. M- and T-classed books accessioned 1950 to date (basement)
19. M- and T-classed serials accessioned 1950 to date (basement)
20. Rare books (basement vault)

*By Crerar processing and shelving treatments, any book or serial not deemed "large" was deemed "small." Any book or serial not "selected" for publicly accessible shelving was shelved on nonpublic shelving and termed "unselected." Any book or serial acquisition after 1949 whose records and physical piece(s) did not receive Dewey class ascription was assigned an *M* (for Medical) or *T* (for Nonmedical) accession number and shelved sequentially in nonpublic areas.

The project was guided by a project description which called for project leadership (1 FTE for 10 weeks), data collectors/searchers (2 FTE for 8 weeks), staff assistants at Crerar to find, photocopy, and refile Crerar shelflist cards (1 FTE for 4 weeks), a bibliographic records problem solver (.5 FTE for 10 weeks), and a data compiler (.5 FTE for 10 weeks)—a commitment of 1,500 hours. Every hour was needed.

The survey proceeded in the following fashion: the number of shelves of Crerar material within a given Dewey class block was determined; determination was then made of the number of shelves to sample within this total; a series of numbers equal to the number of shelves to be sam-

TABLE 2

A PAGE FROM "CLASS-STRATIFIED CENSUS OF SHELVES IN USE FOR JOHN CRERAR LIBRARY HOLDINGS AND LOCATIONS"*

Shelving Section 13: Small books 550 through 629, pre-1950
Large books 550 through 620, pre-1950
Unselected small serials 550 through 629 to date
Unselected large serials 550 through 620 to date

Shelves in Use: 500 through 599 Subtotal		Shelves in Use: 600 through 699 Subtotal		Shelves in Use: 000 through 999 Subtotal	
Class	Shelves	Class	Shelves	Class	Shelves
500-509	0	600-609	365	000-099	0
510-519	0	610-619	3,719	100-199	0
520-529	0	620-629	1,358	200-299	0
530-539	0	630-639	0	300-399	0
540-549	0	640-649	0	400-499	0
550-559	692	650-659	0	500-599	2,567
560-569	44	660-669	0	600-699	5,442
570-579	707	670-679	0	700-799	0
580-589	428	680-689	0	800-899	0
590-599	696	690-699	0	900-999	0
500s:	2,567	600s:	5,442	TOTAL:	8,009

*This report analyzed Crerar's collections shelving sequence by shelving sequence.

TABLE 3

A PAGE FROM "SUBJECT SHELF PROFILE"*

	Dewey "Generalities" Class (000-099)		
Shelving Sequence	Location of Shelves	Shelving Subtotals	Total Shelves
2. Quick Reference:	Face 10		11
3. Bibliography:	B1 - B8	44	
	Freestanding:	3	
	S21	1	
	S22	4	
			52
[Etc.]			[Etc.]
Total Shelves in 000 through 099:			1,248

*The report compiled Crerar's collections by Dewey block.

pled was derived from random number tables; these randomly selected numbers were put in sequence, and then used to identify the exact shelves whose holdings were to be surveyed; with the exact shelves so identified, Data collectors/searchers, using specially designed survey work sheets, wrote down the call number, short title, etc., of each volume found on a given sample shelf; each completed work sheet was passed to Crerar staff for identification and photocopying of appropriate shelflist cards; these photocopies were stapled to the work sheet itself,

TABLE 4

THE CLASS-STRATIFIED SAMPLE

Class	Subject(s)	Total Shelves	Shelves Sampled
000-099	Generalities	1,248	25
100-199	Philosophy*	257	5
200-299	Religion	13	—
300-399	Social Sciences	728	15
400-499	Language	70	—
	Subtotal 000-499	(2,316)	(45)
500-509	General Physical Science	512	10
510-519	Mathematics	449	9
520-529	Astronomy	402	8
530-539	Physics	1,423	28
540-549	Chemistry	1,373	27
550-559	Geology	900	18
560-569	Paleontology	50	—
570-579	Life Sciences	1,143	23
580-589	Botany	527	11
590-599	Zoology	973	19
500-599	Folios	26	—
	Subtotal 500-599	(7,778)	(153)
600-609	Technology	558	11
610-619	Medicine*	6,935	69
620-629	Engineering*	4,089	41
630-639	Agriculture	1,633	33
640-649	Home Economics	168	—
650-659	Managerial Services	660	13
660-669	Chemistry and Related Technologies*	1,778	18
670-679	Manufactures	1,013	20
680-689	Miscellaneous Manufactures	131	—
690-699	Buildings	365	7
600-699	Folios	139	—
	Subtotal 600-699	(17,469)	(212)
700-799	The Arts	315	7
800-899	Literature	1	—
900-999	Geography	83	—
M- & T-Classed Books		698	28
M- & T-Classed Serials*		2,063	21
	Rare Books	1,006	—
	Subtotal 700-Rare Books	(4,166)	(56)
Totals		31,729	466

*The survey sampled 1.47% of Crerar's shelves in use. In each category approximately 2% of the shelves were sampled, with the exception of those asterisked, where 1% were sampled, and with the exception of the M- and T-classed books where 4% were sampled.

and the combinations of work sheets and photocopies were sent to Chicago for searching against Chicago's files; when searching at Chicago was completed, batches of completely searched and annotated work sheets were passed to the project's data compiler who calculated the parameters within each Dewey class block sample, and who then generalized to the known extent of Crerar shelving for that entire Dewey class.

Shelf Number: _____ Subject and Class: __ Shelf Location: _____

			Serials					Books		
1. Class Number, Call Number, Volume Number, Year, Copy Number, etc.	2. Boxes and Inches	3. Binding Crerar	4. Chicago Holds Same Title	5. Chicago Holds Same Volume	6. Binding Chicago	7. Currently Received Crerar	8. Currently Received Chicago	9. Chicago Holds Same Imprint	10. Chicago Holds Other Edition	11. Comments
1. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
2. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
3. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
4. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
5. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
6. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
7. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
8. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
9. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
10. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
11. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
12. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
13. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
14. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
15. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
16. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
17. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____
18. _____	_____	B G Unb	Yes No	Yes No	B Unb	Yes No	Yes No	Yes No	Yes No	_____

The work sheet couched many questions in ways making simple yes/no answers sufficient.

Figure 1
Work Sheet

The survey work sheet, which compacted all data needed for analysis on a single page (the work sheet itself), and which couched many questions in ways making simple yes/no answers sufficient, was a most deliberate design of the project's work, and this strategy, more than any other, allowed the survey work to proceed with a minimum of paper and data proliferation, and greatly eased the burden of later analysis. Figure 1 presents a copy of the work sheet.

One important note: during the survey, the libraries hoped to gauge the probable one-time costs of a project to commercially bind all of Crerar's unique unbound and Gaylord-bound book and serial holdings. For this reason, the project work sheet prompted each data collector/searcher to measure the thickness of each volume on each shelf within the survey, and to indicate the binding condition of each volume. In the later analytical work, Crerar's unbound and Gaylord-bound volumes were in many instances mathematically combined by the project's data compiler into theoretical bindable volumes according to an explicit multitiered schedule which considered both age and class of materials, and which mandated somewhat thicker bindable volumes for some older materials—though no volume, regardless of age or class, was to exceed 3.25 inches in total thickness, and the average thickness of all such combinations was probably something like 2.25 inches. For the sake of consistency, this same schedule was applied to Crerar's duplicated volumes as well as its unique volumes, and this feature of the analysis work played importantly in shaping the survey's conclusions.

The work of the survey continued through summer 1980. Reports on the full extent of the summer's work were issued on Monday, September 12, 1980. This article will concentrate on the survey's physical volume estimations because later events have tested the verity of those early estimates.

Table 5 presents the major conclusions in columns 1 through 6. In general terms, the survey concluded that Crerar's total collection in September 1980 comprised about 237,000 duplicate bound or bindable volumes (including about 77,000 duplicate book volumes and about 160,000 duplicate serial volumes), about 352,000 unique bound or bindable volumes (including about 151,000 unique book volumes and about 201,000 unique serial volumes), and about 27,000 rare book volumes, for a total estimated volume count at that time of about 616,000 bound or bindable volumes.

Unusual to survey work, this figure for total holdings was almost immediately put to the test, for later in 1980 staff working at Crerar counted every single physical volume in Crerar's collections. The conclusion of this work is presented in column 7 of table 5. The difference between the figures in columns 6 and 7 is about 5.5%. This difference can be attributed largely to the fact that the September 1980 estimate and the December 1980 count were constituted differently, with the September estimate reporting combinative bindable volumes, and the December count reporting bindable volumes without contemplation of the possibilities of combining unbound or impermanently bound volumes.

