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Editorial

“Year’s Work” to “State of the Art”

Jennifer A. Younger

It has been almost a year since I was appointed editor of LRTS. It has been a year replete with learning and accomplishments—the latter, it must be noted, through the outstanding efforts of authors and referees. LRTS Editorial Board members as well as the previous editor, Richard Smiraglia, and the ALCTS Executive Director, Karen Muller, have provided me with invaluable advice, guiding me through a thicket of issues.

Last year, the ALCTS Board voted to return the “Year’s Work in ...” series to LRTS. As editor, I started but then halted a search for an issue editor to direct the traditional issue of “Year’s Work ...,” to allow further development of the “Year’s Work” concept by the LRTS Editorial Board. Subsequently, at the next Midwinter Meeting (January 1998), the LRTS Board created a plan for a series of articles that would report on areas of interest, specifically collection development and management, acquisitions, cataloging and classification, preservation and reformatting, and serials. The characteristics of the articles will preserve the best of the “Year’s Work” while allowing a new flexibility designed to support the writing of outstanding articles.

The focus will be on thoughtful reporting, discussion, and analysis of national and international issues, trends, and events recognized as important to the field. Sources included may be drawn from the most appropriate time period without being restricted to only the past year. Selectivity in the citation of sources will be encouraged to emphasize the critical development of themes and topics. In recognition that the single function or format boundaries underlying the definition of ALCTS sections may often be blurred and interwoven in practice, a disciplinary or interdisciplinary approach (or topic) may be chosen. Instead of appearing together in the July issue of LRTS, the articles will be published individually and episodically. This is important for the selection of the best authors (and their schedules) as well as the ability to take snapshots and report on significant topics in a timely manner.

Last, with advice from the LRTS Board, I will solicit manuscripts from authors respected for their expertise, although the paper, when submitted, will be subject to the double blind review process. Although a recommendation to publish is generally expected, the review process may well result in recommendations for improvement.
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Managing Traditional Materials in an Online Environment: Some Definitions and Distinctions for a Future Collection Management

Ross Atkinson

Collection management (as opposed to collection development) should be understood as the activity of adding value to—or deleting value from—objects of information subsequent to their selection. The management of materials in traditional formats will become increasingly problematic the more we move into an online environment. Although digital resources will sooner or later come to dominate scholarly communication, the effective management of traditional materials will remain essential. While a central goal of libraries must be to manage traditional and digital resources as two aspects of a single service, we must also recognize that all information services will eventually be conditioned by a digital mentality. In order to start planning now for collection management to play a more prominent role in the future of information services, we must begin to define with as much precision as possible the abstract values collection management adds to and deletes from selected information objects.

In every age, humankind imagines itself to be moving through a period of transition so acute that the effect borders on the dysfunctional. Our own age is no exception. We long for a simpler past, or for a more focused future, but the fact is that every era is one of profound change, and it is now our turn. Because we have come to understand ourselves mainly in technical terms, we necessarily and correctly view our transition as a consequence of technology, and those of us in academic libraries see our main objective as the transformation of academic information services from a primarily paper-based activity to an increasingly electronic one.

If we had our druthers, we would probably opt to build two libraries—one traditional and one digital; we could then gradually shift resources from the traditional to the digital as needed. Fortunately for academic libraries and higher education, we do not have anything approaching the means that would be required to create such a schism—because if we did, those two libraries would inevitably become politically disaffected and veer apart, and the library as an institution

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might well under such circumstances become associated primarily with the traditional side. As a result, the library would forfeit much of its political influence, academic information services would be severely impaired, and much time would be lost trying to effect a reconciliation and reunification. Our primary strategy in academic libraries must be, therefore, to bring about this transition through a synthesis of the traditional and the digital—and we will no doubt be obliged to do this using the same amount or less funding than we presently have.

In pursuing this objective, one of the most immediate and obvious challenges we must confront will be the management of traditional materials in a world where information is conveyed increasingly in electronic form. Because we are aiming for synthesis, we must accept that our planning for the place of traditional materials in a digital environment can only be undertaken and understood as a relationship to the role of digital materials in a digital environment—because the traditional and the digital must together form the basis for a single, systematic service. At the same time, we must accept the fact that the more we enter an environment in which most scholarly communication is accomplished in electronic form, the more a digital mentality—conditioned by the qualities of digital sources and methods—will come to dominate and define information services. In the course of this essay, some of the main components of such a mentality will be identified, because it is on the basis of that mentality that we will view and build future services.

In considering dichotomies such as that of the traditional and the digital, we would also do well, at the outset at least, to note what is perhaps the most fundamental dichotomy of information services—that of subject and object. The purpose of information services is always will be to ensure that local users have access to the right information objects (as defined as those that are needed) within the right time frame. That responsibility can be viewed from either a subjective or an objective perspective. From a subjective position, the goal of information services is—given a particular set of information objects—to provide local users with the tools and skills they need to make the most effective uses of those objects. But the service can also be approached from the objective perspective: assuming a particular group of local users with clearly defined needs, the goal of the service is to add selected values to specific information objects, such that those objects can be used more effectively to respond to those local needs. While the subjective perspective is most often assumed by reference services, the objective viewpoint is typically that of collection management and development, preservation and cataloging. Much of the political tension in the modern library derives directly and unavoidably from the differences between these two positions. Since my aim in this essay is to approach the problems of the transition from a primarily objective position, we should always bear in mind that a view from the subjective perspective could conceivably lead to different conclusions.

THE OBJECT

As befits an approach to information services from the objective direction, let us begin with a description of the current state of the information object. The division between the traditional and digital object is the source (objectively speaking) of the current hybridity of information services. The term “traditional” is now often used for nondigital services (see, e.g., Ewing 1995 and Fecko 1991), so it seems reasonable to extend its use to nondigital objects. It is a conspicuously time-dependent term that tends to be used in the midst of a fundamental transition before the vocabulary has caught up; because we do not seem to have an accepted term for nondigital services or objects, we can call them “traditional,” by which we mean “of a kind we have worked with until now.” The transition will progress much more effectively once we have agreed to replace the term “traditional” with one referring to some quality of the object—rather than one that refers to our present temporal relationship with the object.
Figure 1. Relationships among Information Objects.

From traditional originals are created traditional derivatives, which include photocopy and microform—but we are now also able to create digital derivatives. Such digital derivatives can be subdivided into the categories of image and text (e.g., ASCII). Digital objects can be divided into the two broad categories of digitized (i.e., derived from a traditional original) and “natively digital”—also a tentative term—meaning materials that have been produced originally in digital form. On the one hand, therefore, we are working with a hierarchy of concepts (vertically in the diagram), but at the same time we perceive a kind of formal or temporal progression—that is, the more one moves horizontally in the diagram from left to right, the further removed one becomes from the concept of the traditional original.

While there are clearly derivatives of digital objects, these are not the same as traditional derivatives. Digital derivatives are more clones than copies, because there is no apparent loss of physical information: digital objects are characterized, therefore, by what we might call derivative parity. In the case of traditional objects, on the other hand, the creation of the derivative necessarily entails some loss of physical content.

We must take care always to distinguish physical from intellectual content. Physical content is information that is found in the physical construction of the object. Historical bibliography is the study of the history of such physical construction. Analytical bibliography is the study of the relationship of physical and intellectual content. Textual criticism uses historical and analytical bibliography, along with other techniques, to trace the history of the intellectual content of specific texts back to their original archetypes (Greetham 1994). We must wonder what will happen to these disciplines, especially textual criticism, as we move into an increasingly online environment, one of the primary characteristics of which will be derivative parity.

In the traditional environment, we have been willing to accept a certain level of loss of physical content in return for other (usually preservation) advantages. That is the basis for our current traditional derivative decisions. Microforms, photocopies, and reprints eliminate much of the physical content (notably the original format), but retain the typeface; the same is true of digitized images. In the case of the digitized text, on the other hand, all of the physical content is lost, including the typeface, leaving only an encoded symbol string. Both the library preservation profession and the scholarly community remain perhaps still unprepared for the trauma of the loss of the typeface—and there may well even be some resistance to
designating text-only digitization as a legitimate form of preservation.

Such questions as to how much loss is acceptable stem from a deeply held cultural value in the library, which we might call the warranty syndrome. Librarians in the modern library often seem to assume that one of the most fundamental (objective) responsibilities is to guarantee that an object with which they have been entrusted will remain continuously accessible in all of its parts. This warranty syndrome has certainly contributed to the failure of librarians to achieve effective levels of interinstitutional cooperation in the areas of collection development or remote storage. For one institution to withdraw a title and then depend upon the availability of that title at another institution can require (as a consequence of the warranty syndrome) a level of negotiation and formal interinstitutional commitment that may only be achieved at considerable administrative cost (Hazen 1997). If we insist on guaranteeing access—in other words, eliminating any chances of loss—then it is much more cost-effective to store materials in a local offsite facility than to engage in formal negotiations with other institutions.

The effect of the warranty syndrome on the library's readiness to disregard original physical content (e.g., text-only digitization)—especially with the subsequent withdrawal of the original—remains unclear. What is clear, however, is that the warranty syndrome prohibits the conscious loss of any intellectual content whatsoever. Regardless of whether the loss of all physical content might eventually be acceptable, therefore, the loss of any intellectual content remains generally abhorrent to the traditional library culture. The digital culture, on the other hand, while assuming derivative parity, i.e., no apparent loss of physical content, is rather more habituated to, and accepting of, some loss of intellectual content. The digital culture is characterized by information extracted from remote sites, of which the local user has little knowledge and even less control; it is a culture of Web sites that change every day without warning. Some loss—or "lossiness" as an object attribute—while obviously avoided whenever possible, is nevertheless becoming increasingly understood as part of the price of digital access. This tolerance for some loss of intellectual content conflicts sharply, therefore, with the traditional library culture.

**COLLECTION MANAGEMENT OVERVIEW**

Let us now proceed to a simplified overview of the collection development and management process. While the exact definition of collection management remains somewhat obscure, it has often been assumed that collection management should be understood as an expansion of the concept of collection development (see, e.g., Osburn 1990). Collection management then becomes an umbrella term under which collection development is subsumed. However, we need terms that separate policies and actions that drive selection (collection development) from policies and actions that affect the access status of an object subsequent to its selection. The programs and processes by which library materials are selected, therefore, should be termed "collection development," while the process of adding value to objects subsequent to their selection should be considered "collection management." Collection development and management, thus defined, operate on the basis of somewhat different values, and those values must be separated and contrasted in order to be understood and effected.

The activities and concepts of collection development and management should be kept separate also for strategic reasons. There is a chance, perhaps a very good one, that aspects of collection development will not survive the transition to a primarily online environment, because the responsibility for selection in such an environment might be reappropriated by users. When all forms of publication, including monographs, are routinely network accessible, and if an effective level of cataloging can be achieved for those networked resources, then it might well be the user rather than the bibliographer
who selects material. In that case, some of the knowledge and creativity that have evolved over decades in collection development will need to be transferred to collection management. If, moreover, collection development ceases to be a primary library operation, then the materials budget will no doubt be reclaimed by the institution and somehow apportioned among its users. Should that happen, libraries could lose the funding needed for collection management, if library managers have not previously separated collection development and collection management funding into distinct budgets.

Returning to the present condition, in which the librarian retains responsibility for selection, let us use the term “anti-collection” (Atkinson 1994, 97) for all objects that do not reside in the local collection, or are not made accessible to local users by the library (see figure 2). The “anti-collection” is, of course, an abstraction: the set of all objects not in the local collection.

We will assume that offsite and onsite locations (quadrants b and c in figure 2) contain objects owned by the library in all traditional formats, including traditional derivatives. In the past thirty years, the great majority of our efforts have been centered in traditional collection development (the movement of objects from a to c). More recently, however, increasing amounts of our attention have shifted to the selection of digital materials (moving natively digital materials from a to d), digitizing materials (i.e., moving information from c to d), or offsite selection (c to b). While most librarians at research libraries have, to be sure, always done some offsite selection, there has been a rapid growth in such selection for remote storage in more recent years—as if all large collections had crossed some kind of line beyond which the transfer of traditional materials offsite has become more politically and bibliographically acceptable. It is as if traditional collections had finally become so large that the central retention of all materials might actually be seen as a potential impediment to access. This increase in the significance of offsite and digital selection calls for a rejuvenation and redefinition of collection management.

Using figure 2, we can then define collection development more exactly as the movement of an information object from the open quadrant (a) into any one of the closed quadrants (b, c, d). Collection management, as we are defining it here, is the movement of an object from any one of the closed quadrants into any other quadrant (including the open quadrant a—that is, weeding).

Pitschmann (1991, 141) has suggested that, in order to facilitate the transition from traditional to digital services, we might consider replacing the term “collection management” with “resource management.” On one hand, this suggestion could be problematic because it obscures the significance of object relationships as implied by the term “collection.” On the other hand, it is an enticing suggestion because the term “resource” can be applied to both information and economic conditions. The purpose of much of the
librarian’s activity, after all, is to convert economic resources into (access to) information resources—so that the term “resource management” is a provocative one in that sense. In some cases, moreover, there can also be a conversion of (access to) information resources into (savings of) economic resources.

Collection development is, to be sure, unidirectional: it only converts economic resources into information resources. Collection management also moves in that same direction: it uses economic resources to boost access to information objects that have already been selected. However, one of the most important functions of collection management is that it, unlike collection development, also routinely operates in the opposite direction—saving or increasing economic resources by reducing or eliminating (access to) information resources. Thus, in figure 2, collection management either increases access at the expense of economic resources (moving objects clockwise, b to c, c to d, b to d), or it reduces access, saving economic resources (moving objects counterclockwise, c to b, b to a, c to a—and perhaps eventually d to c, or d to a). The criteria for the decisions made by both collection development (in one direction) and collection management (in both directions) are always ultimately based on some application of the prime criterion of potential local utility—i.e., how useful the target object will likely be for the work of current and future local users.

**GOAL VALUES**

This description of collection development and management is, needless to say, greatly oversimplified. For one thing, each of the three closed quadrants contains a whole range of service gradations, which are so extensive that it is even possible in some cases to move an object into a higher access quadrant, but actually to reduce its accessibility (as, for example, if one digitized an object—moving it from c to d—but neglected the index or interface). Rather than relying on the metaphor of object space, therefore, it would be more accurate to define the (objective) work of information services on the basis of the distinguishable values added to information objects. These values added might be divided into two broad categories: (a) functionality—i.e., values that improve the user’s ability to manipulate and work within the object, and (b) maintenance—i.e., values ensuring that the object remains stable and available over time (see figure 3).

These two value categories might each be further broken down into two broad goal values (i.e., values, which it is the goal of information services to add to objects). Functionality can be divided into (a) transferability, the capacity to move an
object from one location to another, and (b) analyticity, the ability to be analyzed, in the sense of breaking down an object into smaller parts for more effective access. Indexing is the main service manifestation of analyticity. In the case of maintenance, the two main goal values would probably be (a) integrity—i.e., ensuring that the content of the object remains stable and uncorrupted as the author intended (what Peter Graham [1994] has called "intellectual preservation"), and (b) longevity, ensuring the object's long-term survival.

The goal values of functionality are concerned with subject-time; they are intended to reduce the amount of time required for the user to gain access to, or to make use of, the object. The goal values of maintenance are concerned with object-time, or the time the object remains extant and intact. The goal values of analyticity and integrity are intended to enhance users' ability to work within an object, while the purposes of transferability and longevity are to move the object across space or time. All of the goal values, therefore, derive from a sense of embedment or context: transferability and longevity entail or presume a larger universe of space and time, just as analyticity and integrity imply the use or quality of the components of an object embedded within its whole.

But despite such conceptual relationships and mutual support among the four goal values, it is nevertheless the case that each of these is operationally and economically distinct; each is independently applicable, so that the addition of one does not entail or require the addition of any other. Because, moreover, the addition (or boosting) of each of these does require an expenditure of economic resources, each is in effect engaged in continuous competition with the others for the library's increasingly scarce economic resources. This competition is the basis (at least from the objective perspective) for the whole economics of information services; all of the library's economic resources (e.g., funding, staff time, staff skill, space, equipment) exist for only one purpose, and that is to add these goal values—individually or in combination—to selected objects. The main criteria for that selection—for deciding which objects should have value added to them, and which values should be added to which objects—will normally be (a) the prime criterion of projected utility, (b) the initial economic value of the object itself, (c) the information philosophy of the library or institution (i.e., an institutional bias for some values over others), and (d) available economic resources.

