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Subject Access to Fiction: An Application of the *Guidelines*

Christine DeZelar-Tiedman

In recent literature, authors have advocated the enhancement of subject access to individual works of fiction. Guidelines were developed and published by the Subcommittee on Subject Access to Individual Works of Fiction, Drama, etc. The OCLC Online Computer Library Center, Inc., and the Library of Congress conducted pilot projects to study the implications of subject cataloging of fiction. Researchers have indicated that while improved access to works of fiction, drama, etc., is desirable, the idea lacks practicality because of the apparent difficulty involved in applying topical headings to works that are not fact-based in nature. Adding to this difficulty is the fact that most fictional works lack indexes, abstracts, and tables of contents, which can aid the cataloger in applying appropriate headings. Exclusive use of dust jacket copy (or back-of-the-book copy for paperbacks) to form fiction subject headings is recommended. The purpose of this study is to determine whether enough information is included on the dust jacket (or the back cover) to provide adequate subject access in the four areas covered in the Guidelines: character, setting, genre or form, and topic.

From 1986 to 1989, the Subcommittee on Subject Access to Individual Works of Fiction, Drama, etc., met to develop a set of guidelines to improve subject access to individual works of fiction, drama, poetry, humor, and folklore in all formats. The guidelines that were established were conceived as a recommendation for standard national practice, and they are based on, but not limited to, the *Library of Congress Subject Headings (LCSH)*. They appear to be usable, and practicable. The headings are divided into four categories: form or genre access, character access, setting access, and topical access. For the

problematic topical access area, the guidelines state that headings should be determined after a superficial review of the publication at hand. No attempt is made to discern topics that have not been made explicit, or that represent value judgments (*Guidelines* 1990, 33). If subject cataloging of fiction is to become common practice, these guidelines are a strong contender to be the standard of choice.

The subject cataloging of fiction might be the direction we are heading. Over the past few years the OCLC Online Computer Library Center, Inc. (OCLC), in

CHRISTINE DEZELAR-TIEDMAN is Catalog Librarian, Assistant Professor, University of Idaho Library, Moscow, Idaho (e-mail: chrisd@drseuss.lib.uidaho.edu). The *Guidelines* referred to herein are the product of the Subcommittee on Subject Access to Individual Works of Fiction, Drama, etc., a subcommittee of the Subject Analysis Committee, Cataloging & Classification Section, Association for Library Collections & Technical Services, a division of the American Library Association. Manuscript received November 8, 1995; accepted for publication January 29, 1996.

conjunction with the Library of Congress (LC), has conducted pilot projects to study the implications of subject cataloging of fiction. Between January and June of 1992, eight libraries, both public and academic, enhanced OCLC fiction records using the *Guidelines*. OCLC then entered each new record into LC's database so that enriched MARC records could eventually be produced (Quinn and Rogers 1992, 14–15). LC followed this by a study of its own in 1993. From April until June of that year, LC monitored the additional time needed to create subject heading assignments and its effect on productivity in order “to determine the desirability of assigning these headings in its own catalog” (LC 1993). In July 1993, the decision was made to continue the cataloging at current levels.

How does a library measure the cost-effectiveness of such a practice? Hayes discusses a study done by LC. Two catalogers were asked to assign subject headings to 25 randomly selected works of fiction according to the ALA guidelines. The surprising result was the disparity in time taken by the two librarians. While the first cataloger spent only 4.3 hours to catalog all 25 items, the second needed 18.3 hours to catalog the same titles (Hayes 1992, 449). Hayes repeated the study using similar methodology. Her results showed more consistency: the two catalogers spent 7.2 hours and 6.3 hours, respectively, to catalog 25 items (Hayes 1992, 453). Unfortunately, neither of these studies addresses the quality of the cataloging that was done. For instance, in the LC experiment, we do not know how many subject headings the fast cataloger applied to each work in comparison to the slow cataloger. In Hayes' study, we do not know whether the headings were applied reasonably consistently between the two catalogers. More to the point of the research project at hand, we do not know what specific methods were used to extract the information necessary to form subject headings for the fictional works.

Hayes gives some detail as to how headings were applied in her study. In the first phase of cataloging each item, the subject, genre, and setting (or settings)

were selected by examining the work, as well as the dust jacket and any introductory material. Topical headings were assigned by adding the subdivision FIC-TION to established headings from the thirteenth edition of *LCSH* (Hayes 1992). But with no specific description of what constitutes an examination of the work, it is easy to see why the results could be so varied.

BACKGROUND

Fiction has had a troubled past in libraries. Early public libraries grudgingly accepted the presence of novels into their collections, with the hope that readers would be lured to more lofty, worthwhile books—namely, nonfiction (Guard 1991, 10–13). Now that fiction has a well-respected, and expected, place on library shelves, isn't it time that cataloging practice allowed the same type of subject access to these works that has long been available for nonfiction?

This question is not a new one. There have been numerous attempts over the past century to employ various methods of fiction classification, yet none has been successful enough or promoted enough to become standard practice. But with the changes that technology has brought to the world of cataloging, subject cataloging of fictional works has a greater chance than ever before of becoming standard practice. Though it is hard to argue against the benefits that this would have for library users, the question remains in this era of budget cuts and downsizing whether the addition of work and responsibility for catalogers is realistic and cost-effective.

Research, as well as testimony by librarians, indicates that library users do not always seek fiction through known-item author or title searches, which are virtually the only access points available to fiction works under current standard cataloging practice. Olderr (1991, xiii) discussed the difficulties faced by librarians when users, after reading *The Thorn Birds*, wanted “other big novels on Australia,” or asked questions like “Do you have any mysteries set in Iowa?” Commercial

indexes such as Wilson's *Fiction Catalog* are only useful to a limited degree: the user (or librarian) must take an extra step to determine whether an item listed under a given heading is actually held by the library. And users do not always ask for assistance from librarians when seeking library materials. A user not schooled in the intricacies of cataloging would not necessarily know about the lack of subject analysis of fiction. A frequently cited study indicated that when searching online catalogs, users search by subject 73% of the time (Matthews, Lawrence, and Ferguson 1983, 91). It can be assumed that many are searching unsuccessfully for fiction works in this way, and might walk away believing the library does not have what they are seeking.

In addition to providing better access for recreational readers, enhanced fiction cataloging would have ramifications in the academic world. Beghtol (1989, 134) compares the extensive classification of works in science and technology with the more limited categorization in the humanities, and declares that "primary works [i.e. works of literature] are the phenomena of humanistic research in the same way that works of nature are the phenomena of the sciences." Thus creative works should receive the same level of access and attention as their scientific counterparts.

To carry this point further, Ranta (1991, 4) discusses how new trends in literary scholarship and other disciplines "have brought about a greater interest in studying topical and other cultural/historical features of literary texts." Collocating fiction and nonfiction works on related topics in the catalog might facilitate an interdisciplinary search. For example, a student of literature could retrieve factual historical works related to an author or novel, and a historian could access representative fiction of a time and place he or she is studying.

Despite all the arguments in favor of enhanced fiction cataloging, there are legitimate reasons it has not become common practice. Foremost is the nature of fiction itself: unlike most nonfiction works, it can be difficult to determine

exactly what a piece of fiction is about. Nonfiction books regularly contain tables of contents and indexes, and their titles usually offer some clue as to subject content (Ranta 1991, 10). This is rarely true with fiction. Most problematic is the issue of topics or themes. As Hayes explains, fictional works can exist on several different levels at once: the literal, the symbolic, and the thematic (Hayes 1992, 445). In fact, it can be stated that the purpose of fiction is not to lay out ideas or topics in a literal manner, but to reveal them slowly through character, plot, and setting. Catalogers might need to rely heavily on book reviews and literary criticism to correctly classify a fiction work. As Ranta suggests, some people might object that such subject cataloging would verge too much upon literary scholarship and criticism, fields for which most catalogers are unqualified (Ranta 1991, 10). However, she goes on to argue that catalogers have traditionally been trusted to apply headings in subject areas they have no expertise in, and expectations should be no different with fiction. The question remains whether such in-depth subject analysis is realistic in today's library.

RESEARCH QUESTIONS AND METHODOLOGY

The purpose of this study is to determine the feasibility of routine subject cataloging of fiction and drama. Specifically, we want to know whether dust jacket copy, or back-of-book copy on paperbacks, provides enough information to apply subject headings to fictional works using the *Guidelines*. Without abstracts, indexes, and tables of contents to guide them, fiction catalogers might feel compelled to skim or read sections of the work at hand in order to apply appropriate headings. Nancy Down, writing of Bowling Green State University's experience participating in the OCLC/LC Fiction Project, mentions browsing through novels and reading passages from various chapters (Down 1995, 61-69). This is potentially problematic because of its time consuming nature, and also because some catalogers might attempt to dig deeper to find

thematic or topical elements. By limiting catalogers to dust jacket copy, will only those elements that are truly essential to and encompassing of the work be reflected as access points?

This study was designed to learn:

1. Whether dust jackets carry enough information to effectively apply subject headings for works of fiction; and,
2. How many headings of each type outlined in the *Guidelines* would typically be assigned using dust jacket copy?

In order to determine whether subject headings that encompass the subject content of the work can be formulated from dust jacket copy while adequately covering the four areas in the *Guidelines* (genre, character, setting, topic) as appropriate, the researcher separated new works of fiction, drama, and poetry from the cataloging workflow as they came into the University of Idaho (UI) Library. This method was used, rather than extracting a sample from the existing collection, because the UI Library does not retain dust jacket copy except for a small selection of works that are in the Browsing Collection. Because this is a convenience sample, the results obtained here cannot be generalized to other samples or populations. In contrast to earlier studies, individual poetry collections and dramatic works were included in the sample.

Once the works were selected, subject headings were applied as outlined in the *Guidelines*. The 18th edition of *LCSH* was used to apply setting and topical headings,

and all headings were verified in the LC subject and name authority files. Once the target number of fifty works was reached, the results were tabulated.

RESULTS

The sample consisted of 26 hardcover books and 24 paperbacks. Of these, the vast majority (43) were novels, with 5 poetic works and 2 works of drama also included. The distribution of headings per category by format appears in table 1.

It can be seen that topical headings were the type most frequently applied, followed by genre headings, settings, and finally, characters. The low incidence of character access is not surprising, because the guidelines state that character headings are only to be applied when a character has appeared in three or more works, or is a real or historic figure used fictionally. Therefore, it is not expected that character headings will be applied to all fictional works. Topical headings were most often applied. The relatively high incidence of topical headings can be attributed to the fact that many books contained several themes or topics, resulting in the application of as many as three or four headings per title in this category. As for genre access, not every work of fiction falls neatly into a genre category; many mainstream fiction works do not exhibit a genre, and others can fall into two or more. For example, a fictionalized biography could be considered to be both biographical fiction and historical fiction.

Except for the genre category, hard-

TABLE 1
AVERAGE NUMBER OF HEADINGS APPLIED PER RECORD BY FORMAT

Category	Hardcover	Paperback
Genre	0.81	1.04
Character	0.42	0.38
Setting	0.77	0.54
Topic	1.81	1.04
Total headings per record	3.81	3.00

TABLE 2

AVERAGE NUMBER OF HEADINGS APPLIED PER CATEGORY BY LITERARY FORM

Category	Fiction	Poetry	Drama
Genre	0.95	0.60	1.00
Character	0.37	0.00	2.00
Setting	0.67	0.20	1.50
Topic	1.53	1.00	1.00
Total headings per record	3.53	1.80	5.50

cover books appeared to offer more information than paperbacks. This might be because the dust jacket sleeve provides more physical space than the back of the typical mass-market paperback. Several paperbacks gave only brief, one-paragraph descriptions of the work, followed by excerpts from reviews of the authors' previous works. Little of this was useful in applying subject headings. There were a few cases where there was no copy on the back of the paperback, but a photograph of the author instead. This seemed more likely to occur when the author was highly popular and well known (e.g., Stephen King or Danielle Steel). However, these books do sometimes include a brief description of the work on one of the first few pages, which could serve as a reasonable substitute. (This substitution was not made for the purposes of this study.)

The average number of headings applied per category for each of the forms encountered (fiction, poetry, and drama) are given in table 2.

More headings were assigned to drama than to poetry. However, the sample is so small that no real conclusions can be drawn from the results. For example, both of the plays in the sample were by the same playwright and issued by the same publisher.

Figure 1 is an example of dust jacket copy from a hardcover novel. From the information provided here, the genre heading DETECTIVE AND MYSTERY STORIES was applied using the *Guidelines*. Because two other novels featuring the lead character are mentioned, and the guidelines state that a character should appear in three or more works to justify a

heading, one was added for HALLEY, SID (FICTITIOUS CHARACTER)—FICTION. The dust jacket mentions no geographic setting for the novel, so no heading was added in that category. Finally, two topical headings were applied: HORSE RACING—FICTION and PRIVATE INVESTIGATORS—FICTION.

Figure 2 is an example of a dramatic work in paperback form. The copy consists of review excerpts and at first glance there is little to aid the cataloger in applying subject headings. But from the second paragraph, one can come up with headings for genre, characters, and setting. The headings applied were: HISTORICAL DRAMA; JOYCE, JAMES, 1882–1941—DRAMA; LENIN, VLADIMIR ILICH, 1870–1924—DRAMA; TZARA, TRISTAN, 1896–1963—DRAMA; and WORLD WAR, 1914–1918—SWITZERLAND—ZURICH—DRAMA.

At least some subject access was provided for most of the works in the sample. Only three works did not give sufficient information to apply any subject headings according to the *Guidelines*: a Stephen King novel, an experimental novel by Louis Aragon, and a collection of poetry by Mary Robinson. The time needed to apply subject headings to the works was not extensive. It took an average of ten to fifteen minutes per book to review the publisher-supplied copy, look for headings in the *Guidelines* and *LCSH*, and verify them in the authority files.

CONCLUSION

In this study, publisher-supplied copy from dust jackets and the backs of books

usually provided sufficient information to apply subject headings to individual works of fiction, drama, etc. Just how many subject headings are enough is subjective and must be determined by the individual library. As stated above, the method of selecting the sample precludes the results from being generalized to other populations. However, this study should give other libraries information to consider when deciding whether to provide additional subject access to fictional works. In

some cases it would seem appropriate for catalogers to supplement the jacket copy with other easily scanned information, such as lists of characters in plays or preliminary pages in paperback novels. When reviews are readily available, they may also be helpful provided they are brief.

If topics and other elements of works of fiction were as easily identifiable as they are in nonfiction, the *Guidelines* would not be necessary. The purpose of this study is to suggest a method by which the

COME TO GRIEF DICK FRANCIS

"Few writers have maintained such a high standard of excellence for as long as Dick Francis," writes the *San Diego Union-Tribune*. "[His] genius...is his ability to write suspense from character rather than incident and to find terror in the mundane." In *Come to Grief*, Dick Francis posts another surefire winner.

After constant requests from fans to bring back Sid Halley, the champion jockey turned investigator of *Odds Against* and the breakout thriller *Whip Hand*, Dick Francis does just that in his new novel. Although more than a decade has passed since the publication of *Whip Hand*, little time has elapsed in Sid Halley's life. Still in his mid-thirties, he remains troubled, courageous, unwilling to admit defeat to disabling injury or corruption. Now, though, Sid faces nineties dilemmas and hazards even more serious than those he once faced in horse racing,

(Continued on back flap)

(Continued from front flap)

the passion that cost him his hand, and "the only sport so dangerous that ambulances follow the athletes from start to finish" (*The Philadelphia Inquirer*).

"I had this friend that everyone loved," Halley says, "and I put him on trial.... I grieved for the loss of a friendship, for a man who still looked the same but was different, alien...despicable. I could much more easily have grieved for him dead."

Having exposed an adored racing figure as a monster, Sid must testify at the man's trial. But the morning of his appearance, a tragic suicide shatters the proceedings and jars Halley's conscience. Plagued by regret and the suspicion that there's more to the death than has yet come to light, he is catapulted into days of hard, rational investigation, heart-searching torments, and the gravest of perils. Business as usual for Sid...

Come to Grief is a stunning successor to *Whip Hand* that does Sid Halley and Dick Francis proud.

Dick Francis is the author of many best-selling mysteries, most recently *Wild Horses* and *Decider*, which are set against a racing background. He makes his home in the Caribbean.

TRAVESTIES

A PLAY BY

TOM STOPPARD

"The effect of *Travesties* is intoxicating! It is nothing short of miraculous . . . brilliant, and replete with limericks, puns, word play, contradiction, and paradoxes." These words by Frank Marcus of the *Sunday Telegraph* celebrating the success of Stoppard's play were representative of the ecstatic reception which greeted the stage work at its London opening in 1974.

"Tom Stoppard is not the first man to have noticed that Lenin, James Joyce, and the Dadaist Tristan Tzara were all living in Zurich during the Great War. But what other playwright, with these three revolutionary figure-heads to draw on, would have chosen for his hero a minor British consular official called Henry Carr? . . . From this obscure footnote to *Ulysses* Stoppard has spun out a fantastically elaborate web to snare his three giants in the same play."

—Irving Wardle, *The (London) Times*

"Stoppard has come up with another dazzling display of theatrical sleight-of-mind. . . . The world premiere was an event to excite the intelligence."

—Herbert Kretzmer, *Daily Express*

"A dazzling pyrotechnical feat that combines Wildean pastiche, political history, artistic debate, spoof-remembrance, and song-and-dance in marvelously judicious proportion. It radiates sheer intellectual *joie de vivre*. Exuberant and freewheeling!"

—Michael Billington, *The Guardian*

Tom Stoppard has occupied a prominent place in the front row of living dramatists ever since the success of his *Rosencrantz and Guildenstern Are Dead*. His other plays include *The Real Inspector Hound*, *After Magritte*, *Enter a Free Man*, *Jumpers*, and *Dirty Linen*, and he is also the author of the novel *Lord Malquist and Mr. Moon*.

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Guidelines can be applied in an efficient, cost-effective manner, so that valuable cataloging time is not spent searching for topics in works where subjects are not clearly or openly stated. Few libraries have the resources to pay catalogers to read and interpret fiction; perhaps they will find book jacket copy an effective summarizing tool for providing a reasonable level of access to these valuable library materials.

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From Access Points to Materials: A Transaction Log Analysis of Access Point Value for Online Catalog Users

Brendan J. Wylly

It is possible to obtain some insights into searchers' judgments by using transaction log analysis to associate online catalog search methods with decisions to retrieve location information. The Mainframe Interface to Libraries Online (MILO) is an interface to the Illinois Library Computer Systems Office online union catalog for 45 academic libraries. MILO provides access to a bibliographic database and directly links to another database with circulation and location records. Because the latter database only provides location and circulation status, searchers' decisions to make links to such data are seen as an indication that the records being linked represent potentially useful material. Via a transaction log analysis, the linked location records were associated with the access points used to retrieve them in order to analyze the value and problems of searchers' uses of specific access points. Transaction logs were analyzed for a 38-day sample of the 1994 logs. Counting records retrieved through the use of multiple access points (making the total greater than 100%), subject fields were used to access over 30%, author fields to access over 19%, and title fields to access over 51% of all records linked to location information. Other fields were used to retrieve very small percentages of linked records.

In an online catalog that requires an additional searcher action to obtain location and circulation information following a search, it is possible to obtain some insights into the searcher's judgments about the results. An analysis of such a system raises two interesting questions: (1) When

specific access points are used to find online catalog records, how often do searchers find the results sufficiently valuable that they decide to seek location and circulation information? and (2) In what relative proportion are specific access points in an online catalog used to obtain

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records for which location information is subsequently viewed? The answer to the first question reveals one kind of success rate for the use of an access point, regardless of how rare or common that use is. The answer to the second question offers a purely quantitative measurement of the value of each access point compared to all other access points.

Because many academic libraries have been caught between budgetary constraints and a commitment to thorough cataloging (in essence, a commitment to intellectual access), some library leaders have asked: Can we reduce or eliminate subject cataloging or complex name authority control? Large backlogs of uncataloged material have developed. The choice seems to be between providing some lower level of cataloging or allowing the backlog to remain uncataloged, and perhaps even expand, while seeking resources for full cataloging. In either case, some unknown but possibly substantial amount of intellectual access is being lost. Ascertaining the significance of that loss is helpful in guiding the treatment of backlogs and in guiding cataloging priorities. Even in less dire circumstances, establishing the value of the elements of cataloging and indexing is important. This study is an attempt to discover the value of various access points in catalog records by determining their usefulness to searchers in locating items in a collection.

An automated analysis of nearly 800,000 online catalog searches revealed how often the use of various access points resulted in retrieved records for which the searcher went on to find location and call number information. With some qualifications, which are explained below, logged searcher actions of a particular type might provide a strong indication of the usefulness of such access points in searches. For this study, the raw numerical analysis was accomplished by a parsing and tallying program written in FORTRAN. Descriptive statistics are reported in order to cross-tabulate search type, number of records retrieved, bibliographic record display format choices, and decisions to link to location information.

LITERATURE REVIEW

Numerous researchers have provided introductions to the advantages and limitations of transaction log analysis (TLA). Tolle (1984) and Peters (1993) provide a general introduction to TLA research. Peters, Kaske, and Kurth (1993) also have provided a more extensive bibliography and research review. Borgman (1986) provides a valuable review of older research. Both Tolle (1984) and Peters (1993) also provide some cautionary notes about the limits of TLA for extracting information about searchers' intentions. Further discussions of the limits and possibilities of the method are provided by Kaske (1993) and Kurth (1993), who raise helpful design considerations for any TLA.

Studies of searchers' online catalog search strategies are a very common, almost universal, component of online catalog TLAs. Kalin (1991) compared the searching techniques and success rates of remote and in-house searchers through a TLA and duplication of 1,000 searches by each group. The fact that searchers had to take a specific action to pull up a full bibliographic record was used to try to determine searchers' judgments about the relevance of the retrieved records. The present study provides firmer ground for the detection of searchers' decisions about the usefulness of retrieved records. Hancock-Beaulieu, McKenzie, and Irving (1991) conducted a TLA collaboratively at a number of academic and large public libraries in the United Kingdom and the United States. They administered interactive pre- and post-search questionnaires via online catalog terminals to ascertain searchers' intentions. They then compared these intentions with the actual search strategies revealed by the transaction logs. The general conclusion was that subject searching, whether direct or indirect, remains the prime means for use of the online catalog even though searchers face great difficulties integrating controlled vocabulary subject headings with keyword searching possibilities. Their study highlights the benefits of enhancing TLA with other analytical methods; questionnaires allowed measurement of searchers' intentions.

Reading intentions from the transaction logs must be undertaken with extreme caution. Nielsen (1986) challenges the benefits of enhanced TLA, observing that there are differences between what searchers say they do and what they actually do. Nielsen's results were sufficiently conclusive that he strongly warned against relying upon any self-reporting of search strategies. A study of search persistence by Wiberley, Daugherty, and Danowski (1989) also showed self-reported search behavior to be inaccurate. Because the present research focuses on questions relating to searchers' successful use of access points, rather than searchers' intentions, this study avoids the methodological pitfalls identified by Nielsen and others.

Ballard (1994), Barrett and Matica (1989), Frost (1989), Hunter (1991), Marner (1993), and Peters and Kurth (1991) are just a few who have explored the use of search strategies in online catalogs. One of the most significant treatments of subject access in recent years was reported by Larson (1991), who was also a participant in the Council on Library Resources project on online catalogs. (Important earlier work in the field includes the BOOKS Subject Access Project by Atherton (1978), the final reports of the Council on Library Resources project (Kaske and Sanders 1983; Markey 1983; and Tolle 1983), and Markey's (1984) OCLC Online Computer Library Center, Inc. work.) Wiberley, Daugherty, and Danowski's work (1989, 1995) is also of interest, since they discuss the information overload that Larson perceives to be a particular problem. Drabenstott and Vizine-Goetz (1994) also offer an excellent overview of subject searching. They include an interesting TLA on subject searches that corresponds with many of the broad findings of this study. Drabenstott and Vizine-Goetz explore subject search failure and success in much more detail than this study, but in the present article I aim to explore the searchers' perceptions of success in their use of access points rather than the details of the failed and successful search entries.

Prabha (1990), Hickey and Prabha (1990), and Wiberley, Daugherty, and

Danowski (1989, 1995) believe that the threat of information overload should be a central concern for information system designers. Indeed, Larson's research suggests that subject searching has become so difficult for online catalog searchers due to zero-hit searches and information overload that searchers are slowly being driven away from controlled vocabulary subject searching and may move towards even very limited title keyword access as a substitute form of topical access.

While Larson's conclusions about the slow decline of subject searching in the MELVYL system of the University of California appear to be sound, his analysis of causes is based on the rather narrow definitions of subject searching success and failure that he draws from the transaction logs. The difficulties he cites are of two types, the zero-hit subject search and the excessive-hit or information overload subject search. These difficulties afflict any type of online bibliographic searching and, perhaps, are particularly troublesome with subject searching. However, classing all zero-hit and large-hit controlled vocabulary subject searches as failures—failures that have an iterative effect of driving searchers towards alternative topical access methods—is too broad a generalization. An easily conceived example illustrates this point.

A search in a large academic catalog using the subject "Dogs" will likely produce over 100 titles and thus, according to Larson's analysis, our example appears to be a case of failed subject searching due to information overload; it seems to be a case of a searcher not understanding the excessive generality of the subject search executed. However, in many catalogs, one of the first books in a date-sorted list is the latest edition of *The Complete Dog Book: The Photograph, History, and Official Standard of Every Breed Admitted to AKC Registration, and the Selection, Training, Breeding, Care, and Feeding of Pure Bred Dogs*, a volume that is likely to meet the needs of many subject searchers. Similarly, were such a searcher to scan only the first of several hundred screens, find this book, and then leave the online catalog with a promising reference title

and call number, Wiberley, Daugherty, and Danowski (1989, 1995) would classify the search process as a case of information overload because of the nonpersistence in scanning records. However, such a hypothetical searcher would likely consider the search process a success. In other words, ascertaining information overload is a very subjective matter; we need a way of letting the searcher inform us when information overload is a problem and when it is not. The number of hits alone cannot reveal the problem. Though it is perhaps somewhat less obvious, neither can zero-hit searches be clearly judged as failures if the whole search process—instead of the individual search transaction—is considered. For example, a mistyped and failed subject search for "Signal processing—Digital techniques" followed immediately by a search for "Signal processing—Digital techniques" appears, based solely on the transaction logs, to indicate a 50% failure rate for this beleaguered subject searcher. However, if asked whether subject searching worked, the searcher might reasonably respond that it did. Another easily overlooked success is the searcher who initially fails with the subject search "Canoeing" and converts it to a title keyword search and discovers the subject "Canoes and canoeing" and then returns to the controlled vocabulary subject approach. This searcher has undergone a perfectly normal process of communication with the bibliographic information system, but according to Larson's analysis of the transaction logs, the searcher appears to have succeeded with the title keyword search 100% of the time and with the subject search only 50% of the time, insofar as zero-hit searches are considered "failures."

The problem is that "failure" is a natural part of success in extracting information from any bibliographic information system. Communication involves "failure" because it necessarily involves feedback and learning. Online catalogs are communication devices that allow searchers to interact with a database. We must analyze them as communications facilitators.