TABLE 5

CRERAR/CHICAGO MERGER ESTIMATES OR COUNTS OF VOLUMES

Dewey Block and Subject	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Estimated September 1980						Actual Count December 1980	Actual Count August 1984		
	Duplicate Volumes			Unique Volumes			All Volumes	Duplicate Volumes		
	Monos	Serials	Subtotal	Monos	Serials	Total	Total	Monos	Serials	Subtotal
000-099 Generalities	962	14,652	15,614	1,327	3,216	20,157	27,204	1,576	12,901	14,477
100-199 Philosophy	1,926	1,542	3,468	541	1,902	5,911	5,913	1,438	2,663	4,101
200-299 Religion	197	67	264	56	81	401	404	203	7	210
300-399 Social Sciences	3,095	5,129	8,224	3,939	5,784	17,947	17,404	2,188	3,833	6,021
400-499 Language	854	249	1,103	241	305	1,649	1,915	317	8	325
Subtotal	(7,034)	(21,639)	(28,673)	(6,104)	(11,288)	(46,065)	(52,840)	(5,722)	(19,412)	(25,134)
500-509 Pure Sciences	5,150	3,595	8,745	2,279	1,338	12,362	10,661	1,346	5,847	7,193
510-519 Mathematics	2,649	5,475	8,124	3,658	112	11,894	10,643	1,339	5,726	7,065
520-529 Astronomy and Allied Sciences	2,359	3,917	6,276	2,662	1,600	10,538	10,786	1,348	1,990	3,338
530-539 Physics	4,240	8,338	12,578	5,621	7,395	25,594	27,416	1,235	7,432	8,667
540-549 Chemistry and Allied Sciences	3,884	13,068	16,952	5,588	4,127	26,667	27,752	2,755	11,451	14,206
550-559 Earth Sciences	4,065	7,009	11,074	3,463	4,295	18,832	18,452	1,711	7,205	8,916
560-569 Paleontology	531	149	680	453	91	1,224	1,153	436	196	632
570-579 Life Sciences	5,899	9,056	14,955	4,272	7,115	26,342	22,343	2,703	14,266	16,969
580-589 Botanical Sciences	2,537	1,711	4,248	7,223	2,268	13,739	12,749	2,743	4,771	7,514
590-599 Zoological Sciences	2,145	7,591	9,736	5,802	4,853	20,391	20,411	1,903	8,671	10,574
500-599 Folios	399	0	399	341	0	740	740	[Counted above . . . . .]		
Subtotal	(33,858)	(59,909)	(93,767)	(41,362)	(33,194)	(168,323)	(163,106)	(17,519)	(67,555)	(85,074)

TABLE 5 *Continued*

Dewey Block and Subject	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Estimated September 1980						Actual Count December 1980	Actual Count August 1984		
	Duplicate Volumes			Unique Volumes			All Volumes	Duplicate Volumes		
	Monos	Serials	Subtotal	Monos	Serials	Total	Total	Monos	Serials	Subtotal
600–609 Technology	302	1,649	1,951	370	7,511	9,832	8,756	1,072	2,545	3,617
610–619 Medical Sciences	19,347	48,410	67,757	35,931	35,056	138,744	132,450	12,657	56,850	69,507
620–629 Engineering	7,048	10,835	17,883	22,319	40,762	80,964	79,173	2,605	7,276	9,881
630–639 Agriculture	2,232	5,033	7,265	10,900	17,846	36,011	32,007	1,471	9,181	10,652
640–649 Home Economics	88	226	314	642	1,188	2,144	4,115	204	127	331
650–659 Managerial Services	1,120	1,727	2,847	5,104	7,364	15,315	10,274	1,381	2,988	4,369
660–669 Chemical Technologies	482	3,175	3,657	9,163	21,249	34,069	30,944	1,083	3,607	4,690
670–679 Manufactures	730	1,996	2,726	5,352	10,479	18,557	14,973	705	1,515	2,220
680–689 Manufactures (Miscellaneous)	148	288	436	1,086	1,515	3,037	2,617			
690–699 Buildings	0	0	0	919	5,141	6,060	5,303	149	188	337
600–699 Folios	430	236	666	1,289	480	2,435	2,435	[Counted above]		
Subtotal	(31,927)	(73,575)	(105,502)	(93,075)	(148,591)	(347,168)	(323,047)	(21,327)	(84,277)	(105,604)
700–799 The Arts	903	628	1,531	4,409	2,364	8,304	8,538	183	361	544
800–899 Literature (Belles-Lettres)	26	0	26	6	0	32	–	22	0	22
900–999 Geography, History, Etc.	1,355	290	1,645	1,725	327	3,697	3,020	489	695	1,184
Subtotal	(2,284)	(918)	(3,202)	(6,140)	(2,691)	(12,033)	(11,558)	(694)	(1,056)	(1,750)
Circulating Volumes	1,998	4,150	6,148	3,996	5,227	15,371	15,371	[Counted above]		
M- and T-Classed Materials	[Counted above]						56,639	[Counted above]		
"Unclassed Materials"	[Counted above]							1,636	0	1,636
"Primary Interest Serial Title" Vols.	[Counted above]							0	8,567	8,567
Documents given to IIT	[Counted above]							5,134	15,401	20,535
Deliberately duplicated Books	[Counted above]							831	0	831
Deliberately duplicated Serials	[Counted above]							0	2,333	2,333
Other Document Volumes	[Counted above]							400	531	931
Unique and Duplicate Totals	77,101	160,191	237,292	150,677	200,991	588,960	622,561	53,263	199,132	252,395
Crerar Rare Books	—	—	—	—	—	27,077	27,077	—	—	—
Total Volumes						616,037	649,638			

While the December 1980 count confirmed the survey's estimate of total Crerar volumes for practical purposes, it left open the crucial question of the duplication between Crerar and Chicago collections, and the splits between unique and duplicate holdings of books and serials. But here again, subsequent events have allowed at least limited evaluation of those early estimates, for during the four years between September 1980 and September 1984 Crerar and Chicago identified and deaccessioned duplicate volumes from the Crerar collections. The tallies of these duplicate volumes are presented in columns 8 through 10 of table 5. Table 5 shows that there were about 24,000 fewer duplicate monographs in the 1984 Crerar collection than were estimated in the 1980 Crerar collection. By similar comparison, table 5 shows that there were about 39,000 more duplicate serials in the 1984 Crerar collection than were estimated in the 1980 collection. And in sum, table 5 shows about 15,000 more duplicate volumes in the 1984 Crerar collection than were estimated in the 1980 Crerar collection.

An Evaluation of AACR2

Nurieh Musavi

Catalogers and library educators were surveyed to assess their attitudes and opinions about the second edition of the Anglo-American Cataloguing Rules *and to learn their ideas about possible future directions for the cataloging code. The survey instrument contained a series of negative, positive, and neutral statements taken from the professional literature about the code and asked respondents to indicate the extent of their agreement or disagreement. Results indicate that there is strong, positive, overall support for AACR2 among both groups. This support, however, varies according to different aspects of the code. The two groups have differing perceptions about particular strengths and weaknesses of the code. Respondents are opposed to an AACR3 anytime in the near future but do see a need for changes to certain chapters and rules. There is also strong opposition to the development of a cataloging code that is radically different from an AACR-type code. Recommendations for the areas most in need of revision are made.*

SINCE THE PUBLICATION OF the *Anglo-American Cataloguing Rules* (ACCR2), different aspects of this code have been under intense scrutiny by its users. As a result a great number of positive and negative comments have appeared in the literature. How deep is the satisfaction or dissatisfaction six years after the implementation of AACR2? In defending AACR2, Frances Hinton stated: "We have gone further than anyone expected us to go, but until the question was posed to catalogers all over the world about flaws in the AACR 1967, people were not aware of how widespread the dissatisfaction was with many of its provisions."[1] Six years have passed since AACR2 was implemented. It is time to ask its users about the "flaws" in this new edition of AACR. This study has been conducted (1) to measure the degree of satisfaction or dissatisfaction with the code among catalogers and educators; (2) to assess professional opinion about essential changes which should be made in AACR2; and (3) to determine attitudes and opinions about the need for a complete set of new rules that would replace AACR2.

BACKGROUND

Melvil Dewey was the first person to advocate the idea of standardization and internationalization of the cataloging code. The first coopera-

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tive Anglo-American code *Catalog Rules: Author and Title Entries* was published in 1908. Two world wars and the social problems associated with them hindered the further development of a cooperative cataloging code between Europe and the United States. Renewed efforts resulted in a set of principles for cataloging practices which was internationally approved in 1961 and became famous as the "Paris principles."[2] Cooperation continued during the entire postwar period, and in 1967 culminated in the publication of the *Anglo-American Cataloging Rules* (AACR1).

In spite of its name, the British and Americans did not agree on all of the rules and two separate texts were published. The conflicts and inconsistencies between the two texts remained to be resolved at a later time.

Shortly after the publication of AACR1, many amendments were added to the rules, and chapters 6, 12, and 14 were totally revised. The Library of Congress revised part 3 for nonbook materials and the Library Association developed *Non-Book Materials Cataloguing Rules* for the same purpose.[3] Canada followed suit and introduced their own rules for cataloging media other than books.[4]

These piecemeal changes encouraged the national libraries and the library associations in the United States, England, and Canada to make a forceful effort to revise the entire code. According to Gorman, the revision committee was charged with the following tasks:

> to incorporate already agreed revisions to AACR1;
> to harmonize the British and North American texts of AACR1;
> to incorporate international standards and international agreements;
> to take developments in library automation into account; and
> to incorporate changes arising from proposals for change coming from any source.[5]

In short, internationalization and standardization of the code were to be central goals to help achieve Universal Bibliographic Control (UBC).

During a period of three years, 1974–77, the Joint Steering Committee for Revision of AACR (JSC) worked toward attaining these goals. During this process, the JSC was assisted by the representatives of the following agencies in England, Canada, and the United States: the American Library Association, the British Library, the Canadian Committee on Cataloguing, the Library Association, and the Library of Congress. The library communities in these three and some other countries around the world were aware of and involved with the development of the revision.[6]

In 1978 the new code (AACR2) was published. Reaction to the code ranged from highly favorable to strongly critical. For large libraries the criticism centered around the fact that no implementation cost analysis had been made. Surprisingly, neither the JSC nor any of the national libraries involved with the revision of the code had initiated any study to investigate the impact of the implementation of a new code on a library's budget, staff, and users.[7] Also, no estimate had been made of the extent of changes in the catalog which the application of the new code would bring about.[8] These neglects made many librarians cautious and the majority of the large libraries postponed application of the code until 1980–81.[9,10]

To some extent the fears were reduced after a few studies had been made and the results published. The findings by the Association of Research Libraries (ARL),[11] OCLC,[12] and a few others[13] showed that the changes were less than had been predicted. The studies revealed that alterations in headings were not excessive enough to mandate closing of the catalog or starting a new catalog under the new rules. Many libraries realized that they could interfile the new cards with the old ones.

The JSC claimed that the revised code facilitated the manipulation of bibliographic records by computers and would be more responsive to the users' needs. The first claim was mostly rejected by Michael Gorman[14] and Michael Malinconico[15] and the second by many members of the library community.[16] In large libraries a number of catalogers perceived the alterations unnecessary, costly, and not beneficial to users.