In making such decisions, the format of the target object is, on the one hand, irrelevant: the librarian should and does aim to add such values to selected objects regardless of format. On the other hand, such decisions will also necessarily be affected by format conduciveness: some formats are more receptive than others for adding or boosting certain values. In general, digital objects are more conducive to functionality. They can be moved across space at nearly the speed of light, and (if in textual form, rather than images) they can be rapidly searched or analyzed. Digital objects are, however, far less conducive (at least at this point in time) to maintenance: they can be easily corrupted, and no standards exist for their long-term archiving and migration (Waters and Garrett 1994, 41). Traditional objects are the opposite of digital objects in this regard: traditional objects are not nearly as conducive to transferability and to analyticity (cataloging and indexing cannot be supplemented with automatic text searching)—but traditional objects are much more conducive (at this time) to maintenance than are digital objects.

**The Political Dimension**

If competition among goal values forms the basis for the economics of information services, then we must expect a political superstructure that reflects that competition—and there is indeed a fundamental ideological or political division that is a manifestation of the dichotomy of the two broad value categories, and that is probably as old as the library itself. It is the dichotomy of the information service agency as purveyor on the one hand, and
as repository on the other. Drawing on the distinction made by Waters and Garrett (1994), we can use the term “library” for the former, and “archive” for the latter. This ideological division is further reflected—and will likely be heightened—by the fundamental dialectic in the digital culture of the search engine and the database (see figure 4).

The library side of information services, as opposed to the archive, has vastly greater political power, not only because it is much more associated with the digital culture, but also because its primary user community is present; librarians can rely upon those users to influence current decision-making in the institution. The archival side of information services, on the other hand, views the present in some respects mainly as a conduit through which to move objects from the past into the future. The primary user groups of this side have not yet arrived on the scene, so they have no real political influence. But the archival side has, at the same time, a far greater existential responsibility than the library side, because “life and death” decisions about objects are made; they determine whether objects will survive into the future, while the library side is concerned more about increasing access (reducing access time) to objects that are presently extant. This side increases the availability of objects that are for the most part already available, while the archival side decides whether objects will remain available at all. On the archival side, there is less concern about subject time and more for object time: from the purely archival perspective, it does not really matter how long it will take to gain access to an object, provided that access per se remains possible. From the extreme library side, on the other hand, if an object requires too much time to access, it might as well not exist at all, and any economic resources spent on its maintenance are wasted. (On the value distinctions between librarians and archivists, see McCarthy 1986.)

The library perspective is focused mainly on the needs of readers. The archival perspective is also concerned about reader requirements, but at the same time it represents the writer by ensuring that the object creation remains intact as the writer intended. Also, the library side represents more of a scientific approach, in the sense that it is less concerned about maintaining dated information (which is not to imply that all scientific information necessarily becomes less useful over time), and is well disposed to summary. The archival side, on the other hand, with its concern for history and its focus upon the artifact, might perhaps be more associated with the values of the humanities.

It might sometimes be assumed that the territory of collection development is the library, while collection management is more the concern of the archive. That should not be the case, however, and we must take care not to allow such a political schism to debilitate collection services. Collection management must take into account the needs and goals of both the library and the archive sides—and it should be the main political function and

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**Figure 4.** Comparison of Library and Archive Attributes.
rationale of collection management to connect and synthesize these two fundamentally and historically divergent aspects of library operations.

**Traditional Objects**

The options we have for providing access to traditional objects in future will depend upon both economic and political factors (see figure 5). From the archival perspective, maintaining the original object in a protected form (as in a special collection) is the ideal. Under such conditions, the integrity and longevity of both the physical and intellectual content are assured. The cost of providing objects in their original form with a high level of protection, however, can be significant. (The relative costs for these different operations are only assumptions based on experience; they are not a result of any empirical study.) Less preferable from the archival perspective, but presumably somewhat less expensive, is to maintain a reformatted version only, in which the typeface is retained. Because of the reduced costs and the more ready accessibility, this is also a much preferable solution from the library perspective—and even more so, if the reformatting is digital. Less preferable from the archival position, but probably even less expensive, is the maintenance of the original in unprotected form, e.g., offsite; seen from the archival position, this is a deferral of necessary action, but it does mean at least that all physical content is maintained for the moment. From the library position, the unprotected original is somewhat more accessible than some forms of typeface-only reformatting (notably microform), although it is obviously far less preferable than digitization.

Much more acceptable from the library viewpoint would be a total digitization of the text only, which would render the entire document keyword searchable. This could be, of course, a very expensive undertaking, since unevaluated Optical Character Recognition (OCR) would not provide full accuracy; such an undertaking would require very costly quality control. From the archival standpoint, such a step is even less preferable because it entails a loss of all physical content—but at least the symbol string of the original, representing the intellectual content, is kept intact. Totally unacceptable from the archival side would be fast but not entirely accurate digitization (uncorrected or “dirty” OCR), for this would inevitably entail some loss of intellectual content. From the library perspective, such rapid digitization would be—in some cases—an ideal solution, because it would provide access to (pound for pound) more information at a much reduced cost. (Needless to say, however, in those instances requiring totally accurate content, even the li-
Figure 6. Modified Model for Objects in Collections.

Library position would support fully accurate digitization.

For more important (potentially higher use) traditional objects, combinations of one option from the library side and one from the archival side are the preferable action. The combination of fast but inaccurate OCR with typeface digitization, for example, is an especially effective option, because it allows the user to search the OCR, but view an image of the typeface; both processes can be done relatively automatically, as opposed to fully accurate OCR, which entails much expensive human intervention. (The current JSTOR project, for instance, uses both OCR and images; the OCR done for JSTOR, however, is subject to quality control, and the project feels it has achieved 99.95% accuracy as a result. See http://www.jstor.org/about/production.html.)

Well after much of the action in academic scholarship has shifted online, institutions will doubtless remain custodians of large quantities of paper materials—unprotected originals. The reason for this will be partially economic (it costs less, we assume, to put such originals someplace on a shelf, rather than to convert them). However, the maintenance of unprotected originals will also have political motivations: the unprotected original is a compromise between the library and the archival value directions, and as such will be acceptable to the broadest range of libraries and users.

THE FUTURE MODEL

As we noted earlier, the movement of objects from the anti-collection to the onsite library has been the primary and dominant focus of academic information services for centuries. As we move more into a digital environment, however, we must now expect the centrality of the onsite library for information services gradually to dissolve. The onsite collection, (quadrant c in figure 2), will and should eventually disappear as an independent conceptual entity, and its basic functions will be divided and drawn into the other two quadrants, b (offsite) and d (digital). This does not mean that the onsite library will cease to exist, but rather only that users (and information service providers) will probably come gradually to view any library that is not desktop accessible as being a remote storage facility, even if it is on a central campus. The offsite storage facility is merely more remote than the onsite facility, while traditional objects maintained in collections at other institutions are simply more remote still.

The three closed quadrants—onsite, offsite, digital—in our general model (figure 2), therefore, will ultimately contract into two: online and offline (see figure 6). Given the significance of transferability in the functional value system, we should begin to define objects in the online collection as those that are network accessible at the local institution—that is, not objects that have only the capacity to be network accessible, but rather those that are locally network accessible at the present time.

It is this dialectic of online and offline that should become the operative dichotomy, ultimately replacing the transitional dichotomy of traditional and digital. It is not that the concepts of traditional and digital objects should lose their relevance, but rather that they should be subsumed within this operative dichotomy. While online object space contains only digital objects, offline object space should be seen as holding both digital and traditional objects. Digital objects that are maintained offline are those that are not network accessible, such as stand-alone CD-ROMs. There are also different gradations of offline (and online) access; the more offline the object is, the less accessible it becomes as an information resource—but also, in general, the lower the cost in economic terms of its maintenance.
and functionality.

We can expect three broad categories of objects to reside offline:

1. The most obvious (and possibly largest) category will be objects of low potential use. These will consist mainly of large collections of unprotected traditional objects, although we must assume some digital materials will also fall into this category. Such digital objects will be kept offline because they do not promise high potential utility; this category will include some objects that were once online, but that have now been moved offline for storage purposes, because their local utility has declined.

2. While there will be some objects kept offline because they are considered less important, there will be a second category of objects kept offline because they are more important. These will include all of the protected traditional originals (although some of these might have been digitized as well); most of these will presumably reside in special collections. We must also expect to create and maintain offline backup copies of particularly important digital objects for archival or historical purposes.

3. A third category of materials maintained offline will be those that are either technically unsuitable for online access as well as, more importantly, those for which there are legal impediments to digitization. We do well to remember that libraries do not own the intellectual content of many of the objects they maintain—but rather only, so to speak, the physical content of the copies they have purchased. The owners of the intellectual content—individual publishers—presently have the right and responsibility to decide whether such objects may be digitized for online access, and we must expect that a certain amount of material that is legitimately needed online for scholarly purposes will be kept offline by publishers to protect their investments. If the academy continues to outsource its publishing to (especially commercial) publishers, then it is possible that access to such information will be increasingly restricted, the more we move online. Re-appropriating at least some of the responsibility for specialized scholarly publishing must therefore be one of the highest priorities for the academic community.

**The Role of Collection Management**

What are the responsibilities of collection management in an evolving digital environment? To answer this question, we must return to the fundamental values added (depicted in figure 3), bearing especially in mind the factor of format conduciveness. We should recognize that the acts of selection and acquisition add to the selected object all four goal values—transferability, analyticity, integrity, longevity—to a limited degree; we could, in fact, define selection and acquisition as the modest addition of these values to particular objects. If the object is considered to be especially important, collection management can then boost access to the object by increasing one or some combination of those values. This can be done by increasing further those values to which the object by virtue of its format is already conducive: digital objects can be made more transferable or analyzable, or the integrity and longevity of traditional objects can be further improved. Alternatively, or in addition, collection management can move to compensate for values that are less prevalent because of format: the integrity or longevity of digital objects can be boosted by, for example, creating offline back-up copies, or the transferability and analyticity of traditional objects can be increased through digitization.

If the object is determined to be of less importance, the collection management decision may be simply to do nothing, i.e., to leave in place the values added by selection, but not to boost those values in any way. On the other hand, if an object is determined to be of less potential utility to local users than at the time of its selec-
tion, then collection management can move in the opposite direction, reducing access in order to increase or maintain economic resources. In those cases, for example, digital objects might be moved offline, or traditional objects could be digitized, and their originals discarded. In many (but certainly not all) cases, such adding or subtracting of value—the primary work of collection management—will be increasingly accomplished by moving objects online and offline.

THE DIGITAL MENTALITY

We noted at the outset that as the work of scholarship becomes increasingly available in digital form, our thinking about information services in general will be informed by a digital mentality that is conditioned by the special qualities and capabilities of digital objects. We have already drawn some conclusions about that mentality. We have seen, for example, that the old tension in the library culture between the library and the archival value directions is likely to be heightened in future by the fundamental division in the digital mentality between the search engine and the database. We have also speculated that the operative dichotomy for information services (online or offline) should be based upon network accessibility, because transferability appears to be a primary (perhaps dominant) value of functionality, which is more conducive to digital objects. We have also remarked in passing on two other aspects of the digital mentality that are likely to have wide-ranging effects on the transformation of information services—loss tolerance and embedment. Let us conclude by considering these attributes more carefully.

As both the library community and its users become increasingly accustomed to some forms of information loss in some circumstances (not only of physical but also intellectual content), we must expect the iron grip of the warranty syndrome to loosen: librarians will no longer be inclined to see as an essential function the provision of total access forever to every object for which they assume responsibility. We can perhaps begin to develop levels of responsibility or warranty connected to or derived from the standard collection levels (cf. Bryant 1987 for a definition of the collection levels). This change in culture and philosophy will have a number of important implications. It will mean, for one thing, that we should be able to put in place much more effective programs of cooperative collection management, which will become increasingly necessary for unprotected originals. If we can avoid the high levels of negotiation and item tracking that have sometimes appeared as necessary prerequisites for cooperation in the past, then we can begin to rely more regularly on each other—with the understanding that such reliance will necessarily entail a certain amount of loss. The dissolution of the warranty syndrome should also increase our willingness and ability to make macro-decisions. Such macro-decisions will become more necessary as we are compelled to move more materials offline. As that work can rarely be done on an item by item basis, the ability to make broad decisions on large groups of objects is essential, but these decisions will unavoidably engender some loss of information for the local user community. The greater tolerance for lossiness, and the concomitant reduction of the warranty syndrome, should also mean that we will be prepared to engage in much more fast-but-less-accurate conversion, e.g. uncorrected OCR. If the choice is between digitizing ten items very accurately and digitizing several hundred items less accurately, we should have the option of choosing the latter in some cases.

We may also conclude that there is indeed an important future for textual criticism in an increasingly online environment. Because of such contrivances as uncorrected OCR, we are perhaps entering an era in which we will see a real renaissance of textual criticism. For economic reasons, librarians will create poor digital copies of objects—and then we will inevitably lose the originals in some instances. If a later age then decides those objects were important, much highly specialized scholarly work will be needed to reconstruct the archetypes of those objects.

The decline of the warranty syndrome
should also contribute to the final elimination of the myth of comprehensiveness. To collect comprehensively on a subject, or to provide comprehensive access, has always been a highly questionable concept (see Exon and Punch 1997). The fact is that all research and bibliographic searching, no matter how systematic and sophisticated, is necessarily a form of browsing—but it has taken Web browsers to remind scholars (and even some librarians) of that reality. We need, therefore, not only to condone browsing, but to search for ways to improve it. Because of offsite storage, as well as the increasing use of more streamlined cataloging methods, there has probably never been a time in the history of modern libraries when main stacks browsing has been more difficult and unproductive. We need to replace what was lost in the stacks with a new ability to browse online—albeit with the understanding that online browsing is something very different from traditional browsing (Heim 1993, 24–27).

Equally important for the future of information services will be the heightened sensibility for embedment. Both transferability and analyticity entail embedding. Transferability is the potential to move objects within a wider universe, while analyticity is the capacity for the user to move within the object. Thus while every database is an object, we must also recognize that every object is a database. We should anticipate, therefore, a loosening or broadening of the concept of the object. Presently we feel that we have a firm grasp in the traditional environment on the nature or definition of the object. We think of it as a document. It is a book or a journal—but we know an object is also a chapter of a book, or an article within a journal. But does that mean that several articles in the same journal might also conceivably together constitute an object? Would it be possible to think of several journals on the same subject area as an object? How about all of the publications of a single author? The separate publications of a group of associated authors? A number of items in different formats on the same subject areas? A collection of items in the same place? A collection of items in different places that are administratively linked? A collection of items in the same geographic region?

It is by asking such questions that we begin perhaps to gain some insight into the novelty and complexity of the collection management environment we are now entering. It is a highly volatile environment, in which information services will be called upon as never before to balance the library and the archival sides, the capacity for reformulation and the prerequisite for stability. New objects can and will be created increasingly from previously extant objects, but the traces and components of those extant objects will need also to be safeguarded in some cases. It will be neither loss tolerance nor embedment that paves the way to the new information environment, but rather their dynamic combination—because each implies the other.

The digital mentality, with its heightened sensitivity to embedment, will cause us to realize more than ever that the collection is itself an information object. Collection development has always had the potential to be viewed and practiced as a form of authorship; because, if every text is to some extent a compilation of previous texts, then the collection is a kind of text—and the building of the collection is a kind of authorship. Opportunities and requirements for that same creativity will now be found through collection management, as we move increasingly online, and as technology provides us with abilities for text manipulation and object definition. Even if the responsibility for selection is partially or totally transferred to users in the online environment, so that collection development ceases to be a key responsibility of the academic librarian, the creative skills and knowledge of collection management—the ability to change the relationships of objects to each other, and of users to objects, by adding values to (or deleting values from) objects already selected—will remain a fundamental information service.

**Works Cited**

Gauging the Reception of Choice Reviews through Online Union Catalog Holdings

John C. Calhoun

The reviews in Choice are known to influence book selection, particularly for academic library collections. An investigation was made of how many books that were reviewed over a seven-year period in Choice Reviews (the CD-ROM version of Choice) were subsequently received or purchased at Cavin Library of California State University Dominguez Hills (CSUDH), as well as by a large number of other libraries across the country. All of the books mentioned in Choice Reviews were purchased by one or more libraries, while the majority of books were purchased by several hundred libraries. These findings were further tested to determine the extent to which they could be incorporated into an academic approval program. Two notification-slip approval plans were created for new titles from the presses and publishers of the best-received books. Notification-slip titles were searched shortly after they appeared or were profiled by the vendors, and a correlation was found between the later review holdings and these early approval holdings.