My intent in this study is not to dismiss Larson's findings regarding the decline of

subject searching, nor to dismiss his insights on the difficulties with subject searching. Instead, it is simply to note that Larson's study does not establish a firm link between the difficulties of subject searching and the decline in subject searching. Many searchers choosing to use title keyword searching for topical access in MELVYL might only be becoming more intelligent users of all the options of online catalogs. We need more information about searchers' perceptions of the value of all access points and stronger evidence of searchers' problems in using all access points. The present research provides some of this information by inquiring into the searchers' perceptions of merit in the records they retrieve via the use of subject and other access points.

The research already conducted in this area has not been large in scope nor has it provided an idea of how searchers themselves perceive the relative value of controlled vocabulary subject searching. Drabentstott and Vizine-Goetz (1994) do provide dramatic insights into subject searching and online catalog design for subject searching. However, they offer little insight into the relative value of all the access points as perceived by users. In order to investigate the reliance of patrons on subject headings for finding material they wanted to check out, Knutson (1986) correlated the number of subject headings for 1,105 records in three Library of Congress classifications and one subclassification with circulation levels by patron type in an academic library. On the whole, Knutson found little positive correlation and some negative correlation between the number of subject headings and circulation levels. However, the scope of the study was so limited that conclusions were very difficult to draw.

Later, Knutson (1991) tracked one year of circulation for three groups of social science essays with three different levels of catalog records, ranging from ordinary treatment to enhanced subject headings and contents notes. Again, the scope of the study was too limited for the results to be generalized, and the results were inconclusive in any case. Charbonneau (1986) also found no significant dif-

ference in levels of circulation when he compared the circulation of materials receiving original cataloging to that of materials receiving copy cataloging at the University of Pittsburgh. He did not focus on the two types of bibliographic records, however, but rather on the differences in the types of materials that received original cataloging as compared to those for which copy was available.

Knutson (1986) recognized the problems with making cataloging decisions based on his results and called for studies with similar intent to be done using protocol analysis or TLA. The current study responds to that call. Much of the uniqueness of the TLA reported here hinges on the claim that when searchers linked to location information for selected records they had made a decision about the usefulness of these records. No attempt is made in this study to discern why searchers judged records to be useful. Rather, the mere fact that they did make a judgment at a particular point in time is acknowledged.

INSTITUTIONAL AND TECHNICAL ENVIRONMENT

The transaction logs, as shown in the ex-

ample in figure 1, provide information on date, time, terminal, response time, number of Boolean operators, number of potential index entries in a search (e.g., "engineers smalltalk" as a subject heading is one index entry, but as a title keyword search two index entries are searched), number of truncations, hits, error codes, and the text of the input for the transaction. Because search, display, and location linking commands all result in logged transactions, the total of nearly 2.7 million analyzed transactions reflected 795,810 searches and their associated linking and display transactions.

The raw logs had records from all of the system's terminals mixed according to the time stamp on the transaction. As shown in figure 1, these raw data were sorted according to terminal codes and time so that specific search sequences could be analyzed. For purposes of this analysis, it was not necessary to ascertain when one searcher left a terminal and another began using it, but time stamp analysis might allow interested researchers to obtain some partially revealing information in this regard. A FORTRAN program was written to detect and tally all the search sequences and attempts to view location information. Thirteen dif-

a	b	c	d	e	f	g	h	i	j
94/12/31	12.33.34.90	AAI7	0.10	1	1	0	0	0	F S ENGINEERS SMALLTALK-SC,1
94/12/31	12.34.11.10	AAI7	0.10	1	1	0	0	0	T SA ENGINEERS SMALLTALK-NOSCOPE,3
94/12/31	12.34.11.70	AAI7	0.60	1	2	0	0	0	F T ENGINEERS SMALLTALK -SC,15
94/12/31	12.44.55.90	AAI7	0.10	1	1	0	0	0	F S SMALLTALK-SC,1
94/12/31	12.45.33.20	AAI7	0.00	1	1	0	0	0	T SA SMALLTALK-NOSCOPE,3
94/12/31	12.45.33.30	AAI7	0.80	1	1	0	12	0	F T SMALLTALK -SC,15
94/12/31	12.47.31.20	AAI7	0.10	1	1	0	0	0	F S SMALLTALK-ALL,1
94/12/31	12.48.00.30	AAI7	0.10	1	1	0	0	0	T SA SMALLTALK-NOSCOPE,3
94/12/31	12.48.00.90	AAI7	0.80	1	1	0	42	0	F T SMALLTALK -ALL,15
94/12/31	12.48.02.20	AAI7	0.80	0	0	20	0	0	S 3-22 -,1
94/12/31	12.48.03.50	AAI7	0.10	0	0	2	0	0	S 1-2 -,1
94/12/31	12.50.21.30	AAI7	0.20	1	1	0	1	0	H 2-ALL,5
94/12/31	15.57.13.90	AAI7	0.60	1	1	0	26	0	F T AUTOCAD -SC,15
94/12/31	15.57.15.10	AAI7	0.10	0	0	6	0	0	S 1-6 -,1
94/12/31	15.57.15.10	AAI7	0.10	0	0	6	0	0	S 19 -,1
94/12/31	15.58.00.10	AAI7	0.10	0	0	0	0	0	DISP 19 --SC

- (1) (1) Zero-hit subject search scoped to search one institution (SC=SIU, Carbondale), (1) (2) converted to zero-hit "see" reference search (all authority file searches are non-institution specific) (1) (3) converted to zero-hit title keyword search.
- Zero-hit subject search converted to 12-hit title keyword search scoped for searching one institution (SC).
- Same search as (2) scoped to search all institutions. The H transaction links to location information for multi-institution search results. S transactions with multiple hits result in short displays, and those with single hits result in full displays.
- A single-institution (SC) title keyword search for which one of 26 records was fully displayed (S 19) and linked (DISP 19).

F=(find/initiate search); T=(initiate authority file search); S=(show bibliographic record(s)); DISP=(link to location information, DISP does not result in a hit count so 0 on DISP transactions is normal); H=(link to location information for searches scoped to multiple institutions)

a) date, b) time, c) terminal id, d) response time; e) # of Boolean operators, f) # of index entries searched, g) # of truncations in search; h) # of hits; i) error indicator; j) transaction text

Figure 1. Time and Terminal Sorted Sample of Transaction Logs.

TABLE 1
SEARCH TYPES AND ACCESS POINTS

Search Type	MARC Record Access Points Searched
1. authority-based corporate author	028, 110, 111, 240, 410, 411, 610, 611, 693, 694, 710, 711, 715, 730, 810, 811
2. corporate author keyword	028, 110, 111, 240, 410, 411, 610, 611, 693, 694, 710, 711, 715, 810, 811
3. authority-based author	028, 100, 110, 111, 130, 240, 700, 705, 710, 711, 715, 730, 240, 400, 410, 411, 800, 810, 811
4. author (automatic truncation)	028, 100, 110, 111, 130, 240, 700, 705, 710, 711, 715, 730, 240, 400, 410, 411, 800, 810, 811
5. author+title keyword	028, 100, 110, 111, 130, 240, 700, 705, 710, 711, 715, 730, 240, 400, 410, 411, 800, 810, 811, +245, 246, 247, 653
6. series title (automatic truncation)	440, 490 (for first subfield = 0), 830, 840
7. exact phrase title	245, 246, 247, 653
8. title keyword	245, 246, 247, 653
9. title keyword automatically substituted for failed subject	245, 246, 247, 653
10. subject headings and/or subheadings	052, 600, 610, 611, 630, 650, 651, 690, 691, 692, 693, 694, 695
11. authority-based subject	052, 600, 610, 611, 630, 650, 651, 690, 691, 692, 693, 694, 695
12. miscellaneous (e.g., ISSN, ISBN, accession number)	020, 022
13. undetermined authority-based derived from retrieved record	could be any of above authority-based options

ferent search types were detected, as shown in table 1. The raw and sorted data were compressed and archived for additional analysis and for sharing with other researchers.

SAMPLING

Kaske (1988, 1991) has reported on the variability of search types in online catalogs across time periods in academic institutions and has encouraged analysis of entire transaction populations. However, due to problems with very large data sets, sampling was used for this study. Kaske's concerns were taken into account by paying attention to use cycles in the sampling procedure. The large Mainframe Interface to Libraries Online (MILO) installation typically produces over 140,000 transactions on a high-use day during the

semester. This is a peak rate that is roughly maintained by system limitations, and the peak is fairly consistently reached on semester weekdays.

Because the availability of MILO has been greatest most recently, the sample was limited to 1994. The data could only be sampled based on time. However, the interest was not in sampling based on time so much as sampling based on the lowest unit of analysis, the transaction. The sampling technique needed to allow every transaction an equal chance of being chosen for analysis. Randomly sampling across the 365 days of the year meant that any transaction would have an equal $n:365$ chance of being chosen. However, the distribution of transactions per day across the days of the year was extremely nonnormal. Thus, a purely random sample based on time might not have a representative

number of transactions from low-use, high-use, semester, or non-semester days. According to Kaske (1988), the failure of a purely random sample to be truly representative might be significant, because search methods vary with levels of use. The sampling method had to assure an overall representative sample in this potentially diverse population of days.

Five subpopulations were chosen from 1994: high transaction-count semester days, low semester, high non-semester, low non-semester, and exceptionally low transaction-count days having below 10,000 transactions. The latter were mostly holidays in Illinois' institutions. The division between semester and non-semester periods was based on the data rather than on an academic calendar because a number of academic calendars are at work in the ILC SO system. The divisions were made on days when transaction counts fell to non-semester norms and did not rise again until the next semester, or vice versa. Within the semester and non-semester subpopulations, further divisions were made between high-count days and low-count days. For the semester periods, the division between high and low days was made at 120,000 transactions and seemed rather clear-cut. For the non-semester periods, the division between high and low was less obvious but placed at 40,000 transactions. Given these divisions, 111 days were high semester days. One-hundred-thirteen days were low semester days. Ninety-one days were high non-semester days. Forty-two days were low non-semester days. And 8 days were

extreme lows. Altogether these latter 8 days only totaled 40,714 transactions and were all included in the sample rather than have a very weak intra-type sample for what might be an interesting subpopulation. In the other categories, random sampling in each category selected 9 high semester transaction-count days, 9 low semester, 8 high non-semester, and 4 low non-semester. This total of 30 days was roughly in proportion to the 111:113:91:42 split of the total population of day types.

The sample contained a total of 2,689,396 transactions out of 33,386,286 transactions in 1994, or 8.06% of all transactions. The sample contained transactions from the different semester/non-semester and high/low transaction count days in the proportions shown in table 2. Except for skewing caused by the inclusion of all of the extreme low days, this random sampling within subpopulations resulted in a fairly representative overall sample. The extreme low transaction count days were over-represented but were such a small portion of the total sample that they could not significantly alter the overall results. Including the low count days at this level was worthwhile simply to allow comparisons of interesting day-type distinctions that might emerge.

THE MILO SEARCH ENVIRONMENT

The author of this study examined transaction logs that recorded the use of MILO by searchers of the catalogs of the 45 uni-

TABLE 2
TRANSACTIONS IN STRATIFIED SAMPLE FROM 1994

	Days N=38 (N=365)	Sample % of Transactions N=2, 689, 396	Pop. % of Transactions N=33, 386, 286
High-count semester days	9 (111)	46.59	46.89
Low-count semester days	9 (113)	27.83	29.68
High-count non-semester days	8 (91)	21.30	20.44
Low-count non-semester days	4 (42)	2.77	2.87
Extreme low-count days	8 (8)	1.51	0.12

versities, colleges, and community colleges which belong to ILCSO. MILO provides an online catalog interface to the Full Bibliographic Record (FBR) database, which is a catalog of the material acquired by hundreds of libraries in Illinois over a broad period of time. The ILCSO libraries' holdings are included in the database with complete title and author access and fuller bibliographic access for more recently acquired materials. Though precise dates vary by institution, most materials within ILCSO have been fully cataloged since the 1970s. This fact introduced an important limitation in the study: MILO provides access to a wider range of materials through author and title fields than through other fields. Searchers using the former access points retrieved more records and had greater chances of successfully fulfilling their needs insofar as those needs might be met by older material. Thus, the apparent success of searching based on author and title access points was inflated in this TLA. This problem does not affect recently acquired material and does not affect all ILCSO institutions.

Through the use of the Library Computer System (LCS) database, MILO also provides an interface to some ILCSO volume holdings and all copy holdings records and the circulation components of the catalog. MILO allows linking from a record in the FBR database to the holdings and circulation information in LCS. These links must be made if a searcher is to obtain the location and circulation status of an item found by searching FBR. All linking between an FBR record and the associated LCS record is recorded as a transaction in the separately maintained transaction logs for transactions occurring through the MILO interface. From these logged linking actions, the TLA software written for this research traced back to discover the types of searches that retrieved the original records.

Many non-ILCSO libraries also have records in FBR; a total of over 800 libraries throughout the state of Illinois are represented at varying levels in FBR. One can use MILO to search for non-ILCSO materials contained in FBR. Upon finding

a record from such a non-ILCSO institution, a searcher who attempts to obtain location information can determine only which libraries hold the item but neither the call number nor the circulation information at non-ILCSO libraries. The retrieval of any location information by ILCSO searchers of non-ILCSO holdings was detected as a linking effort in this TLA.

There is a command-mode interface to the FBR database that provides more flexibility than the MILO interface—in particular advanced Boolean searching—but all of the more commonly used capabilities present in FBR command mode are also available via MILO. This command-mode interface is available as a bypass option under the MILO menu system. Searches entered in this way are logged with the MILO searches and were thus analyzed for this study. All MILO-based searches are converted into a set of command-mode FBR searches. By analyzing transaction sequences it was possible to detect MILO-automated search types such as automatic uses of the authority files and automatic conversions of failed subject searches into title keyword searches. The thirteen search types analyzed are listed in table 1. Call number searching takes place directly in LCS and is therefore not in the analyzed FBR logs for MILO.

In the MILO interface, subject searches that retrieve no records are converted first to searches for a subject see reference in the authority file and, if that fails, to title keyword searches. These conversions are done without notifying the searcher as to what specifically is taking place. The searcher is only queried as to whether a multi-step subject search is desired. This typically occurs when a searcher enters a non-Library of Congress (LC) subject heading, but it can happen if there are no records in the bibliographic database for a valid LC heading. The former is a very common occurrence. This type of conversion of attempted subject searches can be detected in the logs by detecting specific sequences of transactions, as shown in figure 1. In this study, I treated such converted searches as a spe-

cial subject-converted-to-title-keyword search type.

I also tracked separate categories of searches that were initiated based on authority file information. Authority-based author, subject, and corporate author searches were separately tracked. A miscellaneous category dealt with quasi-authority-based searches that occurred due to the system's capability to initiate a search based on an access point of a retrieved record. This capability exists at any time in command mode bypass from MILO, but is only available in the MILO interface when a subject search has been converted into a title search. This miscellaneous category was also used to keep track of other, very rare types of authority-based searching such as authority-based series title searches and authority-based uniform title searches. The authority-based search categories were used only when the results of a search in the authority file were directly used to drive a search in the bibliographic file. Searches that were actually keyed in based on the information read from the authority file were not detectable as being authority-based searches.

Searchers must conduct their search via the subject authority records if they wish to execute exact subject heading and subheading combination searches. Even a precisely entered heading and subheading combination retrieves records that contain the elements in any combination. For example, an entered search of "Nutrition—Economic aspects" also results in records containing a combination of subjects such as "Agriculture—Economic aspects—Mexico" and "Working class—Mexico—Nutrition." A search executed in the authority file to find "Nutrition—Economic aspects" could be used to drive a search in the bibliographic file for records containing the exact combination. However, the only access to the authority file in MILO occurs when a searcher enters a heading with many subheading combinations—such as "Nutrition"—or when a searcher retrieves records through a title keyword search as a result of a failed subject search. The default of searching for headings and subheadings in any combi-

nation is sometimes helpful to searchers, but it turns subject searching into phrase searching in the subject headings and subheadings. Finally, it should be noted that MILO does not allow keyword searching of the subject headings.

The most fundamental assumption in this study is the assumption that, generally, searchers intentionally decided to link from the display of bibliographic records to the location information in the associated LCS records. Some unknown number of links were no doubt errors or confusions in the use of the interface rather than genuine expressions of a desire for location information. Through a TLA, there was no way to determine how often these unintentional links occurred. Obtaining such information about searchers' intentions would be extremely difficult to obtain by any means. However, the linking command keystroke on the menu is clearly labeled as "Location." It might be reasonable to assume that such unintended actions afflict all types of searches in roughly equal proportions, so that at least the proportional effects on the results have been minimized.

Transaction logs were available from October 1991, when MILO began operation as an FBR/LCS interface. Though MILO was not widely used at all ILCISO member libraries immediately after its implementation, the system is now very widespread, with only the University of Illinois at Urbana-Champaign (UIUC) still running a significant number of public terminals with older interfaces to FBR with separate transaction logs. Now even most of UIUC's public terminals and all its remote logins run MILO. Note that the introduction date of MILO does not in any way correspond either with the varying dates on which ILCISO members began creating full catalog records in the FBR database in the 1970s or with dates to which they have conducted retrospective conversions. Also note that only those searches conducted through MILO and through the MILO bypass to command-mode were analyzed in this study. Other interfaces to FBR store their transaction records in separate transaction logs.

AUTOMATED ANALYSIS

A FORTRAN log analysis program recorded an entry in a data table for every search sequence analyzed. A search sequence consists of:

- A search command that drives a search of the bibliographic file;
- Any automatic conversions of a failed subject search to a see-reference search and a title keyword search; and,
- All the transactions to display the search results and link them to location information.

A search sequence is ended by the initiation of another search from the same terminal. Thirteen search types were analyzed as shown in table 1. Some search types make different uses of the same access points (e.g., title keyword searches converted from failed subject searches as compared to searcher-initiated title keyword searches). In addition to the search type, each element in the data table recorded three additional characteristics of the searches in any given search-type category:

- The number of retrieved records (hits) between 0 and 1,999, listed in intervals of 1, and a single category for greater than 1,999 hits;
- The number of links to location records for a given retrieval, between 0 and 19, listed in intervals of 1, and a single category for greater than 19 links;
- A display code to reflect the bibliographic display modes. The display code category was broken down into: (a) zero-hit searches, i.e., no display; (b) searches with or without linking in which only the short display was used; (c) single-hit searches with or without linking that resulted in an automatic full bibliographic display for the single hit; (d) searches in which the searcher chose to force full displays of some records and in which any linking occurred from those full displays; and (e) cases in which the searcher linked some records only displayed in short form but also chose to force full displays of some records whether linked or unlinked.

It would have been desirable to track

whether a given linked record was linked from a full or short bibliographic display, but the unit of analysis was the entire search-display-link sequence rather than individual hits. Therefore, some compromises had to be made in recording the display type used when a searcher linked from mixed display types. A future analysis might treat each hit as the unit of analysis. The short display includes author, title, and publication date. The full display includes all the elements of the MARC record typically displayed in on-line catalog full displays (i.e., title, author, notes, physical description, publication information, subject headings, standard numbers, continuation notes, etc.).

Recorded transactions in the logs allowed all these characteristics of a given search sequence to be determined. Because it is possible for a searcher in command mode to restore the immediately preceding search, this study treated the restoration of a previous search result as a new search identical to the old search rather than as a continuation of the previous displaying and linking sequence.

Having assembled a 13 x 2,001 x 21 x 5 (search-type x hits x links x display-code) table that contained the tallies for any given run of transaction logs, the table was analyzed by the same program that was used to extract the tallies from the transaction logs.

The program was run to analyze all 38 sample days individually and then to analyze collectively the high-count and low-count sample days for semester and non-semester periods as well as the extreme low-count days. Finally, the program was run against all 38 days as a whole to assemble the overall results that are the main focus of this report on the research.

FINDINGS

CLASSICAL TLA RESULTS

The analysis extracted typical information about searchers' uses of various search types and access points. Although the focus of the present study was on the logged decisions by searchers to link to location information, the general results are offered here for comparative purposes.

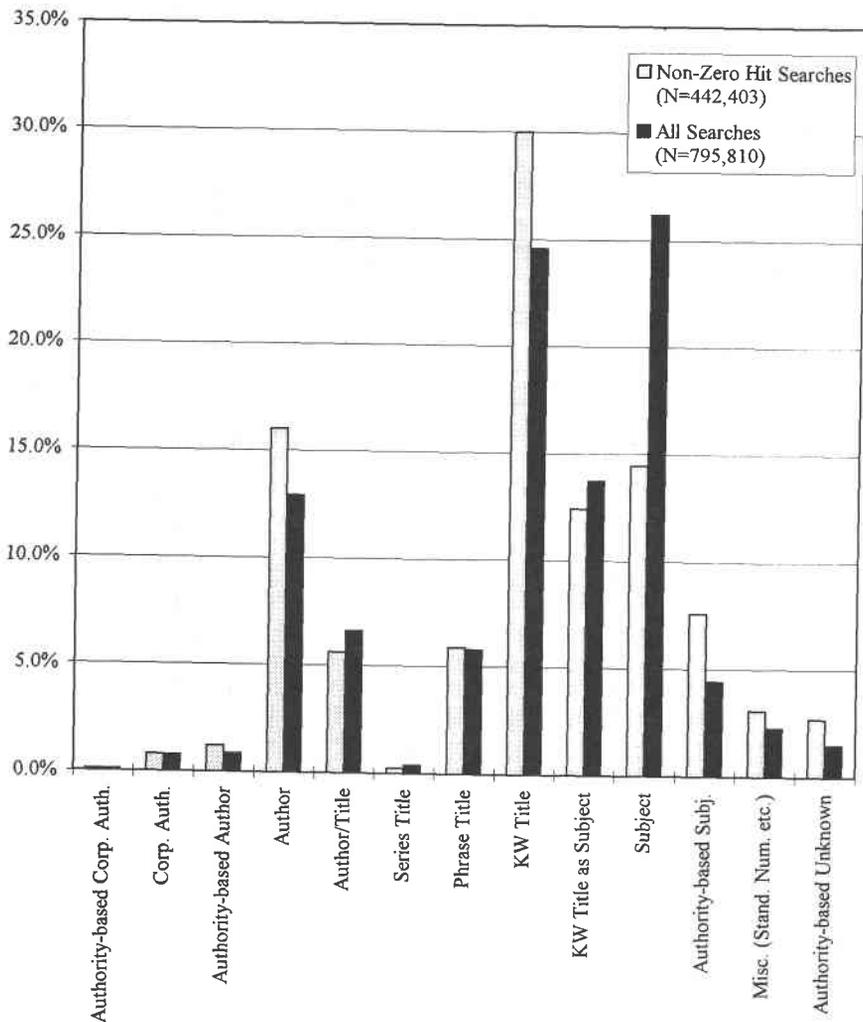


Figure 2. (A) Non-Zero Hit Searches by Type as a Percentage of All Non-Zero Hit Searches; (B) Searches by Type as a Percentage of All Searches.

Some of the same patterns reported by Larson (1991) were found. All types of explicitly topical searching (i.e., subject, converted subject to title keyword, and authority-based subject) comprised about 45% of the searches. This is roughly in accord with Larson. The breakdown by search type for all searches and for searches with non-zero hits is given in figure 2. By comparing percentages that are not equal, we can see which search

types had the most or least zero hits. For example, zero-hit searches were very common for subject searchers using controlled vocabulary. Subject searches dropped from over 26.2% of all searches to under 14.5% of all searches that retrieved one or more items, i.e. non-zero hit searches. This drop results from the nearly 70% of such searches that retrieve no records as shown in figure 3. However, even in MILO, which automatically

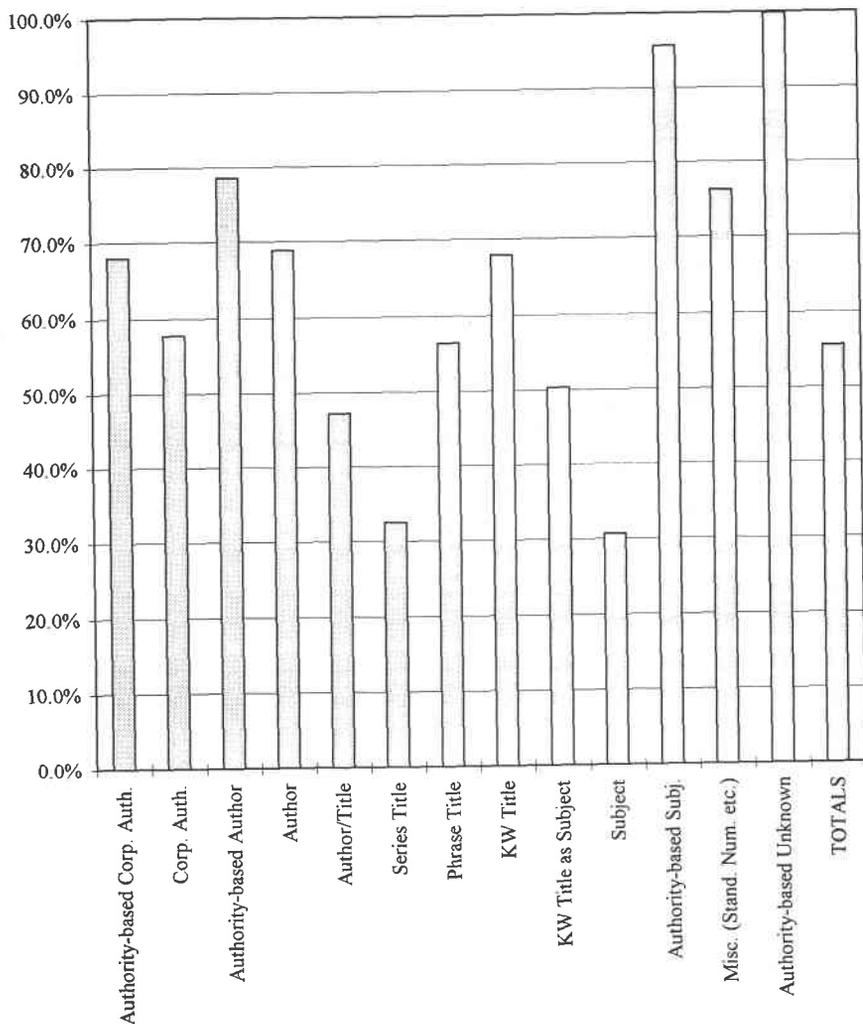


Figure 3. Percentage of Each Search Type Resulting in Non-Zero Hits.

searches for see references in the authority file and—failing to find any—then converts failed subject searches into title keyword searches, these converted topical title keyword searches also dropped from 13.7% of all searches to 12.4% of non-zero hit searches. The shifts in proportion when comparing all searches to non-zero hit searches were towards title keyword, author, and authority-based subject searching rather than towards failed sub-

ject searches automatically converted to title keyword searches. These shifts in proportion result from variations in the proportions of zero-hit searches that are a part of all search strategies to the varying degrees shown in figure 3. However, figure 3 does not contain information about how common a search type was—only how likely it was to retrieve some results when used. Figure 2 includes information both about how common a search type

was and how often it retrieved one or more records.