Unfavorable criticism began before the publication of the code and was apparent at the International Conference on AACR2 in 1979 when Lubetzky, the theoretician who has followed the development of the rules for half a century, stated: "The inadequacy of the definition of 'author' in general and abandonment of the principle of corporate authorship have also had a deleterious effect on the treatment of serials."[17] He further pinpointed his dissatisfaction with the new code by saying: "There is no indication that the principle of corporate authorship was abandoned in AACR2 in the conviction that this was necessary to improve the ideology of the code or the effectiveness of the catalog."[18] "AACR2 began," Lubetzky said "as a revision of AACR1—a code of a defined character, of objectives susceptible to critical evaluation, and of a respectable history—but ended up as a transformed code that lacks the features, character, and integrity of AACR1."[19]

The issue of serials prompted Malinconico to comment: "AACR2, rather than attempting to solve the problem of corporate authorship, simply abandoned the entire concept. As a consequence, the vast majority of serials and series will now be entered under title. This immediately raises the problem of creating relationships among them, since the bibliographic name assigned to them will, in the overwhelming majority of cases, be ambiguous."[20] Fasana complained about the lack of a separate chapter "on choice of entry for serials,"[21] while Edgar praised it and said, "no separate chapter is needed."[22]

A number of catalogers with long experience warned others that "the card catalog has so many layers of inconsistencies that it has largely outlived its usefulness."[23] The new code, they declared, would only add another chaotic layer to the old catalog. Weber observed that serials catalogers were struggling with many confusing issues.[24]

AACR2 received unfavorable comments in general as well as on specific rules and sections. One of the most severe criticisms came from Shinebourne who wrote: "The product is a disappointment" and hard to follow consistently.[25] Catalogers of microforms faced a new dilemma. Stine and Willard believed that the results of the new rules for microforms would be misleading to the library users.[26,27] For Butchart, the new code was hard to interpret, lacked separate rules for deciding on serials publications access points, neglected audiovisuals, and was generally imbalanced on the treatment of the various media.[28] Anticipating the

frustration to come in the first years of implementation, Martin observed: "A few libraries were so scared of its application that some librarians urged that AACR2 be deferred or even scrapped completely."[29]

AACR2 was implemented but the hardship was so great that Huse came to believe catalogers should continue using AACR2 "for the rest of this century, at least and if possible well into the 21st."[30] Afraid of new changes, he recommended "No AACR3 until 2023!"[31]

In 1982, catalogers were still doubtful about the results of the application of the code. Stevenson, concerned about the uncertainty and the theoretical basis of AACR2 which leads to UBC, wrote: "The foundations of UBC are not always congruent with what are perceived to be in the best interests of local systems." He admits, however, that AACR2 has largely been accepted by the professional users of the code.[32]

Not all of the voices raised in regard to AACR2 were negative. Among the admirers of the code was Simonton who praised it for having a better organization and for providing options.[33] Hostage noted that "It is generally agreed that the new code results in headings that are more sensible for the library users."[34] Wellisch extended this comment by saying that "the 1978 edition (AACR2) has eliminated practically all of these inconsistencies and is now indeed predicated on the application of a set of basic rules with necessary variations for specific cases."[35] Weintraub expressed her satisfaction by noting that the code has gained a "greater degree of logic and internal consistency" but ended by commenting that "many of the specific details and fine points have not been thought through as carefully as they could have been."[36]

Description of Study

The central objective of this study was to assess the attitudes of the two groups that have been most vitally concerned with the implementation of AACR2: experienced catalogers doing original cataloging using AACR2 and library educators teaching the use of the code. The absence of directories identifying the specific members of these two populations necessitated, however, the selection of a subset of each. For this reason it was decided that the group that would most likely represent experienced catalogers would be the heads of cataloging departments and one experienced cataloger in each ARL library (i.e., a cataloger with more than five years of experience in using both editions of AACR). Library educators would be represented by full-time faculty teaching cataloging in ALA accredited library schools.

Selection of the group of experienced catalogers was accomplished by finding the names of the heads of cataloging departments in ARL libraries in the 1983 edition of the *American Library Directory*. If it was not possible to identify the head of the cataloging departments, the director of technical services was selected. In cases where no name was listed the library was dropped from the population. Two sets of the questionnaire along with a letter were mailed to this group in November 1984. In the accompanying letter it was requested that the head of the cataloging/technical services departments fill out one set and give the other to a cataloger with more than five years of experience.

The teachers of cataloging in the ALA accredited schools were se-

lected from the specialization lists in the 1983 annual directory issue of the *Journal of Education for Librarianship*. This group comprised 58 full-time faculty members.

Given the objective of assessing the attitudes of these two groups about AACR2, the question logically arises as how to present a variety of viewpoints for respondents' reactions. The literature shows that published viewpoints about AACR2 range from very negative to very positive. These opinions formed the major part of the survey instrument. In order to avoid bias in the nature of the statements a great deal of effort was made to select these directly, with only minor editorial adjustments, from the literature on AACR2. A selection of these statements, representing the variety of viewpoints, was made and appeared in random order in the questionnaire. The original authors of the statements were not identified in the questionnaire.

The questionnaire was pretested on a small sample of catalogers and educators. Analysis of these pilot study results showed that the survey instrument appeared to be reliable, though no exact estimate of reliability was made. The pretest also confirmed that identifying the catalogers with knowledge of both editions of AACR would be very costly and time-consuming.

As it was mentioned before, 182 questionnaires were mailed to 91 ARL libraries. From this population 61 heads of the cataloging/technical services departments and 55 catalogers, a total of 116, returned the questionnaires. Any responding cataloger who had less than five years of experience or did not have a comprehensive knowledge of both editions of AACR was excluded. Any questionnaire which was not filled out completely was also discarded. Four questionnaires from the heads of cataloging departments and 8 questionnaires from the catalogers were discarded. This process reduced the population to 170 members and usable questionnaires to 104 (61%). From the educators population, 39 members (or 67%) responded. All the questionnaires which were returned by this group were complete and accompanied by numerous comments.

Initially, it was intended to compare the opinions of heads of cataloging departments to the opinions of catalogers. During a preliminary statistical analysis no significant differences were discovered between the opinions of the heads of cataloging departments and of the catalogers. As a result, these two groups were combined and were treated as the "cataloger" group, which was compared to the group of "educators."

Results of the Study

The data have been arranged in three different tables to show the responses to the positive and negative comments about AACR2 as well as the differences of opinions between the catalogers and educators. Table 1 shows the responses to the positive statements about AACR2. Overall, it is clear that AACR2 is well regarded by the respondents. Educators are generally more positive than catalogers. The weakest positive support from both groups in this table is for statement 4 on whether AACR2 "has made the development of online catalogs possible." Both groups also agree that AACR2 would facilitate Universal Bibliographic Con-

TABLE 1

REACTIONS TO POSITIVE STATEMENTS ABOUT AACR2

Statement	Educators N = 39				Catalogers N = 104				Total N = 143			
	Agree		Disagree		Agree		Disagree		Agree		Disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Changes of rules in AACR2 are all for the better. Staff and users benefit from them.	31	79	8	21	57	55	47	45	88	62	55	38
2. AACR2 made the task of catalogers much easier.	24	62	15	38	34	33	70	67	58	41	85	59
3. AACR2 is a worthwhile step toward standardization and internationalization of cataloging codes, which leads to Universal Bibliographic Control.	37	95	2	05	90	87	14	13	127	89	16	11
4. AACR2 has made the development of online catalogs possible.	13	33	26	67	30	29	74	71	43	30	100	70
5. It is generally agreed that the new code results in headings that are more sensible for library users.	32	82	7	18	77	74	27	26	109	76	34	22
6. AACR2 has made cataloging practice more efficient.	25	64	14	36	35	34	69	66	60	42	83	58

trol. Disagreement between the two groups is noticeable on the issue of whether AACR2 had made cataloging easier and more efficient. While 62% of the educators agree with statements 2 and 6, only 33% of the catalogers believed in them.

The questionnaire, as in the literature surveyed, contained a larger number of negative statements than positive ones. Respondents were given the opportunity to respond to fourteen separate negative statements. The results are presented in table 2.

Despite this preponderance of negative over positive statements, respondents were remarkably consistent in offering their support for AACR2. In general, both catalogers and educators disagree with negative comments. Again, however, there are differences in the ways the two groups respond to the individual statements. Educators are more enthusiastic about the new code than the catalogers. Disagreements between the two groups are particularly apparent on such issues as the code's ease of application (statement 2), clarity of the definitions in AACR2 (statement 7) and the need for a separate chapter for choice of entry for serials (statement 9). Although 82% of the educators and 65% of catalogers do not agree that "audiovisual materials are neglected in AACR2," 36% of the educators and 50% of the catalogers think that "AACR2 is not comprehensive and balanced and has treated various forms unequally." Surprisingly, more than half of the respondents disagree with the abandonment of main entry even in an online catalog. The majority believe that online catalogs will not devalue application of AACR2 or the concept of main entry.

As was noted earlier, the literature contained a number of general statements about problems with AACR2 in relation to the need for refinements for current practice and, particularly, for the future development of cataloging codes. Table 3 presents the findings for nine separate statements on these issues.

The issue of inconsistency in catalogs is addressed in statement 1. Here, both educators and catalogers agree that the several new codes in recent years are a source of trouble to users. Following on that issue, statements 2 and 3 assess their attitudes about the likelihood of still another code in a few years. Neither group is receptive to that possibility, with catalogers being sharply opposed. Interestingly, however, both groups will gladly take AACR2 over any prospect for a radically new code. The results for statements 4, 5, and 6 should give pause to any proponent of a drastic alternative approach to AACR2!

These tables give a good indication of the approval that exists among catalogers and educators about AACR2 specifically and cataloging codes in general. In almost all of the returned questionnaires, respondents took time to write many valuable additional comments about the questions. As in the literature, these comments again ranged from very positive to strongly negative. There appears, however, to be a consensus in these comments on the following points: there are chapters and rules in AACR2 that should be revised or changed completely; chapters 9 and 11 need drastic revision; chapters 3, 4, 5, 6, 7, and 8 need substantial revision; and, many rules in chapters 22, 24, and 25 need to be clarified.