Gauging the reception of a particular title from Choice Reviews (the CD-ROM version of Choice) in a single library requires only finding a bibliographic record for the title in the local catalog. If the record is there, the title was well received. The reception of a particular title, defined in this case as the purchase and inclusion of a title in a library collection, is usually the result of an individual’s intellectual interest moderated to some extent by the institution’s financial constraints that together suggest the item would be a worthwhile addition to the collection. Typically this is because a member of the teaching faculty has suggested a firm order to an acquisitions librarian, or a subject bibliographer has selected a title from an approval program previously set up with an academic vendor. Over the course of time then, using a union catalog, we can judge the reception, not only of particular titles in particular library collections, but of whole groups of titles in a large number of academic library collections—either by discipline or across disciplines—on the basis of characteristics such as the titles having been included in Choice Reviews.

For single disciplines, we can search records in the local catalog by subject. We also can search across disciplines in the local catalog by searching multiple subject terms that would transcend a single main class. Alternatively, we can search across

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disciplines using additional data elements, such as publisher, when there is a well-defined set of these additional data elements available.

Local catalogs can handle the first of these reception studies easily because access by subject has been built into the file structure. Some local catalogs would accommodate the second kind of reception study (across disciplines) because the searching can be repetitive in nature, using several subject terms, or because additional access by other data elements, such as publisher, has been included as a special feature of the indexing. Searching by additional data elements such as publisher is a special feature in the OCLC Online Computer Library Center, Inc. Online Union Catalog (OLUC) as well; and searching the OLUC also provides holdings information that indicates whether the title has been purchased and included in the collections of a number of libraries. The OLUC, however, does not indicate whether a title was reviewed in Choice or any other reviewing service. Determining that information required using Choice Reviews itself, and it was that circumstance that suggested the rationale of creating a single database with both the requisite data elements and access capabilities to make an efficient investigation of the extent to which books reviewed by Choice were purchased by libraries across the country.

There were several aspects to this study. The first was to create this database, which was done by superimposing the holdings data of machine-readable bibliographic records from the OLUC onto the corresponding records from Choice Reviews. The second was to use this database to gauge the reception of the books reviewed by Choice both in the local academic library collection—the Cain Library at California State University, Dominguez Hills (CSUDH)—as well as in a large number of other, presumably academic, library collections across the country as reflected by OLUC holdings. The third was to collate the information from the reception of the books reviewed by Choice and acknowledged in the OLUC holdings to design an academic approval program that would accurately forecast what the best-received materials were most likely to be.

**Literature Review**

Two articles were the conceptual antecedents of the present study. In the first, Balay (1988) described how the machine-readable bibliographic records for Choice Reviews were created in September 1988 and hypothesized future research for these records, such as discipline-oriented or cross-disciplinary searching. In the second, Serebnick (1992) analyzed the holdings of OCLC member libraries for a diverse group of small press titles published in 1986 to find a relation between library holdings and book reviews from core journals such as *Choice* and other review journals, publisher's catalogs, and vendor information. In the current study, I replicated the method used by Serebnick but restricted the domain of review journals searched to a single journal, *Choice*. The selection of *Choice* reflects the high value placed on its reviews as seen in the heavy use of the reviews in both the selection and collection evaluation processes.

Most depictions of *Choice* in the literature (e.g., MacLam 1992, or Graf 1995) have been supportive of the work of its highly qualified reviewers. In addition, the editors weed out about 70% of what is submitted for review, and at the end of each year produce a list of about 10% of what has been reviewed for the annual Outstanding Academic Books (OAB) list. In contrast, Leavy (1992) has suggested that this OAB list has absolutely no validity.

Other critics have not been willing to draw such an extreme conclusion, although they have suggested—through content analysis (Carlo and Natowitz 1995) or some form of quantitative study (Greene and Spornick 1995)—that the vast majority of the reviews that have appeared in major review sources (including *Choice*) have been favorable, perhaps too favorable. MacLam (1992) attributes this to an editorial process that weeds out inappropriate material and recognizably bad books, which is a serv-
ice provided by any good review journal.

On another dimension, the review coverage in *Choice* proved to be an accurate reflection, over a three-year period, of the subject proportions of the market identified in Books Published Annually from *Publishers Weekly* (Sabosik 1992). And the difference in use between titles reviewed by *Choice* from university presses (5.091) and titles reviewed by *Choice* from commercial publishers (6.404), in a representative academic setting, proved to be less than had been anticipated (Saunders 1996).

The OAB list is an aspect of *Choice* Reviews that has attracted a good deal of attention. Marquet and Diambra (1990) suggested that the OAB lists could be used to document a decline in both the quantity and quality of holdings from a midsized academic library. In a second study, Calhoun, Bracken, and Firestein (1990) suggested that the OAB presses and publishers would form an 80/20 core that could be used to model an academic approval program. Goedeken (1993) showed that, unlike the proportion found for *Choice* in general, the proportion of university presses to commercial publishers has increased significantly among OAB lists in the last ten years. Metz and Stemmer (1996) found, not surprisingly, that the reputation of these OAB presses and publishers is an important influence on macro-level decision making of collection development officers in the design of approval plans.

In addition to uses of the OAB lists as postselection assessment tools, Stebelman (1996) suggested that frequently cited publishers from *Choice* Reviews, particularly when arranged by Library of Congress main classes, are the best source for an academic library to use in maintaining its acquisitions program. Erickson (1992) recommended cooperative collection development based on book reviews from *Choice* as a way to stretch budgets and provide more titles without compromising the quality of individual collections.

Just as *Choice* Reviews-on-Cards might be used for cross-disciplinary selection from a single issue in such a cooperative project, so too might vendor referral slips be used for discipline-oriented selection over a period of time equivalent to several issues in a retrospective project, affording bibliographers a perspective of what actually had been published. This last was the suggestion of Childress and Gibbs (1989). From these two instances, it would seem that cross-disciplinary selection from a single issue or discipline-oriented selection from several issues might be worthwhile characteristics to include in any large-scale study of the reception of *Choice* Reviews.

Finally, the utility of a recommended core list such as *Books for College Libraries*, 3d ed. might be limited by availability of the books (Budd 1991). Therefore, including the length of time after the appearance of each OAB list during which titles still were being actively purchased is an important piece of information to take full advantage of what the reception study tells us and to make that a part of an academic approval program.

**Method**

We started with the creation of a relational database of machine-readable bibliographic records developed from *Choice* Reviews and the OLUC. To increase the accuracy of the file, the holdings were normalized by date of issue and the subject categories were normalized by main class.

When the normalized database was sorted by main class, the second step of the study—an analysis by discipline—made it possible to gauge the reception of a particular group of titles reviewed in *Choice*, specifically the OAB items in a large number of academic library collections. It was also possible to gauge a more general group of titles reviewed in *Choice* (those selected by CSUDH bibliographers) in a single academic library collection.

When the normalized database was sorted by publisher, the third step of the study—an analysis of the file across disciplines—made it possible to gauge the reception of university-press and commercial-publisher titles in a large number of academic library collections. Those
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**TABLE 1**

**Review File by Review Number and Date/Issue**

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<th>OCLC</th>
<th>Rank</th>
<th>PCT</th>
<th>D</th>
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<td>C</td>
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<td>0-313-25712-4</td>
<td>88-160</td>
<td>26-2462</td>
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<td>1,834</td>
<td>18</td>
<td>D</td>
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<td>87-35157</td>
<td>26-2463</td>
<td>8905</td>
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<td>72</td>
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<td>455</td>
<td>77</td>
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<td>88-11465</td>
<td>26-2465</td>
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<td>1,055</td>
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<td>51</td>
<td>95</td>
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<td>Hall, G.K. &amp; Co.</td>
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core presses and core publishers could then be used as the basis for two notification-slip approval plans in a single academic library collection.

In the final step of the study, the approval titles were searched in the OLUC shortly after they were profiled by the vendors; and following the first year of the program, the early searches of the approval titles were correlated with the later searches of the review titles. The definition of the 70/30 approval core and the 60/40 review core (the timely purchase of the most likely candidates to become OAB and later to be included in the fourth edition of *Books for College Libraries*) were used as comparison.

**Constructing the Database from Choice Reviews and the OLUC**

Table 1 shows a display of bibliographic records from the top of a file that I was able to obtain from Choice Reviews in January 1995 using a locally developed program. These records existed because of the decision to put the reviews beginning with the September 1988 issue of *Choice* into machine-readable form (Balay 1988). In the display, the bibliographic records appear as rows and the fields of the bibliographic records appear as columns. Most of the fields are identified with two- or three-letter mnemonics that are recognizable from Choice Reviews (Title, Publisher, International Standard Book number, Library of Congress control number, Review Number, Date/Issue, and Subject). From the sequence of review numbers, it will be clear that I intended to search all reviewed titles to ensure finding the OLUC holdings for a general group of large press titles published over several years but reviewed in a single core journal—in contrast to Serebnick (1992), who used a sophisticated sampling technique to ensure finding OLUC holdings for a select group of small press titles published in a single year but reviewed in several core journals.

Table 2 shows the initial intent of the project, which was to sort the file by the three-letter mnemonic for subject category (in this case, African Studies, or AFR) and then to subarrange it in descending order by the OLUC holdings. Once the titles had been sorted and subarranged in this fashion, each could be assigned a rank (to facilitate discipline-oriented searching) and a percentile expression of rank (to facilitate cross-disciplinary searching) with short programs, to indicate how well each had been received among its peers from this subject category in the OLUC. Before this could be realized, however, some means had to be found to standardize the age of the records in the file. This was done because some reviews were issued in January 1989 (DI=8905), and thus would have had as much as eight years to accumulate holdings; while others were issued in January 1995 (DI=9505), and thus would have had as little as two years to accumulate holdings.

Figure 1 might help to make this technical problem clear. Our first searching project in the OLUC, covering titles from the years 1989 to 1994, occurred in February and March 1995 (equivalent to 9506 and 9507 on the bar graph, because each calendar year begins with issue 5 of Choice Reviews). When we compared the results of this large-scale searching project year by year, we elected to discard the 1994 data because first of all the data appeared to shelf off abruptly, and second, the OAB list for 1994 had just appeared, and we thought that might result in additional purchases that would not be reflected in the data. The results for 1989 through 1993 stepped up at a very modest rate of about 5% a year, and they seemed, in contrast to more recent purchases, almost plateau-like.

Our second searching project in the OLUC, looking again at titles from the year 1994, occurred in February 1996 (equivalent to 9606 on the graph). When the results of this second project were compared to the data for 1993 from the first project, we were pleased to see that the average holdings for 1993 and 1994 were almost identical. The appearance of the succeeding year's OAB list appeared to have a stabilizing effect on the penultimate year's holdings—in effect, closing the door on active purchases from the
<table>
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<tr>
<th>X</th>
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<tr>
<td>O</td>
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<td></td>
<td>Like Lions They Fought: The Z</td>
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<tr>
<td>O</td>
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previous year's OAB list. Following this, I was able to obtain another two-year file of machine-readable bibliographic records from Choice Reviews.

Our third searching project, for titles from the year 1995, occurred in February 1997. When we compared the results of this third project to the results for 1993 from the first project and to the results for 1994 from the second project, we were pleased to see that the average holdings for all three years were almost identical. This seemed to confirm that the appearance of the succeeding year's OAB list had a stabilizing effect on the penultimate year's holdings. As an addendum to this third project, we also searched the 1996 titles in April 1997, and the reader can see the effect of this early searching (which was very similar to our initial results for 1994 titles from the first project) in the shelving off of the average holdings in the 1996 dates of issue at the far right of the figure.

After some consideration, we decided to take the 1993 results from the first project, the 1994 results from the second project, and the 1995 results from the third project as our norm. We indexed the average holdings for each date of issue in the file to this value. This process of normalizing the holdings ensured that the titles from each volume and number would be weighted equally and that the dates of issue would be consistent throughout the file. At the same time, because our approval vendors used Library of Congress (LC) main class to sort and arrange their notification slips (rather than the three-letter mnemonics for Choice subject categories that we had devised), we also decided to use Main Class as our norm in place of Subject Category.

**First Use of the Database:**

**Discipline-Oriented (Main Class) Searching and Analysis**

Table 3 shows a sample of the results of this normalization process: 44,950 titles with dates of issue from 1989 through 1995 were sorted in a single file by LC main class (in this case, for General Works: Collections, Encyclopedias, and Dictionaries; AC, AE, and AG) and subarranged in descending order by OLUC normalized holdings. Once the titles had been sorted and subarranged, each could be assigned a rank and a percentile expression of rank with short programs (under RANK and PCT, between the OLUC holdings and the Dominguez Hills holdings) to indicate how well each had been received among its peers from these main classes in the OLUC. Once our method was developed to the point that it permitted us to use a consistent file of this size, we could begin to answer some questions about the reception of titles from Choice Reviews on an empirical, rather than a
<table>
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<tr>
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</table>
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Theoretical basis. We included codes for OAB titles as well as CSUDH titles in the file (O at the far left, and D at the far right), for example. So all that was required to create discipline-oriented subsets of these from the seven-year review file was a feature of the dBase software called SET FILTER.

Table 4 shows a subset of OAB titles created by setting the filter to X=“O.” Because their rank and the percentile expression of that rank (which is independent of a particular main class) had already been assigned in the seven-year review file, very little extra was required to find the mean (71) or the median (76) for this subset. There may have been nothing, a priori, among the 1,335 graded book review citations attached to the 460 OAB titles in the General Periodicals Index to support Leavy’s (1992) findings of the superiority of Choice’s OAB. However, there certainly seems to be something, a posteriori, among the 2,229,926 holdings attached to the 4,209 OAB titles in the OLUC to suggest taking another look.

More than once the editors at Choice have pointed out the primary role the reviewers (typically undergraduate teaching faculty with expertise in the subject) play in the review process (Graf 1995; MacLam 1992). The reviewers must say, in their own 200 words, that the title is outstanding before the editors can select it as part of their annual OAB list. It might be true, as some critics have said, that most book reviews are favorable (e.g., Carlo and Natowitz 1995; Greene and Spornick 1995). But a very large number of bibliographers have responded to the OAB lists in a way that suggests the reviews represented by the lists are much more favorable than most reviews, and the conclusion seems inescapable: an overwhelming majority of the librarians who buy academic books view these titles as outstanding.

Table 5 shows a subset of CSUDH titles created by setting the filter to D=“D.” Again, because their rank and the percentile expression of that rank (which is independent of a particular main class) had already been assigned in the seven-year review file, very little extra was required to find the mean (63) and median (67) for this subset. That CSUDH has been buying some of the best-received, or weightiest, titles from Choice Reviews for the past seven years is good to know because we were only able to buy 15,285 of the 44,950 titles reviewed (34%). We have a Western Association of Schools and Colleges (WASC) review coming up in which we will almost certainly be asked how well we have done with our declining funds. Our very modest share of titles from Choice Reviews will be significantly enhanced by the 44% share of normalized holdings or purchases attached to them in the OLUC. A more serious difficulty, however, may be the unequal distribution of that 34% or 44% share of the total—-a fact that another bar graph will help to make clear.

Figure 2 shows the local holdings from CSUDH as a percentage of reviewed titles from Choice in the most frequently seen LC main classes. The editor and publisher have established already that the review coverage in Choice is an accurate reflection of the subject proportions of books published (Sabosik 1992). Within the context of what has been published, our overall performance for 1989 through 1995 was that we were able to buy one title for every three reviews. We will argue that, because we have been careful to buy the better received titles, the net effect, in terms of the weight of those titles, is closer to one for every two. In some LC main classes, however, we did much better than this, while in others we did much worse. Our students and faculty will have odds-on chances of finding reviewed titles in the history of theory and practice and special aspects of education (LC classes LA, LB, and LC); in English literature (PR); or in pediatrics (RJ). But they will have only about 1 chance in 10 of finding reviewed titles in Judaism and biblical studies (BM and BS); in the history of Great Britain, France, Germany, Greece, and Italy (DA, DC, DD, DF, and DG); in European politics (JN); in architecture and
### TABLE 4

**Outstanding Academic Books by Main Class and Normalized Holdings**

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<th>LCN</th>
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<th>Rank</th>
<th>PCT</th>
<th>D</th>
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<td>67-79381</td>
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<td>30</td>
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**TABLE 5**

**Domínguez Hills Titles by Main Class and Normalized Holdings**

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<th>RN</th>
<th>DI</th>
<th>Index</th>
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<th>Norm</th>
<th>Rank</th>
<th>PCT</th>
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<td>100</td>
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<td>0.910</td>
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<td>100</td>
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</table>
decorative arts (NA and NK); in botany (QK); in agriculture and plant culture (S and SB); or in civil and mechanical engineering (TA and TJ).