FUNDAMENTAL NEW TLA RESULTS

The most fundamental measure offered by this study is presented in figures 4 and 5. Both figures contain plots of the various subpopulations as well as the results for the overall sample. The overall sample is plotted as a bar and the subpopulations as scatter graphs. One measure of the value of various access points—which considers the average number of links to location information that were made for each non-zero search—is plotted in figure 4. This addresses the first research question about the value of records in a retrieval set. We see that subject searches resulted in more linked records per non-zero hit search than any other search type, including “converted” subject searches, authority-based subject searching that resulted from “see” references, and searches on large headings that resulted in a display of subheading combinations by MILO. When searchers and catalogers were speaking the same subject language from the outset, the results were best, as measured by quantities of linking decisions. When searchers relied on writers to reveal topics in their titles, the number of linked records for the retrieved sets dropped. When authority-based subject cross referencing was used to try to redirect searchers, they linked fewer of the resulting records as they were forced away from the original articulation of their query.

When examining the scatter of the different subpopulations in figure 4, two noticeable characteristics emerge. First, series title searching was very helpful for non-semester searchers in terms of their link rate, and in contrast, this type of searching had a very low link rate for semester searchers and searchers on extreme low-count days. The problems with series title searches are not surprising, but the extreme differentiation in link rates between high-use and low-use periods suggests that searchers who dominate during high-use academic cycles need help in knowing when and how to use this special type of title searching. Note how-

ever that only about 0.4% of all searches were series title searches.

Subject searching is dealt with in the second and more important scatter phenomenon among the sample subpopulations. In figure 4, one of the search types with significant scatter is the undifferentiated authority-based search type that results from searchers' ability to use the fields of one record to initiate a new search for other records containing identical access points. This type of searching is probably dominated by subject searching because the option is only presented to users who have had a subject search automatically converted to a title keyword search. However, this assumption cannot be definitively tested. Nevertheless, the authority-based subject searching, the ordinary subject searching, and even the subject searches converted to title keyword searches all display similar, albeit less dramatic, scatter patterns among the different subpopulations. In all of these cases, the highest link rates occurred during semester periods. At first this might not seem particularly interesting given that we might expect subject searching to be relatively more prevalent during semesters. However, this is a graph not of the volume of linking for a particular type of search compared to all linking; rather, it is only the number of links per non-zero search of the specific type. Thus, for the subject searching that was done during the non-semester periods, the frequency with which the search results were linked to location information was lower than during the semester periods. In other words, subject searches were not only less frequently used by the types of searchers who utilized the catalog during non-semester periods, subject searches were also less successful when they were used, insofar as success is measured by linking decisions.

In figure 5, quantities of linking within a given retrieved set (as in figure 4) are given with information on the frequency of use of various access points. Thus, the graph reflects the percentage of all linked records that resulted from the use of particular access points, directly addressing the first of the two research questions

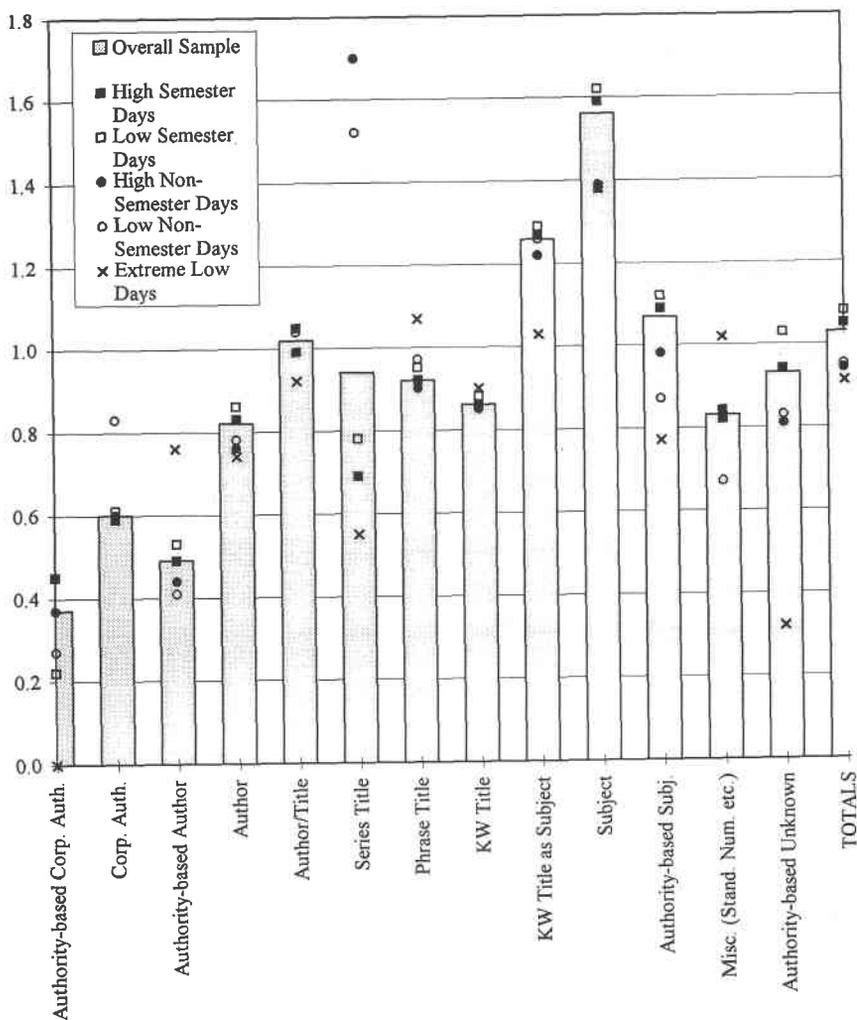


Figure 4. Average Links per Non-Zero Search by Search Type.

posed early in this article: Namely, what were the relative proportions of the specific access points used to obtain these potentially useful records? Even in the MILO environment, which converts zero-hit subject searches to title keyword searches, 29.9% of all the retrieved records for which decisions were made to obtain location information were retrieved by relying upon the subject headings as access points. Subject searches

were used directly to retrieve 22.0% of these linked records, and 7.9% were retrieved by going through the subject authority file. A small proportion, 2.4% of the linked records, represented authority-based searching that could not be specified. These probably were also subject searches; for example, they could be searches based on access points in records received as a result of a subject search that was converted to a title keyword search.

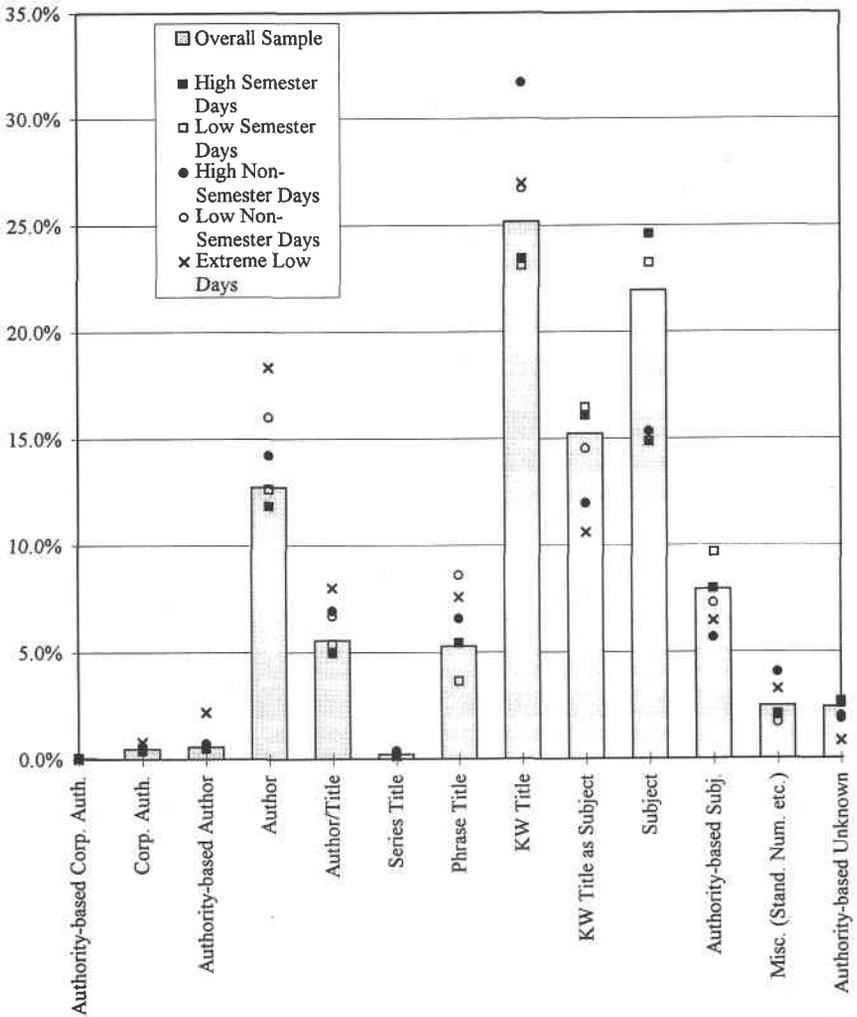


Figure 5. Percentage of All Links Made from Each Search Type.

On the other hand, over 65% of all linked records were retrieved by searchers using the author and title fields. 45.9% were retrieved by using the title or series title access points, 13.8% by using the author or corporate author fields, and about 5.6% by using both the title and an author field. Given that the ability to find material via author and title searching in MILO is enhanced by the greater historical coverage of those indexes, this 65%

figure is almost certainly inflated. It would likely be smaller in a homogenous database in which all records had all types of access points. However, even at the somewhat underrepresented figure of 29.9%, the value of the controlled vocabulary subject access points for MILO searchers is very high. Perhaps having this information can be of some help to technical services managers as an indication of how searchers use access points to find mate-

rials that they believe are worth examining.

The scattering of subpopulations in figure 5 is an indication both of the prevalence of each search type and the likelihood within the subpopulation that the results of a search type would be linked. The scatter must be read differently from that in figure 4, because the two factors influencing the subpopulation scatter—prevalence of search type and linking of search type—cannot be separated in this plot. However, even during non-semester periods, over 20% of all linked records were retrieved due to the presence of subject access points.

ZERO-HIT, INFORMATION OVERLOAD, AND OTHER SEARCHING PROBLEMS

Figure 6 is similar to figure 4, but here data are presented not on the total linking volume but on whether any links were made for a specific search. Some search goals are likely to culminate in only one link decision rather than multiple link decisions, and it is important to present both perspectives on the search types. Over 50% of all non-zero-hit subject searches were followed by some linking decisions. Of course, zero-hit searches cannot be followed by linking, and thus the link rate falls to 15% for all attempted subject searches. Figure 6 is relevant both in identifying the severity of zero-hit search problems and in addressing Larson's information-overload problem. However, several other problems confronting the searcher are revealed as well, such as the communications complexity of subject searching as compared to title searching, and the inaccuracy of title keyword searching as compared to combined author and title searching. In examining figure 6, the interactions of all these problems should be kept in mind.

Having said that, figure 6 provides a new measure of the relative ease or difficulty with which different access points are used when we consider the percentage of non-zero hit searches linked by search type. That new measure is based on the searchers' indications of success reflected in decisions to link to location informa-

tion. It will come as little surprise to public service librarians that low linking rates indicate the relative difficulty of corporate author and series title searching. Also noteworthy is the relative difficulty of authority-based author and authority-based corporate author searching reflected in low percentages of linked retrieved sets. This alternative measure of relative search difficulty reveals an interesting surprise. Once the zero-hit search problem is overcome, a topical search, whether a subject heading search, an authority-based subject search, or a converted title keyword search, was slightly more likely than an author search to produce results that led to linking with location information. Of course, this is partially explained by noting that author searches as known item searches often fail to retrieve the desired item due to collection limitations. However, it is noteworthy that if we take non-zero results as a first indicator of success, then figure 3 shows author searching to be slightly more "successful" than keyword title searching. But in figure 6, we have an indication that author searching is more prone than topical searching to post-retrieval disappointment in which the searcher finds that the retrieved set does not contain desired records.

We can also compare in figure 6 each pair of bars to obtain an idea of the scope of the zero-hit difficulty for searchers using a given search type. In combination, the two elements show that zero-hit subject searches were very common and can be helpfully addressed by converting the searches to title keyword searches automatically as MILO does. Only 15.4% of all subject searches resulted in linking decisions as compared to 25.9% of all failed subject searches converted to title keyword searches. The degree of difference between each bar pair in figure 6 shows the degree to which zero-hit searches had an effect on the desired outcome of finding useful records via various access points. However, we should not be entirely swayed by this illustration of the difficulty of subject searching, because, as we saw in figure 2, a very large proportion of all linked records were drawn from the

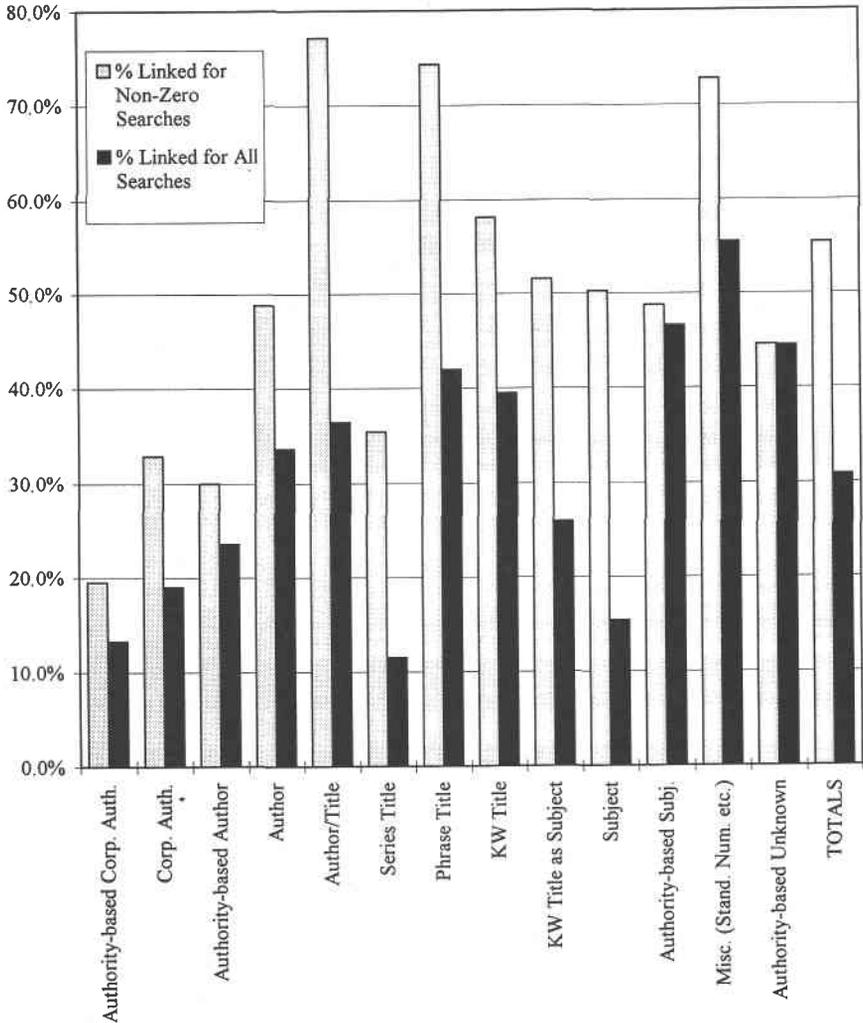


Figure 6. (A) Percentage of Linked for Non-Zero Hit Searches of Each Type; (B) Percentage Linked for All Searches of Each Search Type.

relatively small proportion of subject searches chosen for some linking and illustrated in figure 6. Many subject searches do not retrieve any results and those that do often retrieve results judged not worth linking to location information. However, the data in figure 2 show that subject searches that "succeed" often result in decisions to obtain location information for several items. Zero-hit failure in a single search, which is illustrated

here, is not the equivalent of search-type failure. When considered in combination, figures 2 and 6 illustrate the fact that subject searching is a difficult communications process, but may be worthwhile for searchers.

The other types of searches that figure 6 shows to have been particularly prone to zero-hit search problems are series title, corporate author, combined author and title, and exact phrase title searches.

These types of known-item searching might be failing because of collection limitations, but it might be that many searchers over-specify information with these search types. Keep in mind, however, that figure 6 contains no information about how prevalent a search type was, so the scope of the problem is not as severe as it might appear; figure 2 offers a more general overview of the scope of the problem.

In order to obtain insights into the information overload problem described by Larson (1991) and also investigated by Prabha (1990) and Hickey and Prabha (1990), modes, means, and median hit sizes were calculated for linked and unlinked searches of all types. For the overall sample (excluding zero-hit searches), the hit size mode for all search types—whether linked or unlinked—was one. This uniformity only reveals that for better or worse a single retrieved record was the most common result for all search types and was the most common hit size to be linked or to be left unlinked. The mean number of hits for all non-zero searches and for those non-zero searches with fewer than 2,000 hits is shown in table 3. That table also includes the median number of hits for linked, unlinked, and combined linked-and-unlinked searches. For a given search type, large differences between the mean hit size for all non-zero searches and the mean hit size for non-zero searches with fewer than 2,000 hits indicate that searchers using that search type were more prone to retrieve very large sets. Based on this analysis, rather than subject searching having been particularly prone to the information overload problem as asserted by Prabha (1990), title keyword and corporate author searching (a keyword search on MILO) appear to have been prone to the problem. However, mean hit size forms an extremely uncertain basis for analysis because the standard deviations in retrieved set size were very large in all cases. Therefore, it is helpful to compare median hit sizes for linked and unlinked retrieved sets to see whether sizeable differences exist. If a particular search type exhibited an unusually large unlinked median retrieved set size, that might indicate that

information overload was a problem for the search type because searchers were being discouraged by set size from obtaining location information. Further insight into the information overload problem is possible by taking a higher percentile measurement on hit size rather than the 50th percentile median. The 90th percentile hit sizes for linked, unlinked, and overall searches of all types are also shown in table 3 to allow this comparison. The hit numbers in the 90th percentile columns of table 3 reflect the hit sizes that were greater than or equal to 90% of all search set sizes for a given search type. The aim is to discover the search types in which information overload posed particular problems.

In looking at the median hit size figures in table 3, and noticing which search types have substantially lower medians for linked, as compared to unlinked, hit sizes, it appears that the only search types prone to information overload are the corporate author search—which is executed as a keyword search by MILO—and the title keyword search. None of the median hit sizes was larger than 20 for either linked or unlinked retrieved sets, and most observers would agree that 20 retrieved records does not constitute information overload. Ultimately, however, the information in the median numbers is an indirect rather than a direct indicator of the information overload problem. We can only directly say for sure that half the searches not plagued by the zero-hit problem also escaped information overload problems.

However, by looking at differences between linked and unlinked median hit sizes, indirect information can be gained about the incidence of information overload with a given search type because a large difference indicates that more large retrieved sets were unlinked than were linked. At the median level, only the corporate author keyword and, possibly, the title keyword searches seem to have displayed potential information overload problems. Moreover, in 4 categories (subject searches converted to title keyword searches; authority-based subject searches; authority-based author searches; and the miscellaneous author-

TABLE 3

SIZE OF NON-ZERO RETRIEVED RECORD SETS BY SEARCH TYPE AND LINKED STATUS

Search Type	Mean Hits (Non-Zero)	Mean Hits (Non-Zero <2000)	Median Hit Size			90th Percentile Hit Size		
			Linked	Unlinked	Total	Linked	Unlinked	Total
Authority/ Corp. Auth.	69.1	51.6	19	19	19	93	118	118
Corp. Auth.	247.4	112.0	12	19	17	151	665	436
Authority/ Author	29.8	25.5	6	4	5	46	48	47
Author	61.8	45.2	8	8	8	53	171	92
Auth./Title	4.9	4.9	1	2	1	6	16	8
Ser. Title	90.7	81.5	19	16	16	125	258	211
Exact Title	5.8	5.8	1	2	1	8	18	10
KW Title	116.8	52.6	3	7	4	51	346	120
KWT as Subject	54.9	40.63	8	5	6	72	120	87
Subject	90.7	64.5	18	18	18	129	180	152
Authority/ Subject	66.7	52.1	5	2	3	118	166	137
Misc.	12.1	5.6	1	1	1	3	8	3
Authority/ Undetermined	52.3	40.3	6	3	4	77	116	96
Totals	74.9	44.6	4	6	5	63	183	101

ity-based searches, mostly derived from retrieved records and probably mostly consisted of subject searches, the median hit size was actually larger for the linked retrieved sets than for the unlinked sets. Based on the median data, searchers appear to have preferred larger retrieved sets for those search types, at least up to a point, and at least half of these searchers seem more likely to have been retrieving too few records rather than too many.

This information is relevant to catalog design, but it may have even more relevance for decisions about collection building. As will be seen during consideration of the 90th percentile hit size figures, there is a point with all search types at which retrieved sets can become too large and the likelihood of linking decreases; but, what is fascinating is that these quantitative data also suggest that there is a point with certain search types at which retrieved sets can become too *small* and,

once again, the likelihood of linking decreases. Note that the median retrieved set size is markedly lower for authority-based subject searches than for general subject searches; this is so partly because authority-based searches in MILO search only for precise subject heading and subheading combinations or subject headings standing alone, whereas general subject searches search for any occurrence of subject headings or subheadings in any combination.

Turning to a consideration of the 90th percentile retrieved set size in table 3, some interesting insights emerge. For all search types, the unlinked 90th percentile hit sizes are larger than the linked; beyond a certain number of hits, there was an obvious preference for smaller retrieved sets when making decisions to locate some items. This is in accord with Larson's analysis. However, there are important subtleties that should be noted in the data.

First, there were some very large retrieved set sizes about which searchers were willing to make some judgments. Because MILO allows results to be sorted by a number of criteria, including publication date, it is possible to make certain types of judgments fairly easily about some very large retrieved set sizes. In particular, note that table 3 indicates that 10% of all linked subject searches retrieved more than 129 records and that 10% of all linked authority-based subject searches retrieved more than 118 records. Ten percent of all subject searches that were converted to title keyword searches and subsequently linked retrieved more than 72 records.

Still more informative is the comparison, among all search types, between linked and unlinked records at the 90th percentile of hit sizes. Where the proportional differences are small between linked and unlinked 90th percentiles, information overload appears not to have been a significant problem, except, perhaps, for those retrievals of very large sets of records that constituted less than 10% of retrieval sets. The most noteworthy findings based on this view of the data are that subject searching and authority-based subject searching do not seem to have been as prone to the information overload problem as were title keyword searching, author searching, corporate author searching, and subject searches converted to title keyword searches. Ninety percent of all subject and authority-based subject searches retrieved fewer than 152 and 137 records respectively, and 90% of all linked retrieved sets for these search types retrieved 129 and 118 records respectively. The relative closeness of these two sets of numbers, as compared to the large differences for other search types, indicates that the retrieved sets for these subject search types were, in comparison to other search types, less often so large that they discouraged searchers from making any judgments. Subject searches converted to title keyword searches were somewhat more likely to discourage searchers with large search sets, but the problem was not nearly so severe as it was with general title keyword

searching, author searching, series title searching, and especially corporate author keyword searching.

USE OF BIBLIOGRAPHIC DISPLAY MODES

Findings regarding the relationships among search type, bibliographic record display choices, and subsequent decisions to link to location information are found in figure 7. Note how often the use of a given display mode for the results of a given search type was followed by a decision to link to location information. There is a fourth display mode not shown in figure 7 because it only occurs when some linking occurs from a short display following the linked or unlinked display of a full record. In figure 7, which tabulates linked searches only, this mode would therefore always be 100%. Figure 8 does include this mixed display data. Bear in mind that figure 7 contains no information about the number of linked searches made using various display modes but only presents the likelihood that, when used, a given display mode will be followed by a linking decision. Figure 7 can be taken as an illustration of the effect of obtaining more bibliographic data upon subsequent decisions to obtain location information. For most search types (i.e., keyword title, author, corporate author, subject, subject converted to keyword title, and series title), the searchers' decisions to obtain additional information about items through the full bibliographic display increased the likelihood of a subsequent decision to also obtain location information. For other search types (i.e., exact phrase title, combined author-and-title, and standard number), a decision to display a full record seems to have been an indication that the searcher doubted whether an item matched a known-item need and was looking for hopeful signs but did not find them in the full displays. In those cases, full displays actually resulted in fewer linking decisions. As one might predict, these types of searches, as well as title keyword searches, were most likely to be linked when they resulted in only one hit. Conversely, figure 7 shows that a single-

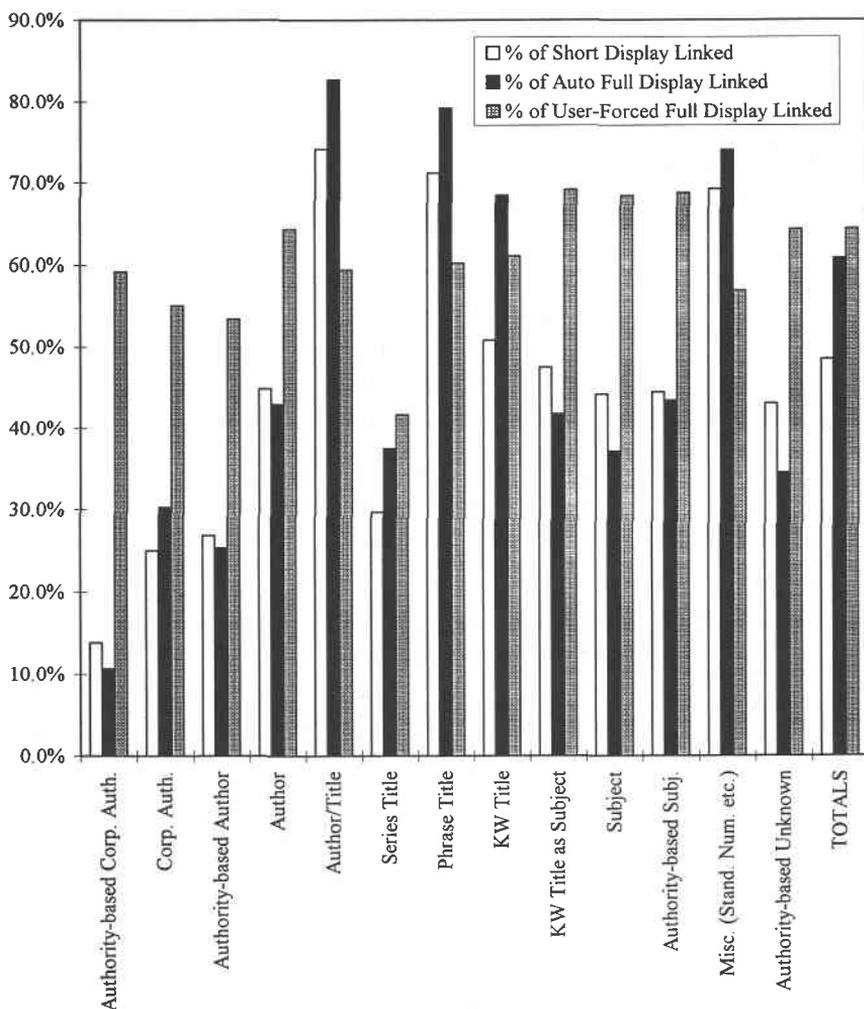


Figure 7. Linking to Location Information vs. Display Mode and Search Type.

hit result for a broader search (e.g., a subject search that results in an automatic full display) was unlikely to be linked to location information because the rare single-hit retrieval in a subject search of a large collection is unlikely to address a need.