TABLE 2

REACTIONS TO NEGATIVE STATEMENTS ABOUT AACR2

Statement	Educators N = 39				Catalogers N = 104				Total N = 143			
	Agree		Disagree		Agree		Disagree		Agree		Disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Changes in AACR2 are unnecessary alterations.	11	28	28	72	24	23	80	77	35	24	108	76
2. Application of AACR2 to the old catalog is impossible due to the shortage of manpower and insufficient funds.	12	31	27	69	64	62	40	38	76	53	67	47
3. The money and time which were spent on AACR2 were a waste.	5	13	34	87	28	27	76	73	33	23	110	77
4. Many rules in AACR2 are vague and subject to local and subjective interpretations. This diminishes the degree of consistency of catalogs from one library to another which has a negative impact on the preparation of national and union catalogs.	20	51	19	49	62	60	42	40	82	57	61	43
5. It is possible to search the new online catalogs by one single word or combination of words. Therefore, using a set of complicated codes such as AACR2 is meaningless.	2	05	37	95	21	20	83	80	23	16	120	84
6. Changes in AACR2 are mostly due to theoretical reasons rather than for any practical need.	8	21	31	79	28	27	76	73	36	25	107	75
7. Definitions in AACR2 are vague and contradictory.	11	28	28	72	43	41	61	59	54	38	89	62
8. By abolishing corporate authorship serials have been treated poorly in AACR2.	11	28	28	72	38	37	66	63	49	34	94	66
9. The lack of a separate chapter on choice of entry for serials causes many problems for catalogers.	11	28	28	72	51	49	53	51	62	43	81	57
10. Audiovisual materials are neglected in AACR2.	7	18	32	82	36	35	68	65	43	30	100	70
11. AACR2 is not comprehensive and balanced. It has treated various forms unequally.	14	36	25	64	52	50	52	50	66	46	77	54
12. Duplication of bibliographic records in OCLC is the result of the lack of consistency in the application of AACR2.	12	31	27	69	29	28	75	72	41	29	102	71
13. The value of main entry is less important in an online catalog. Therefore, it should be eliminated and all access points can be treated as entries.	17	44	22	56	47	45	57	55	64	45	79	55
14. AACR2 and its predecessors have failed to define fundamental bibliographic concepts and have thus failed to present a clear set of principles which could guide and standardize cataloging principles.	8	21	31	79	25	24	79	76	33	23	110	77

TABLE 3

REACTIONS TO STATEMENTS ABOUT AACR2, OTHER CODES AND THE FUTURE

Statement	Educators N = 39				Catalogers N = 104				Total N = 143			
	Agree		Disagree		Agree		Disagree		Agree		Disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. Production and application of the new codes have caused different layers of inconsistency in card catalogs which in many cases devalue the utilization of catalogs by users.	24	62	15	38	76	73	28	27	100	70	43	30
2. Many additions and changes have been added to AACR2. To incorporate the additions with AACR2 will introduce AACR3. Libraries will be able to afford the new edition by 1990.	14	36	25	64	29	28	75	72	43	30	100	70
3. No AACR3 until the year 2000.	16	41	23	59	74	71	30	29	90	63	53	37
4. A complete set of new rules should have been developed in order to be understood and implemented easily.	5	13	34	87	25	24	79	76	30	21	113	79
5. We should scrap all bibliographic codes and standards and start anew.	4	10	35	90	7	07	97	93	11	08	132	92
6. Strict rules are needed in order to provide authority control over all variants of author and corporate names which will eventually facilitate a comprehensive access to bibliographic information.	32	82	7	18	82	79	22	21	114	80	29	20
7. Authority control is needed to make each access point unique and clarify the relationship of each entry to other.	35	90	4	10	96	92	8	08	131	92	12	08
8. Emphasis on authority control is contrary to users' behavior. Users want a simple one-step search procedure, fast response time and easy access.	14	36	25	64	33	32	71	68	47	33	96	67
9. There are other sets of rules that could replace AACR2.	7	18	32	82	23	22	81	78	30	21	113	79

SUMMARY AND CONCLUSIONS

This study was undertaken for the purpose of assessing the attitudes of experienced catalogers and educators of catalogers toward AACR2 five years after its implementation. The measuring instrument used to assess these attitudes contained generally verbatim statements from the extensive literature that was published before and immediately after implementation of the new code. Overall, according to these respondents, AACR2 is a success. Success, however does not mean overwhelming enthusiasm. Indeed, educators, who are generally more positive about the code than the catalogers, find a number of problems with it, particularly in the areas of clarity and the concept of main entry. Catalogers are also unhappy about the lack of clarity in the rules and are especially critical of the practicality. Both groups are opposed to the idea of any prospects for AACR3 in the near future. They are even more adamantly opposed, however, to the development of a code that is a radical departure from the principles of AACR. Here the consensus seems to be that AACR2 may not be perfect but the present professional users would like to continue with it.

Despite this conclusion, however, it is unclear as to when the profession will willingly allow the development of a new code since the slogan of "No AACR3 until the year 2000" is supported by 63% of the respondents. Moreover, 79% rejected the idea of "a complete set of new rules." Overwhelmingly, both groups were against discarding all existing bibliographic codes and starting anew. The trauma involved in a major code switch is most likely the principal reason for the reluctance and unwillingness to accept a new code. Nevertheless, it is also possible that both groups are interested in the kinds of changes that the outcomes of online catalogs will mandate for a future code. However, at present, both groups believe that in order to organize library materials, authority control should be created, strict rules are needed to develop authority control, authority control is not against users' behavior and, finally, there is no other set of rules that could replace AACR2 (table 3, statements 6, 7, 8, 9).

AACR2 has succeeded in being partially approved by the majority of the 104 catalogers in ARL libraries and the 39 educators of cataloging in the accredited library science schools who responded to the questionnaire. They have agreed that the new code has facilitated "international conformity" in bibliographic control. However, there have remained many doubts in their minds that the slight improvement over AACR1 is sufficient enough to justify the costs either in staff time or catalog alterations. Many comments are in accord with one of the respondents who wrote: "AACR2 did not go far enough in breaking with the past: familiar paradigms, vested interests, and a host of other factors proved to be too formidable an obstacle to be conquered all at once." It has not solved the problems of authorship, uniform title, serials, series, microforms, and the like. Above all it has not developed new approaches to bibliographic control or information access in an automated era.

References

1. John D. Byrum and Frances Hinton, "The Newest Anglo-American Cataloging Rules," in *The Nature and Future of the Catalog*, ed. Maurice J. Freedman and S. Michael Malinconico (Phoenix; Ariz.: Oryx, 1979), p.182.
2. International Conference on Cataloguing Principles, Paris 1961. *Report*, ed. A. H. Chaplin and Dorothy Anderson (London: International Federation of Library Associations, 1963).
3. *Non-Book Materials Cataloguing Rules; Integrated Code of Practice* . . . prepared by the Library Association Media Cataloguing Rules Committee. NCET Working Paper no.11 (London: National Council for Educational Technology with the Library Assn., 1973).
4. Peter R. Lewis, "The Politics of Catalog Code Revision and Future Considerations," in *The Making of a Code: The Issues Underlying AACR2; Papers Given at the International Conference on AACR2, held March 11-14, 1979 in Tallahassee, Florida*, ed. Doris Hargrett Clack (Chicago: American Library Assn., 1980), p.8.
5. Michael Gorman, "The Anglo-American Cataloguing Rules, Second Edition," *Library Resources & Technical Services* 22:209-10 (Summer 1978).
6. Byrum and Hinton, "The Newest Anglo-American Cataloging Rules," p.170-71.
7. Charles Martell, "The War of AACR2: Victors or Victims?" *Journal of Academic Librarianship* 7:8 (Mar. 1981).
8. John Hostage, "AACR2, OCLC, and the Card Catalog in the Medium-Sized Library," *Library Resources & Technical Services* 26:12 (Jan./Mar. 1982).
9. Peter R. Lewis, "The Cataloguing Revolution, I Say," *Library Association Record*, 83:235 (May 1981).
10. Susan K. Martin, "An Odd Couple: AACR2 and Automation," *American Libraries* 9:689 (Dec. 1978).
11. "Cost Model Project," *Association of Research Libraries Newsletter* no. 99:8 (Nov. 1979).
12. Georgia L. Brown, "AACR2: OCLC's Implementation and Database Conversion," *Journal of Library Automation* 14:161-73 (Sept. 1981).
13. Association of Research Libraries, Office of Management Studies, Systems and Procedures Exchange Center, *AACR2 Implementation Studies in ARL Libraries*, SPEC Kit No. 68, 117p. (Washington: The Association, 1980).
14. Gorman, "The Anglo-American Cataloguing Rules" p.210.
15. Malinconico, "AACR2 and Automation" in *The Making of a Code* (see ref. 4), p.25-40.
16. Martell, "The War of AACR2," p.4-8.
17. Seymour Lubetzky, "The Fundamentals of Bibliographic Cataloging and AACR2" in *The Making of a Code* (see ref. 4) p.22.
18. Ibid., p.19-20.
19. Ibid., p.25.
20. Malinconico, "AACR2 and Automation," p.39.
21. Paul J. Fasana, review of *Anglo-American Cataloguing Rules*, 2d ed., *Library Journal* 104:468 (Feb. 15, 1979).
22. Neal L. Edgar, "Impact of AACR2 on Serials and Analysis," in *The Making of a Code* (see ref. 4) p.95.
23. Franklyn F. Bright, "AACR2: The First Anniversary: Celebration or Lament?" *Technicalities* 2:6-7 (June 1982).
24. Benita M. Weber, "The Year's Work in Serials: 1982," *Library Resources & Technical Services*, 27:255 (July/Sept. 1983).
25. J. A. Shinebourne, "A Critique of AACR," *Libri* 29:231 (Oct. 1979).
26. Diane Stine, "The Cataloging of Serials in Microform under AACR2 Rules," *Serials Librarian* 5:19-24 (Spring 1981).
27. Louis C. Willard, "Microforms and AACR2, Chapter 11: Is the Cardinal Principle a Peter Principle?" *Microform Review* 10:75-78 (Spring 1981).
28. Ian Butchart, "AACR2 and the Cataloguing of Audiovisual Materials," in *Seminar*

on AACR2: Proceedings of a Seminar Organized by the Cataloguing and Indexing Group of the Library Association at the University of Nottingham, 20-22 Apr. 1979, ed. Graham Roe (London: Library Assn., 1980) p.25–31.
29. Susan K. Martin, "An Odd Couple," p.689.
30. Roy Huse, "The Cataloguing Revolution: Computer Catalogues in Public Libraries," *Library Association Record,* 83:237–38 (May 1981).
31. Ibid., p.238.
32. Gordon Stevenson, "Descriptive Cataloging in 1982," *Library Resources & Technical Services* 27:260 (July/Sept. 1983).
33. Wesley Simonton, "An Introduction to AACR2," *Library Resources & Technical Services* 23:323 (Summer 1979).
34. Hostage, "AACR2, OCLC, and the Card Catalog," p.12.
35. Hans H. Wellisch, "The Cybernetics of Bibliographic Control: Toward a Theory of Document Retrieval Systems," *Journal of the American Society for Information Science* 31:41–50 (Jan. 1980).
36. D. Kathryn Weintraub, "AACR2: A Review Article," *Library Quarterly* 49:435–43 (Oct. 1979).