A possible explanation for the numbers in the last few main classes would almost certainly be that we always have been a general campus rather than a polytechnic one. But clearly there was no coordination in our previous acquisitions model, which, in attempting to control declining fortune with subjective allocations to book funds, allowed the backs and sides of a number of academic departments to go bare. Against an increasingly insistent counterpoint of regularly scheduled courses from those same departments—e.g., courses with titles like Comparative Religion and Understanding the Bible, the Emergence of Modern Europe and Twentieth-Century Europe, or Political Change in First and Third World Countries—we can only hope that our explanation will not sound to our accrediting agency too much like “O Fortuna” from Carmina Burana.

**SECOND USE OF THE DATABASE: CROSS-DISCIPLINARY (PUBLISHER) SEARCHING AND ANALYSIS**

Table 6 shows a second arrangement of the file that can be very helpful for collection development purposes. To permit this display, the publisher field was first normalized using authoritative forms from the WILSONDISC Cumulative Book Index; an asterisk indicates that the publisher form was not verified. Then the file was sorted on the normalized publisher field and subarranged on the International Standard Book Number field. We then took advantage of this new arrangement of the file by writing a short program that summarized the number of titles, normalized holdings, and percentiles for each publisher.

Table 7 shows summaries for the first 20 publishers; by using the SET FILTER command to establish a suitable threshold (in this case, PCT>4,200), we could create what are essentially cross-disciplinary subsets of the best-received presses and publishers from this summary file. Saunders (1996) found the differences between the circulation of university-press to commercial-publisher titles reviewed in *Choice* to be less than anticipated (5.091 to 6.404). And when we consider large-scale purchases and inclusions of the best-received presses and publishers reviewed in *Choice* from these cross-disciplinary summaries (that is, summaries in which the percentile expressions of rank are taken from many different main classes), we too found the differences to be less than anticipated. These cross-disciplinary summaries indicated that the average of the best-received university-press titles reviewed in *Choice* (with a mean of 56 and a median of 57) was
slightly better than the average of the best-received commercial-publisher titles reviewed in *Choice* (with a mean and a median of 53).

Table 8 shows a subset of the 54 best-received university presses, while Table 9 shows a subset of the 57 best-received commercial publishers from 1989 through 1995. During this seven-year period, these presses and publishers were responsible for two-thirds of the titles reviewed in *Choice* and three-fourths of the normalized holdings attached to these same titles in the OLUC. This list of presses and publishers was also responsible for three-fourths of the OAB during this seven-year period. And in fact, if we were to pursue the replication of publisher quality (Goedeken 1993) or of publisher reputation (Metz and Stemmer 1996) a step further by extending our seven-year file to include 1996 reviews, we would find an 80/20 core of 56 presses and 68 publishers among the OAB much like the model for a publisher-based approval program (Calhoun, Bracken, and Firestein 1990) and very similar to this list. There seems to be enough of a correlation between quality and reception then to invite an application.

**AN ACADEMIC APPROVAL PROGRAM APPLICATION BASED ON THE CROSS-DISCIPLINARY (PUBLISHER) ANALYSIS**

In earlier studies, authors have used frequently reviewed publishers or number of OAB items as collection assessment tools for individual academic collections (e.g., Stebelman 1996; Marquet and Diambra 1990), but in this part of our study we were interested instead in the reception of *Choice* Reviews for the general academic collection. As a consequence, we used the cross-disciplinary subsets of best-received presses and publishers as the basis of two notification-slip approval plans for core materials, both with dealers who had online systems accessible over the Internet. Although we receive notification-slip each week from each of these vendors, we also can capture the bibliographic data from the slips through a program developed by local system personnel that draws the data down over the Internet into a relational database file.

Table 10 displays the bibliographic data from the top of this file as it appeared at the end of the 1996 calendar year. Again, most of the fields are identified with two- and three-letter mnemonics that are recognizable from *Choice* Reviews. The titles in the display are sorted by main class and subarranged in descending order by OLUC holdings; but in this example, because the titles were searched in weekly batches one month after having been profiled by the vendor, the holdings have not been normalized. This process of cumulating a large file of notification-slip titles, each of which was searched one month after having been profiled, allowed us to create consistent monthly subsets by using filters and to print these monthly lists with the rank and percentile expression of rank from the larger file still attached.

Table 11 is an example of such a monthly list. This list can be used by subject bibliographers as a guide to two notification-slip referral files, in which the bibliographers can find additional bibliographic information, such as the academic affiliation of the author, or a complete list of subject added entries. The overview that the monthly list and the coordinated referral files provide allows a combination of cross-disciplinary selection from a single issue, characteristic of a cooperative project (Erickson 1992); at the same time, it allows discipline-oriented selection over a period of time equivalent to several issues, characteristic of a retrospective project (Childress and Gibbs 1989).

This combination of discipline-oriented and cross-disciplinary searching, which is an attribute of the larger file, is something we would want to preserve in an online version of the monthly list once we were able to support a local area network that linked the subject bibliographers' computers and provide access to the online referral files in our vendors' systems over the Internet. If we were able to maintain the perspective of such a monthly list, say, at a Web site, while at the same time furnishing access to the online
<table>
<thead>
<tr>
<th>X</th>
<th>TI</th>
<th>O</th>
<th>PB</th>
<th>IS</th>
<th>LCN</th>
<th>RN</th>
<th>DI</th>
<th>Index</th>
<th>MC</th>
<th>Norm</th>
<th>Rank</th>
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referral files over the Internet, we would have a prototype for a systemwide project—something that heretofore has been limited to the more stringent geographical proximity characteristic of traditional cooperative projects (Erickson 1992).

Our experience thus far has shown that the one-month holdings from the notification-slip file form a 70/30 core (that is, 70% of the holdings appear on 30% of the titles), just as the normalized holdings in the Choice Reviews file form a 60/40 core (that is, 60% of the normalized holdings appear on 40% of the titles). This would seem to support MacLam’s (1992) characterization of Choice’s selection procedures, in which inappropriate material and recognizably bad books are weeded out and a more consistent file is produced. We started our notification-slip approval plans in October 1995, by the end of the 1996 calendar year, we found that the list of 54 university presses had produced 5,261 notification slips, while the list of 57 commercial publishers produced 10,027 slips. Also by the end of the calendar year, we found that the university-press list had predicted 2,714 Choice reviews, while the commercial-publisher list predicted 1,856. The lists accurately predicted two-
## TABLE 8
CORE UNIVERSITY PRESS AND NORMALIZED HOLDINGS

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thirds of the 1996 Choice reviews and three-fourths of the 1996 OAB items. As figure 3 will make clear, we were anticipating that approximately one of every four commercial publisher titles and one of every two university press titles profiled would be reviewed. What we were not anticipating, however, was the extent to which the restriction on date (the review having to appear within six months of publication, which MacLam had described) would affect our operation. We found that the amount of time between a title's having been profiled by one of our vendors and the book's being reviewed by Choice had a mean of 151 days and a median of 152 days. As a result, our performance for the first five dates of issue in 1996 looked like a long upward slope. By the end of the year, using the standard numbers from the IS and LCN fields, we were able to find only 3,277 approval titles among 6,730 review titles (49%)—including 208 OAB approvals out of 311 OAB reviews (67%).

**CORRELATION OF EARLY SEARCHES FROM THE APPROVAL FILE WITH LATER SEARCHES FROM THE REVIEW FILE**

One last illustration will help to make clear how the one-month holdings from the approval file can be related to the normalized holdings from the review file through the 3,277 titles that we have been able to match. In the course of our third project, we searched the 1996 titles in April 1997; the effect of this early searching can be seen in the shelving off of the average holdings in the 1996 dates of issue at the far right of the display in figure 3. The results for January 1997 (which include the 1996 OAB list), as well as the results for the last six dates of issue in the display (June 1996 through December 1996), are obviously less complete than the data for the normalized holdings would be following our fourth searching.
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<td>0-8018-5200-5</td>
</tr>
</tbody>
</table>
project. Nevertheless, we can assign an index to each of the 1996 dates of issue that will permit us to normalize the holdings of the 3,277 titles in question. And with the caveat in mind—that the 1996 normalized holdings will not have the same sense of closure that the succeeding year’s OAB list would provide (the 1997 OAB list)—we will proceed.

Table 12 shows the Pearson product-moment correlation between the percentile expression of rank for the normalized holdings of 3,277 titles from the review file to the percentile expression of rank for the one-month holdings for the same titles from the approval file. We have called the latter “centile” (CEN), in order to distinguish it from the former. First, the review file and the approval file were indexed on common key expressions (the IS and LCN fields). Using the relational features of the software, we linked the review file to the approval file according to those common key expressions. And the data for the centile expression of rank from the one-month searches in the approval file were used to replace the CEN field in the review file. Then, the means for both PCT and CEN were found (55.98 and 57.64, respectively). Next, the standard deviations for the two (26.12 and 27.16) were found. And finally, the product-moment correlation coefficient (.4678) was calculated.

The 3,277 records common to the approval and review files had a CEN mean of 58 and median of 60. This is in keeping with what the 70/30 core from the approval file and the 60/40 core from the review file had already suggested. This offers further support to MacLam’s (1992) characterization of Choice’s selection procedures, which weed out inappropriate material and recognizably bad books: from as early as one month, reviewed titles enjoy better than average reception. Also because these 3,277 records have a code (O) to identify OAB items in the review file, we can create subsets of OAB and non-OAB records. When we did this, we found that the mean and median for the OAB records from the PCT field was 69 and 73; and the mean and median for the non-OAB records, 55 and 54. It might be that a large number of librarians ordered these titles from the 1996 OAB list (which appeared in January 1997) and were able to receive and catalog them in time for the OLUC holdings to appear among the data from the addendum to our third searching project (which occurred in April 1997). But it seems more likely that the 1996 normalized holdings reflect some innate quality already inherent in the titles that the reviewers and editors highlighted with the list. Even the very earliest results—the one-month holdings from the approval file—reflect something of this. The mean and median for the OAB records from the CEN field were 61 and 63, and the mean and median for the non-OAB records were 57 and 60.

### The Significance of 70/30 Approval Core and 60/40 Review Core: Timely Acquisitions of Next Year’s Outstanding Academic Books

We were able to correlate the normalized holdings of the review file with the one-month holdings of the approval file, and we are willing to speculate, on the basis of that correlation, that there is a conceptual equivalence between the 60/40 core of the review file with the 70/30 core of the approval file worth further investigation. The advantage in establishing a correlation between the review file and the approval file and suggesting a link between the 60/40 core and the 70/30 core (as Budd (1991) has suggested already), is that of utility. The earlier we recognize core materials, the better our chances will be of finding those materials available. Choice Reviews appears several years ahead of the next edition of *Books for College Libraries*, and notification slips from vendor profiles appear several months ahead of Choice Reviews. If we are willing to search the reviews in the OLUC once the OAB list from the succeeding year has appeared, we can predict from the 60/40 core what *Books for College Libraries*, 4th ed. will contain. And if we search the notification slips in the...
OLUC one month after they have been profiled, we can add a depth to the bibliographic data that only a 200-word review several months later will rival. We believe the succeeding-year search (like a year's-end political analysis) and the one-month search (like a first-hour election poll) are well worth the effort to get an accurate forecast of what the best-received materials will most likely be.

**WORKS CITED**


Goedeken, Edward A. 1993. An index of publisher quality revisited: A partial replica-


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Toward a Computer-Generated Subject Validation File: Feasibility and Usefulness

Lois Mai Chan and Diane Vizine-Goetz

Responding to the fact that the library community has long recognized the need for improved efficiency and reliability in subject authority control, we explored the feasibility of automatically creating a subject heading validation file by scanning the OCLC Online Computer Library Center, Inc. Online Union Catalog (OLUC). The premises were, first, that although the file would not be exhaustive, it would contain the majority of frequently used headings, and second, the predicted level of accuracy in the file would be high. In approach, we focused on finding the density and distribution of assigned headings and the relationship, if any, between density and error rate. We analyzed a sample file of Library of Congress-assigned headings from the OCLC Subject Headings Corrections database. The results of the study showed that (1) frequency of use and number of headings at a given rate of use are in inverse relationship; (2) a small number of headings with high frequencies of use accounts for a majority of total use, while a large proportion shows very low frequency of use; (3) topical headings account for about two-thirds of assigned headings; and (4) error and obsolescence rates are both low, and both are in inverse relationship to the frequency of heading use. We concluded that an automatically generated subject heading file is indeed feasible. Such a file would be useful for various purposes: to verify subject heading strings constructed by catalogers, to update subject headings in catalog maintenance, and to validate subject headings during retrospective conversion.

Because subject heading validation requires extensive manual effort, subject authority control has long been one of the most labor-intensive and costly operations in library cataloging. Automatic error detection and correction mechanisms developed by OCLC Online Computer Library Center, Inc., have already reduced the need for some manual corrections, mainly those involving predictable and mechanical errors, such as spelling. But there are many types of errors these mechanisms do not catch. A subject validation file—that is, a list of valid headings and heading...
strings that exist in a large catalog database such as the OCLC Online Union Catalog (OLUC) or the Library of Congress MARC (MACHINE Readable Cataloging) database (LC MARC)—would make subject authority control much more efficient.

In former years, when the Library of Congress (LC) subject headings system was largely enumerative, Library of Congress Subject Headings (LCSH) served as a fairly effective subject validation file in spite of the fact that certain categories of headings were designated “nonprinted” and so did not appear in the list. Today, however, mainly because of how far the system has moved toward synthesis, listings in LCSH account for only a small percentage of the heading strings actually assigned to bibliographic records. Currently, many libraries rely on the online or print version of LCSH for subject authority control. LCSH is an indispensable tool, but its usefulness is limited by its nonenumerative nature. Accordingly, many in the profession have long felt the need for a more nearly complete subject validation file. In fact, one of the major recommendations from the Subject Subdivisions Conference held in 1991 called for the expansion of the LC subject authority file to include subject heading strings not currently listed in LCSH (Recommendations 1992), and three years later the Subject Authority File Task Group of the Cooperative Cataloging Council also recommended the creation of a subject validation file (Cooperative 1994).

An ideal subject validation file would contain all properly formulated subject headings in current use—in other words, it would be exhaustive and error-free. One method for developing such a file would be first to list all assigned subject headings appearing on bibliographic records and then to correct all the errors such a list would necessarily contain. Even if done centrally, the effort required would be prohibitively large at the initial stage and very high for maintenance. One must conclude, therefore, that a complete list of subject heading strings without errors is an impractical ideal. An alternative to an exhaustive subject validation file with many errors might be a smaller but relatively error-free file made up of unique heading strings that have been used frequently and account for a large proportion of usage.

HYPOTHESES

For such a tool to be possible, however, several assumptions pertaining to headings would have to hold. These are:

1. that frequency of use varies among headings, with some headings used over and over, and some very seldom;
2. that errors congregate at the low ranges of frequency of use; and
3. that a point exists at which errors occur at an unacceptable rate.

If investigation proved these assumptions valid, then the removal of headings below the point of unacceptability should leave a highly accurate subject validation file that could prove a useful and cost-effective professional tool.

Accordingly, OCLC’s Office of Research funded a project to explore the feasibility of automatically generating a relatively error-free subject validation file that would contain all headings that had been used more than a very few times. We would examine, first, the distribution of assigned headings based on frequency of occurrence, and second, the relationship, if any, between frequency of use and error rate.

METHODS

DATA COLLECTION

The Subject Heading Corrections database, developed to correct subject heading errors in the OLUC, was the source of headings for this project. The database contains an entry for each unique, complete subject heading used in bibliographic records loaded into the OCLC system through November 1992 (more than 4 million headings). A 1% sample of the headings assigned by LC was extracted from the database for further processing and examination. The sample came to 20,473 headings.