See figure 8 for information regarding the actual number of link decisions made from each display mode; information that is excluded from figure 7. The distinction

between the information content of the two figures should be carefully maintained. Figure 7 can be used to illustrate the effects of obtaining additional bibliographic information on linking decisions. Figure 8 cannot be used this way because it illustrates the proportion of all linking done from each display mode for each search type, but contains no information about how often the display mode was used. Figure 8 only serves to illustrate the

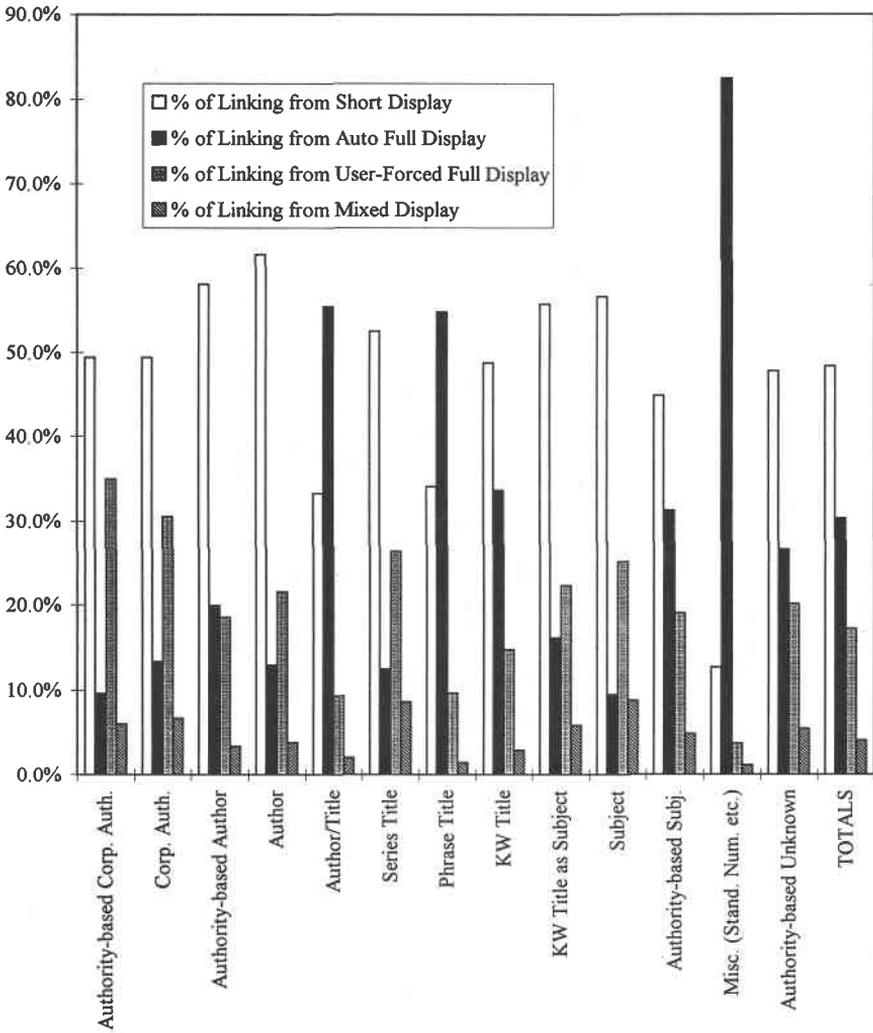


Figure 8. Percentage of All Links for Each Search Type Made from Each Display Mode.

degree to which various bibliographic displays were used when linking was the end result. For example, for all search results chosen for linking, linking to location information was based on short displays 48.4% of the time, on automatic full displays for retrievals of single records 30.3% of the time, on user-forced full displays following long displays (from which links might also have been made) 4.1% of the

time. Clearly, searchers relatively seldom chose to obtain additional bibliographic information in order to make a decision to obtain location information.

CONCLUSION

The purpose of this study was to provide a richer base of knowledge from which to work in understanding the process by which searchers communicate with online

catalogs through access point utilization. The primary objective of this research was to provide some quantitative information about the value of various access points not only as they were used for finding material, but as they were *successfully* used. This study measured "success" through searchers' decisions to obtain location information. The findings can be summarized as follows:

- Topical searches, including zero-hit subject searches automatically converted to title keyword searches, constituted 44.4% of searches and nearly 34.5% of non-zero-hit searches.
- Searches using subject access points constituted 30.6% of all searches and 22.1% of all non-zero-hit searches.
- Searchers retrieved records in 55.6% of all searches, ranging from a low of 30.7% for subject searches to a high of 95.6% for authority-based subject searches.
- An average of 1 link to location and circulation information was made for every non-zero hit search, ranging from 0.37 links per authority-based corporate author search to 1.56 links per subject search directly using the subject headings.
- Of all linked records, 29.9% were retrieved by use of the subject headings, 45.9% by using the title or series title access points, 13.8% by using the author or corporate author fields, and 5.6% by using both the title and author fields.

Clearly, a significant proportion of all relevant record retrievals were based on access points other than the minimal author and title fields. However, it is equally clear that those minimal fields were very useful to a large number of catalog searchers for retrieving a majority of the records judged sufficiently interesting to warrant linking to location information.

There are indications that access points far outweigh description as valuable attributes of the catalog records. In light of actual searcher practices, if cataloging resources are constrained, searchable access points would seem to be more important than rich description for

facilitating the combined process of finding and judging materials. Access points are not separable from descriptive cataloging, but this point is worth recalling as the structure and value of catalog records is debated.

There might be an important message in the finding that subject searching appears to have been less successful for non-semester searchers than for semester searchers. Subject access of one kind or another is likely to become more important as information resources expand. In information environments too large to be encompassed by individuals' knowledge, the volume and value of unknown-item topical searches increases relative to the volume and value of known-item searches.

It is interesting that, for the information system analyzed here, searchers during non-semester periods were less successful with subject searching than were searchers during semester periods. Non-semester searchers were probably more likely to be searching for specialized or specific information. Graduate students and faculty constitute a larger percentage of campus populations during non-semester periods and that shift in proportions is almost certainly reflected in online catalog searcher populations. Graduate and faculty searchers are typically assumed to search information systems for more specialized information due to the nature of advancing levels of academic inquiry.

Non-semester searchers' lower success rates might be a message about the utility of online catalogs and other information systems. Catalogs have historically aimed to satisfy only a certain fairly general approach to subject searching. If more specialized subject searching increases in quantity, online catalogs might begin to frustrate an even larger number of subject searchers.

While the data in this study, and particularly in figure 6, offer only one measure of the difficulty and ease of use of access points, the reality is that all types of access come with constraints, including constraints of the collection. We do not know to what extent subject searching is hampered by collection constraints. We

must look at the searchers and their interactions with the records in many different ways to understand the constraints and difficulties, but we should be careful not to assume that difficulties in access point utilization necessarily indicate a lack of usefulness of those access points.

Ease of use is not the only indicator of the utility of a given access point. Another way of stating this is that difficulty in utilization (i.e., failure in a given single query) is not the only indicator of success rates in the total utilization of an access point. Failure of a particular query through zero-hit sets or information overload is a natural part of the communication process in the overall search.

Communication depends on this feedback process. We should be careful not to stifle communication with the catalog by designing in assumptions about what the catalog should say to the searcher. Sometimes it is very important for the catalog to communicate the large number of records related to a given search.

The median and 90th percentile hit size numbers in table 3 raise serious questions about how concerned we should be with the information overload problem in access point utilization. These figures indicate that we should not make sweeping assumptions about what constitutes information overload for searchers. While the data give no indication of how well searchers were ultimately served by retrieval sets of varying sizes, the willingness to obtain location information for varying retrieval set sizes suggests that searchers were not immediately defeated by information overload problems as we might have expected.

A caveat about this analysis: Searchers can use an online catalog to find some types of useful information without needing to link to location information. This is the case, for example, when bibliographic information is needed to clarify a citation. These are common uses of catalogs, and I was not able to detect and report such hits as "successes." It is not safe to assume that this problem afflicts all search strategies equally. In traditional local usage, subject searches seem much less likely to be put to this use. Moreover, it is also becoming

more common for the Internet-accessible catalogs of large academic libraries to be searched by nonborrowers who turn to other borrowing sources and so do not link to location information but only use the catalog as a guide to the extant literature. In this study, I made no attempt to estimate the number of searches that do not necessitate linking to location information as part of the information-seeking process. Because a major aim of the study is the determination of the relative value of various access points, this is an unfortunate, though probably minor, limitation.

Systems designers must not only seek to help the searcher interact with the catalog as Wiberley, Daugherty, and Danowski (1989, 1995), Hickey (1990), and Prabha (1990) suggest. Systems designers must also be careful not to get in the way of a communication process that necessarily involves feedback (even if that feedback looks like failure). Transaction logs must be investigated with a subtle understanding of the communication processes they reflect. Designers need to understand that what appears to be information overload is often a matter of the system informing the searcher about the nature of its content. Some searchers will take the first few postings from the system and declare their search a success. Some searchers will take the feedback and understand that they can potentially enter more specific searches to match their interests more closely.

While a decision to retrieve location information is not an indication of ultimate success in the information retrieval process, providing information that facilitates that decision can improve the process. Therefore, the data in this study can be taken as a useful guide to how access points serve searchers.

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Notes on Operations

Acquisitions Management in Changing Times

Carol Pitts Diedrichs

There can be no doubt that this is a time of great change for libraries and librarians, particularly those in technical services. The management and business literature surrounding the topics of management and change has much to suggest and recommend to acquisitions managers struggling with rapid change. This literature can provide some insights into how those management theories and solutions can be applied to acquisitions. Three concerns are addressed here: What are the essential elements of change? How do acquisitions managers lead in this environment, particularly with those who report to them? How do acquisitions librarians cope with change?

There can be no doubt that this is a time of great change for libraries and librarians, particularly those in technical services. Every acquisitions manager must face these issues. All need guidance and encouragement to get through these times, and no one has all the answers. However, the management and business literature surrounding the issues of management and change has much to suggest and recommend. This literature can provide some insights into how those management theories and solutions can be applied to acquisitions.

In particular, acquisitions managers are expected to cope with and become expert in new arenas such as document delivery, copy cataloging, outsourcing, and contract negotiation. New functions can include selecting and downloading the potential catalog record from bibliographic utilities at the preorder stage;

completing cataloging on receipt where adequate copy exists; managing outsourcing contracts that combine approval profiles, cataloging records, and physical processing; and developing and managing document delivery programs that complement the traditional collection development process.

In the past, acquisitions focused on locating material and recording its bibliographic information correctly for the vendor rather than the patron. Although searching in a bibliographic utility may have been done in the past prior to placing orders, its primary purposes were to determine whether the title already existed in the library's collection and to acquire bibliographic data appropriate to identify the piece to the supplier. Now, preorder searching is done for additional purposes, such as correctly identifying the piece and its previous treatment in the library cata-

log, or attaching the order for a new volume to the fully cataloged record for the entire set where earlier volumes already exist in the library's catalog. A corollary to this searching is determining before use whether the order record added to the catalog for the ordering function will be usable copy for cataloging when the piece arrives.

Libraries such as the University of Cincinnati and the University of Kansas have combined the acquisitions function with document delivery programs. Acquisitions managers are now jointly involved with collection managers in determining when to purchase and how to account for an individual work rather than simply acquiring an entire issue for the collection.

Most acquisitions librarians fit the description of classic middle managers: they report to an upper administration but also have a number of staff members reporting to them. Change, reorganization, and reengineering often is imposed from above. However, by virtue of their positions, acquisitions librarians must respond to change initiatives from above as well as lead change efforts within their departments. In this paper, I will examine three questions:

1. What are the essential elements of change?
2. How do acquisitions managers lead in this environment, particularly with those who report to them?
3. How do acquisitions librarians cope with change?

Key to answering these questions are the need to understand what the library and university administration is doing and why, and the need to understand the business theory surrounding change.

ESSENTIAL ELEMENTS OF CHANGE

EXTERNAL ENVIRONMENT

One of the essential elements of the change process is becoming aware of the external environment. In essence, "managers who are good at creating sustainable change have an extensive understanding of the environment surrounding the business, where the main threats and opportunities lie" (Clarke 1994, 1). From my

experience, there are certainly elements of the state environment that are driving change at Ohio State University (OSU). The university has been under heavy fire from the media and the governor in particular. The governor, who has a reputation for viewing higher education harshly, actually published an editorial in suburban newspapers that serve some suburbs of Columbus lambasting staff and faculty in public institutions of higher education for being lazy. Diminished state funding for the campus has resulted in departmental restructurings and elimination of programs.

During one budget cycle several years ago, the OSU Libraries' annual report, which is essentially a report on progress and a request for funding, had an entirely new wrinkle. The libraries were mandated to produce a report showing budget cuts of 4%, 6%, and 8%. The plan was to indicate where the cuts were to be taken and what impact these cuts would have. That portion is fairly predictable. The new wrinkle was that the plan was to indicate how the library would reinvest those savings in its own operation to improve services. If the university approved the plan, the libraries would be allowed to keep the savings to use in the manner indicated in the plan. If the library refused or failed to submit a plan indicating ways to cut, the administration would make the cut for them and keep the money. This is an excellent example of a mandate from the "environment" to look at things with a new eye and reengineer.

For acquisitions librarians, the external environment also includes the larger library environment. For example, at OSU a number of environmental changes have occurred. The 25-year-old LCS online catalog was recently replaced by an Innovative Interfaces, Inc. (III) system. In addition, OSU is a charter member of the OhioLINK Project, which involves participation in a statewide union catalog and patron-initiated circulation throughout the state. Both of these automation activities created significant changes within the library system. The change from LCS to III involved a workload shift from management of the system by the

university's systems staff to the libraries' automation staff. The university administration also decided, without consulting the library that the new system, had to be cheaper to maintain so that some of the libraries' allocation that was used to support automation could be returned. New demands from OhioLINK for patron-initiated circulation meant a commitment to forty-eight-hour delivery of materials requested by others in the state. This increased demand resulted in a significant new workload on circulation and mail-room staffs.

ORGANIZATIONAL CAPABILITY

A second key element of change is assessing the organization's ability to effect change. Managers must "diagnose [their] organization's capability to deliver the kinds of changes . . . the marketplace and external world demand" (Clarke 1994, 25). One of the most dramatic changes for technical services in the past few years is the extension of outsourcing to cover operations that have traditionally been done in-house. The best determinant of whether members in an organization are capable of evaluating and making such changes is their willingness to test new procedures and compare in-house costs to outsourced ones.

At OSU, the Acquisition Department and the Cataloging Department served as a beta test site for the OCLC Online Computer Library Center, Inc. (OCLC) PromptCat program. For a period of several weeks, tapes of short bibliographic records from the approval vendor were sent to OCLC for matching against their database. A printout of the records selected from the OCLC database through OCLC's matching algorithm was sent to the library. These titles were searched in the OCLC database by OSU staff to determine the record that would have been selected by OSU cataloging staff during usual copy cataloging. "Based on a random sample of 200 books, 182 records (91%) matched one-to-one with those chosen by OSU" (Rider and Hamilton 1996, 12). With the library's low approval return rate and high hit rate against the

OCLC database for titles received on approval, the OSU Libraries determined that this program would be an effective means for decreasing the throughput time for one category of new receipts. The key point here is that the organization has to be willing to consider changes of this nature and evaluate their feasibility.

Part of organizational capability depends on organizational culture, also known as the corporate culture.

"Corporate culture" is the organizational equivalent of the fingerprint, the unique identification of every business in terms of its history, assumptions, values, and behaviors. Without a good understanding of the traditions that underlie a particular business it is all too easy to propose changes that completely go against the grain and will therefore be rejected by the body of the organization (Clarke 1994, 40).

UNDERSTANDING THE CHANGE PROCESS

Of the myriad explanations of the change process, the one suggested by Swedish psychologist Claes Janssen is the most compelling. He suggests that "people's reactions to change involve moving through something akin to a 'four-room apartment'" (Phillips 1995, 100). The four rooms—contentment, denial, confusion, and renewal—are not unlike the phases of the grieving process (another explanation often used for the change process). In the contentment room, people are comfortable with what is happening and able to keep things in perspective. People should not be moved out of this room unless it is absolutely necessary. Changes that involve job threats or reorganization usually send the individual initially into the denial room, where they do not accept their situation but appear oblivious to it.

Individuals move into the confusion room when they own up to their fears. At this stage, individuals feel unsafe and insecure and often lack a clear sense of direction. The only way out of this room is to accept that this confusion is the only way to get to the renewal room. The individuals in the renewal room are able to

accept the new and begin to experience the excitement of positive change. Individuals remain in the contentment room until the next change arrives, and the process recurs (Phillips 1995, 103). This explanation is compelling because it emphasizes the reality that one never leaves the apartment itself; one only moves through the rooms continuously. "This reflects the idea that change is not a downward spiral, but a perpetual circle" (Phillips 1995, 100).

HOW INDIVIDUALS WILL REACT TO THE CHANGE PROCESS

In *The Essence of Change*, Liz Clarke provides a list of thirteen positive responses to change such as enthusiasm, challenge, excitement, reward, fulfillment, and new start. She presents thirty negative responses to change such as fear, anxiety, shock, distrust, stress, loss of self-esteem, depression, insomnia, conflict, mutiny, and personality change (Clarke 1994, 76). Obviously, it is not very difficult to deal with those individuals who respond positively to change. It is resistance that poses the greatest problem for managers. Kanter (1985, 52–56) has articulated the ten most common reasons that people resist change:

1. They feel a loss of control because they feel powerless.
2. They feel excess uncertainty because they don't know what is going to happen next.
3. They feel surprise because decisions or requests have been made without appropriate preparation or groundwork.
4. They question familiar routines and habits (known as the Difference Effect).
5. They fear that admitting that the way things were done in the past was flawed and will result in a loss of face.
6. They are concerned about their future competence.
7. They fear other disruptions as a result of this change.
8. They resist an increased workload.
9. They transfer past resentments to requests to do something new.

10. They fear they will lose their jobs, their status, or their power.

Curzon (1989, 89–90) adds some additional reasons for resistance:

1. *Ignorance*. When staff lack the information to persuade them that the idea is a good one.
2. *No confidence in management*. In this case either the manager is not trustworthy or the staff is predisposed to cynicism about management.
3. *Peer pressure*. There may be pressure from fellow co-workers to go with the group reaction.
4. *Poorly managed project*. Staff may resist when they feel that the project is disorganized, poorly thought out or suffering from bad decision making.

The reason for including this long list is to dispel a widely held notion that the primary reason for resistance is that the individual feels threatened. This "excuse" shifts the burden from the manager to the individual and enables the manager to dismiss the individual's concerns as "feeling threatened." In reality, managers should look carefully at the other factors and make adjustments when possible.

Each acquisition manager's environment is very different. Resistance to change can manifest itself in a number of ways, depending on the particular corporate culture (Curzon 1989, 87–88):

1. *Work slowdown*. Rather than confronting the manager directly, an individual or group of staff might use passive-aggressive behavior.
2. *Union action*. Union members may go to the union, particularly if the change involves salary or working conditions.
3. *Gossip*. Gossip is the most common way to show resistance and is a form of sabotage.
4. *Setting up alternate systems*. Staff may set up alternate systems or simply keep working in the old way rather than implement the change.
5. *Refusing to learn a new task*.
6. *Giving surface support*. In this covert resistance, the staff member pays lip service to the new idea but actually does not comply with the change. This individual may be wary of speaking honestly or of openly defying the manager.

7. Dragging out the work. Missed deadlines or issues that never get out of committee are examples of this type of resistance.
8. Providing inadequate resources. This is the weapon of a supervisor who is resisting change. There are always excuses for resources being used elsewhere rather than in pursuit of the change; and
9. Giving mixed messages. Another weapon of the supervisor. If the supervisor gives an idea short shrift, so will the staff.

How then do acquisitions managers counteract this resistance (Curzon 1989, 90-92)?

1. Create a safety net. If fear is the issue, provide as much training, meetings, and information as possible.
2. Manage the change well. Have a well-organized and well-considered approach to the change. Staff will respond to quality work and strong leadership.
3. Be an example. While the manager may be doubtful privately, set an example by being positive, assertive, enthusiastic and confident about the change.
4. Make the resisters part of the project. This is difficult but a manager can often convert doubters by including them more closely in the change process. However, the manager runs the risk of the project being changed by their actions or stalemated.
5. Use peer pressure. If only part of the staff is resistant, the supporters can be encouraged to exert reverse peer pressure on the resisters.
6. Be honest. There will be less resistance if the manager has a reputation for honesty.
7. Communicate. Managers should speak often and frankly about the change. Staff should feel free to speak up.
8. Discipline. If everything else has been tried, counseling and warning about behavior may be justified. This is a last resort.

Fortunately, most of the resistance to change that I have experienced has been on a small scale, usually an individual responding to a particular change in his or her position.

EMPOWERMENT

Empowerment is one of the goals of most change processes today. Empowerment can "make [the] work force more productive without sacrificing essential leadership and controls" (Price Waterhouse 1995, 94). But what does empowerment really mean? There is a common misconception that empowerment means giving power away. "Empowerment is the creation of an environment in which employees at all levels feel that they have real influence over standards of quality, service, and business effectiveness within their areas of responsibility" (Price Waterhouse 1995, 95).

Staff members who are empowered exhibit a number of behaviors (Price Waterhouse 1995, 102). They:

1. Present ideas
2. Take on problems
3. Build on colleagues' efforts
4. Help to implement
5. Seek out information
6. Encourage discussion
7. Work well in a team
8. Take initiative
9. Build realistic ideas
10. Help to sustain environment
11. Challenge
12. Contribute ideas

It is likely that many of the individuals in acquisitions already exhibit some, if not all, of these behaviors. Managers must learn to foster these qualities to manage effectively in changing times.

LEADERSHIP

On of the greatest challenges each acquisitions manager faces is leading their staff during times of change. Curzon has indicated that "change that is out of control or mismanaged can prove destructive to any organization" (Curzon 1989, 13). Hale and Williams (1989, 11) have identified five critical issues that a manager involved in the change process must address:

1. Deliberately selecting a future state that will meet long-term needs
2. Providing quality service while changes are in process

3. Building momentum and commitment necessary to set changes in motion
4. Orchestrating all the resources for the change
5. Caring for the human element—feelings of anxiety, resistance or excitement

The last element rests squarely on the shoulders of the acquisitions manager involved in the change process. Because acquisitions managers are usually middle managers and not upper-level management, they might not have primary responsibility for the change process. But they certainly have responsibility for the well-being and productivity of their staff. In this role, acquisitions managers need to (Curzon 1989, 31–37):

1. Listen to and respect staff.
2. Maintain a healthy balance between task and people.
3. Be fair with everyone.
4. Be supportive.
5. Be committed.
6. Be trustworthy and open.
7. Be collegial.
8. Be credible.

MANAGING THE ACTUAL CHANGE PROCESS

The following list is a set of sixteen principles to employ when the acquisitions manager has primary responsibility for managing the change process. They are my amalgamation of a number of lists from several sources (Price Waterhouse 1995, 4–7, 45, 57–59, 75–76; Clarke 1994, 174; Curzon 1989, 122). Managers should:

1. Confront reality. Organizations have to change, regardless of whether outsourcing is the solution. Managers of technical services operations must recognize that they must produce more and faster than in the past. Material must reach the shelves faster.
2. Focus on specific outcomes. Managers must focus efforts where the paybacks are the greatest. Incremental improvements in the quality of cataloging are probably not an adequate payback for the resources invested.

Getting a rush book in time for a professor to use on the first day of class (regardless of the cost) will have a more obvious payback.

3. Set an appropriate scope. Managers must focus on measurably improving performance in areas most important to their organization, e.g., delivering newly received serial issues to the location within 24 hours of receipt.
4. Build a powerful case for change. Not everyone is prepared for change. Managers may have to build the momentum and support for needed changes. When no crisis exists to make the case for change, managers must focus on the values and benefits to be gained through the change. A number of crisis situations were mentioned earlier (e.g., loss of key staff) that drive the change process, but crisis need not be the only change initiative at work.
5. Let the customer drive change. For acquisitions the first-line customer is usually the collection manager, but the ultimate customer is the user. Technical services must “eliminate activities that do not add value from the customer’s viewpoint” (Price Waterhouse 1995, 124).
6. Know the library’s stakeholders. Managers must understand the needs and priorities of those who have a vested interest in the changes being considered.
7. Communicate continuously and honestly. Communicating what is ahead or being planned can help mitigate resistance. Keep no secrets; strive for consistency. The actions of managers must be consistent with their words. I remember being told often as a child by my mother that “beauty is as beauty does.” Action is the most persuasive and visible measure of the honesty of leaders.
8. Reshape the area’s measures or statistics. Managers must design new performance measures consistent with new goals and strategies and dismantle old measures when they are no longer needed.

9. Build skills. Managers must invest in human resources. Broaden the technical, problem-solving, leadership, and decision-making skills in individuals at all levels.
10. Develop a formal plan. It should outline the evaluation process as well as the decision-making process.
11. Integrate your initiatives. Change initiatives occur throughout an organization. Managers must try to maintain a coherent approach to the change process and not diminish energy by undertaking too many diverse approaches or agendas at one time.
12. Link how the individual "wins" with the change program. Managers must show individuals how they can participate in the change process and make that participation substantive. For example, staff in lower-level positions may now get to do more interesting work than before.
13. Clarify and question understandings. Confusion causes inaction. Encourage individuals to ask for clarification. Many will not ask, however, so it is best to overcommunicate. Make no false promises.
14. Slay sacred cows. One of the biggest disappointments in the change process is to have the administration set aside particular sacred cows that are not to be considered. Virtually any manager can list those individuals or departments within the library that are off limits. These are the folks who take no budget cut (or a modest one) when everyone else is receiving a heavy hit. If library management is really committed to the change process, slay a sacred cow!
15. Budget lots of time. Change takes longer than anyone expects. It is an evolutionary process, not a revolutionary one.
16. Consider the political realities. Despite the manager's best intentions and hopes for a pure decision-making process, political realities are just that—realities. By taking them into consideration from the beginning, managers might avoid establishing false hopes.

MAKING THE DECISION

The manager in charge of the change process is the manager who will be making the decision about the change or at least participating in that decision-making process. That manager should, according to Curzon (1989, 65-71):

1. Review all documents. There is nothing more offensive than to receive news of a final decision in which it is obvious that no one even bothered to review the recommendations or comments of the group charged with evaluating the issue.
2. Evaluate the pros and cons.
3. Consider the consequences. Curzon states that "A decision cannot be separated from its consequences."
4. Allow for mature deliberation. "Mature deliberation can be defined as a period of time in which the project is allowed to rest so that thinking can ripen. Change frequently has an impulse all its own. People get caught up in it and begin to believe what has been set out regardless of contrary evidence."
5. Avoid major barriers to decision making. These can include insufficient facts, projected attitudes and values, opportunism, pressure, or the desire for perfection.
6. Make the right decision (Curzon 1989, 65-71).

Clarke [(1994, 170)] has compiled the "Ten Commandments for Getting It Wrong:"

1. Criticize your predecessor: he or she screwed it up.
2. Don't tell anyone anything until you've spelt out the last detail.
3. Tell lies.
4. Impose a communications blackout.
5. Announce a change, then try to get it to work.
6. Time major changes for the Friday afternoon before Christmas.
7. Be autocratic: Genghis Khan didn't consult.
8. Discourage people from criticizing the status quo and saying what they think; you might not like the answers.
9. Rely on memos: talking is a waste of time.