Allocation of Human Resources for Collection Development

Bonita Bryant

Division of subject responsibilities among a corps of librarians has been acknowledged as a continuing challenge for collection development officers. Few attempts to address this problem have been published. This article reviews personnel administration techniques that have been used to establish work-load parameters, but offer no aid in subject deployment. A model that identifies elements that must be included in a consideration of work-load measurement and subject allocation is presented with the objective of stimulating further attention to this challenge.

THE ANNUAL BIBLIOGRAPHIC REVIEWS of collection development literature in *Library Resources & Technical Services* from 1973 through 1982 illustrate the extent of recent literature on the various activities performed by collection developers (subject specialists, selectors, bibliographers, curators—depending on the choice of terminology by specific libraries). Most of these works presuppose that *someone* possesses and exercises an overview of the library's collecting goals and acquisitions funds and leads a team of collection developers toward accomplishing such tasks as library materials selection, collection development policy writing, collection evaluation, and other collection management activities. This *someone* has been generically designated "collection development officer." Indeed, since the mid-1970s the American Library Association Resources Section has recognized this role in library organizations with the formal existence of two discussion groups for chief collection development officers.

PERSONNEL RESPONSIBILITIES

In some libraries, the manager of the collection development enterprise serves as coordinator and performs few supervisory functions. In others, the collection development officer operates as a traditional department head and may be delegated responsibility for preparation of job descriptions, recruitment, and primary evaluation of collection developers' performance.

Little has been written about the activities of the collection develop-

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ment officer as manager of the human resources available for approaching the primary goals of collection development and management. When Lopez[1] and D'Aniello[2] wrote, fifteen years apart, about the needs of neophyte collection developers, neither assumed that a collection development officer should be expected to provide training for new builders of library collections. Gleason's "Training Collection Development Librarians,"[3] however, accords this responsibility to the collection development officer. In 1984, the RTSD Resources Section and Education Committee presented a program on this theme at the Dallas Annual Conference. "'Educating Rita'—Part II: Training for Collection Development," too, recognized this role as belonging to the collection development officer.

Another trend in the administration of human resources for collection development is exhibited in recent attention to the compilation of manuals which document local collection development policies and practices. The University of Texas at Austin General Libraries published its *Bibliographers Manual*[4] in 1982. Perkins' "Writing the Collection Development Manual"[5] anticipated the work of a subcommittee of the ALA RTSD Collection Management and Development Committee, which has since produced "Guide for Writing a Bibliographers Manual."[6] All three of these documents recognize that the collection development function is guided by a collection development officer, who may perform such personnel-oriented tasks as recruitment, orientation, and performance appraisal.

Most of the personnel responsibilities of collection development officers can be performed by using techniques common to all library units, yet each personnel task is affected by a unique circumstance: the need to align a finite number of human beings with an array of subject responsibilities covering a wide variety of disciplines and interdisciplinary approaches to knowledge. This factor is particularly problematical in academic libraries, where not only the manner in which the libraries compartmentalize subjects but also the need for communication with discrete academic units are often accommodated in position descriptions for collection developers.

Evaluation of collection developers' performance must be done with recognition that neither the collection development officer nor the team of peers (collection developers, all) can be expected to know as much about specific subjects and their literatures as the employee being evaluated. Thus, tasks which are common to all collection developers, the accomplishment of which can be compared with the productivity of others, have to be defined and standards developed to permit fair and reasonable judgments to be made. This is a topic collection development officers often discuss, but about which they have not written.

The importance of subject characteristics and equitable work load cannot be underestimated in the allocation of collection developers' work. Whatever the line authority of the collection development officer may be, one common managerial activity is the deployment of the human resources allocated to the collection development function to cover

all the subject units which, in aggregate, support the institutional mission. While the number of library personnel accorded to the collection development function is the result of librarywide administrative decision making, it is usually the role of the collection development officer to analyze work-load requirements and initiate changes in the number of staff allocated to fulfill collection development goals.

Although the collection development officer may not have the opportunity to make deployment decisions until the library administration decides to reconfigure the organizational structure of collection development or until a resignation is *not* followed by a replacement, continuing attention should be paid to work-load questions, for when assignment changes become necessary, little assistance will be found in existing professional literature or from collection development peers. When the Chief Collection Development Officers of Medium-Sized Research Libraries discussed this question at their 1983 meeting in Los Angeles, they offered no firm data, no formulas, and no other substantive suggestions to aid in thinking systematically about the human resources allocation problem.

In addition to meeting the needs of members of the collection development organization, collection development officers are accountable to the larger organization for the accomplishments of their administrative units. They may generalize, when the library acquisitions budget increases significantly, that they need more people to spend more money, or, they may argue quite plausibly in times of budgetary stringency that it takes more time to be more selective about additions to the collection. They must, however, be prepared to provide library administrators with facts and figures, particularly in an era when staff reductions are an ever-present threat. Collection development officers must be prepared to answer two important types of queries: (1) How many librarians are required to develop a collection to adequately meet different levels of need for different subjects? and (2) How much can be expected of a given number of individuals? (A more graphic statement of the latter is: Can a librarian be expected to select materials in x subjects, serve as liaison with y academic departments, manage the corresponding collections, search z bibliographic databases, provide specialized and general reference services and a similar range of bibliographic instruction sessions, participate in professional development activities, perform institutional service, *and* remain a sane, productive individual?) These questions emphasize the importance of assigning priorities to activities on a groupwide basis. Their answers cannot be left to serendipity nor to independent decision making on the part of the collection development team members.

Determining the amount of relative effort to invest in specific subjects is an administrative activity, informed, of course, by the expertise of the collection developers. The preparation of collection development policy documents and conspectuses, ascribing collecting intensities to each subject, results in official approval of variables in investment of funds and time. Work load must reflect these decisions in some way.

DISTRIBUTING WORK LOAD

Job descriptions and recruitment requirements for collection developers are greatly influenced by the organizational structure of collection development within the library.

In the smallest of academic, public, and special libraries, the selection of library materials and certain collection management activities are likely to be the province of a single librarian; they may be one of several responsibilities of the director, the acquisitions librarian, or the reference librarian. In somewhat larger libraries, this work may be distributed among several librarians in broad, general subject groupings—science, social sciences, humanities—with foreign language assignments allocated where skills are available.

Larger libraries, dedicated to educational and research purposes, have been observed by Sloan to organize collection development in three distinct patterns: tasks may be (1) dispersed among a larger functional unit within the library, (2) recognized as a distinct activity with a separate administrative unit devoted to them, or (3) assigned to specialists drawn from various functional units within the library, who assemble to perform collection development activities and then return to their regularly assigned units.[7] Some current collection development organizations combine two or more of Sloan's models. Without attempting to analyze organizational structure, Baatz described seemingly endless variations in his 1979 review of nineteen ARL libraries' collection development activities.[8] More recently, Cline and Sinnott described seven collection development organizations in their discussion of "Item-selection Procedures."[9]

Thus, there can be no standard job description for collection developers (nor does there appear to be one for collection development officers). Library literature provides many lists of tasks that libraries might wish to have accomplished by librarians with subject expertise, including cataloging and branch library administration. The literature on subject specialists ranges from the European ideal[10] through the American area studies bibliographer[11] to more recent acknowledgments that a single person may be assigned multiple subject areas to cover while having academic preparation in no more than one.[12] Certainly the academic background and personal interests of individuals and the subject-oriented *and* auxiliary assignments to be distributed among them dictate to a great extent the collection development officer's resolution of workload challenges.

Equitable distribution of work load among team members is vitally important to the individual collection developer's professional life. To some degree, productivity is dependent upon morale, and quality of work is dependent upon provision of sufficient time to meet library expectations well. A science specialist at Leeds University remarked that he "felt he could not deal adequately with this vast array of subjects and would welcome a more even distribution."[13] Tuttle's admonition that we "not require an impossible range of duties which no single person has time to cover adequately so that he ends by doing little which is satisfac-

tory to himself, his library, or his patrons''[14] has apparently not been heeded well, when we learn that the Leeds specialists felt ''fulfillment of all the duties . . . was an ideal impossible to attain owing to lack of time.''[15] These two frustrations, inequitable subject distribution and lack of time, are not uncommon. For one collection developer to observe that another has more time for maintaining and enhancing subject expertise or for other professional development activities, or for a whole team to believe that they are expected to accomplish more than is humanly possible, indicates a malaise that the collection development officer *must* treat.

Assigning coverage of subjects on the basis of their quantifiable characteristics could minimize time spent in mediation of conflicts over factors not explainable by individuals' energy levels and degree of professional commitment. It might offer the opportunity for each collection developer to excel within the framework of a reasonable work load.

Measuring Work Load

Three examples of the application of personnel administration techniques to collection developer work load should be considered here. Each uses a different approach toward examining the elements of collection developers' work.

Collection development tasks are enumerated in *Personnel Utilization in Libraries: A Systems Approach*[16] which reproduces the series of subsystems and modules developed for libraries of the University of California system. Specific tasks are divided among professional, technical, and clerical personnel. This sort of division of labor, if adhered to rigidly, can be unrealistic and, for collection development, counterproductive. For example, searching the card catalog and checking standard collection-building tools against the catalog are designated as technical tasks. Seasoned collection developers would agree that doing a certain amount of searching is important for them, both as an orientation to the collection for neophytes and as a means of retaining a sense of control over the results of their labors. Nevertheless, the list of tasks for each group of employees is useful.