The records in the test file were ana-
TABLE 1
SAMPLe DATABASE
HEADINGS AND POSTINGS IN DESCENDING ORDER BY FREQUENCY OF USE

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Headings</th>
<th>Postings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>Cum. Ct.</td>
</tr>
<tr>
<td>&gt; 500</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>401-500</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>301-400</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>201-300</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>101-200</td>
<td>28</td>
<td>48</td>
</tr>
<tr>
<td>51-100</td>
<td>74</td>
<td>122</td>
</tr>
<tr>
<td>46-50</td>
<td>17</td>
<td>139</td>
</tr>
<tr>
<td>41-45</td>
<td>22</td>
<td>161</td>
</tr>
<tr>
<td>36-40</td>
<td>28</td>
<td>189</td>
</tr>
<tr>
<td>31-35</td>
<td>35</td>
<td>224</td>
</tr>
<tr>
<td>26-30</td>
<td>47</td>
<td>271</td>
</tr>
<tr>
<td>21-25</td>
<td>82</td>
<td>353</td>
</tr>
<tr>
<td>16-20</td>
<td>115</td>
<td>468</td>
</tr>
<tr>
<td>11-15</td>
<td>246</td>
<td>714</td>
</tr>
<tr>
<td>6-10</td>
<td>792</td>
<td>1,506</td>
</tr>
<tr>
<td>3-5</td>
<td>1,876</td>
<td>3,382</td>
</tr>
<tr>
<td>2</td>
<td>2,588</td>
<td>5,970</td>
</tr>
<tr>
<td>1</td>
<td>14,503</td>
<td>20,473</td>
</tr>
</tbody>
</table>

The density and distribution of the sample of LC-assigned headings were determined by statistical analysis. The first step in the investigation was to determine, for each heading, how many times it appeared in the sample; then the headings were divided into groups according to frequency of use. The number of postings, or occurrences, for each frequency group—that is, the total frequency of assignment of all the headings in the group—was also tabulated. The results are shown in table 1.

The left side of table 1, labeled “Headings,” shows the density of sample headings by categories of frequency of use in descending order. The columns labeled “Headings count” and “%” give the number and percentage of headings in each category of frequency ranging from 500 or greater to 1. Three of the headings in the sample file have been assigned to bibliographic records in the OCLC database more than 500 times, and more than 14,500 have been assigned only 1 time each. The heading count shows an inverse relation to frequency of use; the lower the frequency, the greater the number of headings. The most frequently assigned headings from the sample file are Art, American—Exhibitions (assigned 611 times), India—Politics and government—1919–1947 (assigned 567 times), and Family—Religious life (assigned 552 times).

The right side of table 1, labeled “Postings,” shows the distribution of postings calculated by multiplying the number of headings by frequency. A small number of
TABLE 2

<table>
<thead>
<tr>
<th>MARC Tag</th>
<th>Number of Headings</th>
<th>Percentage</th>
<th>Cum. Freq.</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>2,356</td>
<td>11.51</td>
<td>2,356</td>
</tr>
<tr>
<td>610</td>
<td>1,145</td>
<td>5.59</td>
<td>3,501</td>
</tr>
<tr>
<td>611</td>
<td>26</td>
<td>0.13</td>
<td>3,527</td>
</tr>
<tr>
<td>630</td>
<td>156</td>
<td>0.76</td>
<td>3,683</td>
</tr>
<tr>
<td>650</td>
<td>13,653</td>
<td>66.69</td>
<td>17,336</td>
</tr>
<tr>
<td>651</td>
<td>3,137</td>
<td>15.32</td>
<td>20,473</td>
</tr>
</tbody>
</table>

headings account for a high percentage of use. Compare the top 122 headings (headings assigned more than 50 times) that account for about 25% of total heading usage with the more than 14,500 headings assigned 1 time each that account for approximately 25% of usage at the lower frequency levels.

The distribution of the sample of unique LC-assigned headings by MARC tag was also determined. The results, given in table 2, show that the largest number of headings are topical headings (MARC 650), followed in descending order by geographic name headings (MARC 651), personal name headings (MARC 600), corporate name headings (MARC 610), uniform titles (MARC 630), and headings for meetings (MARC 611).

To determine the extent of overlap between headings appearing in LCSH and the subject heading strings assigned to bibliographic records, a count was made of the number of assigned headings with a frequency of 2 or higher that matched exactly those found in LCSH.

EVALUATION OF HEADINGS

Details of the methods used in evaluating the sample headings are given in a previously published paper (Chan and Vizine-Goetz 1997) and are briefly summarized here.

The file of sample headings was ordered by MARC tag, frequency of occurrence of the headings, and the heading strings sorted alphabetically within frequency. The entry for each heading also included an OCLC number for a bibliographic record in which the heading appeared, the most recent date from the MARC fixed field element, "date entered on file," and a sequential ID number. The following example shows these elements for the heading Art, American—Exhibitions.

```
MARC Tag: 650
Frequency: 611
Heading string: Art, American $x Exhibitions
OCLC#: 26855900
Date: 1992
ID number: 1589967
```

In the second stage of the project, we tested the relationship, if any, between the frequency of use and error rate. The heart of the investigation was to test for accuracy and to calculate error rates at various levels of frequency of assignment. In order to determine the validity of the headings, each heading had to be evaluated according to the terminology established in LCSH or the name authority file and the policies for combining elements in a heading. Because of the large size of the sample, it was decided to focus first on headings with higher frequencies of use. A preliminary analysis of those headings used 3 or more times each (a total of 3,382 headings), confirmed the supposition that errors indeed increased as heading use declined. Subsequently, 2,588 headings used twice each were added. This brought the working sample to 5,970. Time and labor constraints allowed examination of only a subset of the headings that were used once each.

Each of the 5,970 headings in the working sample was examined manually for correct MARC tagging, terminology, syntax, spelling, punctuation, capitalization, etc., according to the standards and
authority files in the following list:
• USMARC formats for authority data and for bibliographic data
• LCSH [both the print version and the LCXR (SUBJECTS) file in LOCIS (Library of Congress Information System)]
• Authority records in the name authority file in LOCIS
• Free-Floating Subdivisions: An Alphabetical Index (Library of Congress 1989–)
• Subject Cataloging Manual: Subject Headings (Library of Congress 1984–)
• Revised Library of Congress Subject Headings (Library of Congress 1991)
• Anglo-American Cataloguing Rules, 2d edition, 1988 revision (AACR2R 1988)

In a typical case, a given heading was first checked to see whether the field tag and subfield codes conformed to USMARC formats. The heading was then checked in LCSH or the name authority file, depending on whether it was a topical or name heading. A heading was considered valid at this point if no mechanical errors were found in coding, punctuation, capitalization, spacing, etc., and the entire heading or string, including subdivisions, matched one in the name authority file, in LCXR, or in the 16th edition (1993) of LCSH. The 16th edition of LCSH was used as the cutoff point because the cutoff date of the sample was November 1992.

The remaining headings were further evaluated with the tools listed above and analyzed in consultation with the Cataloging Policy and Support Office staff at LC.

Two examples of verification procedures are shown here. In the first case, the heading is valid. In the second case, the subdivision $x Religious life was incorrectly applied. The appropriate subdivision under a topical main heading is $x Religious aspects (see figure 1).

**Figure 1.** Headings with Verification Procedure.

CATEGORIZATION OF INVALID HEADINGS

Headings can be invalid because they contain actual errors or because they are obsolete in whole or in part. Through references from old to new forms, obsolescence is less detrimental to retrieval than outright error; it was thus deemed important to distinguish the two. Invalid headings were characterized as either “incorrect” or “obsolete,” with headings containing both incorrect and obsolete elements classed with the former. All invalid headings were also sorted according to heading type as described in the earlier paper (Chan and Vizine-Goetz 1997). Variations within each category and examples are also given in the earlier paper.

In the spring of 1995 when the data were being analyzed, each heading that was identified as incorrect or obsolete was checked in the LOCI (the bibliographic file in the LOCIS database) in the LC
MARC database to determine whether the error or obsolete element had been corrected or updated since the sample was collected. This was done for the purpose of determining the extent of maintenance of assigned subject headings in the LC MARC bibliographic database.

After the analysis of headings with a frequency of 2 or higher was completed, a subset of headings with a frequency of use of 1, consisting of 3,472 headings (representing 23.93% of the total sample of 14,503 headings) was examined and analyzed as a test of the validity of the findings from the earlier sample. Errors in the subset were also characterized as incorrect or obsolete, and their numbers extrapolated as an estimate of the situation in the 14,503 frequency-1 headings in the full test sample.

RESULTS

Two files figure in the summary that follows. One was the full test file of 20,473 headings, i.e., the 1% random sample of LC-assigned headings in OCLC's Subject Headings Correction database. The other, called the working file, was made up of the 5,970 headings in that file that had been used more than once. The cutoff date for both was November 1992.

The analysis of heading and posting relationships, presented in tables 1 and 2, is based on the full test file. The analyses of invalid headings, presented in tables 3-10, are based on the working file.

DISTRIBUTION OF SAMPLE HEADINGS

The data shown in table 1 support the first hypothesis that frequency of use varies among headings, with a small number of headings accounting for a large percentage of usage. Headings that were used only once or twice account for the largest number. The heading count shows an inverse relation to frequency of use; the lower the frequency, the greater the number of headings. The higher frequency categories are sparsely populated, and there is greater density in the categories of low frequencies.

The inverse relationship between heading count and frequency of use is illustrated by the following:

- 3 headings were assigned more than 500 times each, represent only 0.01% of the sample, but account for 2.86% of total usage.
- 122 headings were assigned more than 50 times each, represent only 0.6% of the sample, but account for 25.81% of total usage.
- 714 headings were assigned more than 10 times each, represent only 3.49% of the sample, but account for 46.19% of total usage.
- 1,506 headings were assigned more than 5 times each, represent 7.36% of the sample, but account for 56.05% of total usage.
- 3,382 headings were assigned 3 or more times each, represent 16.52% of the sample, but account for 67.43% of total usage.
- 5,970 headings were assigned 2 or more times each, represent 29.16% of the sample, but account for 75.99% of total usage.
- In contrast, 14,503 headings (almost 71% of the total number of assigned headings in the sample) were used only once each. However, they account for only 24.01% of the total usage.

Topical headings made up two-thirds of the full test file and 71% of the working file, with personal and geographic name headings sharing most of the remainder in each file (see table 2).

OVERLAP BETWEEN LCSH AND LC-ASSIGNED SUBJECT HEADING STRINGS

Table 3 shows the overlap between LCSH and the sample headings in the working file. Only 777—just over 13%—appear in LCSH as such. Of these, topical headings show the greatest degree of overlap (13.94%), with personal name headings coming next (12.74%). Most of the overlapped personal name headings were those for individual families, which are enumerated in LCSH. The low rate of overlap between LCSH and name headings was due to the fact that most name headings, especially those for persons, corporate bodies, and jurisdictions, are maintained in the name authority file.

The data indicate that in assigning subject headings, catalogers seldom derive
TABLE 3
OVERLAP BETWEEN ASSIGNED HEADINGS AND LCSH

<table>
<thead>
<tr>
<th>Type of Headings</th>
<th>Number of Sample Headings*</th>
<th>Headings Matching LCSH</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>463</td>
<td>59</td>
<td>12.74</td>
</tr>
<tr>
<td>610</td>
<td>181</td>
<td>10</td>
<td>5.52</td>
</tr>
<tr>
<td>611</td>
<td>0</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>630</td>
<td>39</td>
<td>4</td>
<td>10.26</td>
</tr>
<tr>
<td>650</td>
<td>4,233</td>
<td>590</td>
<td>13.94</td>
</tr>
<tr>
<td>651</td>
<td>1,054</td>
<td>114</td>
<td>10.82</td>
</tr>
<tr>
<td>Total</td>
<td>5,970</td>
<td>777</td>
<td>13.02</td>
</tr>
</tbody>
</table>

* Headings with frequency of use of 2 and above

headings exclusively from LCSH. Most name headings are based on name authority records, and over 85% of the topical headings must be synthesized.

INVALID HEADINGS

When the validation process was completed, it was found that 294 (4.92% of the 5,970 headings that were tested) were invalid, as shown in table 4. Headings considered invalid were classed as "incorrect" or "obsolete" with validity ratios figured according to the sum of the two. Among the 294 invalid headings, 76 (1.27% of the total working sample) were incorrect and 218 (3.65%) were obsolete. Thus, among the invalid headings, incorrect headings accounted for approximately one-fourth of the total, and about three-quarters were obsolete headings.

Analyzed by type of heading, uniform titles and corporate name headings showed the highest rate of invalid headings, at 17.95% and 13.26% respectively. These were followed by geographic name headings (8.35%), personal name headings (4.97%), and topical headings (3.59%). There were no headings for meetings in the sample. It might be important that over 70% of the headings in the working file were topical headings, of which fewer than 1% were incorrect and only 2.62% were obsolete, for a total invalidity rate of 3.59%. Table 4 shows the distribution as well as data on corrections in the LC MARC database during the time the study was underway.

Table 5 contains a summary of the distribution of invalid headings by frequency of use. It was found that errors do indeed accumulate at the lower levels of frequency of assignment. Obsolete headings were distributed over a wider range of frequencies of assignment.

No incorrect headings were identified among those with a frequency of use of 11 or higher, and only 7 in the set of headings that were assigned 3 times each. There was then a substantial jump to 58 in the headings assigned twice each.

On the other hand, obsolete headings were spread among headings with high frequency of use as well as among those with low frequency. Among those with a frequency higher than 20, a heading with a posting of 258 and one with a posting of 22 were both found to be obsolete. The remaining 216 obsolete headings occurred among those with frequencies of 2–20, again with a dramatic increase at frequency 2.

INCORRECT HEADINGS

Focusing on errors, table 6 contains a summary of incorrect headings with 2 or more postings. A total of 76 headings were found to contain errors.

The largest number of errors occurred among topical headings, with a total of 41. Geographic name headings contained the second largest number of errors, with a total of 27. There were 6 incorrect corporate name headings, and 2 errors were detected among uniform titles. No errors were found among personal name headings, and there were no headings for meetings in the sample with a posting greater than 1.

The data in table 6 show that errors
congregated among the headings with lower frequencies of use. Fifty-eight of the 76 incorrect headings occurred in the set of headings with a frequency of 2.

Table 7 shows the cumulative ratio of incorrect headings at each frequency of use. The first four columns present the figures relating to the sample database derived from table 1. The fifth column gives the number of incorrect headings at each frequency of use. The sixth and seventh columns show the cumulative incor-

### TABLE 4
**Summary of Invalid Headings by Tag**

<table>
<thead>
<tr>
<th>Tag</th>
<th>Total Number of Sample Headings</th>
<th>Number of Incorrect Headings (%)</th>
<th>Number of Obsolete Headings (%)</th>
<th>Total Number of Invalid Headings (%)</th>
<th>Invalid Headings Corrected—1995 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>463</td>
<td>0</td>
<td>23</td>
<td>23</td>
<td>26.09</td>
</tr>
<tr>
<td>610</td>
<td>181</td>
<td>6</td>
<td>18</td>
<td>24</td>
<td>25.00</td>
</tr>
<tr>
<td>611</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>630</td>
<td>39</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>42.86</td>
</tr>
<tr>
<td>650</td>
<td>4,233</td>
<td>41</td>
<td>111</td>
<td>152</td>
<td>31.58</td>
</tr>
<tr>
<td>651</td>
<td>1,054</td>
<td>27</td>
<td>61</td>
<td>88</td>
<td>48.86</td>
</tr>
<tr>
<td>Total</td>
<td><strong>5,970</strong></td>
<td><strong>76</strong></td>
<td><strong>218</strong></td>
<td><strong>294</strong></td>
<td><strong>36.05</strong></td>
</tr>
</tbody>
</table>

### TABLE 5
**Summary of Invalid Headings by Frequency of Use**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Number of Sample Headings</th>
<th>Number of Incorrect Headings</th>
<th>Number of Obsolete Headings</th>
<th>Number of Invalid Headings</th>
<th>Invalid Headings Corrected—1995</th>
</tr>
</thead>
<tbody>
<tr>
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<td>57</td>
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<td><strong>218</strong></td>
<td><strong>294</strong></td>
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TABLE 6
SUMMARY OF INCORRECT HEADINGS

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<th>Frequency</th>
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<th>Number of Incorrect Headings</th>
<th>Errors Corrected</th>
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</thead>
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<td>28</td>
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<td>10</td>
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<tr>
<td>8</td>
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<tr>
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<td>2,588</td>
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</tr>
<tr>
<td>Total</td>
<td>5,970</td>
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</tbody>
</table>

The data also show that, except for a slight variation at the frequency of 8, the cumulative error rate increased steadily from 0% to 1.27% as the frequency of use decreased from 15 to 2.

The follow-up analysis of the subset of headings with a frequency of use of 1 showed a dramatic increase in the cumulative error rate, at 3.24% for headings in all frequency ranges; in other words, an accuracy rate of 96.76%.