10. Don't forget it's your change not theirs.

All managers would like to believe that they have never done any of these things or something like them, but unfortunately many of them probably have. For example, I reorganized the accounting division I once supervised because of a very serious problem with the supervisor of that unit. Indeed, I made all of the decisions and discussed them with the other division heads who would be taking on some new activities, but I never talked to the individuals who were being reassigned or the supervisor. Then I announced the change to everyone at once. I console myself in this case with the confidential nature of the issues causing the change, but I know I probably suffered a blow to my credibility with some individuals in the department with that action. Most now understand the necessity of my actions, but it has taken some time and experience to regain the ground lost.

THINKING BIG, THINKING NEW

"People need to feel free to take the lid off, to think out of the box, to surface dozens of ideas that may not work in order to come up with a few that are genuinely powerful" (Price Waterhouse 1995, 6). They warn managers to be careful not to sit on a new idea too quickly because it may inhibit individuals from coming forth with other more appropriate ideas. Rosabeth Kanter's famous spoof recipe for creating inertia, "Rules for Stifling Innovation," follows (Clarke 1994, 110-11):

1. Regard any new idea from below with suspicion because it's new, and it's from below.
2. Insist that people who need your approval to act first go through several other levels of management to get their signature.
3. Ask departments or individuals to challenge and criticize each other's proposals. (That saves you the job of deciding; you just pick the survivor.)
4. Express your criticisms freely and withhold your praise (that keeps people on their toes). Let them know they can be fired at any time.

5. Treat identification of problems as signs of failure, to discourage people from letting you know when something in their area isn't working.
6. Control everything carefully. Make sure people count anything that can be counted, frequently.
7. Make decisions to reorganize or change policies in secret, and spring them on people unexpectedly. (This also keeps people on their toes.)
8. Make sure that requests for information are fully justified, and make sure that it is not given out to managers freely. (You don't want data to fall into the wrong hands.)
9. Assign to lower-level managers, in the name of delegation and participation, responsibility for figuring out how to cut back, lay off, move people around, or otherwise implement threatening decisions you have made, and get them to do it quickly.
10. Above all, never forget that you, the higher-ups, already know everything important about business.

Thinking big, thinking new means overcoming conventional wisdom. Conventional wisdom is more than just "we've always done it this way." A good example in the area of acquisitions is included in the recent report from Stanford University on the reengineering of their technical processing. Large university libraries usually engage in approval purchasing programs that include a time period for review by collection managers. During this review process the books can be accepted or rejected. The conventional wisdom is that, because no purchase order was issued to "select" the title before it arrived, the library needs to do a review process before accepting it into the collection. Thinking new may mean reevaluating whether the number of returns is small enough that it makes more sense simply to keep the books rather than to review and return the small percentage of inappropriate ones. This possibility can be given serious consideration in an environment in which the materials budget is better funded than the staffing budget.

Southwest Airlines is an excellent example of thinking big, thinking new. Their

frequent flyer program ignores the usual conventions of such plans. When individuals sign up for the Southwest Airlines plan, they are handed applications with sixteen empty squares on the application. The agent will stamp the application each time the individual takes a Southwest Airlines flight. The difference is that this information is not stored in a computer somewhere; passengers have to remember to carry the application with them every time they take a flight. When the 16 squares are filled, the passenger becomes a member of the program and immediately receives his first reward: a free ticket. The airline has shifted the information processing duties to the customer without any disruption in customer service. In addition, many customers lose their application after 5 to 6 boxes are stamped and Southwest saves money and passes (Price Waterhouse 1995, 158–59).

The final piece of thinking big, thinking new is asking “what if” (Price Waterhouse 199, 1625). This is an excellent way to operate on a daily basis as managers make decisions or evaluate old patterns. What if an expensive order did not have to go through three levels of approval signatures? What if collection managers stopped signing their initials to order requests? What if orders were keyed directly into the online system rather than being provided to Acquisitions in paper form? What if collection managers could order material just by initialing beside the title in the catalog? What if serial issues were not checked in but simply sent to the shelves? What if invoices were paid without checking to see whether all pieces had been received? What if invoice statements from vendors were never reviewed? With some of these, there would be consequences if the action did not occur. But, in other cases, the consequences would be non-existent or within tolerable levels.

CHANGE STARTS WITH THE MANAGER

Thus far I have focused on managing change, motivating staff to change, etc., but one person has been left out: the ac-

quisitions manager. Acquisitions managers can be one of the most important factors for change in their attitudes, enthusiasm, vulnerability, and willingness to change themselves. When radical change occurs, the old way of doing things may no longer work. Instead, managers have to radically reexamine and throw out old assumptions. The classic adage that has been attributed to Rosabeth Kanter is that “change is something ‘the top asks the middle to do to the bottom.’ This assumes that the person ‘doing’ the change can sit safely on the point of the organization pyramid orchestrating the process while those at the front line get changed. A fatal illusion. In making any change—personal or organizational—you risk yourself” (Clarke 1994, 49).

It is also important for managers to believe that they can make a difference. Individuals have the most control over themselves, but the hardest person to change is also oneself. Many managers avoid making changes until something significant in their lives changes. Clarke discusses another list that resulted from work done at Ashridge Management College on managing change. A few examples follow:

For me to change I am waiting for (Clarke 1994, 50–51):

inspiration, my turn, revenge, time almost to run out, a more favourable horoscope, someone to be watching, my subordinates to mature, my self-esteem to be restored, a clearly written set of instructions, a signal from heaven, the stakes to be lower, someone else to screw up, logic to prevail, and on and on . . .

Managers have to let go of the old even though there may be no guarantee of what the new will bring.

SELF-ASSESSMENT

Much has been written on personal growth; Bones (1994) provides particularly useful information and exercises for assessing one’s current position and keeping oneself motivated and stable during times of massive change. These exercises can be done alone, but many would be useful if used with the staff being supervised. One of the first steps is to take stock

of where you are. For example, ask yourself, In thinking about my library and department, what are the five major people-based issues facing us (Bones 1994, 5)? For example, OSU recently faced the retirement of six librarians, many of whom had key collection development or management roles or specific skills not readily replaceable.

In a second step, evaluate your own skills:

1. What major tasks am I expected to carry out?
2. What skills do they require of me?
For example, technical/professional, critical/analytical, or reporting managerial/supervisory interpersonal (Bones 1994, 17-18).
3. What new skills are needed to be successful in my job?
4. What actions can I take to go about acquiring these skills?

Even more important than skills is the way in which the manager spends his time. Several years ago, I began thinking about how I spent time each day. For a period of two months, I kept daily track of how my time was spent in increments of fifteen minutes in fourteen categories. These categories included general administration/mail, meetings, word processing/writing, specific committee assignments related to OhioLINK, e-mail, editing a journal, teaching in the Kent State library school program, ALA activities, professional reading, and research.

I was amazed by the average number of hours I was working each week as well as the areas where that time was being spent. In many categories, there was absolutely nothing I could do to change the amount of time being spent. In other areas, I did have more control, such as professional reading and meetings. For example, in order to give my staff more time to do productive work, I recently moved from a weekly meeting with my division heads and section heads to a biweekly meeting. This has proven successful and has added three hours a month of productive time back into the schedules of twelve people.

Continuous self-development and learning is essential in today's world. Each of us must take charge of our own devel-

opment. "An individual who comes up with their own ideas for improvement is far more likely to see it through to the end, and to employ the new skills they have acquired on a regular basis. How many people do you know who have taken up golf later in life and are out in all weathers as they try to improve their handicap?" (Bones 1994, 31). Think back over the past ten years and identify several key achievements you are particularly proud of and several where you failed to achieve a goal. Ask yourself:

1. What was your achievement?
 2. How did you achieve it?
 3. What skills did you use?
- For the failures, ask yourself
4. Why did you fail?
 5. What skills did you lack?

Review the lists. Did any skills appear more than once? In the failures, what skills could you have applied in order to succeed? Were there any surprises (Bones 1994, 31-36)? Sometimes we make bad decisions because we are too far removed from the details of a particular task. I am convinced that one of the best ways for managers to learn about the operations under their supervision is for them to perform those jobs themselves on occasion. The closer managers get to the activities, the easier it will be to see where improvements and changes can be instituted and, conversely, where suggested changes are not warranted.

Managers must also learn the importance of risking the impact of innovation rather than staying with what is safe.

Creativity can liberate organizations. We have to begin to establish management styles that welcome and encourage the innovative and that support the taking of risk. A key part of this is to set up learning processes that review the implementation and results of innovation, and, where failure occurs, ensure key points are understood and that the organization as a whole benefits from the experience (Bones 1994, 55).

STRESS

Even in the best of situations, managers are subject to a great deal of stress. In

times of change, that stress accelerates and has even more serious consequences. "One of the most important sources of stress, . . . is responsibility for other people. The jobs that have been found to carry the highest levels of stress—miners, police officers, construction workers, doctors, dentists, and managers—all involve a high degree of responsibility for the safety and well-being of others" (Phillips 1995, 125). In addition to dealing with the stresses of their staff, managers also must deal with stresses in their own role. Overwork presents another struggle as does coping with conflicts and demands. However, it is important to remember that long hours do not necessarily result in higher productivity. People become too tired to think clearly and act effectively. Managers must be aware of the stress they are under and of the options available to reduce it (Phillips 1995, 125–30).

The following example illustrates how individuals can decide what is most important in life. This example concerns an overworked manager faced with his child's illness.

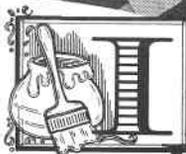
The manager dropped everything at work, spent three days at his son's hospital bed, and then returned to work to await further medical tests. He arrived at his desk, looked at the mounds of paper that had accumulated over three days, and suddenly realized that the paperwork "did not amount to a hill of beans" in comparison to the health of his son. It was as if someone had opened a window for him. With a wider perspective, and able to see the whole forest instead of just the trees, he was able to get through his mound of paper in no time. He felt calmer and more able to cope. When the medical tests gave his son a clean bill of health, he did not lose his newfound perspective, and he felt far more efficient as a result (Phillips 1995, 131).

Another way of looking at this is to evaluate individual projects (especially when they mean working late) in terms of whether anyone would even know they had been done or would remember very long. That test can be used on many occasions to assess one's workload. Phillips (1995, 131–32) states:

Recharging the batteries can take many forms depending on individual taste . . . Whatever form of relaxation you decide to adopt, the really important thing is to decide what things make life worth living for you. . . . Overcommitment to work does not mean more productivity. It creates managers who have tunnel vision. Managers who have a balanced outlook on work have a better perspective and are of more commercial value to the organization. . . . People with a clear sense of their own priorities are generally also better able to cope with change. . . . Their internal "stability" will often have a trickle-down effect on the people they work with, making them calmer, too. Stressed managers tend to produce stressed teams or departments, but the reverse is also true: Self-aware, calm, and focused managers can produce a healthy department, able to respond positively and innovatively to change:

CONCLUSION

Libraries can expect lots of change for many years to come. Acquisitions cannot expect to be spared. Acquisitions is already becoming comfortable with recent changes, such as the addition of new functions. Entirely new functions that may at first seem unrelated to acquisitions will be aligned with it, such as interlibrary loan and document delivery. Some acquisitions departments have taken on expanded responsibility for negotiating licenses for the purchase of electronic products; this growing expertise may result in acquisitions becoming the contract and licensing center for the library. Acquisitions will be expected to build on its established competencies. For example, if the automated system can be used to track payments and budgets for a large materials budget, perhaps that expertise can be expanded to track individual faculty document delivery accounts. New subscription services such as RoweCom's Subscribe system open new avenues for the electronic transfer of funds between suppliers and the university. New approaches to collection development may result in approval material being accepted without review by collection managers, opening the door to ac-



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Change is inevitable and accelerating every day. Some organizations have experienced a continual change process or a stream of "flavor of the month" management fads. However, new management theories are not all just fads or clichés. The biggest problem is that we do not read all the details and follow through. We focus on the vanilla highlights and forget that chocolate sauce is what turns ordinary ice cream into a sundae.

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UCLA/OCLC Core Record Pilot Project: Preliminary Report

Sherry L. Kelley and Brian E. C. Schottlaender

This report details the record-creation phase of the UCLA/OCLC Core Record Pilot Project. A total of 384 records were created, consisting of 234 core and 150 full (control) records. Approximately half of the core records were coded K level in OCLC, and half I level. NACO authority work was done for all controlled (name, series, subject) access points in both the core and control records. Core record creation was determined to be significantly faster than control record creation: between 8.5% and 17% faster, depending upon whether learning curves are factored in. The core records created included, on average, 1.52 subject headings and 1.01 name headings each; the control records averaged 2.05 subject headings and 1.59 name headings each. The importance of these differences for access is unclear. Of the 384 records created, 30 core and 15 control records—a total of 45—were subsequently used by 91 institutions within two months of their creation. Of the 45 used, only 7 were modified: 6 core and 1 control. Of the ten modifications made to these records, only two involved the addition of controlled access points. With OCLC support, UCLA will continue to gather use and modification data for a year.

The University of California at Los Angeles (UCLA) University Research Library (URL) Cataloging Department, in cooperation with the OCLC Online Computer Library Center, Inc. (OCLC) and with the approval of the Program for Cooperative Cataloging (PCC), carried out a core record pilot project for monographs from December 1994 to April 1995. Core level cataloging is a national standard developed by the PCC as a means to increase

the pool of usable original cataloging records in national and international bibliographic databases. The standard defines a set of data elements essential to cooperative use of the catalog record and requires that all access points be supported by authority records in a national authority file (figure 1).

The purpose of the UCLA project was threefold. First, to follow up on and expand the earlier Cornell study (Cornell

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FIXED FIELD VALUES:

Code fully.

020,\$a (ISBN):

If present on item

040 (Cataloging source)

042 (Authentication code)

050,082,086, etc.:

Assign at least one classification number from an established classification system recognized by USMARC.

1XX (Main entry):

If applicable

240 (Uniform title):

If known or readily inferred from material being cataloged.

245-300 (Title page transcription through physical description):

Describe fully, using all data elements appropriate to the item described.

4XX (Series area):

Transcribe series if present.

5XX (Note fields):

Minimally, include the following if appropriate:

500: Note for source of title if not from t.p.

505: (Contents note) For multi-part items with separate titles

533: (Reproduction note)

6XX (Subject headings):

If appropriate, assign from an established thesaurus or subject heading system recognized by USMARC at least one or two subject headings at the appropriate level of specificity.

7XX (Added entries):

Using judgment and assessing each item on a case by case basis, assign:

1) a complement of added entries that covers at least the primary relationships associated with a work (e.g. joint authors);

2) added entries to bring out title access information judged to be important.

8XX (Established form of series if different from that in 490 field):

If series is traced, use as appropriate.

Figure 1. Core Record for Print Monograph.

1995), which did not include national level authority work. Second, to test the assumptions that: (a) the creation of core level cataloging will take less time than that required for full-level cataloging; and (b) core records will provide sufficient

access to materials through their description and through authorized headings for names, subjects, uniform titles, and series. Third, to provide the PCC with some concrete data for consideration in national program implementation.

The researchers designed the project to gather data about the following questions as well:

1. Subsequent to their creation, how often are core records used by other libraries for cataloging purposes?
2. When they are used, how many modifications are made to them?
3. What kinds of modifications are made to them?
4. Are core records coded level I used differently from those coded level K? (OCLC defines level I cataloging as full-level cataloging input by OCLC participants, and level K cataloging as less-than-full cataloging input by OCLC participants.)

OCLC compiled information to address these questions by using tracking software to record use and modification of the records. These data will continue to be gathered for a year.

PROJECT SCOPE

Material selected for the project had to meet specific criteria. They had to be monographic works in the roman alphabet script, without full-level cataloging copy in OCLC. Further, the following were excluded:

1. Items requiring new series authority records, or changes to existing LC Name Authority File (LCNAF) series authority records;
2. Items targeted for the UCLA remote storage facility, which do not require classification or subject headings and often receive only minimal cataloging; and
3. Individual belles lettres, which are already very easy to catalog because, at UCLA, they do not receive subject headings.

PROJECT DESCRIPTION

A total of 384 records were created over the course of the project, consisting of 234 core and 150 full (control) records. Sixty of these, 30 core and 30 control records, were created between December 1994 and January 1995 as part of a pre-test.

OCLC tracking statistics for the pre-test records are included in the tables below, but time statistics are not. The remaining 324 records were created in a six-week period between February and April 1995.

After a one-hour training session, the catalogers began creating a preliminary set of "practice" core records, following guidelines developed from the proposed core record data elements (figure 1) listed in *Cooperative Cataloging Council Task Group 4: Standards, Final Report, October 29, 1993* (Reser 1994, 53-60). These practice records are not included in the project data. Following this, two catalogers began the project by creating core records, and two began by creating control records. Upon completion of the required number, the catalogers swapped assignments.

Five catalogers participated in the project, one in the pre-test phase, and four in the project itself. Each project participant cataloged approximately 80 titles between February 28 and April 4, 1995. Of these, approximately 50 were cataloged following core record guidelines and 30 following the full-level standards as defined in *Bibliographic Formats and Standards* issued by OCLC (OCLC, 1995). Catalogers timed the cataloging process for both categories of material and recorded results on log sheets (see figure 2). The log sheets were submitted weekly to the project manager, along with copies of the OCLC records. The project manager then reported the record ID numbers to the OCLC liaison, Karen Calhoun, to track further use and modification by OCLC member libraries.

Titles in both samples were assigned full classification and all headings were given full authority control: i.e., all name, uniform title, series, and subject heading access points were represented by records in the LCNAF or in the Library of Congress subject authority file. Project catalogers created new NACO records if none existed in the LCNAF, and updated any NACO records needing revision. No new subject headings were proposed. The same authority control procedures were followed for both core and control rec-

and that devoted to the established one. In this study, the researchers tried to neutralize or isolate the learning curve data by having catalogers create practice records before beginning the project, and by rotating their assignments. The two "learning" areas were the new set of cataloging guidelines for the core record, and the introduction of the use of a stopwatch. Interestingly, the catalogers reported that use of the stopwatch was the more problematic of the two new tasks. As an aside, there was a third, unanticipated "learning" area that was probably a constant for all four catalogers. This was the implementation of Format Integration, phase I, on January 28, 1995—roughly one month before cataloging for the project began. Some of the learning curve data may include the changes occasioned by Format Integration—in treatment of alternative title information, for example.

Because the UCLA/OCLC Core Record Project began before the implementation of explicit coding values for core records, UCLA, OCLC, and PCC worked out an interim set of data elements to include in the records to mark them as core level and allow for their batch retrieval. These are use of the subfield "e" of the 040 field with the term "core" (040 CLU :e CORE :d CLU) and creation of a 500 field with the phrase "core record." All core records created in this project can be retrieved through a "fin nt core record" search in OCLC. The newly defined values for PCC core records for the fixed field and 042 field were not implemented

until after phase II of Format Integration. The need to add these two interim elements may have added some unnecessary time to the creation of core records.

RESULTS

On average, core record cataloging is faster than full level. Tables 1 and 2 contain two different calculations for the time differential. In table 1, the mean time for each set of core records (50 per cataloger) is given, along with the mean time for each set of control records (30 per cataloger). The difference shown is that between the average time spent creating a core record and that creating a control record. Negative numbers indicate that core cataloging took less time than control cataloging. In the comparison shown in table 1, core cataloging takes over two minutes less than full cataloging per record, representing an 8.5% time savings. In all four cases, the last set of records was the fastest, whether core or control. This tells us something about learning time, particularly involving the use of stopwatches.

Table 2 contains the average time spent on approximately the last half of the core records (25 to 29 records) compared to that spent on the full set of control records. Given the small sample, and given the information shown in table 1 suggesting that learning time is a part of the total cataloging time for both levels of cataloging (use of stopwatch for control records, use of stopwatch and new cataloging guidelines for core records), the

TABLE 1
CATALOGING TIME

Cataloger	N	Mean Time per Record (Core)	N	Mean Time per Record (Control)	Difference (Core Minus Control)
*A	50	22:58	30	18:40	+4:18
B	50	14:09	30	19:28	-5:19
*C	52	35:50	29	30:13	+5:37
D	52	22:18	31	35:25	-13:07
Total	204	23:59	120	26:00	-2:01

*Began with core-level records.

TABLE 2
CATALOGING TIME—FACTORED

Cataloger	Mean Time, Last Half Core Records	Full Set Core Minus Last Half Core	Last Half Core Minus Control
A	24:04	-1:06	+5:24
B	13:24	+0:45	-5:04
C	26:47	+9:03	-1:26
D	21:53	+0:23	-13:22
Total	21:32	+2:27	-4:28

*Began with core level records.

researchers included this data as another means to control for learning time when two new tasks had to be learned in the first set (i.e., for catalogers A and C who began the project with core level cataloging). In three out of the four cases, the time spent per record on the last half of the core records was less than the time spent per record on the entire set of core records. Moreover, this half of core record cataloging took approximately 4.5 minutes less per record than full cataloging, a time savings of over 17%.

NACO authority work was the wild card in this Project. Of the three cataloging areas timed by the catalogers—description, subject analysis and classification, and authority control—time spent on authority control fluctuated most dramatically among catalogers. The number of new NACO authority records created for each set of records is shown in table 3A. In addition, these data show that

among all four catalogers only a slightly larger percentage of new NACO records were created for core level cataloging.

Table 3B shows the average time spent on authority work per title. The wide disparity in time spent creating new NACO records can be explained in part by the mix of name and corporate headings. Cataloger B created no corporate names in either set of records.

One of the goals of this project was to evaluate the adequacy of access for core records. The guidelines for creating core records call for the assignment of one to two subject headings only. In addition, the guidelines do not require additional headings for authors or titles in a single work when either numbers more than two. Limiting the number of obligatory headings is one of the efficiencies of core cataloging. Do these reductions limit access, however? Table 4 lists the number of subject headings per title in core and control

TABLE 3A
AUTHORITY WORK

Cataloger	No. of Name Headings / No. of Records		No. of New NACOs		% Hdgs. Needing NACOs	
	Core	Ctrl.	Core	Ctrl.	Core	Ctrl.
A	70/50	50/30	29	18	41	36
B	57/50	39/30	23	13	40	33
C	73/52	53/31	30	15	43	28
D	70/52	53/31	30	15	43	28
Total	270/204	191/120	99	61	37	32

TABLE 3B

AUTHORITY WORK

Cataloger	Avg. Time per Title/No. of NACO Headings	
	Core	Control
A	5:24/29	4:48/18
B	2:34/23	3:16/13
C	11:12/17	10:43/15
D	5:42/30	6:07/15

TABLE 4

SUBJECT ASSIGNMENT

Cataloger	No. of Subject Headings / No. of Records	
	Core	Control
A	73/50	47/30
B	72/50	44/30
C	80/52	71/29
D	87/52	84/31
Total	312/204	246/120

records, and table 5 shows total headings assigned, both subject and name, for both sets of records. Control records received an average of 2 subject headings per title, core records an average of 1.5 subject headings per title. Overall, total headings assigned averaged 2.85 for core records, and 3.64 for control records.

A significant result of the project is the number of institutions that have made subsequent use of project records. An OCLC tracking program shows that 91 institutions used 45 UCLA project records within the first two months of their creation. This is a strong argument for a national cooperative cataloging program. Table 6 contains a list of the records used by record number, encoding level, and number of holdings symbols attached. The table also reflects whether or not records were modified during their subsequent use.

It is interesting to note that of the core records that were modified, two were K level and four were I level. This is the

opposite of the researchers' expectations. Since the result given is so small, we cannot consider this statistically significant, however, and will need more use-data before drawing conclusions, if any, about treatment of I and K level records by catalogers.

Ten subsequent-use modifications have thus far been made to 7 of the 45 project records used to date—6 core and 1 control. These modifications have included addition or deletion of fields, and changes to field content. Table 7 is a summary of the modifications. Only two directly affected access: in one case, a variant title field (246) was added; in another, a subject field (6xx). Notes (500) and bibliographical references (504) fields were the most frequently modified. Again, the volume of use-data is too small to draw conclusions at this time, but, at this point, modifications that directly affect access are small in number.

TABLE 5

TOTAL HEADINGS ASSIGNED

Cataloger	Core No. Headings / No. Records	Avg. per Core Title	Control No. Headings / No. Records	Avg. per Control Title
A	143/50	2.86	97/30	3.23
B	129/50	2.58	83/30	2.77
C	153/52	2.94	120/29	4.14
D	157/52	3.02	137/31	4.42
Total	582/204	2.85	437/120	3.64

TABLE 6
USE STATISTICS FROM OCLC

Record Number	Encoding Level	Previous Holdings*	Updated Holdings	Modified (Y/N)
<i>Core</i>				
31746834	I	1	6	n
32011958	I	1	2	n
32056423	K	2	5	y
32058347	I	1	2	y
32065038	I	3	4	y
32069303	I	2	3	n
32069434	K	2	5	y
32084096	I	1	2	y
32084786	K	1	3	n
32104590	I	2	10	n
32098426	I	1	2	y
32105059	I	1	2	n
32152523	I	1	2	n
32154317	I	1	3	n
32164001	K	1	2	n
32164506	K	2	3	n
32078179	I	1	2	n
32078252	K	1	2	n
32112499	I	1	2	n
32197837	K	1	3	n
32198861	K	1	2	n
32184169	K	1	2	n
32229000	K	1	8	n
32222827	K	1	2	n
32234035	K	1	3	n
32254730	K	1	3	n
32266559	K	1	3	n
32267359	K	1	2	n
32297924	I	1	3	n
32291731	I	1	3	n

CONTINUED ON NEXT PAGE

CONCLUSION

On average, core record cataloging was faster than full-level cataloging. In the best case, allowing for project learning

curves, the time saved was over 17% per record; in the worst case, disallowing learning curves, it was 8.5% per record. While generally confirming the results of the Cornell study, the UCLA/OCLC

TABLE 6 (CONTINUED)

Record Number	Encoding Level	Previous Holdings*	Updated Holdings	Modified (Y/N)
<i>Control</i>				
32048971	I	2	4	n
32053247	I	1	2	n
32054493	I	2	3	n
32104631	I	3	8	y
32104731	I	1	2	n
32104693	I	1	3	n
31923478	I	8	15	n
31873459	I	3	5	n
32128973	I	3	4	n
32164424	I	2	4	n
32164475	I	1	4	n
32164664	I	1	2	n
32173818	I	1	2	n
31785002	I	2	3	n
32187088	I	2	3	n

*Records with "Previous Holdings" exceeding 1 represent those for which either Enc lvl K or Enc lvl 5 OCLC records were upgraded to core level by Project catalogers.

Total records used/created:	45/384
Core records used/created:	30/234
K level core records used:	15
I level core records used:	15
Control records used/created:	15/150
Total holdings updates:	91
Core holdings updates:	60
Control holdings updates:	31
Total number of records modified/used:	7/45
Core records modified/used:	6/30
K level:	2
I level:	4
Control records upgraded/used:	1/15

project researchers extend the earlier study by demonstrating that significant time savings accrue to core record cataloging even when NACO authority work is factored into the equation.