Two pairs of authors have described collection development tasks within the parameters of the first of Sloan's organizational patterns: collection development performed within the public service division of a library. One uses time inventories and a simple task analysis, the other employs the techniques of zero-based budgeting.

Ferguson and Taylor found that Brigham Young University Library subject specialists spend 7.9 hours of a 40-hour week on ''acquisitions'' work.[17] They asked each librarian to keep a diary of time required to accomplish six ''professional'' collection development tasks. They designated as ''processing/clerical'' five other tasks which qualify as collection development activities and which occupied an additional 1.2 hours per week for subject specialists. The authors do not say how many librarians were involved, what subjects they covered, nor whether additional librarians outside the public services are also involved in collection development at Brigham Young University.

Parker and Carpenter describe a zero-based budgeting project at SUNY-Buffalo's Lockwood Library, the main library of the SUNY-Buffalo system. The project resulted in an allocation of 17 hours out of 37.5, or 45% of the work week, for the typical subject librarian's time for collection development activities.[18] Instead of using time inventories, after group discussions among members of the reference and collection development department, an estimate of the effort by the staff as a group was made by the head of collection development. This method established what the Lockwood administrators considered an ideal allocation of human resources for their library's collection development program. The description of this project states that the library employed a head of collection development and fifteen other selectors, at least five of whom were not members of the department being studied. The time of four of these selectors was added to the FTE total.[19]

The task analysis for this study encompassed a larger number of collection development activities than that at Brigham Young University—nineteen in all—and it included some tasks which might be considered exclusively the province of the collection development officer. The tasks are

1. liaison with academic department
2. collection evaluation
3. writing collection policies
4. liaison with other libraries
5. choosing materials
6. coordination of selection
7. liaison with [other units of the library]
8. gift and exchange
9. de-selection: cancellation and weeding
10. collection maintenance
11. monitoring expenditures
12. bibliographic searching
13. policy preparation and implementation
14. budget justification and allocation
15. personnel
16. design and monitoring of routines
17. preparation of order forms
18. file maintenance for selection
19. transfers[20]

The tasks above are arranged in "preferred priority order";[21] tasks 1 through 6 were rated as first priority, 7 through 11 as second, 12 through 17 as third, and the final two (plus "clerical support of administration") were deemed fourth priority. Although recognizing that policies are the foundation of good selection practices, the SUNY-Buffalo librarians initially ranked these tasks "based on a fiscal reality—the need to spend our acquisitions budget by a certain date," with selection of titles receiving higher priority than writing collection development policy statements.[22]

The authors indicate that "all available quantitative measures were specified such as size of acquisitions budget, number of academic programs served, and the number of volumes acquired."[23] They do not re-

veal how or if this data was used. They do, however, echo the concern of others who must grapple with collection developer work load:

> The crucial and most challenging part of this analysis for collection development was the determination of time actually spent by staff on each specific activity. The quantification of effort spent on book selection is a problem for which there does not appear to be a satisfactory solution at this time. It seems to *many* to be impossible to measure how long it takes a bibliographer to develop working relationships with faculty and students or to select a book.[24]

And they recognized that work-load distribution remained an unsolved problem.

Replication of either of the above studies at multiple libraries could provide interesting data which might bring us closer to answering two questions: (1) How much time does collection development cost the library? and (2) How much time *should* be expended on collection development? Data compiled would have to be accompanied by detailed descriptions of the individual libraries' available acquisitions budgets, collecting intensity goals, and job descriptions which may include non-collection development assignments. To be optimally useful, task descriptions and definitions would have to be constructed and agreed upon prior to initiation of such projects. Neither approach would assist in solving the work load distribution problem unless separate data were generated for specific subjects and compared for all participating libraries.

Use of time inventories would certainly appear to be more expensive in terms of time and talent invested than the results might warrant. Woodhead reported that "I had considered the possibility of asking the subject specialists to fill in 'diaries' recording their work over a period of, say a week, but conversation with specialists soon made me realize that a subject specialist has no typical week and certainly no typical day."[25] Hence, any time study would have to be conducted over an extended time period in order to establish *any* norms; one could puzzle over an acceptable length of time—would a year suffice?

The validity of time inventories or diaries is dependent upon the willingness and accuracy of participants. Some people resent spending time on recording their actions, claiming that meeting their task goals is more important. Others find such studies threatening, fearing that they will not meet the expectations of management or of their peers. Skillful persuasion would be required to convince participants that in addition to providing data for management, these studies might accrue gains for the employee: relief from overwork, assistance in organization of daily work, and a clearer understanding of administrative expectations. The collection development officer might do better to encourage individuals to experiment with the technique as part of a personal time management program, including use of other tips offered by the proponents of this popular method of reducing stress and increasing both productivity and job satisfaction.[26]

Use of the zero-based budgeting technique, using estimates of time spent, expressed in percentages of the work day or the work year and

converted to FTE, might be a less expensive and more satisfying effort, but it is not based on empirical data about specific subjects and would be of little help to the collection development officer faced with dispersing subject responsibilities among a group of librarians.

QUANTITATIVE MODEL

The collection development officer's dilemma remains: how to allocate subjects among human resources reasonably, equitably, and advantageously both for the library and the individual collection developer. Lacking standardized data for decision making, the collection development officer might do well to establish a model based on quantifiable characteristics of collection development activities. One such model is provided here with the hope that reactions to it might stimulate further research resulting in the establishment of some standard measures which can be applied to all subjects and across institutional boundaries, at least within the academic research library community.

Implementation of this model would require firm data about a number of elements and the cooperation of individual subject specialists to establish estimates where firm data is not available. It does not, in theory, rely on recording amounts of time; it is based on comparison of known data about multiple subjects with each other. Once verified by further research, time elements could be introduced to assist in determining how much time *should* be allocated to the collection development function of a given library. Until such data is confirmed, the model serves only to apportion a specified amount of work among a predetermined number of people.

Review of two seminal works, Atkinson's "The Citation as Intertext"[27] and DePew's "An Acquisitions Decision Model for Academic Libraries,"[28] has convinced me that much of the work of collection developers is quantifiable at the microdecision level. Using Atkinson's definition of *citation*—"any string of natural-language signs that refers to or represents, regardless of its textual location, a particular information source or set of sources"[29]—we should be able to count the number of citations (whether a bibliographic reference found in a selection tool, a patron request, or a book in hand) that are given either a positive *or* a negative resolution during the course of a given time period. We should also be able to categorize decisions made about citations as immediate or as requiring research and then to ascribe to each category a time factor. The sum of time spent on the two types of microdecisions would then constitute a distinct segment of the total work expenditure for a specific subject: the selection process.

Another segment of collection development work focuses on citation-centered decision making: the collection management process. This effort is dependent upon the number of titles already owned by the library. It would require differentiation between routine maintenance and special projects.

A third segment of the collection development work load is people oriented and consists of communication of at least two sorts: planned and casual. In academic libraries, the clientele of collection developers are

easily enumerated in terms of academic units, although considerable acceptable variation in the proportion of population to actual contacts will exist both among subjects and among libraries treating the same subject.

A model of the two basic elements of collection development work—microdecisions based on citations and communication with clients—could be expressed quantitatively as:

$$(A \cdot x) + (B \cdot y) + (C_1 + C_2 + C_3) + D + E = N$$

A represents the number of simple microdecisions (number of citations treated) in a given time span for subject *N*. A simple microdecision does not require consultation of any source other than the citation itself.

B, in contrast, represents the number of microdecisions which prompt the collection developer to consult auxiliary sources, such as library files, colleagues, or published sources.

A and *B* characterize the selection process. Their sum, as a basis for inserting numbers in the model, is the total number of titles ordered during a specified time period (a figure available from an acquisitions system which provides good management information) plus the number of titles selected for addition to the collection with book in hand (approvals, gifts, etc.) together with an inflation factor representing negative decisions. Previous experience as manager of a pre-order search unit provides me with a gross estimate of positive decisions which are found to be duplicates (gross, because the data recalled was not subject oriented and this factor would undoubtedly vary among collection developers and subjects)—for every title ordered, three requests for it were searched. Data gathered on gifts received over a span of several years, again without subject characterization, substantiates that only 8% of the material received ultimately won a positive decision; whether this decision is made directly by the collection developer or is minimized by clerical screening will vary from library to library and even from one lot of gifts to another, often depending on the source of the gift. Establishing an additional factor for purchased titles would initially require an impressionistic contribution from the collection developer which could be phrased thus: the number of titles selected from various sources is *x*% of all citations considered. A firm number could be established for approval titles using reports from the vendor on the number of rejected books and the number of forms sent without books which then resulted in firm orders. The above factors could all be confirmed, subject by subject, with some limited sampling. A sensible time period for enumerating *A* and *B* would be a fiscal year.

These two elements of collection development work could be further computed in terms of time expended, again impressionistically and with less hope for verification, by assigning *x* as the ratio of time spent in making a simple microdecision to *y*, time spent on decisions requiring consultation. The collection developer would have to estimate the proportion of one type of decision to the other for each subject.

Complex as this process may appear, it incorporates a number of elements which collection developers are wont to cite when discussing their work load:

1. number of selection tools screened for potential purchases;
2. level of collecting intensity assigned in the collection development policy statement for a given subject (whether based on the terminology and definitions provided by ALA's "Guidelines for the Formulation of Collection Development Policies"[30] or the Research Libraries Group's conspectus program[31] or any derivative of either);
3. budget allocations;
4. the controversy over whether it takes more time to select 30% of available titles or 50% or 90%.

Verification of initial intuitive statements could be accomplished more easily than time studies because sampling should, in many cases, suffice and because counting of some citations could be performed by clerical personnel or student assistants with minimal cooperation from collection developers. Those who are uncomfortable with time studies for reasons cited above might be much more interested in confirming their own estimates and in substantiating hitherto perplexing impressions of how time is actually spent.