OSTOKE HEADINGS

Table 8 contains a summary of obsolete headings among headings with 2 or more postings. A total of 218 headings were found to be obsolete at the time the test database was generated.

The largest number of obsolete elements occurred among topical headings, with a total of 111. Geographic name headings contained the second largest number of errors, with a total of 61. There were 23 obsolete headings among personal name headings, and corporate name headings contained 18 obsolete headings. Five obsolete headings were found among uniform titles. There were no headings for meetings with a posting greater than 1.

The data in table 8 show that obsolete headings also congregated among the headings with lower frequencies of use. There were only 3 obsolete headings among headings with a frequency of 20 or above, while 124 of the 218 obsolete head-
TABLE 7
RATIO OF INCORRECT HEADINGS

<table>
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<tr>
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<tbody>
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<td>2</td>
<td>0.30</td>
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<td>0.60</td>
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<td>16</td>
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<td>5,970</td>
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<td>76</td>
<td>1.27</td>
<td>98.73</td>
</tr>
</tbody>
</table>

ings occurred among headings with a frequency of 2.

Table 9 shows the cumulative ratio of obsolete headings at each frequency of use. The first four columns present the figures relating to the sample database derived from table 1. The fifth column gives the number of obsolete headings at each frequency of use. The sixth and seventh columns show the cumulative obsolete headings count and percentage. For example, headings with a frequency of 6 and above contained a total of 31 (2.06%) obsolete headings, and those with a frequency of 3 and above contained a total of 94 (2.78%) obsolete headings. The last column is the inverse of column 7, showing the currency rate. In other words, headings with a frequency of 6 and above had a currency rate of 97.94%, and headings with a frequency of 3 or above showed a currency rate of 97.22%.

The data also show that, with slight variations, the cumulative obsolescence rate increased steadily from 0.37% to 3.65% as the frequency of use decreased from greater than 25 to 2.

The follow-up analysis of the subset of headings with a frequency of use of 1 showed a dramatic increase in the cumulative obsolescence rate, at 9.82%, for headings in all frequency ranges—in other words, a currency rate of 90.18%.

VALIDITY RATIOS
As shown in table 10, the validity ratio of a file made up of headings assigned more than 25 times each could be expected to be 99.63%. This ratio drops slowly as headings with lower frequencies of assignment are added, to 97.04% for a file of headings assigned four or more times each. Adding headings assigned three times each brings the ratio to 96.69%, and adding those assigned twice each brings it to 95.08%. An estimate (Chan and Vizine-Goetz 1997), based on the sample of 5,970 headings studied in this project plus a subset consisting of 3,472 headings (approximately 25%) in the frequency-1 set, indicated a cumulative invalidity rate of 9.16%, which means that the validity rate for an exhaustive file might be about 91%.

SUBSEQUENT CORRECTION AND UPDATING OF INVALID HEADINGS
In the spring of 1995, two and a half years after the cutoff date of the file from which the test sample was drawn, each heading identified as incorrect or obsolete was checked in LOCI (the bibliographic file in the LOCIS database) to determine whether it had been corrected or updated.
**TABLE 8**

**SUMMARY OF OBSOLETE HEADINGS**

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<th>MARC 611</th>
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<th>MARC 650</th>
<th>MARC 651</th>
<th>Total # Obssolete Headings Updated—1995</th>
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<td>3</td>
<td>982</td>
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<td>3</td>
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<td>9</td>
<td>34 18</td>
</tr>
<tr>
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<td>2,588</td>
<td>14</td>
<td>13</td>
<td></td>
<td>2</td>
<td>63</td>
<td>32</td>
<td>124 45</td>
</tr>
<tr>
<td>Total</td>
<td>5,970</td>
<td>23</td>
<td>18</td>
<td>0</td>
<td>5</td>
<td>111</td>
<td>61</td>
<td>218 87</td>
</tr>
</tbody>
</table>
It was found that 106 of the 294 invalid headings had been corrected or updated, 19 from the incorrect list and 87 from the obsolete list. Figures on corrections along with type-of-heading and frequency of use information are given in tables 4-6 and 8.

**Summary of Results**

The results of this research can be summarized as follows:

1. Distribution of subject headings assigned to bibliographic records by frequency of use: frequency of use and number of headings at a given rate of use were in inverse relationship; the higher the frequency of use, the smaller the number of headings in the set, and vice versa.

2. Relationship between number of headings and total use: a small number of headings accounted for a majority of total use. A large proportion of headings show low frequency of use.

3. Distribution by type of subject headings assigned to bibliographic records: approximately two-thirds (66.69%) of headings assigned to bibliographic records were topical headings. The remaining one-third consists of name headings and uniform titles.

4. Error rate: in the sample, headings with a frequency of 11 or above showed no errors. Headinga with a frequency of 2 or higher had a total error rate of 1.27%.

5. Obsolescence rate: in the sample, headings with a frequency of 21 or above had an obsolescence rate of 0.57%. Headings with a frequency of 2 or higher showed a total obsolescence rate of 3.65%.

6. Relationship between frequency of use and error rate: the cumulative error rate was in inverse relationship to frequency of use; the lower the frequency of use, the higher the error rate.

7. Relationship between frequency of use and obsolescence rate: the cumulative obsolescence rate was in inverse relationship to frequency of use; the lower the frequency of use, the higher the obsolescence rate.

**Conclusion**

Based on the findings, we conclude that it would be feasible to generate a subject validation file automatically with a relatively low error and obsolescence rate, which could be used to validate a majority of subject headings assigned to bibliographic records. Our results led us to draw
several conclusions regarding the attributes of validation files of various levels of exhaustivity. In considering these conclusions, however, it should be noted that the error and obsolescence rates that were uncovered were based on subject headings extracted from bibliographic records. Filters such as the OCLC error detection and correction program could reduce the number of errors and obsolete elements in the validation file, thus raising validity ratios above those predicted by the study results. Another factor worthy of notice is that the file tested was static for the duration of the study, and that during the two and a half years of the study about a third of the invalid headings had been corrected in the LC MARC database.

Based on the data, subject validation files of various sizes reflecting different validity rates might be generated. For example:

- **99.43% validity**: such a file would total approximately 35,000 headings with frequency of use of 21 or higher, and would account for over one-third of total use in the LC MARC database. Its obsolescence rate would be 0.57%, but it would have no incorrect headings.

- **98.29% validity**: such a file would total approximately 93,000 headings that had been used 9 or more times, and would account for almost half of total use. Its error rate would be 0.2% and its obsolescence rate 1.5%.

- **96.5% validity**: such a file would contain all headings used 3 or more times and would total approximately 340,000 headings. Its error rate would be about 0.5% and its obsolescence rate less than 3%. This file would account for approximately two-thirds of total use.

- **95.1% validity**: such a file would include headings used twice or more, and would total almost 600,000 headings. Its error rate would be 1.27% and its obsolescence rate 3.65%. It would account for approximately three-quarters of total usage.

- **ca 91% validity**: if all unique subject headings extracted from the bibliographic records in the MARC database were added, invalidity would increase considerably, to approximately 9%—almost certainly too high a rate to be acceptable. Note that this validity estimate is less reliable than those
for frequency sets 2 and higher, because it is based on a sample of about a quarter of the sample headings in the frequency-1 set.

ADVANTAGES AND DRAWBACKS

If a subject validation file were automatically generated along the lines visualized here, at whatever validity rate policy dictates, it would have many advantages over currently available sources for subject authority control.

1. The file would contain complete subject heading strings; thus, the strings would include free-floating subdivisions as well as geographic subdivisions.

2. The file would contain all types of headings, including name headings.

3. There would be no additional cost for the creation of subject heading strings in the file, because they would be by-products of subject cataloging.

4. Quality would be high. Each heading would have been constructed or verified repeatedly during the cataloging process by human effort, so inaccuracy would be minimized.

5. Minimal intellectual effort would be required for maintenance. Both the generation and maintenance of the subject validation file could be performed by the computer. Because maintenance of subject heading strings is constantly performed in the bibliographic database, the regularly regenerated subject validation file would be a dynamic file, reflecting the corrections and updates being done continuously in LC's bibliographic database.

There are several drawbacks to this approach. The file would not be exhaustive because it would not contain all the subject headings that have been assigned. It would certainly not anticipate all possible combinations. And, until their use builds up, heading strings based on newly established headings would not likely be included. On the other hand, until the usage builds up, the number of headings affected would be small. Furthermore, heading strings based on newly established headings would not likely contain obsolete elements.

POSSIBLE IMPLEMENTATIONS

A subject validation file might be generated and displayed as a machine-readable file, a CD-ROM, or in print format—or in some combination. The machine-readable file could be used in conjunction with the electronic version of LCSH for automatic validation or as a tool of consultation in authority control and in original or copy cataloging. A subject validation file, with complete strings but without cross references and notes, in CD-ROM or print format could vary in scope: it could contain all subject strings above a certain frequency of use or it could be a selected file, e.g., a file of the 50,000 most frequently used subject heading strings. Such a file would be virtually error free and would have few obsolete headings. Because it would represent the most frequently written-about subjects, a selected file could be particularly useful to public and small college libraries, or to undergraduate libraries.

Other possible by-products might be discipline-based subject validation files. Such files could be extracted according to the class numbers (based on Dewey Decimal Classification or LC Classification numbers) that are associated with the subject heading strings appearing in the bibliographic records. These products could be very useful not only to subject catalogers in specialized fields but as aids in online retrieval in specific subject areas.

POTENTIAL USES OF A SUBJECT VALIDATION FILE

As a supplement and complement to LCSH, a subject validation file containing complete strings might help facilitate cataloging, bibliographic database management and maintenance (retrospective and routine), authority file management and maintenance (Chan 1991), as well as have additional uses.

In the area of cataloging, a subject validation file would be useful both in original and copy cataloging.

Original cataloging. Because over
85% of the subject headings assigned to cataloging records do not appear in LCSH, the subject validation file would be a better source of ready-made heading strings. In original cataloging, subject strings in the validation file could be used as they appear, when appropriate, thus minimizing efforts required in synthesizing subject heading strings. Furthermore, these complete strings might be used:

- as models for constructing new strings
- as means for validating and verifying headings and heading strings to ensure consistency
- as means of providing patterns for synthesizing subject heading strings involving free-floating subdivisions and geographic subdivisions

**Copy cataloging.** In copy cataloging, the heading strings in the subject validation file could be used to verify or update the headings found in cataloging copy.

In the area of database management, a subject validation file would be useful both for retrospective conversion and for current maintenance.

**Retrospective conversion.** The file could be used as a means of verifying, correcting, and updating subject headings and strings in bibliographic records.

**Current maintenance.** The file could be used for individual bibliographic record maintenance, as an aid in error detection and correction. It could also be used for collective maintenance:

- as an aid for adjusting local headings to additions and changes made by LC
- as an aid in maintaining currency of headings in existing bibliographic records

A subject validation file could be equally useful in machine and manual validation. For libraries and agencies that have the capability of machine validation (cf. Ludy 1985), complete subject heading strings facilitate the matching of headings in bibliographic records with those in the validation file, thus reducing drastically the number of headings requiring manual validation. For libraries and agencies that must rely on manual validation, the file could serve either as a source for or model of valid headings.

In the area of authority file management and maintenance, a subject validation file would be useful at LC as a means for facilitating the creation and revision of headings and cross references. In local maintenance, the file could serve:

- as a means of achieving consistency and compatibility within the local database
- as an aid in achieving consistency and compatibility, if so desired, between locally created headings and LC subject headings
- as a means for recording and documenting conscious choices to differ from LC practice

Finally, this file might be used as an auxiliary tool for cataloging. If it were decided to establish a regularly generated subject validation file at approximately, say, a 95% validity rate, this file could serve as a guide to help catalogers avoid the 5% invalid headings such a file would be expected to contain. Probability charts, perhaps different ones for errors and obsolescence, could indicate the likelihood of error given the type of heading and the frequency of use. The figures from this study, for instance, show that uniform titles are particularly suspect, and that corporate and geographic name headings make a worse showing than personal name headings, while topical headings have a lower invalidity rate than other heading types. The figures also show that, overall, obsolete headings are almost three times as common as headings that are incorrect on some other count. Some catalog agencies, of course, might decide to accept a given error rate in the interests of efficiency. But for those that do not, probability-of-error charts could indicate to catalogers in which circumstances additional validation work would be beneficial.

**A Recommendation**

Members of the profession have devoted countless hours over the last several years to considerations of how to achieve cost-effective improvement in subject authority control. The recommendations of the Subject Authority File Task Group of the Cooperative Cataloging Council (Cooperative 1994) include the long-term strategy of
developing automatic validation mechanisms through the creation of subject heading records and subdivision records with appropriate coding to assist in the validation of correct synthesis of heading strings. Such a tool, when fully developed, would be an ideal solution. Its implementation would require much effort and time. As an alternative or a short-term strategy for efficient and cost-effective subject authority control, the subject validation file proposed here might prove to be viable.

Attention has centered on improving and extending the coverage of existing authority files, but projected costs have been a deterrent to action. Our results show that a major improvement can be achieved, at reasonable cost, by reducing the amount of manual review in subject authority control and minimizing the effort involved in synthesizing heading strings in original cataloging and in verifying existing headings in copy cataloging. Leading groups in the profession should seriously consider whether an instrument designed along the lines suggested should be implemented and, if so, at what level of frequency and accuracy.

Works Cited


Redundancy and Uniqueness of Subject Access Points in Online Catalogs

Hong Xu and F. W. Lancaster

An analysis of 205 records selected at random from the OCLC Online Computer Library Center, Inc. Online Union Catalog showed considerable overlap (duplication) among the subject access points provided by the title, subject heading, and classification number fields. Little more than four unique (unduplicated) access points were found, on average, per record. While title and class number fields do add some access points not provided by subject headings, the increase is less than many librarians might have expected. It is suggested that the online catalog might outperform the card catalog more in precision than in recall.

Card catalogs, as implemented in the majority of libraries, provided very limited subject access possibilities. In the United States, they provided subject access only by means of a very small number of subject headings. In fact, based on a sample of more than 50,000 monographic records from the OCLC Online Computer Library Center, Inc., Online Union Catalog (OLUC), O'Neill and Aluri (1981) reported that, on the average, there were only 1.41 subject heading/subheading combinations per record and only 1.32 unique subject headings per record.

It is generally assumed that online catalogs have greatly improved subject searching capabilities. Even without adding to the conventional record (e.g., terms from contents pages or other sources), the number of subject access points (SAPs) was increased merely by making other fields searchable. (In this paper, the term “subject access point” refers to any element in a bibliographic record that is indicative of the subject of the item represented: a subject heading, classification number, or words appearing in titles, subject headings, or elsewhere.) Obviously, the title field and the classification number field both include elements that might be useful in subject searches. For some items, however, it is possible that title and classification number add no SAPs that are not already provided by the subject heading.

To take an extreme hypothetical example, if a book entitled Birds has a single subject heading BIRDS and the Dewey class number 598, the title and classification number fields give no SAPs that are not already provided by the subject heading.

In an earlier study, Lancaster et al (1991) suggested that title and class numbers seem frequently to duplicate...
the subject headings assigned to a book rather than provide further access points. This was the motivation for the present investigation.

The study was performed to determine to what extent titles and classification numbers provide SAPs not already provided by subject headings in a typical catalog record. The principal hypotheses guiding the study were:

1. In typical catalog records, the SAPs provided by classification number (CN), title (TI), and subject heading (SH) tend to overlap (duplicate) each other considerably.

2. In typical catalog records, the CN, TI, and SH fields are significantly different with respect to the number of unique SAPs they provide. Unique is defined here as occurring in one field but not the other two.

**METHOD**

The study was performed on a sample of records drawn from the OLUC in Dewey Decimal Classification (DDC) classes 300 (Social Sciences), 500 (Natural Sciences/Mathematics), 600 (Technology), and 700 (the Arts). A 3x4 level factorial design was selected to determine the level of duplication among the SAPs in different subject areas. This is appropriate because of the involvement of three subject fields (title, subject heading, class number) and four subject areas (classes 300, 500, 600, and 700). Based on Cohen (1988) and Stevens (1990), for a 3x4 analysis of variance (ANOVA) involving repeated measures, the sample size can be quite small: 44 records in each of the four main cells, or a total of 176 records.