Core records created during the project include an average of 1.52 subject

headings and 1.01 name headings each; Control records include an average of 2.05 subject headings and 1.59 name headings each (26% and 36% more than core records, respectively). It remains to be seen how these differences will affect access, if at all. The data on the kinds of modifica-

TABLE 7
SUMMARY OF MODIFICATIONS MADE
DURING SUBSEQUENT USE

Field Tag	No. of Modifications
015	1
041	1
043	1
082	1
246	1
260	0
300	0
500	2
504	2
505	0
6xx	1
7xx	0

tions made to project records subsequent to their creation appear to indicate, at this point, that the impact may be small. Thus far, only two access fields have been added to the forty-five records used by other libraries. The researchers will continue to monitor use-data from OCLC.

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Reinstatements of Retrenched Journals at the University of Ilorin Library

Richard Olorunsola

The rising costs of serials coupled with the devaluation of Nigeria's currency make subscribing to journals almost impossible for the country's academic libraries. In 1987, the University of Ilorin Library was forced to curtail its current journal acquisition program. Periodical holdings were listed and broken down into subject areas, and academic departments were asked to rank titles in order of their usefulness. The university library administration made final decisions. The administration initially decided to renew 287 journals (43.1% of the original total) while canceling 379 (56.9%). As a result of wide publicity about the dearth of books and journals in Nigerian universities, the federal government reached an agreement with the World Bank, which extended credit for the purchase of monographs and serials. After bureaucratic difficulties in ordering replacements, 384 titles were reinstated—five titles above what was retrenched. Unless the cost of the University Library's journals stops increasing or the library's books and periodicals budget expands, the library may face more sacrifices after the World Bank funding ceases.

To start, it is important to note that the economies of most Third World countries have declined precipitously since the early 1980s. Since that time the funding climate for libraries in Third World countries has not been favorable, to say the least. Up until now, the situation has shown no appreciable signs of improvement. This has adversely affected the adequate provision of resources for most of these libraries. The rising costs of serials coupled with the devaluation of the naira make journal subscriptions almost unaffordable for academic libraries in Nigeria. Guides to the contents of periodicals—i.e., abstracts and indexes—are no exception; in fact,

they are hardest hit. When, in 1986, the University of Ilorin began having difficulty in renewing its journals, the cost of *Science Citation Index* was between \$3,000 and \$3,425.

Puccio (1989, 194) has said that a serial's life within a particular library begins when a decision is made to start receiving the publication on a continuing basis. This is normally achieved through a paid subscription, which is often placed or maintained through a subscription agency. The decision to add a serial to a library's collection is usually made after careful consideration. Once a subscription begins, it becomes a standing charge against the

library budget for an unforeseeable period.

In 1987 the University of Ilorin Library was forced to curtail its current journal acquisition program for two reasons. First, in 1986 the government introduced a Structural Adjustment Programme that compelled all libraries to make their overseas journal and book purchases through the Foreign Exchange Market. Second, the inflation of serials prices increased more rapidly than previously, and additional funds were not made available for the books and periodicals budget.

It was estimated at the time that renewal costs for journals totaled \$102,062.18, while the annual budget for books and periodicals stood at just \$63,798.27 (Olorunsola and Ajileye 1990, 42). Although library policy dictated that 80% of the books and periodicals budget was to be spent on serials, there was obviously no way to cover all the increased costs of serial renewals by further reducing the money spent on monographs. Consequently, the library was forced to prune its subscription list.

Behind the idea of allocating 80% of the available budget to serials is the realization that journals play a crucial role in research at academic libraries. The University of Ilorin's priorities are by no means unique. Puccio (1989, 21) has said that serials comprise a significant portion of the collection of most libraries and obligate a large percentage of the budgets of those libraries. Ward (1975, 243), in his study of seventeen London libraries, observed that the libraries spent between 24% and 90% of their budgets on periodicals purchases.

PROCEDURES FOR CANCELLATION

The periodical holdings of the University of Ilorin Library were broken down into 36 subject areas. In all, 36 departments received lists of serials relevant to their interests. Each department was asked to rank the serials in order of their usefulness. This exercise was done in order to determine which journals were most urgently needed in the face of very lean budgets. The listed titles were ranked in

four categories in order of priority. At the end of the exercise, the analysis of the ranking—in descending order of importance from A to D—was as follows:

A	290
B	258
C	84
D	<u>34</u>
	666 titles

The university library administration made final decisions based on those rankings. The administration renewed 287 of journals ranked A (43.1% of the original 666), while it canceled 379 (56.9%) (Olorunsola and Ajileye 1990, 44).

EFFECT OF THE CANCELLATION EXERCISE

The seriousness of the economies required by retrenchment was brought home to most members of the faculty because, with 56.9% of the serials cut, almost everyone had to do without one of "their" journals. Nevertheless, the serials librarian received serious verbal protests from many lecturers. Faculty members complained that current issues of certain journals were not available for use; in many cases, however, those serials were on the retrenched list. Some protested that damage had been done to the collection by the cancellation of unique titles. Others argued that they had not been informed of the ranking exercise that preceded the pruning. However, the university management had consulted with the heads of departments.

I observed some inadequacies in the cancellation procedure. The procedure should have considered some more scientific methods of selecting titles for cancellation, such as:

- Citation frequency
- Productivity ranking (Bradford's law of dispersion)
- Use surveys
- Cost analysis
- Abstract coverage
- Processing and storage costs

REINSTATEMENTS

As a result of wide publicity about the dearth of books and journals in Nigerian universities, the federal government reached an agreement with the World Bank, which extended credit for the purchase of monographs and serials. The idea was to renew most journals that were discontinued due to a lack of funds. The credit was to be extended to all federal, government-funded universities that satisfied certain conditions laid down by the National Universities Commission. The University of Ilorin qualified and in 1990 the library began plans to draw from the credit. The serials librarian drafted a new subscription list based largely on the list of the journals canceled in 1987, although some new titles were added. The serials librarian ordered 500 titles worth some \$109,890.82. To bridge the gaps created in the library's journal file, some backfiles worth about \$196,000 were also ordered (University of Ilorin Library, World Bank File 1990).

There were prolonged delays in the efforts to reinstate the journals. In a meeting of professional library staff, the university librarian (University of Ilorin Library, Serials Unit, World Bank File 1991) said: "It may not be possible to get journals for 1991 through the procurement agents; as a result the University Library took a safety measure and placed order for some titles using UNESCO coupons."

In a related development, it was reported that the 500 journal titles ordered with the World Bank loan would likely not arrive until February or March 1992. Then, in a meeting held on September 23, 1991, the university librarian revised that estimate. He explained that only 20 journals had arrived and that few more should be expected by February or March 1992. He opined that the situation might change for the better by the end of 1992. There were also difficulties with the backfiles order. The National Universities Commission directed individual university libraries to hold local votes to determine which backfiles should be ordered. The backsets were to cover 1992. Thus, it was decided

to cancel the original backfiles order with the World Bank.

Before the end of 1993, bureaucratic procedures had bogged down the smooth procurement of journals and only 44 titles had been received. Consequently, the rest of the orders were canceled. A new directive and new procedures were issued from the office of the World Bank Implementation Committee at the National Universities Commission. Fresh orders from the individual universities were to be prepared and submitted on deadline. This marked the end of the first attempt to reinstate canceled journals.

THE SECOND ATTEMPT

The procedures used in the second attempt to reinstate the pruned journals differed in several ways from those of the first. The attempt would include the purchase of backfiles from 1993 forward. In addition, the mechanics of the reinstatement were handled by the university librarian and the serials unit of the library. Lists of previously canceled journals were compiled on a departmental basis, following the rating pattern adopted during the cancellation exercise that took place in 1987. The lists were sent to departments for rapid ranking because of time constraints. There was room for faculty to recommend new titles and to suggest reinstatement of any titles that had been previously canceled.

The ranking was done primarily by heads of departments, but in a few instances by deans of faculties. The university and serials librarians, assisted by the serials staff, coordinated this process. The exercise was conducted in March 1994 and resulted in the selection of 287 titles at an estimated cost of \$86,952.55. The list was dispatched to the National Universities Commission on schedule. However, the commission later requested that the University prepare a supplementary list for a specified amount. This list was to be arranged by discipline. The University of Ilorin Library was not the only one asked to supply a supplementary list; the com-

TABLE 1
TITLES REINSTATED ON FACULTY BASIS (SUPPLEMENTARY)

Faculty	No. Titles	Cost (\$)
Science	8	5,149
Business and Social Sciences	15	1,635
Agriculture	14	2,132
Education	15	2,229
Engineering	23	7,221
Arts	22	1,336
*Health Sciences	—	—

Source: University of Ilorin Library, Serials Unit, World Bank File.

*No medical titles were listed under the supplementary list because the faculty was adequately provided for in the first list.

mission requested them from all university libraries that had failed to meet the commission's fiscal ceiling. The library came up with an additional 97 titles; thus the first list and the supplementary totaled 384 titles.

PROGRESS REPORT ON JOURNAL SUPPLY

As of January 31, 1995, 71 of the journal titles ordered during the second reinstatement attempt have been received. Added to the 44 titles received earlier, 115 titles have been received for 1993 subscriptions. These journals were supplied by Low Priced Books Limited, whose contract has been terminated. The breakdown of journals supplied by the agent is shown in table 2.

A new agreement was signed with Blackwell's Safari, which also supplies books through the World Bank Project.

Blackwell's first shipment of journals for 1994 subscriptions came in March 1995. It contained 263 journal titles. In May 1995, the agent made another delivery containing 67 journal titles for 1994, bringing the total received to 330 titles. It is clear from this that the agent was unable to supply 54 of the titles that had been ordered. No 1995 subscriptions had been received as of May 1995.

FACTORS AFFECTING REINSTATEMENTS

The university librarian consulted exclusively with the heads of departments in deciding what titles to reinstate or add. Some departments rated more than the required or requested number of titles, and many titles were graded by more than one department; in some cases these gradings conflicted with one another. The library also considered the price of titles

TABLE 2
JOURNAL TITLES SUPPLIED BY LOW PRICED BOOKS LIMITED

S/N	No. Titles	Amount
1	26	\$17,647.24
2	76	£23,554.06
3	10	DFL 15,608.00
4	3	SFr 8,541.00
Total	115	

Source: University of Ilorin Library, Serials Unit, World Bank File.

when deciding which journals to delete, meaning that expensive titles were deleted.

OBSERVATIONS

Using only the rankings of department heads and deans of faculties led inevitably to some questionable deletions. However, with the huge volume of work involved and short time limit, there was no time to allow the faculty a second chance. Lists were required very quickly, and most of the data were collected hastily, with no time for validation except in a few cases where the university librarian had to contact department heads by telephone on related issues. The practice of not validating the information is quite understandable because the university librarian and the serials staff were under pressure and had to work extra hours to meet the deadline given by the National Universities Commission. Inevitably errors occurred, but not often enough to invalidate the outcome of the exercise. Overall, the procedures utilized during the cancellation and reinstatement process worked reasonably well, even though methodological faults existed.

If the arrangement adopted in preparing the supplementary list as presented in table 1 had been used in making the first list, the serials department would have had a better idea of what was being spent in each discipline. Such information is invaluable not only to the university librarian for decision making but also to other unit heads and academic librarians.

CONCLUSION

The library was forced by rising costs and government fiscal measures to cooperate with teaching departments in the task of reducing journal commitments. Neither

side welcomed the operation and there were times when patience wore thin during the 1987 exercise. Journal reinstatements also proved difficult to implement due to a number of factors, including faulty administrative arrangements and bureaucratic tangles. The problem of backfiles acquisition is a riddle that remains unsolved.

Unfortunately, to identify the problem is not to solve it, and unless the cost of the University Library's journals stops increasing or the library's books and periodicals budget expands, the library may face more sacrifices after the World Bank funding ceases.

The nauseating effects of Nigeria's economic crunch on libraries are not hard to decipher: journal subscriptions and book acquisitions have been reduced. There is evidence of decline in the resources and services of libraries, hence the need to turn to the World Bank for help. Unless the federal government makes enough funds available after the expiration of the World Bank Project, the libraries will be back at the very point they found themselves in 1987. Unless this vital issue is properly considered, reinstatements are unlikely to continue.

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Document Delivery at the International School for Advanced Studies Library of Trieste 1992-1995

Lucio Lubiana

During the period 1992-1995 the library of the International School for Advanced Studies of Trieste (Italy) increased the number of delivery transactions of journal articles with Italian university libraries and with the British Library Document Supply Center. Of these, two-thirds were requested by users in the biophysics sector and the rest by users belonging to the mathematics and physics sectors of ISAS. In the same period the ISAS library fell into the category of "applicant library" rather than "provider library." An increase in requests for photocopied articles has been caused by the introduction of the Medline CD-ROM in the ISAS library and by the enlargement of the biophysics sector of the school. The purpose of this study is to find alternative ways of providing information to internal users in the face of decreasing budgets.

The International School for Advanced Studies (ISAS), founded in 1978, is an international postgraduate school in physics, mathematics, biophysics, and neurosciences that promotes scientific research and prepares young graduate students from Italy and abroad for advanced research. It is located in Trieste, in north-east Italy, near the border with Slovenia. The ISAS has a small library that holds about 11,000 books and subscribes to five CD-ROM databases (including Medline) and 400 current journals. The library specializes in mathematics, physics, astronomy, and biophysics literature. It is being automated with Tinlib (IME, London)

running on a UNIX platform; this system allows eight users simultaneous access to the system.

Both the ISAS library and the neighboring library of the International Center for Theoretical Physics (ICTP) of Trieste have a large collection of mathematics and physics journals. But their journal collections are insufficient for users in the biophysics sector of the school. In fact, the number of requests for journal articles sent by the ISAS library to other libraries has grown from 60 in 1992 to 323 in 1995, of which two-thirds were requested by students in the biophysics sector (see table 1).

TABLE 1

TOTAL NUMBER OF JOURNAL ARTICLES REQUESTED BY ALL USERS OF THE SCHOOL

Year	No. Requests	No. Articles Found in Italy	No. Articles Found in BLDSC	No. Articles Found in Other Countries	No. Requests Cancelled	No. Requests Fulfilled
1992	60	60	—	—	—	60
1993	164	152	15	—	—	164
1994	230	214	15	1	8	222
1995	332	290	41	1	4	328

With the growth of the biophysics sector at the beginning of 1990, the library's journal collection was enlarged—but not enough to satisfy all of the information needs of these users. For this reason, the library decided to open a delivery service and interlibrary loan for internal users (Comba 1994; Pedersen and Gregory 1994; Alpigiani and Grilli 1994; Ferguson and Price 1995; Holt and Schmidt 1995; and Kohl 1995). This was done in 1992 and expanded during 1993.

One of the principal bibliographic tools for locating journals in Italian libraries is the *Catalogo collettivo nazionale delle pubblicazioni periodiche CNR*, a union list of journals of Italian libraries (ISRDS 1990). This is the only bibliographic tool covering nearly all the university libraries of the country. The university libraries of Trieste, Udine, Padova, and the ISAS are not included in this union list. Recently this union catalog became accessible online through the GARR network (universities network of Italy) located at the University of Bologna (<http://www.cib.unibo.it>). In 1994 the catalog became available on CD-ROM. The ISAS library is still using this bibliographic tool for locating journals in Italian libraries.

Another bibliographic source, even if not up to date, for locating journals in the northern part of Italy is the union list of periodicals of the libraries of Lombardia (*Catalogo dei periodici correnti delle biblioteche lombarde* 1985–1991). To verify journal citations, the library also uses Gale's *Periodical Title Abbreviations* (1992) and *Ulrich's International Periodicals Directory* (1991). Italy does not

have a public or private centralized library provider of documents like the British Library Document Supply Center (BLDSC). This lack of a centralized and efficient delivery service is particularly evident in medical sciences and pharmaceuticals. For this reason a group of medical libraries in central and northern Italy decided in 1983–1984 to found the Italian Association of Documentation for Biomedical Research and the Pharmaceutical Industry (GIDIF-RBM, Gruppo Italiano Documentalisti Industrie Farmaceutiche e Ricerca Bio-medica). Today this association is located in Milan with about forty associate libraries (public, private, pharmaceutical industries, and hospitals) whose aim is to keep the union catalog of journals up to date and to circulate photocopy requests free of charge among its members. This union catalog, containing about 4,000 current titles of periodicals, is available only to its associates both in print and online (Pesenti 1995). This example was not followed by other libraries in other fields of the sciences.

For mathematical sciences, a union list of periodicals owned by mathematics libraries of Italian universities was created. This project was undertaken in 1979 and 1988 by the Istituto per le Applicazioni del Calcolo (IAC) "Mauro Picone" of the Italian National Research Council (CNR) and has been continued by the University of Lecce. In 1991 the University of Lecce became the center of the national informative system for mathematics (SINM, Sistema Informativo Nazionale per la Matematica), which will provide for, among other things, the creation of an

TABLE 2
NUMBER OF REQUESTS OF BIOPHYSICS USERS OF THE SCHOOL

Year	No. Requests	No. Articles Requested in Italy	No. Articles Requested from BLDSC
1992	31	31	—
1993	160	148	12
1994	206	194	13
1995	242	201	41

efficient public national delivery service between mathematical libraries of Italy.

Within SINM, the University of Lecce, in accordance with CNR, is coordinating the growth of the union list of mathematical periodicals and is including in the CNR union list the mathematical periodicals of the IAC "Mauro Picone" (Istituto per le Applicazioni del Calcolo "Mauro Piccone" 1988). Also, the libraries of the Astronomical Observatories of Italy are building up a national bibliographic information system in astrophysics, developing a national union list of periodicals owned by astronomy libraries, and creating an efficient national delivery service. This project, called the union catalog of the Italian astronomical libraries (CUBAI, Catalogo Unico delle Biblioteche Astronomiche Italiane, <http://www.oat.ts.astro.it/biblio/cubai.html>), has among its goals that of creating an efficient and fast delivery service among the Italian astronomical institutes (Ferrucci 1995). These projects will be superseded by the creation, in the near future, of the national bibliographic service (SBN, Servizio Bibliotecario Nazionale), which will provide for, among other things, the creation of an efficient public national delivery service.

BIOPHYSICS SECTOR OF THE SCHOOL

This is the main sector of the school that depends on photocopied articles. In this highly specialized field of science it is essential that researchers be kept up to date with information that could affect their current work. The amount of scientific information in this field is growing so rapidly that no library can collect all of it. The

collection of biophysics journals in ISAS library is not wide enough to satisfy all the information needs of scientists in this field.

One source for informing biophysics students of current bibliographic information is Current Contents-Life Sciences (available on computer starting from 1993), produced by the Institute for Scientific Information (ISI) of Philadelphia. This provides access to the tables of contents and bibliographic data from current issues of the world's leading journals in life science. But this source did not increase the number of photocopy requests at the ISAS library. The growth of requests for articles was noticed when Medline on CD-ROM was introduced in the library.

Medline has increased bibliographic access to information and pressure for physical access to information. For this reason the ISAS library had extended the collection of biophysical journals, but not so wide as to fulfill all of the information needs of these users. To meet the increasing requests of these users, the ISAS library decided to increase the document delivery service for internal users (Alston and Coomb 1992; Fox and Lancaster 1994). When Medline was introduced in 1992, the photocopying requests of biophysics users numbered only 31. In 1993, when biophysics students had become much more knowledgeable about Medline, photocopy requests grew to 160. During 1994, they grew to 206, and in 1995 this total increased to 242 (see table 2). At the time we noted that there seemed to be a close link between the use of Medline and the photocopy requests of journal articles.

We have allowed internal users to use Medline themselves to locate articles unavailable locally so that they can request delivery at the library office. In fact, photocopy requests of articles were often made on the same day on which Medline was consulted. We verified this when users sent their requests to the library, writing the bibliographic citation from which the information was taken on opposite forms. More than 50% of these requests arose from consultation with Medline.

We also noticed that most of the documents requested were published in journals between 1987 and 1994. For users in this field of research, it is extremely important to obtain an article as soon as possible. In order to check article citations and their locations, the ISAS library uses the following bibliographic tools:

- CNR union catalog,
- Regional union list of medical periodicals,
- *Biblioteca a Trieste*, the catalog of periodicals at the Library of Medicine of the University of Trieste,
- *Ulrich's Periodical Directory*, and
- *Periodical Title Abbreviations*.

At the same time, the ISAS library bought journal catalogs of the principal Italian biomedical library and the catalogs of the University of Trieste and Udine. This was done mainly to locate journals in the neighboring libraries of the ICTP and the University of Trieste.

But the only library in Trieste that has an efficient document delivery service is that of the central Library of Medicine of the University of Trieste. For this reason we started requesting articles from this library, which provides articles from an in-house collection of approximately 1,000 current subscription titles and from the biomedical institutes of the University of Trieste and other universities (*Biblioteca centrale di Medicina Università di Trieste* 1990). The delivery service of the Trieste Library of Medicine is efficient, and requests are filled within one or two days if the journal is owned by the main library or within a week if it is owned by another library of the university.

All requests are sent to this library by

fax on a ready-made form indicating, in capital letters, the title of the journal, year, volume, issue, pages requested, authors, and the indication of the university institute where the journal is located. The articles and invoices are delivered once a week by ISAS drivers. If the journals are not found in the libraries of Trieste or in the province, then they are located and ordered from other Italian libraries through the CNR national catalog. If none of these libraries owns the journals requested, then requests are forwarded to the British Library Document Supply Center. Normally all requests are made by fax, phone, or e-mail.

MATHEMATICS SECTOR AND OTHER SECTORS

The principal bibliographic tool for locating mathematical journals in Italian libraries is the *Union Catalog of Scientific and Technical Periodicals*, first published in 1979 under the title *Catalogo collettivo dei periodici scientifici e tecnici*. The second edition of this publication was published in 1981; the third, in 1988. This union catalog is available through the Italian network GARR at the University of Lecce (gopher/server SIBA1.Unile.it or 193.204.64.176 with login: "dsm") (Basile and Pettinati 1994).

Unlike users in biophysics, mathematics users adopted a different bibliographic search linked more to books than to journals or preprint. In fact, the number of requests for articles in the mathematics sector was lower than that for the biophysics sector. Over a period of three years, mathematics users, unlike those of biophysics, requested more articles with earlier dates. The articles requested were found in the neighboring libraries of the mathematics department of the University of Trieste and of the International Centre for Theoretical Physics (ICTP) of Trieste.

But the principal provider of photocopied articles for mathematics students during 1992–1995 was the mathematics department library of the University of Trieste. In fact, this library has the most complete collection of mathematical jour-

nals written in English and German in northeastern Italy.

In 1992 the mathematics sector of the school requested 10 articles, while in 1993 only 4 requests were made. In 1994, 21 documents were requested by the mathematics sector of which only three were not found in Italy and were requested from the BLDSC. In 1995 mathematics users requested 15 journal articles, all of which were found in Italian mathematical libraries.

Astrophysics users did not request journal articles during 1992–1994. In 1995 astrophysics users requested 13 journal articles, of which all were found in the library of the Astrophysics Observatory of Trieste, which has the most complete collection of astrophysics journals in northeastern Italy. The physics users of the school have access to a wide range of information sources available inside the school and on network servers over the Internet (among them the Babbage preprint server, the Los Alamos preprint server, and the SLAC (Stanford Linear Acceleration Center) preprint server at Stanford University, all of which also provide document delivery). It is perhaps for this reason that users requested only a small number of journal articles during 1994 (2 documents) and 1995 (2 documents).

In the fields of physics and astronomy, the American Institute of Physics (AIP) has developed the physics information network called Searchable Physics Information Notices (SPIN), which covers every major area of physics research (database, journals, abstracts, conference proceedings, preprints, and electronic bulletin boards). In addition, the new document delivery service Articles in Physics provides full-text copies of journal articles, proceedings, journal issues, and other AIP publications (Anderson and Pausch 1991, Albrecht and Egret 1991, Judd and Perugini 1994, Elxis 1995, Heck and Murtagh 1993, and Ricart 1995).

No one in the neuroscience sector of the school used the delivery service for requesting documents unavailable in the ISAS library. This sector is relatively new (Fox and Lancaster 1994).

BRITISH LIBRARY DOCUMENT SUPPLY CENTER (BLDSC)

Photocopy requests for articles were sent to the BLDSC only when the requested journals were not found in an Italian library. BLDSC was chosen due primarily to the lack of a skilled Italian supplier of scientific documents, and also due to BLDSC's strong experience in the document delivery field. The relationship with this document supplier started in 1993, when the number of documents requested by internal users increased. From this point on the relationship with BLDSC was clear and no problems arose.

At first it was thought that the best way of paying BLDSC would be to purchase coupons through the British Council. But this idea was dropped, and in 1994 a deposit account was opened by which the ISAS library paid in advance for delivery requests. This method of payment was the best choice for both parties.

In 1993 and 1994, 15 photocopy requests were made to BLDSC; of these, only 2 were made by mathematics users and 1 by a physics student.

During these years all photocopy requests were mailed using a ready-made form supplied by BLDSC, on which were indicated the title of the journal, year of publication, volume, issue, page, authors, source of information from which it was taken, and BLDSC's coupons. In 1995 the method of request was changed, and in 1995 all requests were sent through electronic mail using BLDSC's ERTEmail system. In 1995 we requested 41 journal articles, all of which were made by biophysics users of the school. All documents were sent to the ISAS library from England by mail, and all requests were fulfilled within a period of one or two weeks. Along with the articles, the BLDSC also sent the certificate of clearance of copyright.

PRIVATE LIBRARIES

Private libraries were contacted only when the journal was not found in public libraries. The requests were made by telephone or fax. In 1992 the ISAS library

requested only 3 articles from 3 Italian private libraries. During 1993, 12 requests were sent to private libraries in the pharmaceutical industry and one to a hospital library (Hospital S. Raffaele Milano); all were fulfilled free of charge.

In 1994, 9 requests for articles were sent to 7 different Italian private libraries: Carlo Erba of Milano, Glaxo of Verona, Fidia of Abano Terme (Padova), library of the International Centre of Genetic Engineering and Biotechnology (ICGEB) of Trieste, and the library of the S. Raffaele Hospital of Milan.

In 1995, only 2 requests for documents were sent by the ISAS library to the following libraries: Fidia of Abano Terme (Padova) and Smithkline Beecham of Milano.

Most articles were delivered by mail within one week of the requests. During 1993-1995, the photocopy requests to private libraries were also free of charge. None of the Italian private libraries requested that the ISAS library observe the regulations of the Italian Copyright Act 1941.

COSTS AND METHOD OF DELIVERY

All documents ordered and all delivery costs during the period 1992-1995 were paid for by the ISAS library. Requests for documents made to ISAS from internal users were received in the traditional way from 1992 to 1995 via written applications or telephone calls. To expedite this process, in 1994 the ISAS library developed a special order form for delivery service on paper that was distributed to internal users. Users requesting documents filled in the following information: user name, article title, journal title, year of publication, volume, authors, and journal issue.

Prior to 1994, the library did not receive requests for documents from internal users via e-mail. Starting in 1995, the library began to receive photocopy requests through e-mail, which will make possible the expansion of electronic document delivery. This project is still being tested.

All delivery transactions with other libraries were conducted via fax, mail, telephone, or e-mail. Documents were deliv-

ered within 12 hours of receipt of the request. The most urgent requests were filled within one hour via fax. But the cost of delivering articles via fax is much higher than by ordinary mail. Most university libraries in Italy supply documents and exchange bibliographic information free of charge between peer institutions.