The second major element of the collection development effort, collection management, is represented by the C values in the model. At first glance, this activity can quickly and easily be quantified by letting C_1 stand for the number of titles already in specified classification ranges of the monographic collection, C_2 for the number of standing orders serving the subject under consideration, and C_3 for the number of periodical subscriptions attributed to the subject. Reflection reveals that this is a more mind-boggling problem than selection, as described by elements A and B. Deterrents to obtaining satisfying time estimates include

1. ascribing classification ranges to any subject must be arbitrary and less than satisfying to the experienced collection developer who knows that a certain proportion of the titles needed to support the curriculum or research of an academic unit will inevitably be sprinkled across the classification schedule *and* that many titles will support multiple programs within the institution;
2. few collection management activities require review of all titles in the monographic collection (with the exception of a long-range Brittle Books Program);
3. collection management projects may focus on different segments of the collection from year to year—standing orders may be reviewed one year and, again, claimed by more than one subject, and periodical subscriptions another year. Whether the project is intended to cut subscriptions or to prune for discard or storage or to prepare a formal collection evaluation to meet institutional requirements, the amounts of time necessitated may vary wildly with the purpose. In the case of periodicals, the number of subscriptions may be acceptable for one project, while the number of titles held (dead or alive) may be the basis for another.

The mitigating factor for purposes of describing collection developer work load is that we need not ascribe a time factor at all. We are interested in comparing elements of one subject with the same elements of all others. Until we wish to use the data in the model to justify addition of

one or more members to the collection development team, a time factor is not essential. Much more study of the collection management segment of the collection developer's time commitment is needed to meet the needs of staff expansion or construction of a team where none previously existed.

The final two elements, *D* and *E*, are again quantifiable without much initial effort. *D* represents planned communication with constituents who are members of academic units corresponding to the subject assignment of the collection developer. The collection development officer or library administration may specify and include in the collection developers' job descriptions a standard for this element. It may be limited to an annual or once-a-semester meeting with the chair or the entire assembled faculty of the unit, or it may require one or more sessions with a library liaison. Whatever the standard may be, it can be quantified in terms of hours spent in establishing contact and making appointments, preparation for the sessions, and the meetings themselves. Even these simple activities may vary from one academic unit to another: they may be governed by difficulties in obtaining interest and cooperation from the academic unit, by patterns established through previous contacts, or by the public relations capabilities of the collection developer. Nevertheless, the time element can be recorded and reported without complicated manipulation of numbers.

E is a more elusive component of the model. It *could* be represented by a simple count of the number of faculty in the academic unit, or it could be the result of keeping calendar records of actual contacts. A contact, in that case, could take the form of receiving in the campus mail a packet of requests for purchase of library materials and the ensuing correspondence, phone call, appointment, or chance meeting via which a response to the requests is transmitted. Such communication could also include extended consultation with graduate students on a one-by-one basis, rather than in the form of group bibliographic instruction sessions (which the model assumes are separate from the collection development function). Thus, initial estimates of the number of contacts and the time involved would have to suffice until a uniform method of accumulating actual time data is established for the team.

This segment of the model is somewhat more realistic than the tendency to use institutional statistics on numbers of faculty and/or students, which seems to crop up whenever collection developers are pressed to describe their work loads quantitively. Use of such data can lead to controversy as well as artificial and meaningless statements, as it has frequently been demonstrated that a faculty member in one department can devour more time for one collection developer than a whole department's personnel will absorb for another team member. Student contacts can be a matter of serendipity, collection developer public relations efforts, departmental pressure, or institutional policy, but it certainly varies with subject areas.

One important factor which this model can treat only if data are assembled and updated over a span of, say, five years is the relative length of experience of individual members of the collection development team as well as their length of tenure in the specific library *and* in treatment of

the specific subject. Atkinson systematically refers to the various contexts within which microdecisions are made—the citation itself, "supplementation," and archival, communal and thematic contexts of resolution—all of which are dependent upon the subject background and experiences of the collection developer.[32] In the library where subject expertise is not equally available for every subject requiring treatment, even an experienced collection developer may not be able to serve every assigned subject with equal facility. DePew's consideration of local politics in the collection development decision reminds us that length of service, regardless of subject expertise, is a factor influencing time investments.[33] The collection development officer is challenged by these factors to provide carefully planned training programs, a network of mentors for new employees, and access to continuing education opportunities for all.

To be useful in allocation of collection development work load, the model must be completed for each subject assignment. *N* comprises the quantified characteristics of a single subject for which a collection developer is responsible. Completion of this question for each subject leads to a second equation:

$$N_1 + N_2 + \ldots N_n = 100\%$$

When all collection developers have identical amounts of time to devote to collection development activities, *N*s (expressed as percentages of the total subject coverage of the library) can be arranged in groups realistically reflecting the backgrounds and interests of collection developers (each one an *X*):

$$X_1 = N_1 + N_2 + \ldots N_n = \_\_\_\_\%$$
$$X_2 = N_3 + N_4 + \ldots N_n = \_\_\_\_\%$$
$$\vdots$$
$$X_n = N_5 + N_6 + \ldots N_n = \_\_\_\_\%$$

where the sum of the percentages is again 100.

Additional assignments, such as reference desk duty, computer database searching, bibliographic instruction sessions (and preparation time), and departmental meetings, may result in unequal claims on individuals' time. Bibliographic instruction tailored to demands of academic units seeking subject-oriented sessions, rather than general library orientation, will introduce variables in time spent on this activity among collection developers. When collection management and development is not a 100% time commitment, the total number of hours of all collection developers must be calculated and the hours attributable to these assignments deducted to arrive at a total to be used for collection development. The percentage figure for each subject must then be converted to hours in order to distribute subjects equitably among available personnel. When these time allocations are clearly not sufficient for meeting collection development expectations, the collection development officer is faced with convincing library administrators to provide

either release from noncollection development work, additional collection developers, or a revision of expectations.

We can assume that the total time available per individual and the configuration of subjects and added assignments will never work out exactly, but we can approach a defensible position this way which should be more equitable than the voluntary assumption of subject responsibilities or an equal time allotment for all subjects, practices which obtain in many libraries today.

CONCLUSION

The allocation of human resources for collection development is a complex challenge for the collection development officer. Traditional personnel administration techniques are of limited assistance in the distribution of subject assignments among a group of librarians, regardless of the span of their academic preparation and interests. Efforts to define subject and human variations must be matched against the requirements of the library's goals to provide consistent quality in collection building. Alternatives or supplements to extensive task analysis and time study projects are needed. The quantitative model proposed here is limited at present by absence of verified data and by the subjectivity necessarily introduced by dependence upon individual estimates or record keeping. Sensitivity to administrators' tendencies to grasp unsubstantiated or ever-changing quantitative models as rigid justifications for future action must be exercised to avoid the types of controversy exemplified by the Clapp-Jordan formula.[34]

Collection development officers need to continue to share detailed information about their methods for solving human resources allocation problems within a variety of organizational structures. The ultimate goals must be a realistic means of maximizing collection developers' contributions and their job satisfaction and of realizing the goals of the library's collection development policies.

REFERENCES

1. Manuel D. Lopez, "A Guide for Beginning Bibliographers," *Library Resources & Technical Services* 13:462–70 (Fall 1969).
2. Charles D'Aniello, "Bibliography and the Beginning Bibliographer," *Collection Building* 6:11–19 (Summer 1984).
3. Maureen L. Gleason, "Training Collection Development Librarians," *Collection Management* 4(4):1–8 (Winter 1982).
4. University of Texas at Austin, General Libraries, *Bibliographer's Manual: A Guide to the General Libraries Collection Development Program* (Contributions to Librarianship, no.7) (Austin, Tex.: The General Libraries, 1982).
5. David L. Perkins, "Writing the Collection Development Manual," *Collection Management* 4(3):37–47 (Fall 1982).
6. "Guide for Writing a Bibliographer's Manual," compiled by the Collection Management and Development Committee, RTSD, Subcommittee on Guidelines for a Bibliographer's Manual. Draft dated Jan. 1986.
7. Elaine F. Sloan, "The Organization of Collection Development in Large University Research Libraries," (Ph. D. diss., Univ. of Maryland, 1973), p.59–61.
8. Wilmer H. Baatz, "Collection Development in 19 Libraries of the Association of Research Libraries," *Library Acquisitions: Practice and Theory* 2:98–100 (1978).
9. Hugh F. Cline and Loraine T. Sinnott, *Building Library Collections* (Lexington,