As of August 10, 1994, the OLUC contained more than 734,000 records that satisfied the requirements for the study (i.e., referred to monographs in the four Dewey classes selected). To allow for the fact that some records drawn at random might not be suitable for use in the study, a somewhat expanded stratified sample (i.e., proportional to the number of records in each class) was drawn to ensure that each of the four classes was represented with at least the minimum number of records (i.e., 44) needed. After discarding records outside the parameters set for the study (e.g., books published before 1990, books without subject headings, books in languages other than English), the final sample consisted of 205 records: 58 in DDC class 300, 46 in class 500, 46 in class 600, and 55 in class 700. Books in non-English languages were omitted to simplify the analysis. The date restriction (1990–94 publication date) was imposed to avoid the possibility of encountering significant variations in cataloging policy, including widely different subject headings or classification numbers, over a considerable period of time.

Testing of the hypotheses involved a comparison of the contents of the title, subject heading, and classification number fields in the sample records. Within the title field (MARC 245), other title information was also considered. In the subject heading field (MARC 6xx), subheadings were considered as well as main headings, with the exception of subheadings indicating type or form of publication rather than subject. Dealing with the classification field (MARC 082) was more complicated because class numbers had to be translated into words (e.g., 327.73 translates into “foreign relations” and “United States”) by use of DDC captions, notes, and auxiliary tables.

Unlike some earlier authors (e.g., Markey and Calhoun 1987; Frost 1989), we dealt with comparisons at the “idea” level rather than the word level. For example, “foreign policy,” “foreign affairs,” and “international relations,” when associated with “United States,” are so closely interrelated that it would be virtually impossible to distinguish them. For all practical purposes, then, we considered them to be synonymous.

Dealing with SAPs at the idea level clearly involves some subjectivity. Because, for practical reasons, all decisions on equivalency were to be made by Xu, it was necessary to determine whether or not her decisions were likely to be supported by the majority of others. A validation procedure was used for this purpose. The validation was based on 30 sample records for which Xu had already made
TABLE 1
RULES USED FOR DETERMINING EQUIVALENCY AMONG SUBJECT ACCESS POINTS

1. Ignore words that reflect method of presentation rather than subject content (e.g., "report," "approach," "workshop").

2. In proceedings of conferences, or other meetings, consider only words indicative of subject covered. Ignore words indicative of conference location or frequency.

3. A specific subject idea (species) includes the idea immediately more general (genus).

4. Words or phrases associated with the subject access points are considered synonymous (and therefore equivalent) under the following conditions:
   a) absolute identity (e.g., subject heading = birds, titles = birds)
   b) abbreviations (e.g., USA = United States)
   c) popular versus more "serious" usage (e.g., stamp collecting = philately)
   d) equivalency at phrase level although not at word level (e.g., church music = sacred music = liturgical music, even though "church," "sacred," and "liturgical" are not synonymous)
   e) Implicit synonymy (e.g., "America" in title is equivalent to "USA" in subject heading field when it is clear that author is using "America" as shorthand for USA)
   f) singular/plural equivalency (e.g., mouse = mice)
   g) standard versus slang usage (e.g., high fidelity = hi fi)
   h) variant spellings (e.g., catalog = catalogue, online = on-line)
   i) variant usage within English (e.g., railroad = railway)
   j) words with the same etymological root (e.g., electroluminescence = electroluminescent, Egypt = Egyptian)
   k) different expressions of the same historical period (e.g., 1930's = 1930–1939 = "the thirties")

decisions on equivalency and uniqueness of SAPs for the three fields. Thirty masters students from the Graduate School of Library and Information Science, University of Illinois at Urbana-Champaign, participated voluntarily in the validation. The 30 sample records and the 30 students were randomly grouped into six units such that each student examined five records and each record was examined by five students.

For each group of five records, then, it was possible to determine to what extent the group of students agreed with Xu's decisions. For example, for one group of five records, she had identified 27 unique SAPs. All five students agreed with 21 of these, and four of the five students agreed with the other six (agreement means that the student agreed that the SAP was not equivalent to any of the other SAPs in the record in which it appeared). It was not to be expected that all students would agree with all of Xu's decisions. However, about 78% of her decisions were supported at the 100% level (all five students) and an additional 18% at the 80% level (four out of five students). This level of agreement was considered to be sufficiently supportive to allow Xu to proceed with the other decisions without further validation or corroboration of this type, especially because many of the disagreements that did occur stemmed from a misinterpretation of the rules established by Xu (e.g., a general idea was not considered unique when it is included, explicitly or implicitly, in a more specific idea: "architecture" is included in "domestic architecture," "cyanides" is included in "sodium cyanide").

In fact, Xu's decisions, while ultimately subjective, were always supported by the use of appropriate reference tools (encyclopedias, dictionaries, thesauri, glossaries) or, if necessary, by consulting others on campus.
TABLE 2
EXAMPLE OF RESULTS OBTAINED FROM ONE OF THE SAMPLE RECORDS

<table>
<thead>
<tr>
<th>Title:</th>
<th>Efficient masonry housebuilding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject headings:</td>
<td>Masonry—Great Britain</td>
</tr>
<tr>
<td></td>
<td>House construction—Great Britain</td>
</tr>
<tr>
<td>Class number:</td>
<td>693, construction in specific types of materials and for specific purposes</td>
</tr>
<tr>
<td>Unique subject ideas:</td>
<td>Masonry</td>
</tr>
<tr>
<td></td>
<td>Houses</td>
</tr>
<tr>
<td>Subject ideas represented in title:</td>
<td>Construction</td>
</tr>
<tr>
<td>Subject ideas represented in subject headings:</td>
<td>Great Britain</td>
</tr>
<tr>
<td>Subject ideas represented in class number:</td>
<td>masonry, houses, construction (= building)</td>
</tr>
<tr>
<td></td>
<td>all four</td>
</tr>
<tr>
<td></td>
<td>construction (only)</td>
</tr>
</tbody>
</table>

more familiar with the subject matter.

It should be noted that equivalence among SAPs was determined by the context of the terms within the bibliographic record itself, not the context (e.g., classification schedules) from which the terms were drawn. Thus, U.S. + foreign relations, U.S. + international relations, and U.S. + foreign policy were considered so close conceptually that we felt unable to distinguish clearly among them. Put differently, it was felt that a book dealing with U.S. foreign policy must, in some sense, deal with its international (foreign) relations and vice versa, despite the fact that these terms might be treated somewhat differently in the classification schedules, the list of subject headings, or both.

**RESULTS**

The types of results obtained in the study are illustrated in the example given in table 2. In this example, four different SAPs have been identified. Of these, the subject heading field includes all four, the title field three, and the class number field only one.

The major results of the study, at the macro level, are shown as a Venn diagram in figure 1. Because the comparison across subject areas is not the main focus of this paper, these results are not presented here. Altogether, 844 unique SAPs were assigned to the 205 items, the average per record being 4.12. Of these, 210 (24.88%) were duplicated in all three fields. At the other end of the spectrum, 414 (49.05%) of the total headings appeared in only one field: 209 (24.76%) appeared only in the subject heading field; 118 (13.98%) appeared only in the title field; and 87 (10.31%) appeared only in the class number field.

As figure 1 shows, the subject heading (SH) field alone contributed 634 (75.12%) of the SAPs, while the title (TI) field alone contributed 458 (54.27%), and the classification number (CN) 406 (48.10%).

Another way of looking at these data is in terms of the proportion of unique SAPs contributed by each field. As mentioned, the total number of SAPs unique to a single field was 414 (209+118+87) and, of these, the SH field contributed 209 (50.48%), the TI field 118 (28.50%), and the CN field 87 (21.02%).

As figure 1 indicates, the greatest overlap occurred between the SH and TI fields, with slightly less between the SH and CN fields. The least overlap occurred between the TI and CN fields largely because titles tended to provide much greater specificity.

Table 3 presents the results of a one-way ANOVA for overlapping SAPs between two fields. Because the average
number of overlapping SAPs between every pair of fields is significantly different (F=38.30, p<0.0001), the null hypothesis associated with our first hypothesis—that there are no significant differences in the average number of overlapping SAPs among each pair of fields—is rejected.

Hypothesis 2—that the three fields are significantly different with respect to the number of unique SAPs they contribute—was tested by comparing the unique SAPs existing in the three fields, taking all three together and looking at each pair separately.

Table 4 shows the results of a one-way ANOVA for the unique SAPs provided by the three fields: the three fields provided a significantly different number of SAPs (F=24.29, p<0.0001) so the null hypothesis—that there are no significant differences among the three fields in the number of unique SAPs they provide—is rejected. In other words, we can conclude that the three fields are significantly different with respect to the number of unique (nonoverlapping) SAPs they contribute.

The pairwise comparisons (table 5) indicate that each field is significantly different from each of the other two fields in

![Figure 1. Overlap of Subject Points in Three Subject Fields.](image)

<table>
<thead>
<tr>
<th>Sources</th>
<th>Degrees of Freedom</th>
<th>Sum of Squares</th>
<th>Mean of Squares</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>c</td>
<td>2</td>
<td>29.08</td>
<td>14.54</td>
<td>38.30*</td>
</tr>
<tr>
<td>Error</td>
<td>402</td>
<td>152.60</td>
<td>0.38</td>
<td></td>
</tr>
</tbody>
</table>

Notes: * p < 0.0001

---

**TABLE 3**

**ONE-WAY ANOVA FOR OVERLAPPING SAPS BETWEEN TWO FIELDS**
the number of unique SAPs provided.

**CONCLUSIONS**

Remarkably few unique SAPs exist in a typical online public access catalog record—little more than four (actually 4.12 in our sample). In this study, it has been shown that online catalogs offer less improvement over card catalogs in the number of unique SAPs provided than many librarians might have expected, at least for the four subject areas covered. If the number of unique SAPs per record can be considered a measure of "retrievability," titles add only modestly to subject headings alone, and classification numbers contribute very few access points not provided by the other fields. In subject access, then, the main advantage of the online catalog over the card catalog might lie more in allowing greater discrimination in searching (terms from different fields can be combined; titles offer greater specificity; searches can sometimes be restricted by date, language, or other criteria) than in providing a more complete (exhaustive) representation of the subject matter of each book. Put differently, the potential improvement in precision might be greater than the potential improvement in recall.

**WORKS CITED**


Frost, C. O. 1989. Title words as entry vocabulary to LCSH: Correlation between assigned LCSH terms and derived terms from titles in bibliographic records with implications for subject access in online catalogs. *Cataloging and classification quarterly* 10, nos. 1 & 2: 165–79.


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### TABLE 4

**One-Way ANOVA for Unique Subject Access Points Provided by Three Subject Fields**

<table>
<thead>
<tr>
<th>Sources</th>
<th>Degrees of Freedom</th>
<th>Sum of Squares</th>
<th>Mean of Squares</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
<td>2</td>
<td>42.13</td>
<td>21.07</td>
<td>24.29*</td>
</tr>
<tr>
<td>Error</td>
<td>402</td>
<td>348.67</td>
<td>0.87</td>
<td></td>
</tr>
</tbody>
</table>

Notes: *p < 0.0001

---

### TABLE 5

**Pairwise Comparisons for Unique SAPs in Three Fields**

<table>
<thead>
<tr>
<th>Fields</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN–TI</td>
<td>p &lt; 0.05</td>
</tr>
<tr>
<td>CN–SH</td>
<td>p &lt; 0.0001</td>
</tr>
<tr>
<td>TI–SH</td>
<td>p &lt; 0.0001</td>
</tr>
</tbody>
</table>

This fine book fills a major gap in current library literature. Most of the existing books on technical services outsourcing take the form of manuals or checklists. These books, very useful for their task, discuss the "how" rather than the "why"; it is beyond their scope to analyze the impact of outsourcing in the library or on the profession. While the authors of a bewildering array of journal articles have discussed the reasons and impact of technical services outsourcing from every angle and on every tone of the emotional scale, no other book has attempted to summarize and augment this research. This book, then, would represent a useful contribution to library literature even if it were not particularly well written. Since it is, in fact, a well-written and superbly edited piece, its contribution to the literature is considerable.

The bulk of the literature on technical services outsourcing falls into three categories. Many authors address the philosophy of outsourcing, raising issues about current practice and the good or bad changes that outsourcing can bring. In these articles, authors are often passionate and personal in tone, asking questions but providing few answers. Other items are reports of outsourcing projects in which the authors have participated. These reports have had an enormous influence on the profession because they ground the outsourcing debate in reality. However, the reader may find it difficult to piece together a balanced picture of outsourcing from these studies alone because the most controversial outsourcing projects are most commonly presented in the literature, and very routine or small projects rarely appear. In the third category of items, authors give advice to potential outsourcing. Some of these are excellent, but they are limited in scope and are most useful to the librarian who is already involved in the outsourcing process. Thus, putting together a broad, objective, practical view of technical services outsourcing has been nearly impossible without reading the majority of the available literature and weighing each item on its objectivity and applicability to the global view. While the literature is rewarding to read, the process is an exhausting one, and many librarians have been unable to invest the time.

In this situation, Outsourcing Technical Services Operations provides welcome relief. It presents 16 case studies, of which 11 come from academic libraries, 3 from public libraries, and 2 from special libraries. The outsourcing options presented in the studies range across technical services functions from authority work, database maintenance, and original and copy cataloging to book selection, document delivery, and table of contents services. Outsourcing arrangements vary from total outsourcing of cataloging all the way to the two chapters on "insourcing," or the process of awarding work to one's own employees. In several studies, authors discuss outsourcing specialized tasks, such as cataloging audiovisual material, electronic journals, or government documents. Many different reasons to outsource appear in the book, from time or staffing constraints to budget issues or
lack of expertise. Some outsourcing projects occur in an austere climate of re-
trenchment; others are a luxury, an oppor-
tunity to enhance the quality of the cata-
log or complete the processing of a back-
log. The case studies in this book pro-
vide something for everyone, and the col-
collection of all these varied projects in
one book provides a nicely balanced view
of the current situation of outsourcing.

This book is a welcome alternative to
wholesale digestion of the fragmented
outsourcing literature, but it does not ex-
ist in a vacuum. On the contrary, it offers
the reader a convenient tool for further
research. A 26-page "Selected Annotated
Bibliography" by Marylou Colver follows
the case studies. In this bibliography, the
outsourcing literature is divided into eight
major categories, including three catego-
ries devoted to case study literature. The
case study literature is divided further,
grouping articles on well-publicized out-
sourcing projects by the name of the li-
brary or institution. This bibliography is
up-to-date: 10 of the 15 entries on out-
sourcing at the Hawaii State Public Li-
brary System are 1997 citations. The
annotations, which are generous para-
graphs, greatly enhance the value of the
bibliography.

In addition to the bibliography, the
book has several useful features. Each
case study begins with an abstract so
that readers can locate those most per-
tinent to their interests. Subheadings
within the chapters clearly label the dif-
ferent aspects of the projects, again aid-
ing foragers to find the right data
quickly. A handy index rounds out the
volume. Although each case study has
its own authors, the whole book reads
very evenly. The writing is consistent
and maintains objectivity throughout, a
tribute to the thorough and painstaking
editors. This book, in short, meets the
needs of both the researcher who will
thumb through quickly for some ready
data and the one who will read it cover
to cover. It is a fine work, and one that
deserves serious attention from every
librarian interested in outsourcing is-

From Print to Electronic: The Trans-
formation of Scientific Communi-
cation. Susan Y. Crawford, Julie M.
Hurd, and Ann C. Weller. Medford,
N.J.: Published for the American Soci-
ety for Information Science by In-
formation Today, 1996. 117p. $39.50

The stated purpose of this monograph
is "to provide an overview and examine ...
against existing models" (p. 3) the changes
in scientific communication brought
about by the growth of science since
World War II and the rapid development
of new technologies for information
management and exchange. The book con-
ists of a foreword by Belver Griffith, two in-
 introductory chapters on the growth of science
and on models of scientific communication,
three case studies, and a concluding dis-
cussion of future directions.

Chapter 1, "Scientific Communication
and the Growth of Big Science" by Susan
Y. Crawford, is a clear, concise history of
the rise of research in science and tech-
nology as a central factor in modern eco-

nomic growth. Chapter 2, "Models of Sci-
cientific Communications Systems" by Julie
M. Hurd, begins with a brief discussion of
the Garvey/Griffith model of scientific
communication, providing a useful back-
ground for the case studies and predic-
tions that follow. Hurd distinguishes be-
tween modernization and transformation
of the communications process.