The principal provider of documents to the ISAS library was the central library of medicine of the University of Trieste, which charged the ISAS library for document delivery. The other libraries, with the exception of the library of Centro Regionale Oncologico of Aviano (Pordenone), the library of the Department of Pharmacology of the University of Milano, and one institute of the University of Florence, did not charge for photocopied articles.

None of the Italian libraries requested verification that the ISAS was in conformance with the Italian Copyright Act 1941 before supplying an article. This was done only by the hospital library of the Centro Regionale Oncologico of Aviano (Pordenone), which put a copyright release statement on the first page of all articles provided: "a copy of the document is required for the purpose of research or study and in accordance with the Copyright Act 1941."

All Italian public and private libraries outside Trieste sent documents to ISAS using ordinary mail, and the delivery times were different between cities, ranging from two to three weeks from the date of request. During 1995 very urgent requests were sent via e-mail or fax. One document was received via e-mail from the Slovak republic in PostScript format, and the document was printed in the ISAS library.

CONCLUSION

To improve the sources of information for ISAS's users, it will be necessary to integrate delivery service into the automated system of the library, which will allow users to send and receive documents more easily and quickly. If in the future the number of requests for photocopied journal articles continues to increase, and if

the ISAS library will have to eliminate more journal subscriptions, then the school should consider the possibility of automating this service and linking it to commercial suppliers for full-text article delivery.

These suppliers allow libraries to adopt more cost-efficient serials strategies, to enhance the automation of delivery service, and to establish user-mediated document delivery service ordering (Jackson 1993, Hugenholtz 1994, Capelli 1994, Revelli 1994, Carotti 1994, and Boretti 1995). Finally, the electronic retrieval and network delivery of Internet resources will change the way information will be delivered to end users.

Another goal of the library is to merge the delivery service into the daily reference work of the ISAS library, making use of electronic resources as a regular part of reference service. But the Italian situation in delivery service has remained behind that of the European market, with delivery methods slower than those of other European countries. In Italy we do not have a clear law on copyright, and royalties on photocopied articles in journals normally are not required. The Italian Copyright Act of 1941 must be changed, and a new copyright bill must be passed that will also consider the question of ownership of documents posted on the Internet. This situation must change in order for Italy to catch up with the European market.

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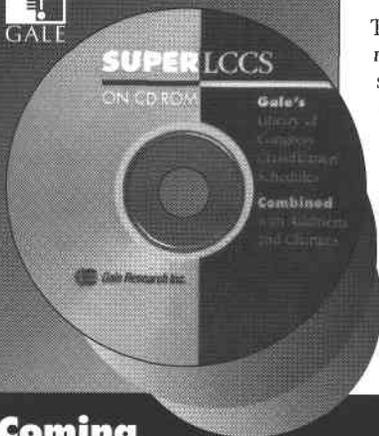
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Grass-Roots Cataloging and Classification: Food for Thought from World Wide Web Subject-Oriented Hierarchical Lists

David G. Dodd

The explosion of the use of the Internet by the general public, particularly via the World Wide Web, has given rise to an interesting phenomenon: the proliferation of semiprofessional attempts to give some subject-based access to Internet resources via hierarchical guides (hotlists) such as Yahoo. In this paper, the author examines the structure and principles of various hierarchical lists, which were examined during a period between September and October 1995. The lists are compared, when possible, to broad Library of Congress and Dewey classification schemes and to Library of Congress subject heading structures. The author also explores the approaches taken by nonlibrarians in their efforts to organize and provide access to materials on the Internet. In particular, the author focuses on the dichotomy between the hierarchical "browse" and the analytical "search" approaches to finding materials, as exemplified by these various attempts to organize the Internet.

Librarians are only beginning to make significant strides in providing access to materials on the Internet. The advance guard in this endeavor includes computer nerds, scientists, or just plain folks who want to impose some kind of order on the exponentially expanding mass of information distributed by various means over the Internet. Specifically, the introduction of the World Wide Web (hereafter the Web) has given this avant-garde a powerful tool—the use of hypertext linking—to allow for rapid movement around the Internet.

This is not to say that the profession has been inactive in this regard. Evidence that the library profession is moving to secure

a role in the organization of the Internet can be found in the joint OCLC Online Computer Library Center, Inc./Department of Education project, "Building a Catalog of Internet Resource"; OCLC's work on providing Persistent Uniform Resource Locators (PURLs); the introduction of the 856 tag into the MARC record to allow for the recording of Uniform Resource Locators (URLs); and the increasing appearance of advertisements by libraries seeking to hire librarians specifically to evaluate, select, and catalog electronic resources. Taylor (1995) includes a brief section regarding subject access to the Internet, and the various projects being undertaken

by librarians to provide controlled vocabulary access to the chaos of the Internet.

In our rush to apply standards of librarianship to this exploding medium, I believe it would, however, be unwise to ignore the efforts of those who have gone ahead and attempted, on their own, to provide access to the medium. The hypertext link is easy to construct. The Web is graphically attractive. Perhaps that is why web users have shown so much interest in organizing this information.

Please note that the observations and conclusions drawn in this paper are based on a snapshot of a quickly moving target taken in late September to early October of 1995. I selected a small subset of available subject-oriented hotlists (Yahoo, Magellan, and the Whole Internet Catalog) and search engines (Lycos, Intercat) for examination, and scrutinized both their use of principles of categorization and the language they used. The instability and flux inherent in the Web mean that by the time this paper sees print, much will have changed and evolved. For instance, the Yahoo list has evolved significantly since October 1995: It now provides access to multiple search engines and also conducts searches of its own subject category words, a feature not available at the time of the original snapshot.

An earlier snapshot approach to the question of web access to information resources was conducted by Kambitsch (1994), who presented an anecdotal approach to evaluating various Internet search engines. These included Archie, Veronica, and the Clearinghouse for Subject Oriented Internet Resources at the University of Michigan, based on a search for a known item.

GENERAL PRINCIPLES OF WEB HOTLISTS

The subject-oriented hierarchical classification system used by many web indexes represents one of the two major streams of thought on how best to provide access to resources on the Internet, and, in particular, on the Web. Hotlists of this type (called "hotlists" because they are hot-linked to the resources they list) function via a browsing mentality. A person looking

for a resource works down into the hierarchies beginning at the top with the broadest category, and proceeds through the subcategories until arriving, it is hoped, at the goal—the resource that will deliver the sought-after information.

The other major trend in accessing resources on the Internet involves search engines that exhaustively scan the Web for matches on keywords. Examples of these include WebCrawler and Lycos. The most sophisticated indexes provide both search and browse capability. Later, I will provide some comparison between this type of searching and the results obtained by browsing hotlists.

Yahoo, a project begun in April 1994 by computer science Ph.D. students Jerry Yang and David Filo at Stanford University, began as a straightforward alphabetical listing of subjects. Click on a subject, and you would be sent to an alphabetical listing of resources on that subject. As the database evolved, often with the addition of as many as 800–900 new resources in a twenty-four-hour period, the hierarchies became gradually more complex. Yahoo's designers developed their current look by adhering to the general hypertext markup language (HTML) design principle of menu-driven hierarchies (Lemay 1995, 30–34). Thus, the opening screen (figure 1) contains bold pointers to fourteen broad categories, with some of the most frequently sought subcategories noted in a smaller font beneath them.

According to an interview conducted via e-mail with Srinija Srinivasan, who is in charge of Yahoo's "ontological and hierarchical" matters, there are several major factors driving Yahoo's structure (Srinivasan 1995):

1. Headings should be as concise and precise as possible. That means taking into account the context, or full path, of the heading in question so that, e.g., the same category is just called "Therapy" under Entertainment/Music/ but is called "Music Therapy" under Health/Alternative Medicine/.
2. Headings should be commonly used words and phrases that are likely to be utilized in a search query.

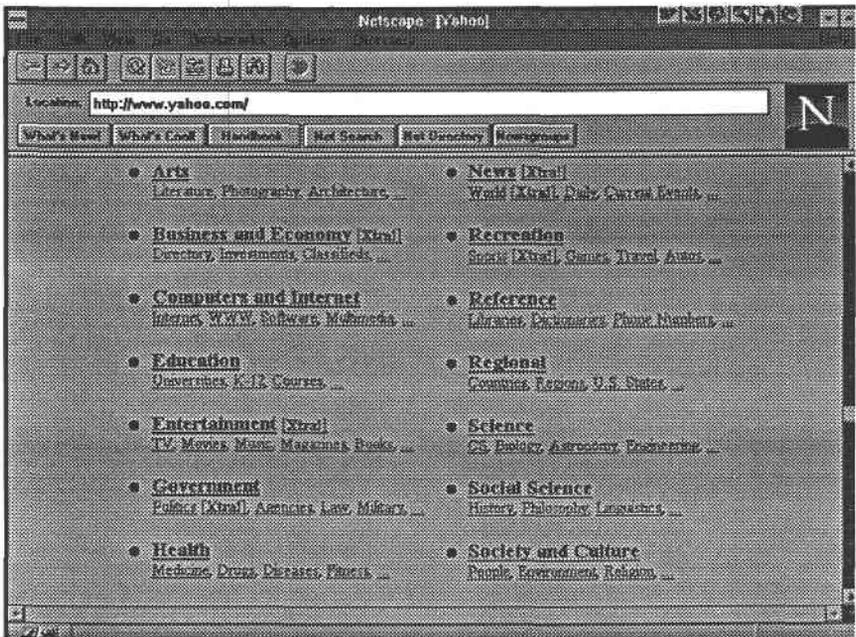


Figure 1. Yahoo's Opening Screen Categories.

- Headings should be consistent across Yahoo so that, e.g., "Indices" means roughly the same thing in any Yahoo category, specific to that category.
- Reference texts (dictionaries, almanacs, encyclopediae, etc.) and human specialists, when necessary, are consulted to create useful, familiar categorization schemes.

Asked at that time about future plans, Srinivasan stated that Yahoo intended to implement keyword searching on its own subject categories in the near future (which has since become operational) and hoped to use transaction-based analysis of queries to evaluate its choice of categories. She stated that they are also planning to investigate the use of thesauri to improve search results (Srinivasan 1995).

Magellan, another sophisticated site (figure 2), has fifteen broad categories. Although it lists no subcategories on its opening screen, activating the link on any of the main categories brings up a second level of subcategories. These range in number from a low of eight (under "Re-

ligion & Philosophy") to a high of twenty-nine (under "Business & Economics").

The Whole Internet Catalog (WIC) goes into greater detail, listing all of its subcategories on its opening screen, but adheres to the keynote of web organization: grouping the subtopics under thirteen broad categories.

Also worth examining are three good examples of the "labor of love" (i.e., classification systems not under the auspices of any institution or business): Hackstadt's Hierarchical Hotlist (H3), Hay's Ways, and Joel's Hierarchical Subject Index (JHSI). H3 has twenty main categories, three of which are directly related to computing. Hay's Ways has a compact graphical user interface that allows selection from a menu of ten broad subject categories. JHSI has six main categories, with thirty-two subcategories.

JHSI also includes a section on the theoretical background of hierarchical subject indexes (Jones 1995). I will quote from it at length because it indicates the sophistication of the thinking behind



Figure 2. Magellan's Opening Screen Categories.

these hotlists. Note that the author, a graduate student in Computer Science at the University of Illinois, Urbana-Champaign, is a little fuzzy on, but by no means completely ignorant of, the principles of librarianship, and seems intent on finding the best way to provide access, regardless of prior conceptions.

Why a hierarchical index? Because there isn't a good one available yet. Existing attempts at providing an index based on a list of subject headings thus far have been very shallow, having only one or two levels.

Wouldn't another kind of index be better? For some kinds of searches, yes. There are already many different keyword and subject-heading based indexes to sources on the Internet. The problem with these indexes is that knowledge of keywords are needed by the person doing the search. In a traditional library setting, reference librarians can provide help to patrons in choosing the appropriate terminology. This is less true on the Internet.

So how does a hierarchical index solve the keyword ignorance problem? By having a

hierarchical structure, browsing the subject headings becomes possible. It is assumed that the person doing the search will have some knowledge of how their search targets fits into the over wealth of human knowledge. For example, if someone is looking for a C++ compiler, they will try to find a reference to it in the areas of knowledge related to technology and then computers, rather than religion.

Why not pick Dewey or some other well-established classification system used in libraries? The problem with Dewey and Library of Congress subject headings is that they are all "a mile wide and an inch deep." Also, they don't closely match the sort of divisions that a domain expert would use, except in certain circumstances.

If some system isn't chosen, won't this lead to chaos? The indexers on [JHSI] are strongly encouraged to use pre-existing classification schemes, such as the ACM Computing Review Classification Scheme, or the Encyclopedia of Social Sciences scheme.

Shouldn't the index have classification codes that are recognizable by someone from library science so that experts from the library field can quickly find their way around? This would be a great addition. However, since [JHSI] is to have a distributed management model, we have assumed that it would be easier if domain experts who are responsible for indexing a topic area chose a classification scheme that works best for their field. If this happens to match LC or UDC, fine. If someone wants to use a traditional subject heading classification to classify the sources on the Internet, they are welcome to do so.

THE CORRESPONDENCE OF BROAD SUBJECT TERMS TO TRADITIONAL CLASSIFICATION SCHEMES

Although there is quite a bit of variation in the way specific topics are placed under these broad umbrellas (table 1), there is nevertheless wide consensus that people can use this hierarchical approach quite readily to narrow a search.

The column on the left in table 1 shows the main classification divisions for both Library of Congress Classification (LCC) and the Dewey Decimal Classification (DDC). The columns under each hotlist show the first-level category that contains the corresponding LCC or DDC category. Depending upon the wealth of material available, browsing via hierarchical lists may require as many as five levels of hierarchy, as in Yahoo's typical chain: Broad subject/Subcategory/Level 2 subcategory/Level 3 subcategory/topic. For example, the resources on rock musician Jerry Garcia are under "Entertainment/Music/Artists/Grateful Dead/Jerry Garcia." This arrangement sometimes leads users down a fruitless path if they guess incorrectly at the first two levels of categories. For instance, note that Magellan puts "General Reference" under "Popular Culture and Entertainment."

TERMINOLOGY

A sampling of terms from each of three hierarchies was checked against the

OCLC subject authority file. Fifty terms were selected from the 197 terms used by WIC; 17 were valid subject headings, 4 were valid see references, and the remaining 29—over half—were not found in the authority file. Fifty terms were selected from the 63 terms used by Yahoo; 30 were valid subject headings, 8 were valid see references, and the remaining 12 were not in the authority file. Sixty terms were selected from the 228 terms used by Magellan; 25 were valid subject headings, 12 were valid see references, and the remaining 23 were not in the authority file. Of the resources evaluated, Magellan uses an approach in its assignment of categories to indexed resources that is most similar to the *Library of Congress Subject Headings (LCSH)*.

SUBJECT VS. FORM

In general, there is a tendency among the compilers of these sites to mix together words that describe the aboutness of the resources being pointed to, and words that describe the form of the resources. For example, "Dictionaries & Reference Guides" is used by WIC, as is "Economics." This is always an issue, and presents a trap into which this avant-garde seems to have fallen. It is disconcerting to see what appears to be a separate heading "Careers & Employment" or "Indices" repeating itself again and again under various major categories, until one realizes that the heading is only meant to apply to that particular category.

Both Magellan and Yahoo, in particular, use this strategy, and it makes good sense after a little while. Srinivasan's comment above makes it clear that this is a conscious decision on the part of the hierarchy's designers, corresponding to the cataloging practice of free-floating subdivisions.

SEARCH VS. BROWSE

Some work has been described in the literature that attempts to define and differentiate between "browsing" and "searching" for information. The definition of

TABLE 1A
 BROAD TOPIC NAMING IN SELECTED HIERARCHICAL LISTS COMPARED TO
 BROAD LC CLASSIFICATION OUTLINE

LC Class. Term	WWW Hierarchical Lists		
	Yahoo	WIC	Magellan
General Works	Reference	Education	Popular Culture & Entertainment
Philosophy	Social Science	Humanities & Social Sciences	Religion & Philosophy
Psychology	Social Science	H & SS	None
Religion	Society & Culture	Life & Culture	R & P
History & Social Science	Social Science	H & SS	Humanities
Geography	Science	H & SS	H & SS
Anthropology	Social Science	H & SS	None
Recreation	Recreation	Recreation, Sports, & Hobbies	Sports & Recreation
Social Sciences	Social Science	H & SS	H & SS
Political Science	Social Science	Government & Politics	Government & Politics
Law	Government	G & P	Law & Criminal Justice
Education	Education	Education	Education
Music	Entertainment also: Arts	Arts & Entertainment	Arts & Music
Fine Arts	Arts	A & E	A & M
Languages & Literature	Arts	H & SS	H & SS
Science	Science	Science & Technology	Science
Medicine	Health	Health & Medicine	Health & Medicine
Agriculture	Science	Business & Finance	Science
Technology	None	S & T	Engineering & Technology
Military Science	Government	Government	Government & Politics
Naval Science	None	None	None
Bibliography & Library Science	None	None	H & SS

"browsing" used in this paper was given in Chang and Rice (1993, 258):

Browsing is the process of exposing oneself to a resource space by scanning its content (objects or representations) and/or struc-

ture, possibly resulting in awareness of unexpected or new content or paths in that resource space.

A series of six searches, three for known items, and three for general sub-

TABLE 1B
 BROAD TOPIC NAMING IN SELECTED HIERARCHICAL LISTS COMPARED TO
 BROAD DEWEY CLASSIFICATION OUTLINE

Dewey Topics	WWW Hierarchical Lists		
	Yahoo	WIC	Magellan
General Knowledge	Reference	Education	Popular Culture & Entertainment
Psychology & Philosophy	Social Science	H & SS	R & P
Religion	S & C	L & C	R & P
Social Sciences	Social Science	H & SS	H & SS
Language	Social Science	H & SS	H & SS
Science	Science	S & T	E & T
Applied Science	Science	S & T	E & T
Art	Arts	A & E	A & M
Literature	Arts	H & SS	H & SS
History & Biography	Social Science	H & SS	H & SS

jects, were conducted in each of five databases: Yahoo, WIC, Magellan, Interact (the catalog of the Building a Catalog of Internet Resources Project), and Lycos. The first three of these were subject-oriented lists. Of the three, one (WIC) had no keyword search capability. Yahoo and Magellan were searched using both the keyword search capability and the browse via subject hierarchy techniques. Interact is based on the MARC format, and represents the closest thing to a traditional library approach to the Internet. When the search tests for this paper were conducted, the Interact database was too small to test adequately its browse capability, although it does allow one to browse in a purely alphabetical list of words. The remaining database, Lycos, is purely a string-matching searchable index (table 2).

In table 2 it is demonstrated that for known-items, search capability is optimum. For subject-type queries where specific items are not known, searching is often not as effective as browsing, especially in Yahoo, which did not at that time allow for searching of its own categories.

Figures 4 through 7 give the entry of a search for the National Museum of

American Art conducted in each database. Magellan (figure 7) and Interact (figure 4) provide the most disciplined approach to their records. Interact uses MARC, and Magellan assigns key words, language, publication information, and other details. Yahoo (figure 5) contains only a brief summary. WIC (figure 6) gives a fairly subjective review. And figure 8 shows the opening screen for the sought-after source itself. Here the value of descriptive cataloging becomes apparent, as the content of the Web page is well-reflected in the MARC record that describes it.

CONCLUSIONS

It is possible that we have a microcosm in the Web, under development, of two distinct patterns of human behavior vis-à-vis how we find things. Subject-oriented hierarchies are preferred by "browsers," while search-oriented indexes are for the more analytical-minded among us. Perhaps this is a left-brain vs. right-brain distinction; this may be an area for further research. One might make a case for a correspondence to subject-heading access versus shelf organization. It seems

TABLE 2

COMPARISON OF SEARCH AND BROWSE IN FOUR RESOURCES

Known-item searches

I. The Nine Planets

A. Yahoo:

1. *Search*: Delivered site and a mirror site.
2. *Browse*: Science/Astronomy/Planets/Nine Planets.

B. Magellan:

1. *Search*: Delivered site as first record.
2. *Browse*: Science/Astronomy/ (then prompted for additional words—added “nine” which delivered the site).

C. WIC: *Browse only*: Science and Technology/Astronomy/Nine Planets.D. Lycos: *Search only*: Delivered site as #2 hit.E. InterCat: *Search only*: Delivered site.

II. National Museum of American Art (NMAA) (see figures 5–8):

A. Yahoo:

1. *Search*: Found five matches, including NMAA.
2. *Browse*: Arts/Museums/NMAA.

B. Magellan:

1. *Search*: Delivered NMAA at top of list of more than sixty results found.
2. *Browse*: Arts & Music/Art Museums: (then prompted for additional words—added “American Art” which delivered a list: NMAA at #4).

C. WIC: *Browse only*: Art and Entertainment/Museums and Art Historical Resources/NMAA.D. Lycos: *Search only*: Found seventeen documents, all related to NMAA.E. InterCat: *Search only*: Delivered site.

III. Internet Public Library (IPL):

A. Yahoo:

1. *Search*: Eleven matches, including the site.
2. *Browse*: Reference/Libraries/IPL.

B. Magellan:

1. *Search*: Timed out twice in succession.
2. *Browse*: Educational/Libraries/ (then prompted for additional words—added “internet”—IPL not included in results).

C. WIC: *Browse only*: Education/Libraries/IPL.D. Lycos: *Search only*: Delivered 418 documents; top five were for IPL.E. InterCat: *Search only*: Delivered site.**Topic searches**

I. “Solar system”:

A. Yahoo:

1. *Search*: Thirty-four matches.
2. *Browse*: Science/Astronomy/nothing under “solar system.”

B. Magellan:

1. *Search*: Found more than sixty records containing either or both words.
2. *Browse*: Science/Astronomy/ (then prompted for additional words—added “solar system” which delivered twenty-nine records).

C. WIC: *Browse only*: Science & Technology/Astronomy/ found three pertinent records.D. Lycos: *Search only*: Retrieved 350 documents.

II. “Impressionist painting”:

A. Yahoo:

1. *Search*: Three matches.
2. *Browse*: Arts/Art History/Genres/Impressionism (nothing under impressionist painting, per se).

B. Magellan:

1. *Search*: More than sixty records found.
2. *Browse*: Arts & Music/Art History/ (then prompted for additional words—added “impressionist” which delivered no records).

TABLE 2 (continued)

- C. WIC: *Browse only*: Arts & Entertainment/Museums and Arts Historical Resources: no further results.
- D. Lycos: *Search only*: Delivered 283 documents.
- III. "Quotations":
- A. Yahoo:
1. *Search*: Twenty-eight matches.
 2. *Browse*: Reference/Quotations.
- B. Magellan:
1. *Search*: Twenty-eight matches.
 2. *Browse*: Popular Culture and Entertainment/General Reference: (then prompted for additional words—added "quotations" which delivered four sites).
- C. WIC: *Browse only*: Education/Dictionaries & Reference Guides/ (Bartlett's is listed)
- D. Lycos: *Search only*: Delivered twenty-three documents.

that there are simply not enough ways to group things together for improved access; new methods of conglomeration will always emerge.

Some of the recent developments in library automation are reflected in, or possibly reflect, the proliferation of subject-oriented hierarchical hotlists. CARL Corporation's popular product, the Kid's Catalog, and its corollary for adults, Eve-

rybody's Catalog, certainly have elements of this browsability, as evidenced by the "explore" capability in Kid's Catalog (under development for Everybody's Catalog).

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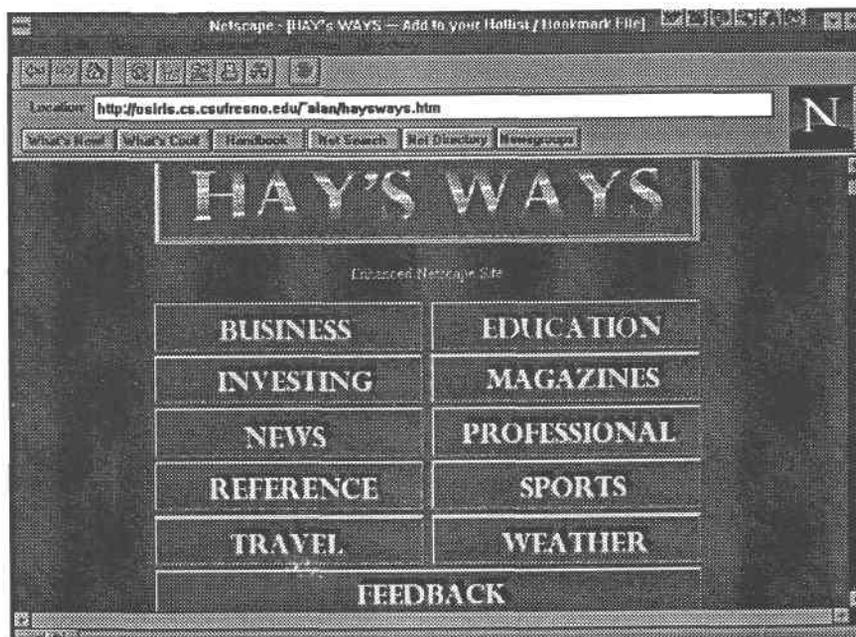


Figure 3. Hay's Ways Opening Screen.

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001 33004857
003 OCoLC
005 19950615000908.0
008 950818m19959999dcun u eng d
245 00 National Museum of American Art \$h [computer file].
246 3 Smithsonian Institution National Museum of American Art
256 Computer data.
260 Washington, D.C. : \$b National Museum of American Art, \$c 1994-
500 Title from title screen.
505 0 Director's welcome -- General information -- Research resources -- Artworks --
Education -- What's new? -- Museum departments -- Publications -- Feedback --
Special exhibitions -- Renwick gallery -- Search.
520 "Welcome to the National Museum of American Art's new World Wide Web site.
We will be adding materials daily, so come back often. In the meantime, enjoy
viewing and reading about over 500 works of art; reports of upcoming and
recent events; and interacting with staff and some of the artists in the
collection."--Welcome screen
538 Mode of access: Internet. Address: <http://www.nmaa.si.edu>
610 20 National Museum of American Art (U.S.)
650 0 Art museums \$z United States \$z Washington, D.C. \$x Databases.
856 7 \$2 [http \\$u http://www.nmaa.si.edu](http://www.nmaa.si.edu)

Figure 4. MARC Record for the National Museum of American Art (from OCLC's Intercat Database).

Government:Agencies:Smithsonian Institution:National Museum of American Art

National Museum of American Art

Publications - Back issues of the scholarly journal, American Art; complete text excerpts of museum catalogs.

Figure 5. Text of Yahoo's Entry for the NMAA.

National Museum of American Art

The online home of the Smithsonian Institution's National Museum of American Art. The inaugural Internet exhibition is "The White House Collection of American Crafts," a rich multimedia presentation of 72 works by contemporary American craft artists. The exhibit features scores of images, videos, and sound files. I particularly enjoyed the virtual tour, which presents pictures of the works as they were exhibited in the White House. The interviews with the artists are also a nice touch. Other resources here include a gallery of GIF images of famous paintings in the museum collection ("Highlights of the Permanent Collection") and a catalog of museum publications, including excerpts and images.

Figure 6. Text of WIC's Entry for NMAA.