Mass.: Lexington Books, 1981), p.99–118.
10. See, for example, J. Periam Danton, "The Subject Specialist in National and University Libraries, with Special Reference to Book Selection," *Libri* 17(1):42–58 (1967) and Kenneth Humphreys, "The Subject Specialist in National and University Libraries," *Libri* 17(1):29–41 (1967).
11. See, for example, Eldred R. Smith, "The Specialist Librarian in the Academic Research Library: The Role of the Area Studies Librarian," in *Final Report and Working Papers of the 17th Seminar on the Acquisition of Latin American Library Materials* (Amherst, Mass., 1972), p.101–22, and Robert D. Stueart, *The Area Specialist Bibliographer: An Inquiry into His Role* (Metuchen, N.J.: Scarecrow, 1972).
12. See, for example, Frederic M. Messick, "Subject Specialists in Smaller Academic Libraries," *Library Resources & Technical Services* 21:368–74 (Fall 1977); Dennis W. Dickinson, "Subject Specialists in Academic Libraries: The Once and Future Dinosaurs," in *New Horizons for Academic Libraries: Papers Presented at the First National Conference of the Association of College and Research Libraries, Boston, Massachusetts, November 8-11, 1978,* ed. Robert D. Stueart and Richard D. Johnson (New York: K. G. Saur, 1979), p.438–44; and P. A. Woodhead and J. V. Martin, "Subject Specialization in British University Libraries: A Survey," *Journal of Librarianship* 14(2):93–108 (Apr. 1982).
13. Peter Woodhead, "Subject Specialisation in Three British University Libraries: A Critical Survey," *Libri* 24(1):40 (1974).
14. Helen Welch Tuttle, "An Acquisitionist Looks at Mr. Haro's Bibliographer," *Library Resources & Technical Services* 13:174 (Spring 1969).
15. Woodhead, "Subject Specialisation," p.42.
16. Myrl Ricking and Robert E. Booth, *Personnel Utilization in Libraries: A Systems Approach* (Chicago: American Library Assn., 1974), p.18, 41–43.
17. Anthony W. Ferguson and John R. Taylor, "'What *Are* You Doing?' An Analysis of Activities of Public Service Librarians at a Medium-Sized Research Library," *Journal of Academic Librarianship* 6(1):24–29 (Mar. 1980).
18. Diane C. Parker and Eric J. Carpenter, "A Zero-Base Budget Approach to Staff Justification for a Combined Reference and Collection Development Department," in *New Horizons for Academic Libraries,* (see ref. 12) p.475.
19. Ibid., p.477.
20. Ibid., p.480.
21. Ibid.
22. Ibid., p.479.
23. Ibid., p.478.
24. Ibid.
25. Woodhead, "Subject Specialisation," p.31.
26. See, for example, Jack D. Ferner, *Successful Time Management* (N.Y.: Wiley, 1980) and Myrna Lebov, *Practical Tools & Techniques for Managing Time* (Englewood Cliffs, N.J.: Prentice-Hall, 1982).
27. Ross Atkinson, "The Citation as Intertext: Toward a Theory of the Selection Process," *Library Resources & Technical Services* 28:109–19 (Apr./June 1984).
28. John N. DePew, "An Acquisition Decision Model for Academic Libraries," *Journal of the American Society for Information Science* 26:237–46 (July/Aug. 1975).
29. Atkinson, "Citation as Intertext," p.109–10.
30. "Guidelines for the Formulation of Collection Development Policies," in *Guidelines for Collection Development* (Chicago: American Library Assn., 1979), p.3–5.
31. Nancy E. Gwinn and Paul H. Mosher, "Coordinating Collection Development: The RLG Conspectus," *College & Research Libraries* 44:139–40 (Mar. 1983).
32. Atkinson, "Citation as Intertext."
33. DePew, "Acquisition Decision Model," p.239.
34. Verner W. Clapp and Robert T. Jordan, "Quantitative Criteria for Adequacy of Academic Library Collections," *College & Research Libraries* 26:371–80 (Sept. 1965); "Corrigenda," *College & Research Libraries* 27:72 (Jan. 1966). See, then, for example, Robert E. Burton, "Formula Budgeting: An Example," *Special Libraries* 66:62–63 (Feb. 1975) and G. Travis White, "Quantitative Measures of Library Effectiveness," *Journal of Academic Librarianship* 3(3):132 (July 1977).

IN MEMORIAM: RICHARD S. ANGELL, 1905–1985

Richard S. Angell served ALA in several capacities, first as the representative of the Division of Cataloging and Classification on the Joint Committee on Library Education, 1949–53, then from 1951–55 as division Councilor, and in 1959–60 as chair of the Resources and Technical Service Division's Cataloging and Classification Section. But members of RTSD will remember him especially from those days when the principal item on the agenda was code revision. He was a member of the Division of Cataloging and Classification's Catalog Code Revision Committee and initially a member of its Steering Committee.

He participated actively in the institutes at Stanford University in 1958 and at McGill University in 1960. But when others at these institutes were agonizing over the possible deleterious effects of abandoning the distinction between societies and institutions, Richard Angell was looking philosophically at the whole picture. His approach was well expressed in his paper, "The Need for a New United States Code" (*Library Quarterly* 26:318–30), presented at the University of Chicago Graduate Library School conference in June 1956. Another paper that sparked considerable interest, "Standards for Subject Headings: A National Program" (*Journal of Cataloging & Classification* 10:191–97), advocated sound research as the basis for any plans for such a program.

It is not surprising then that he should have concluded his career as the first chief of the Technical Processes Research Office at the Library of Congress. His career at LC was indeed a distinguished one. He joined the staff there in 1946 as chief of the Copyright Cataloging Division and later served as chief of the Descriptive Cataloging Division and of the Subject Cataloging Division. He served on various committees or task forces of national and international organizations and received the Rockefeller Public Service Award in 1956. He retired in June 1973 after twenty-seven years of service at LC and almost forty years in the library profession, a career that began as a cataloger in the music library at Columbia University.

Music was always a special interest for Dick Angell, who continued to cherish 78 rpms when most of us had abandoned them for 33⅓s. Some of his friends, too, are likely to recall his enthusiasm for "red dog," with which he and they sometimes whiled away the evening hours at ALA conferences.

At the memorial service on December 12, 1985, they described Dick Angell as a gentle person. Yes . . . and his colleagues knew him too as a gentleman—always.—*Elizabeth L. Tate*

Resources and Technical Services Division—Goals for Action*

THE RESOURCES AND TECHNICAL SERVICES DIVISION OF THE AMERICAN LIBRARY ASSOCIATION is responsible for matters concerning the acquisition, bibliographic description, subject analysis, preservation, and reproduction of library materials; and for those aspects of the selection and evaluation of the library materials relating to their acquisition and to the development of library resources. The goals of the Division are:

1. To implement **in appropriate areas of divisional responsibility** the goals of the American Library Association.
2. To advance the professional interests of librarians engaged in the development of library resources and technical services.
3. To promote research and publication in areas of divisional interest.
4. To provide forums for the discussion of issues in the development of library resources and technical services.
5. To cooperate with other units of the American Library Association and with other national and international organizations in areas of mutual interest.

Areas in which the Division will take action include, but are not limited to:

Access: **by encouraging, promoting and supporting effective public access to library materials through such means as union lists, distribution of bibliographic and holdings data, and participation in the development and distribution of communications formats.**

Cataloging: by encouraging, promoting, and supporting effective bibliographic access by means of the cataloging, **subject analysis,** and classification of all types of materials in all types of institutions; **and by examining and explicating the different forms and functions of the catalog that are created from bibliographic records.**

Education: by promoting library education programs in areas of resources and technical services; by supporting staff development and providing directions for in-service education programs; and by providing information and support for personnel through educational programs at divisional meetings.

Interpretation: by representing and interpreting technical services and the development of library resources to the library world and to non-librarians through appropriate means of communication, in order to develop adequate support for these activities and to assure the satisfaction of the library user.

Involvement of a Large Constituency: by directing attention to library resources and technical services in all types of libraries; by enlisting a broad membership base; by promoting divisional leadership in relevant national and international library issues and associations; and by sponsoring and promoting programs in areas of divisional interest.

Preservation of Library Materials: by advising and assisting librarians in solving preservation problems; by recommending and encouraging research programs;

*Original text adopted by the RTSD Board January 1979; changes and additions in boldface approved by the Board in January 1986.

and by cooperating with other organizations in achieving solutions to preservation problems.

Reproduction of Library Materials: by discussing problems in and disseminating information about production, storage, and use of reproductions; by fostering studies and research; by promoting uniform policies and practices.

Resources: by encouraging and promoting those activities of the division relating to collection development, including selection, acquisition, and evaluation of library materials in all types of institutions.

Standards: by providing leadership and expertise **and participating actively** in the development of standards in areas of divisional interest **on national and international levels.**

Technological Developments: by investigating applications of technology advances as they apply to areas of divisional responsibility; and by collaborating with other groups in the study of mechanization and automation and in facilitating education in these techniques.

It is the responsibility of the Division, its committees, the sections and their committees to set objectives and create action plans to carry out the goals, their programs and other activities.

Because these goals may not always be appropriate for the Resources and Technical Services Division, they will be reviewed and revised at least once every five years with reference to changing library and social conditions, divisional membership surveys, and the goals of the American Library Association. Each revised "Goals for Action" statement will be published in *Library Resources & Technical Services,* ***RTSD Newsletter*** **and other appropriate sources.**

INDEX TO ADVERTISERS

From: *William E. Studwell, Principal Cataloger, Northern Illinois University Libraries.*—Concerning the article "The Library of Congress Z Schedule: It's Time for a Change" by Carole Allis Larson and Ella Jane Bailey (Oct./Dec. 1985), I agree on two points and disagree on one. One, I strongly concur that LC should seriously rethink their overall policy on classifying bibliographies. The disadvantages of separating bibliographies from other material on a subject are obvious. In addition, the high Z's are almost meaningless in organization. Two, the in-house method we use at Northern Illinois University, which was mentioned in the article, has been effective for ten years, though not perfect, and I disagree that it is not workable for a large stack collection. At the least it is the best system I have heard of without altering the structure of LC classification. Three, if a library is willing to somewhat modify LC structure, the scheme devised by the authors' library is a very good one. It does have a slight limitation in that the mnemonic designation .B1 representing Bibliography does not cover indexes and other materials classed in high Z, but this is only a minor objection. Otherwise, I feel it is a suitable solution for those institutions who don't mind varying from LC patterns. The ultimate solution, of course, is for LC to completely revamp their system for handling bibliography, as the authors propose.

Editor's note: Letters sent to the editor for publication in this column cannot be acknowledged, answered individually, or returned to the authors. Whenever space is available in an issue, selected letters will be published, with little or no editing, though abridgment may be required. Letters intended for publication should be typed double-spaced.

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3. Limit your choice of publications to books, new serials, single issues of serials and/or single articles. Any or all of these formats may be included in the review; exclude nonprint publications. Select only publications with imprint or copyright dates of 1981 through 1985, inclusive. Select no less than five and no more than ten publications to be reviewed.
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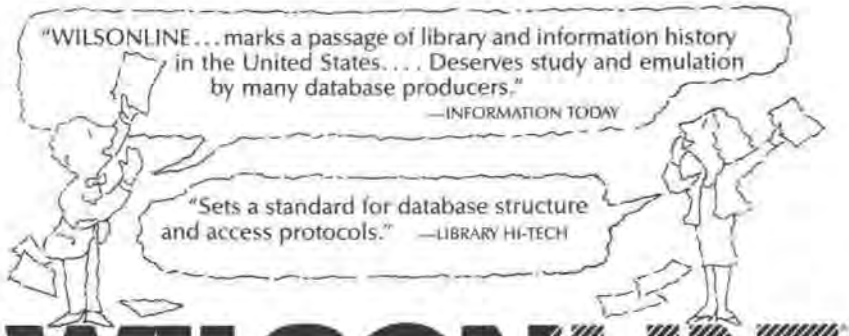

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