"Modernization is defined as the use of
new technology to continue doing the
same thing, but presumably in a more
cost-effective and/or efficient way. Tran-
sformation is the use of a new technology
to change processes in a fundamental
way" (p. 14). Hurd examines the steps in
the Garvey/Griffith model informal com-
munication, meetings and conferences,
and peer review and publication, noting
how each has changed since the 1960s
when the model was first proposed. Hurd
then proposes four new models of sci-
cientific communication: "A Modernized
Garvey/Griffith Model," "The No-Journal
Model," "The Unvetted Model," and "The
Collaboratory Model.”

In the first proposed model, computer-assisted communication modernizes the process by making it faster—sharing findings through e-mail, publishing in electronic journals, and indexing and abstracting materials online. The No-Journal Model replaces the journal as the primary means of disseminating research findings, relying instead on “the article or research report as the unit of distribution” (p. 24). The Unvetted Model goes a step further by removing the concept of peer review from the communications process. Finally, the Collaboratory Model offers the possibility of physically distant groups of scientists working collaboratively through computer-assisted technologies, sharing data and research findings in common databases. This model is the most transformative of the four presented and is the model used in the three case studies presented later in the text.

The case studies, “The Human Genome Project,” “High Energy Physics,” and “Astronomy, Astrophysics, and Space Physics,” exemplify the issues addressed earlier in the text and provide substantive support of the authors’ new model of scientific communication. The studies are clearly presented and accessible—even engaging—reading for nonexperts in scientific communication. Chapter 6, “The Changing Scientific and Technical Communications System,” summarizes the work presented in the preceding chapters. The authors cite a number of instances in which technology has already influenced, modernized, or partially transformed the communications process. They review the current state of electronic publishing and rightly predict even greater transformations to come. Finally, they touch on economic issues, information needs and use, and possible future roles of libraries.

Though the ideas presented in *From Print to Electronic* will be familiar to any librarian who follows current library literature, the book is a compact, admirably readable presentation of these ideas. Librarians who confront the bewildering issues of production, dissemination, and organization of digital materials in all their variety would be well served by a better understanding of scientific communication and of scholarly communication in general. This book meets this need.—Edward Gaynor, Associate Director of Special Collections, Alderman Library, University of Virginia, Charlottesville (gaynor@virginia.edu)


In the 1990s, the bottom-line approach of the business community is finding its way into the library world in general and into the technical services area in particular. The technical services workstation (TSW) is a catchword of the effort to increase productivity with limited personnel and resources. Michael Kaplan has been at the forefront of TSW development, establishing technical services workstations at the Harvard University Library and guiding national committees in the development of TSW standards and procedures. This book is a compilation, history, and guidebook on the technical services workstation and its gradual acceptance as a solution to the problems of doing more with less in technical services. The introduction begins with productivity statistics related to the implementation of TSWs at a number of academic institutions. The definition of a TSW follows, including the statement that “it is ... the choice of the software components and the ability to network that will determine whether the computer makes the evolutionary leap and becomes a true technical services workstation” (p. xvii).

The book is divided into five parts: Background and Planning; Online Documentation and Online Tools; Productivity Enhancers: Macros and Programmatic Approaches; Ergonomic and Training Issues for the Desktop Environment; and the Symbiotic Future: Technical Services Workstations, the Internet, and the World Wide Web.

In Part I, chapter 1, “Hardware and Network Considerations,” a short history of the technical services workstation is
provided, beginning with the 1994 survey by the Automation Task Group of the Cooperative Cataloging Council. The task group’s findings on hardware requirements for TSWs include details on the keyboard, mouse, monitor size and resolution, dot pitch, refresh rate, and color schemes, as well as LAN and Internet connections. In Chapter 2, “Software Considerations,” the software findings of the task group’s survey is examined. Migration to a Windows environment is recommended, and a checklist of what a fully functional TSW should be able to do is given. Much of this chapter is a discussion of macros and macro packages, focusing on the NewKey macro package in use at Harvard. Essential elements of macro packages are given. In Chapter 3, “A Developer’s Point of View,” Mark Wilson of the Library Corporation discusses his company’s work in designing the BiblioFile Cataloging product, and how essential the relationship between the librarian and the developer is to future TSW software development. Chapter 4, “National Cooperative Programs,” is an enlightening and important short history of TSW standards development on the national level.

In Part II, various TSW tools currently or soon to be available are reported. Bruce Chr. Johnson of the Library of Congress (LC) explains Cataloger’s Desktop; Anaclare Frost Evans of Wayne State University provides a comparison of the two Library of Congress Classification products currently available (SuperLCCS and Classification Plus); and Diane Vizine-Goetz and Mark Bendig of OCLC Online Computer Library Center, Inc., explain the Dewey for Windows product. Each of these chapters includes numerous illustrations to accompany explanations of the basic functionality and the pros and cons of each product.

Two additional macro packages are featured in Part III. Gary L. Strawn of Northwestern University explains the development of his Toolkit macro, generally known as “CLARR,” while David Williamson discusses LC’s experience with custom applications. In-depth examples are given in each chapter, with descriptions of specific workstation procedures that resulted in increased productivity and decreased duplication of effort.

In Part IV, two issues that are often not discussed in great detail, but are of immense importance in the day-to-day technical services activity are dealt with: ergonomic design and training. Bruce Trumble of Harvard College Library discusses the importance of establishing a workplace ergonomics program and provides an excellent bibliography of resources for further reading. Julia C. Blixrud of the Association of Research Libraries explains that training is even more important in the TSW environment and that the establishment of a TSW training program is essential in the success of TSWs. She also provides a checklist of questions and topics that library managers need to address when designing a TSW training program.

Finally, Diane Vizine-Goetz of OCLC takes a look into the future of TSWs from a researcher’s perspective. She specifically mentions the Scorpion project currently underway at OCLC, a product that recognizes the subject content of electronic documents. The book concludes with an excellent bibliography for further study of all aspects of technical services workstations.

Much of the information contained in this book relates to Harvard University Library’s implementation of technical services workstations. The information in Part II on current TSW software products is well written and will be helpful to anyone who is evaluating these products. The chapters on ergonomics and training provide useful information for anyone writing policy statements or dealing with health problems related to technology implementation. This book is an essential reference source for everyone in technical services, as well as for library managers and administrators. It provides a blueprint for the future of technical services into the twenty-first century, and describes software products currently available that can maximize current staffing utilization and increase productivity, while at the same time address the training and health concerns related to the use.
of current technology.—Dr. Brad Eden, Coordinator of Technical Services/Automated Library Services, North Harris Montgomery Community College District, Houston (beden@nhmccd.edu)


As the title indicates, the author of this work has set himself a large task. Even at 394 pages, a work that addresses both topics will of necessity use a broad treatment. This book is a general text, not a specialist's text or a handbook for either topic. In the preface, Hagler states that this is not a how-to manual: “This is a conceptual treatment of current bibliographic practice in the context of its principles and history....It acknowledges primary, rather than secondary, sources in the formulation of that practice” (p. xv).

The work, structured in two parts, has many strengths. In Part I (chapters 1–5), Hagler discusses the principles of bibliographic control in library and nonlibrary environments, and in Part II (chapters 6–9 and an appendix) he discusses library standards for record creation. Hagler does an excellent job of keeping the reader aware of the very different contexts in which bibliographic records exist (footnotes, print bibliographies, abstracts, indexes, and library catalogs). He highlights and explains clearly the difference between, and issues surrounding, the document (item) and the work (content).

Chapter 6, “Controlled-Vocabulary Name Access Points,” is interesting in view of the October 1997 Toronto conference on the future of the Anglo-American Cataloguing Rules, 2d edition (AACR2). Hagler very effectively compares and contrasts Cutter’s cataloging rules and AACR2, noting how each is affected by the technology of its time. The author’s clear, consistent distinction between document and item and his discussions of...
the problematic issues of series and serials combine to give readers a context in which to view the current discussions of AACR2.

At the conceptual level, this book is a comprehensive overview of its subject, with creative discussions of the relationship of technology to bibliographic data. Hagler is a professor at the School of Library, Archival, and Information Studies, at the University of British Columbia. He wrote the first edition as a beginning cataloging text; this third edition continues to serve that function well. Any further edition would be improved by the addition of a bibliography and more illustrative examples to make Hagler’s reasoning clearer to both experts and nonexperts.

Hagler explains carefully the book’s lack of a formal bibliography: “The journal literature in this field remains the follower and describer, not generally the harbinger of developments. These are the reasons why this book lacks a formal bibliography and why only primary sources and the few direct quotations are documented in notes” (p. xv). This omission will disappoint many readers, both students and librarians, who would appreciate more convenient access to further readings on the topics Hagler discusses.

Many of the topics treated in this book would benefit from more examples and supporting data. Occasional overstatements, such as “…serendipitous meandering may have caused the awarding of more Nobel Prizes than purposefully directed experiment” (p. 95–96), emphasize a point, but some of Hagler’s assertions would be easier to understand if accompanied by fuller explanations.

The following comments are interesting, but an absence of supporting data or examples leaves the reader in doubt about the context of the statement.

“The most traditionally printed bound book is not published if it was produced only for private distribution…” (p. 5).

“Traditionally, name authority work is done in the largest libraries…by people trained as descriptive cataloguers…Subject authority work is done in those libraries by people whose qualifications include graduate degrees in an academic subject...
Discipline...” (p. 119), “Yet failure to examine every new controlled-vocabulary access point...almost ensures a very high proportion of duplicate records...” (p. 195).

Discussions of complex issues would benefit from clear examples of application. The author of an introductory text cannot expect readers to have a wealth of experience from which to draw. The library cataloging world has tended toward specialization by media, so even experienced catalogers can have limited knowledge of specific areas.

Hagler is sometimes vague where clarity is vital. Several times, he states that online public access catalogs are multifile databases that incorporate Abstracting and Indexing (A&I) products (p. 27, 33, 187). This is misleading. Access to the A&I products via a subfile or menu option is a widespread online catalog feature, but true integration into the library’s catalog of bibliographic records is rare. In this case, a reference is required so the reader can see such an online catalog in action. Similar cases are found in the need for clarification regarding the weakness of the Z39.50 interface to multiple databases (p. 165, 185) and clearer description of the various means of automated authority control. Not all are as comprehensive as Hagler outlines (p. 196).

The promotional flyer from the publisher calls this “the most comprehensive text on creating clear and complete bibliographic records.” This statement does not describe the book accurately. To the contrary, the author states, “This book has never purported to be a how-to manual...” (p. xv). The book is a very good general overview of the bibliographic record in relation to the technology used to manipulate it in a variety of ways. The book does not serve as a technical text, nor does it treat the subject of information technology in a technical manner. This book belongs with other works that treat cataloging and information technology broadly.—Daniel CannCasciato, Head of Cataloging and Interlibrary Loans, Central Washington University Library, Ellensburg, Washington (dcc@cwu.edu)
In Memoriam: John Oldick

Bob Nardini

John Oldick, chief of the Collection Development Division at Queens Borough Public Library, died on August 21, 1997, after he was struck in traffic the day before while walking near his home in Greenwich Village. I heard this news over the telephone, having called John to talk about a branch project we had been working on together. I’d read his latest e-mail message right before making the call and looked at it on my computer screen as I heard about his death from another member of the library staff.

Many others knew John Oldick far better than I did. A book vendor’s contacts with a librarian are occasional, usually brief, and centered on business at hand. In the seven years he worked at Queens, John and I met on perhaps five or six occasions, at a couple of hours per visit, with occasional e-mail and phone contact. Yet doing business is never all business, since librarian and vendor, or any buyer and seller, must present themselves to one another. Time is always short, making for concentrated courtships that quickly distill into an essence of what librarian and vendor need to know about one another.

One of my earliest and freshest memories of John is a lunch at an ALA conference in San Francisco. We’d agreed to meet at a pub not far from the Embarcadero. The place was crowded with nowhere to sit, so we worked standing up, surrounded by a noisy lunchtime crowd, our folders and papers beside our sandwiches and beer, all resting on a wooden ledge that hugged the wall. John inspected our surroundings and, clearly not a stranger to pubs, assured me that this seemed a pretty good place to take up our business. What that business was I don’t remember, but I do recall him telling me, once we’d finished it, that I’d been his last appointment of the conference and that the wonders of the city were now on tap. He was a compact man with a wiry kind of energy, and he walked off in the direction of Market Street, propelled by a crisp and purposeful step as I’d ever seen, blessed with an afternoon sky that was high, blue, and glorious. He grew up in Fort Plain, New York, one of the old towns of the Mohawk Valley, and once told me what he liked about having settled in lower Manhattan. He could leave his building, head in one direction or another, and walk for hours, sure of finding parts of New York he’d never seen before. In his own neighborhood, he said, he loved the fact that at any hour of the day or night there was life down on the street. If he felt like having an ice cream cone at two in the morning, well, he could find one. I’m sure on many occasions he set off for that cone or for one of the far reaches of Manhattan with that same sense of engagement with a city that I’d witnessed in San Francisco.

Each day he rode the subway across Queens to the central library. The ground floor of the building is as animated as a bazaar, books stacked in displays and the aisles between them crowded with residents of New York’s second most populous borough, young and old inspecting the library’s wares, lining up for a terminal, carrying on a hundred simultaneous conversations, flirtations, arguments, and

Bob Nardini is Regional Vice President, Collection Management & Development Group, Yankee Book Peddler.
other engagements with one another, in a dozen different languages. Queens circulates more titles than any library system in America, and it was John’s job, working from one of the upper floors, to coordinate selection and acquisition of materials for the central library, its 62 branches, and some 2 million residents of Queens.

He knew his business. He needed to, to buy books on the Queens scale. He learned the book trade as an insider, in a publishing job and as owner of a bookstore before working as a librarian in all three of the city’s systems: New York, Brooklyn, and finally Queens. He mapped out the book publishing world and covered swaths of it for the library system, with blanket orders, first copies, Greenaways, approval plans, and firm orders, whatever worked, and automated the library’s acquisition routines while he was at it. Could a vendor help? He’d listen to any suggestion a sales rep might have, decide quickly, and tell you why or why not. A rep might come away from a meeting with more business or might come away with less. A good call either way, or so John, with a grin and a laugh, could make it seem.

The people of Queens, those of us anywhere who buy or sell books to put onto shelves for readers—we’re all the poorer for his death.
Index

Volume 41, 1997 (Corrected)

Compiled by Edward Swanson

Editor's note: Due to a production error, the index for Volume 41 that was published in the October 1997 issue of LRTS was the preliminary version, not the final version. It had been prepared before the October issue was in its final form, and Mr. Swanson had not had an opportunity to review and update the index based on the final form of the October issue before it was published. We regret this error and apologize to Mr. Swanson for its occurrence. The correct version of the index appears below.

General Procedures Used in Compiling the Index
The following types of entries are included:
  a. authors—of articles, reviews, and letters
  b. titles—of articles and of articles about which letters were published
  c. subjects—of articles and of books reviewed

Subject entries for individuals are identified by "(about)"; letters are identified by "(of)".
Reviews are indexed by name of reviewer and by subject of the work reviewed, identified by "(r)". They are also listed by title under the heading "Books reviewed".
Entries are arranged word by word following the "file-as-spelled" principle. Numbers are arranged before alphabetical characters; acronyms without internal punctuation are arranged as words.

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LRTS is the official journal of the Association for Library Collections & Technical
Services (ALCTS), a division of the American Library Association. The following statement of editorial policy was adopted by the ALCTS Board of Directors, July 1, 1991.

**PURPOSE**

The purpose of *LRTS* is to support the theoretical, intellectual, practical, and scholarly aspects of the profession of collection management and development, acquisitions, cataloging and classification, preservation and reformatting, and serials, by publishing articles (subject to double-blind peer review) and book reviews, and editorials and correspondence in response to the same.

**AUDIENCE**

The audience for *LRTS* includes practitioners, students, researchers, and other scholars with an interest in collection development and technical services and related activities in all types of libraries.

**FREQUENCY**

*LRTS* is published quarterly, with the volume calendar corresponding to the calendar year. Numbers appear in January, April, July, and October.

**SCOPE**

The editor of *LRTS*, with the assistance of an editorial board, strives to achieve a balance among the articles published in the journal so that the interests of each of the sections of ALCTS (Acquisitions, Cataloging & Classification, Collection Management and Development, Preservation and Reformatting, Serials) is represented in the journal. Articles on technology, management, and education, e.g., are appropriate to the journal when the application of these is to issues of interest to practitioners and researchers working in collection development and technical services. The scope of the articles published in *LRTS* is also guided by the "Mission and Priorities Statement" adopted by the ALCTS Board of Directors in 1990.

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