National Museum of American Art**Arts & Music , Art Museums****Keywords:** American Art, The Smithsonian Institute, National Museum of American Art**Audience:** Art Enthusiasts, Art Historians, Art Students

Description: The National Museum of American Art Web site offers a wide array of information and images. Users will find a complete history of the museum, information on events, exhibits, visiting, and more. There are also several art galleries that users can visit on the Web, with images and information on the artists. Information on traveling exhibits and membership is also available here.

Language: English**Producer:** National Museum of American Art**Contact E-mail:** NMAA.NMAAInfo@IC.SI.EDU**No Cost****Non Commercial****Not Moderated****Figure 7.** Text of Magellan's Entry for NMAA.**15) National Museum of American Art home page [0.9053, 4 of 4 terms, adj 1.0]**

Abstract: Click anywhere on the image. (Click for text mostly version.) Welcome to the National Museum of American Art's new World Wide Web site. We will be adding material daily, so come back often. In the me...

<http://www.nmaa.si.edu/> (6k)**Figure 8.** Text Retrieved for NMAA Search on Lycos.

Filo, David, and Jerry Yang. 1995. Yahoo. (<http://www.yahoo.com>).

Hackstadt, Steven. 1995. Hackstadt's hierarchical hotlist. Version 1.5. (<http://www.cs.uoregon.edu/~hacks/hotlist>).

Hay, Alan. 1995. Hay's ways. (osiris.cs.csufresno.edu/~alan/hayways.htm).

Interact: A catalog of Internet resources. 1995. (<http://www.oclc.org:6990>).

Jones, Joel. 1995. Joel's hierarchical subject index. (<http://www.cen.uiuc.edu/~jj9544/index.html>).

Lemay, Laura. 1995. *Teach yourself Web publishing with HTML in a week*. Indianapolis: SAMS Publishing.

Liebscher, Peter, and Gary Marchionini. 1988. Browse and analytical search strategies in a full-text CD-ROM encyclopedia. *School library media quarterly* 16: 223-33.

Lycos. 1995 (<http://www.lycos.com>).

Magellan. 1995. (<http://www.mckinley.com>).

Noerr, Peter L., and Kathleen T. Bivins Noerr. 1985. Browse and navigate: An advance in database access methods. *Information*

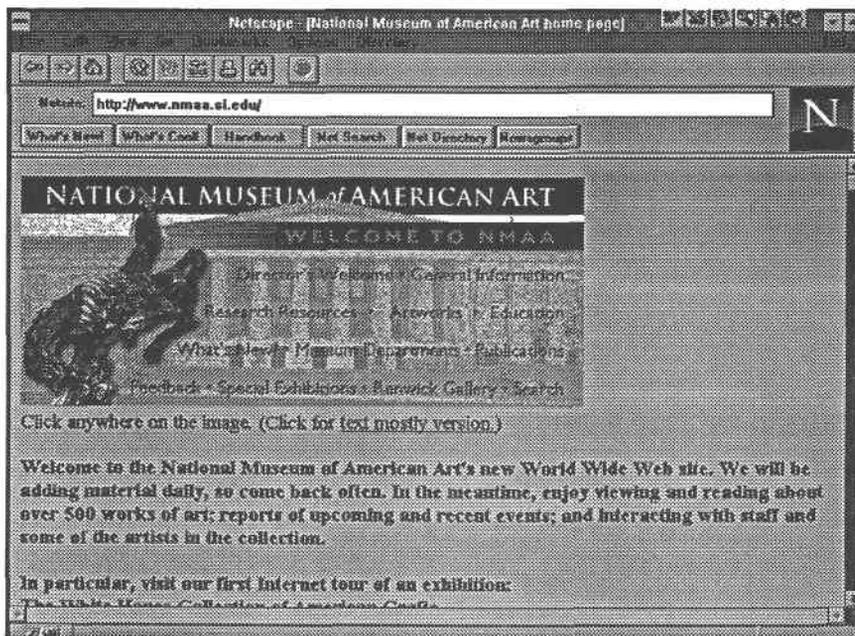


Figure 9. Home Page for the National Museum of American Art.

processing and management 21: 205-13.

Qiu, Liwen. 1993. Analytical searching vs. browsing in hypertext information retrieval systems. *The Canadian journal of information and library science* 18, no. 4: 1-13.

Srinivasan, Srinija. 1995. E-mail interview with the author. October.

Subject Cataloging Division. Processing De-

partment. 1978. *LC classification outline*. 4th ed. Washington, D.C.: Library of Congress.

The whole internet catalog. 1995 (<http://gnn.com/gnn/wic>).

The WWW virtual library. 1995. (<http://www.w3.org/pub/DataSources/bySubject/Overview.html>).

Book Reviews

Gregory H. Leazer, Editor

Planning Global Information Infrastructure. Ed. Ching-chih Chen. Norwood, N.J.: Ablex, 1995. 547p. (ISBN 0-56750-200-8).

Although not apparent from the title, this volume is the proceedings of the 7th *International Conference on New Information Technology, NIT '94*, held in Alexandria, Virginia, in November 1994. Ching-chih Chen has organized these meetings annually or biannually throughout the developing world with the assistance of various funding agencies; the 1994 conference was the first one held in the United States. Prior conferences were held in Bangkok, Singapore, Guadalajara, Mexico, Budapest, Hong Kong, and Puerto Rico. An eighth conference has since been held in Riga, Latvia, in November, 1995. The material in the proceedings is timely and was published in a timely manner—a note in the acknowledgments indicates that 550 pages of camera-ready copy were produced in a week! However, the tradeoff for timeliness comes in the quality of the editing. Most of the volume is an unedited transcript of the proceedings, including unnecessary details of question-and-answer sessions, introductions of speakers, coffee breaks, stage directions, etc. Many of the presentations appear not as coherent essays but as abstracts, outlines (taken from overhead projections), and transcripts. Grammatical and typographical errors and randomly placed hyphens abound. The exceptions are several polished papers submitted by speakers and a summary statement (The Alexandria Declaration of Principles) prepared by Robert M. Hayes and Ching-chih Chen. About 150 pages of appendixes are reprints of National Information

Infrastructure (NII) and Global Information Infrastructure (GII) documents; some are government documents, others are policy statements by public interest groups and professional organizations; most are available on the World Wide Web (WWW).

The NIT conferences are invitational meetings, each of which has attracted 175 to 375 participants from at least fifteen countries. The meetings have been successful in bringing together people from countries at various stages of development to discuss information technology and policy issues. Participants in the 1994 meeting represented major policy organizations, public and private funding agencies, professional societies, industry associations, major national or research libraries from many countries, and university faculty. Most were executive officers or senior staff of these organizations. The NIT conferences are effective mechanisms for convening an illustrious group of representatives to discuss critical matters of the day, gain consensus where possible and mutual understanding where not, and enable them to contribute to policy discussions in their respective organizations and countries. The success of the conferences is a tribute to Dr. Chen's energetic commitment to global cooperation in information systems and services. What is most notable about the NIT meetings is their international representation and the global nature of discussion topics. Too much of the NII policy discussion in the United States assumes that the NII ends at U.S. borders; it is the global nature of the network that raises the most pressing technical and political issues.

While scholarly conferences are designed around a *product*—usually a formal proceedings that consists of peer-

reviewed papers representing the best new work of the year—working conferences such as the NIT are designed around a *process*—face-to-face discussions among a diverse group of opinion leaders. Presentations are intended to provoke discussion, not to serve as a formal record of the meeting. The process vs. product distinction is important in determining the appropriate mechanism to disseminate the outcomes of a meeting to a broader audience.

The best outcome of process conferences is a consensus document representing the thinking of the group. Such a document can be disseminated widely to engage a larger community. This conference produced such a document, the 6-page Alexandria Declaration of Principles, and it is by far the most valuable part of this volume. Unfortunately, these 6 pages serve as an introduction to a 547-page transcript presented in a linear, relatively undigested print format. The declaration would reach its audience more effectively if disseminated as a short statement and republished in various professional magazines and journals, in multiple languages and in multiple countries.

The Alexandria Declaration frames the GII as an open, self-organizing, interactive and interconnected system that will provide a communication channel for democratic discussion. The ten principles formulated by the conference participants warrant listing here (p. 1–6):

1. Empower individuals
2. Educate and train in use
3. Increase knowledge
4. Develop local resources
5. Identify responsibilities of information professionals
6. Educate the information professionals
7. Build from country to region to international
8. National agencies in development
9. Emphasize public/private sector cooperation
10. Recognize the need for appropriate economic policies

Each is briefly discussed and elaborated, followed by a list of specific issues that are in urgent need of resolution.

The rest of the proceedings consists of a few new papers (i.e., narrative works of ten pages or more with citations to other work), reprinted papers from journals and other conferences, short (three-to-ten page) updates or overviews of individual programs in a variety of countries and regions, outlines of papers (speakers' overheads), and transcripts of question-and-answer sessions. The reports are notable for their broad geographic range, including Asia, Africa, and Europe (Eastern, Central, Western, and Northern).

The two new papers of interest are those by Yakov Shraiberg and Robert M. Hayes. At twenty pages, Shraiberg's paper on the infrastructure for scientific and technical information in Russia is the most comprehensive in the volume. Shraiberg discusses history, current issues, and future projections; the paper is illustrated with many tables and diagrams, and it includes a bibliography of resources in English. Hayes' paper, "An Educational Component for the Global Information Infrastructure," includes modeling data on library roles in the information economy, with comparisons among ten countries.

The most useful reprints are Ching-chih Chen's thoughtful piece on the "Information Superhighway and the Digital Global Highway: Realities and Challenges," and the paper by Peter Young, Executive Director of the U.S. National Commission on Libraries and Information Science (NCLIS) on "Global Knowledge Network Infrastructure Development: The National Library Role." Young provides an overview of the relationships among NCLIS, the Library of Congress, the Network Advisory Committee, the National Research and Education Network, and other agencies.

The new papers, and others that might have been submitted by the speakers, would have received wider, though less timely, attention as a special issue of an international journal. The remaining transcript materials could have been posted on a WWW site for those wishing the full details (with links to the appended materials) and perhaps also issued as a techni-

cal report for people in countries without WWW access.

I can recommend the full volume only for those seeking a current update on developments in a wide range of countries and regions. The new material here will be dated fairly quickly and much of the book includes already dated reprints. While the full volume would be of urgent interest in developing countries, these countries are the least able to acquire a print volume in a timely manner, due to their own economic and infrastructure problems. It will be of interest to readers in developed countries for its international perspective, particularly in the United States, where most current materials address domestic concerns.

The declaration deserves wide dissemination, but is unfortunately buried in this publishing outlet. A more effective approach would be to offer it for translation and republication in domestic library and information science, communication, and policy journals around the world, which is common practice in developing countries. For future conferences, I urge the organizers to consider alternate means of publication of papers and transcripts, whether print or electronic, that will engage a larger audience in the issues addressed by these important meetings.—Christine L. Borgman, *Department of Library & Information Science, University of California, Los Angeles.*

Technical Services Management, 1965–1990: A Quarter Century of Change and a Look to the Future: Festschrift for Kathryn Luther Henderson. Ed. Linda C. Smith and Ruth C. Carter. Binghamton, N.Y.: Haworth, 1996. 370p. \$39.95 (ISBN 1-56024-960-9). LC 95-20463.

In more than twenty-five years of teaching cataloging at the University of Illinois, Urbana-Champaign, Kathryn Luther Henderson introduced hundreds of students to the notion of a festschrift. With this volume, twenty-one of her students and colleagues honor Mrs. Henderson and recognize her influence on their professional lives.

The theme of change is a most appropriate one for this festschrift. Kathryn Henderson's teaching career spanned a time of rapid, continuous, and unprecedented change in library technical services. The daily realities of 1990—MARC format, bibliographic utilities, online catalogs, and CD-ROMs—were only wild ideas, if they were thought of at all in libraries, in 1965.

The book's twenty chapters provide broad coverage of technical services, with the emphasis (ten chapters) on cataloging. The other chapters deal with the literature of technical services, acquisitions and collection development, preservation, indexing, professional education, and intellectual property rights and electronic media. Most of the authors are academic librarians or library and information science faculty members.

The authors tend to record events rather than analyze them. In Chapter 1, "Technical Services Literature, 1969–1990," Carolynne Myall states that "the literature of library technical services increased in volume and in degree of specialization" (p. 15). She supports this assertion with a census of the number of index entries, the number of periodical articles, and the number of periodical titles indexed for ten technical services topics in *Library Literature*, 1970/71–1990. Without statistical analysis, it is impossible to ascertain the validity of her assertion. In discussing the results of her survey, Myall focuses on the content of the publications rather than on an analysis of the count of index entries.

In their chapter on the past twenty-five years in school library technical services, Kathleen Shannon and Mary Ellen Gibbs focus on "changes in the way libraries do things" (p. 41) as they cope with new rules and practices, new types of material, and new equipment. In the chapter "Acquisitions and Collection Development," Marion Reed takes a similar approach, describing changes in selection, funding, tools, procurement methods, and staffing. In "Authority Control" by Robert H. Burger, "Descriptive Cataloging" by Mary Ellen Soper, and "The Transformation of

Serials Cataloging, 1965–1990” by Lori L. Osmus, each of the authors provide chronologies of the changes in these areas. Burger begins his history of authority control with Charles Cutter (1894), providing a historical context for, and discussion of, themes that continue into the 1965–1990 period.

In her chapter on minimal-level cataloging, Andrea Stamm includes a review of various efforts at limited cataloging at the Library of Congress (LC) and the bibliographic networks. In a review of the literature of minimal-level cataloging, she presents pro and con arguments on the topic, and concludes with a detailed discussion of minimal-level cataloging at Northwestern University Library.

Larry Millsap in “A History of the Online Catalog in North America” and Debora Shaw in “Automating Access to Bibliographic Information” take a somewhat more analytical approach to the changes that occurred in this period. Beginning with Ellsworth Mason’s 1971 diatribe against “computerization” (p. 79), Millsap briefly reviews the history of library automation, including several little-remembered efforts of the 1960s. He records the false steps and dead ends as well as the successes. Shaw discusses the complex variety of computer-based bibliographic tools—library catalogs, bibliographic utilities, abstracting and indexing services, full-text databases—noting that they evolved from different starting points, with different technologies, and for different purposes. She concludes with a short discussion of the desirability and the difficulties of integrating them into a coherent whole.

Rather than record specific changes in subject cataloging from 1965–1990, Tschera Harkness Connell concentrates on the problems that subject cataloging solves, regardless of changes in technology. When technology changes our tools, solving one problem might create another, as Connell demonstrates in her discussion of strategies for dealing with large retrievals in card versus online catalogs (p. 219–20). Her concluding paragraph serves to summarize the content of the entire cataloging section of this work. She notes: “In

early American library history, cataloging was a central concern of the library profession as a whole . . . With the emergence of online catalogs an interest in improving subject access has again become an active concern of the entire library community.”

Three of the book’s chapters deal with historic details rather than broad overviews. In one of the longest chapters, “Death of a Cataloging Code: Seymour Lubetzky’s Code of Cataloging Rules and the Question of Institutions,” Edgar A. Jones describes the involvement, during the 1950s and 1960s, of the Association of Research Libraries (ARL) and the LC in political maneuvering on the question of entry under place for certain types of corporate bodies. This account, based on archival sources, is fascinating reading for cataloging enthusiasts. Jones’ narrative is straightforward and objective until his conclusion: “the action of LC and ARL must now appear akin to that of Canute commanding back the tide” (p. 144).

John P. Comaromi’s essay, “The Dewey Decimal Classification: 1965–1990,” a lively discussion of the problem of phoenix schedules, is fun to read. Here is the editor of the *DDC*, with a gift for colorful writing, annoyed with his publisher: “An excess of success curses future efforts by lulling those who enjoy such success into believing errors in efforts to be made are as unlikely as they are unwelcome” (p. 224).

Lawrence W. S. Auld, in “Recollections of Two Little-Known Professional Organizations and their Impact on Technical Services,” records the histories of the Committee on Library Automation (COLA) and of the Library Automation, Research, and Consulting (LARC) group. COLA began in 1964 as an informal discussion group for people involved with library automation. LARC also began in the 1960s as a means of sharing information about library automation projects, “especially those with problems” (p. 322), and evolved into the publisher of *LARC Reports*. Auld notes that these two organizations developed outside the existing professional associations when the latter did not have an organizational infrastruc-

ture appropriate for sharing information about library automation. By the mid-1970s the professional organizations had completed this paradigm shift, absorbing the work of COLA and LARC into their organizational structures.

Arlene Taylor's "A Quarter Century of Cataloging Education" begins with a description of her library school student days in 1964, contrasting her cataloging class to current curriculum content and teaching methods. Remarking on the effect of the professor in the teaching process, and noting Professor Henderson's recognized success in teaching cataloging, Taylor discusses the current shortage of excellent teachers in this important area. She notes that this shortage comes just as library schools need to move beyond merely teaching students to catalog to giving all students an essential grounding in the concepts of bibliographic control.

Eloise M. Vondruska discusses professional education as lifelong learning in "Continuing Education and Technical Services Librarians: Learning for 1965-1990 and the Future." When technology is changing rapidly, continuing education is crucial for all librarians to keep their skills current, but even more important, it provides new meaning and a new understanding of core professional values in changing times.

As noted above, details of the changes in cataloging between 1965 and 1990 are the primary emphasis of this book. Coverage of indexing, preservation, and binding is less detailed, though the essays offer a useful overview of areas related to cataloging. "Indexing, in Theory and Practice" by Marie A. Kascus surveys indexing as a "key element in information access" (p. 242). She predicts that indexing and cataloging will merge as librarians develop access to electronic information. Mary Piggot supplements Kascus' discussion of machine indexing with details on "Some Post-War Developments in Indexing in Great Britain."

Preservation was a growth area in technical services throughout the 1965-1990 period as documented in William T. Henderson's "Preservation: A Quarter Century of Growth." Henderson examines the

changes within this area, as preservation needs expanded from paper to plastics and other synthetic material used in film and magnetic tape. He concludes with a discussion of issues related to preservation of electronic information. James Orr's essay, "Combining Old World Craftsmanship with New World Technology: A Quarter Century of Library Binding in Review, 1965-1990," provides a brief survey of developments in this preservation-related area.

Except for the final article, each chapter in this book closes with a discussion of the future of a particular aspect of technical services. In contrast, Richard W. Meyer's concluding essay, "The Effect of a Transition in Intellectual Property Rights Caused by Electronic Media in the Human Capital of Librarians," speculates more broadly about how changes in scholarly communication will influence the future of technical services. In a thoughtful discussion of online journals, Meyer lists their four functions, "communication, archiving, gatekeeping, and human capital appreciation." With access to electronic publications replacing ownership of printed materials, Meyer argues that parallel changes will occur in the role of librarians. Intellectual property rights will focus on rules for the use of common property instead of individual property holdings. Bibliographic control of electronic publications can be integrated with the publication process instead of occurring after the publication is obtained by an individual library, and archival responsibility for electronic journals is likely to be centralized at the originating institution rather than dispersed, as is the case with printed journals. Librarians' expertise in bibliographic control and computer networking will be more essential than ever.

As a festschrift, this book can be considered a success in honoring an influential teacher and reflecting the variety of her interests and concerns. As a contribution to the history of technical services or to thought about its future, it is less successful. Though several of the essays are thoughtful and well written, many are limited to a simple record of events of the period 1965-1990, without the analysis

and discussion that would place them in the larger context of library and information services during that period. With some exceptions (Shaw, Connell, and Meyer), discussion of the future is the weakest part of the book. In the fast-changing world of technical services, looking at the future from a 1990 perspective in a book published in 1996 is not particularly enlightening. Though the definitive history of technical services from 1965 to the present remains to be written, the future of technical services is the subject of a number of recent publications. Michael Gorman, Walt Crawford, and Arnold Hirshon have written eloquently on the future of library technical services.

Unfortunate shortcomings in the production of the publication also lessen its readability and its overall value as a collection of essays. Careless, possibly nonexistent, copy editing jolts the reader, as in "the trails of retrospective conversion gripped libraries" (p. 97) and "card catalogs and their in hospitality to change" (p.80). In Burger's essay, the section headings are listed incorrectly within the text (p. 106). The imprecise use of quotation marks, combined with Comaromi's use of both third and first person to refer to himself (p. 232-34), leaves the reader confused about who said what.

The twenty-two page index is haphazard, possibly the product of a computer without human supervision. The entry under "Bibliographic" is a muddle. The entries "AIDS virus" and "AZT drug" are just examples in a discussion of subject headings. The index mixes, with no distinction, casual mentions of a topic ("Wei T'o") and fuller discussions ("Authority Control"). Two references appear under "Superimposition," both in the Jones article, but the articles by Burger and by Soper also include discussion of that subject. There is a curious tendency to index adjectives ("Bibliographic," "Hispanic," and "Nuclear") as well as mysterious phrases ("Copious strips" and "Uneasy alliance"). Readers of this book will appreciate an index of acronyms and initialisms, and the index does, in fact, provide one with its careful and consistent cross reference sys-

tem.—Margaret Rohdy, *University of Pennsylvania Libraries.*

Museum Librarianship: A Guide to the Provision and Management of Information Services. By Esther Green Bierbaum. Jefferson, N.C.: McFarland, 1994. 190p. \$38.50 (ISBN 0-89950-971-1).

Esther Green Bierbaum's *Museum Librarianship* is a succinct and highly readable introduction to "the library in the museum and how it supports what goes on in the museum: acquiring and studying objects, preparing exhibits, developing programs, and conducting research" (p. 1). Intended for the small museum that is setting up a library from scratch, this book, nonetheless, provides a wealth of information for those managing, or seeking to enlarge or enhance, existing library collections and services in a museum environment.

Arranged in seven chapters, this book carefully leads the reader through each component of a sound library program in a logical and incremental fashion. In fact, the concluding summary of each chapter's content serves as a bridge to the topic covered in the following chapter. Chapter 1 introduces the relationship between libraries, museums, and archives; outlines a number of justifications for establishing a library within a museum; and then demonstrates how statements of mission, goals, and objectives work together to define the library's sphere of action. Chapter 2 explores collection development policies and procedures, and then discusses technical services activities required to achieve control over the collection. Chapter 3 takes a realistic look at the space, furniture, and equipment needs of a small library while keeping issues of scaling up for larger libraries in mind. Chapter 4 examines the personnel, management, and budgetary aspects of starting up and running the library. Bierbaum's consideration of the volunteer's role in a successfully managed small museum library is particularly cogent. Chapter 5 suggests several kinds of information services that can be provided by the library, although a discussion of the role of fees and fee-

based services in the library would have been welcome here. Chapter 6 examines the ways in which technology, in a variety of mechanical and electronic forms, can be successfully utilized in even the smallest operation to increase efficiency and service. The final chapter takes a broad look at the library as a partner with its museum in the dynamic flow and interpretation of information both within the museum and beyond it: in the community and the wider information universe.

Several appendixes provide more detailed information about related organizations and such aspects of technical services as "Structuring Bibliographic Records According to ISBD/AACR2 Standards," and "Standard Filing Rules." The volume concludes with a bibliography of additional readings in each of the topical areas covered in the chapters. Given the "how-to" nature of this volume, however, the references to further readings would have been more effective if they had been annotated and incorporated into each chapter, rather than listed at the end of the book.

There is much to applaud in this book. To attempt to organize and present the full range of library principles to the uninitiated, while simultaneously demonstrating the applicability of those principles in the museum environment, is no small task, and Bierbaum largely succeeds. On occasion, however, Bierbaum's points seem out of place. For example, "Conservation and Preservation" issues are included in the chapter on information services (chapter 5); I would have expected to find these concerns raised as part of the outline of collection management activities outlined in chapter 2. Similarly, Bierbaum's discussion of the placement of the library within the museum's reporting structure comes rather late in the book—as part of a general discussion of management issues in the museum library (chapter 4); it would have been more useful to consider the organizational placement of the library as part of its mission, objectives, and goals in the first chapter.

Although the many details and helpful hints found throughout demonstrate that

Bierbaum's book is based on numerous site visits and careful observation in museum libraries, this does not appear to be a work informed by extensive practice in the field. The most noticeable limitation of the book, in this regard, is the absence of any sustained discussion of the issues of authority and mandate for the library. For the library to be an effective and integral part of the museum organization it must have a clear statement of its scope and authority, be placed on the organizational chart so as to secure access to resources and support, and have critical policies and procedures (such as collection development and de-accessioning procedures) approved and actively supported by the governing body. While some of these political dynamics are alluded to, the book does a disservice to its intended audience by not engaging the practical concerns that necessarily underlie a dynamic and effective library program more thoroughly.

A second limitation of this book is, unfortunately, the result of its strength. Bierbaum admirably explicates the efficacy of library science techniques in a museum environment. The language and the examples used throughout the work reference "traditional" library bibliographic materials and the issues associated with their management and use; the bibliography almost exclusively cites work drawn from the library literature. Although Bierbaum does consider the various kinds of nonbibliographic (archival, manuscript, and ephemeral) materials that museums have in their care, her understanding of the administration of these materials is less well informed. In Bierbaum's model, materials that come with and document artifacts in the collections should remain under the care of the registrar; archival materials acquired from other sources whose subject lies within the scope of the institution's collections should be maintained by an appropriate curator; and the museum's own institutional records should fall under the care of an archivist or archival consultant (pp. 21–22). While these distinctions are useful conceptually and represent the best case scenario, the reality in many small

museums is that the library soon finds itself functioning as the site of curatorship for much if not all of the museum's non-artifactual collections, whether related to particular artifacts or not, and serving as the institutional archives. It is problematic to insist so exclusively on the application of principles drawn from librarianship in an environment that could benefit equally well from the application of principles and practice drawn from other information management paradigms. To wit, Bierbaum's book should be supplemented by such works as Elizabeth Yakel's *Starting an Archives* (Society of American Archivists, 1994), and William A. Deiss' *Museum Archives: An Introduction* (Society of American Archivists, 1983), two particularly useful Society of American Archivists publications.

In the final analysis, I find Bierbaum's desire to create a traditional "library" in the midst of a museum troubling and potentially misguided. It is my sense that many museum professionals are beginning to see the virtue in collapsing aspects of library, archival/manuscript, and artifactual management to achieve integrated control over, and access to, the entire range of institutional assets. This shift in the management paradigm is consistent with, and perhaps made possible, by the emergence of open systems technology, an integrated MARC format, and an increasingly networked and transparent information universe that renders increasingly irrelevant our conventional distinctions between bibliographic and nonbibliographic information, and between archival and artifactual collections.

By proposing the establishment of a "library" as a carefully defined set of collections distinct from other holdings, Bierbaum is unfortunately advocating a luxury few museums of any size can afford, and a model that many museums will find increasingly out of step with their information management needs. If a museum looking to establish a library is eager, as Bierbaum correctly argues they should be, to create a dynamic information center that is integral to the institution's activities, mission, and goals, this book will be useful to the extent that its reader can

synthesize it with other works to create a truly integrated approach to collections management in a museum environment—Luke J. Gilliland-Swetland, *Japanese American National Museum*.

Video Acquisitions and Cataloging: A Handbook. By James C. Scholtz. Greenwood Library Management Collection. Westport Conn.: Greenwood, 1995. 184p. \$55 (ISBN 0-313-29345-7). LC 95-7536.

While maps and sound recordings have had a place in libraries for a long time, it was not until the 1960s and 1970s that various types of other materials found a home in library collections. Some of these media, e.g., filmstrips, motion picture loops, and sound slides, have disappeared from the marketplace. Videos, however, have experienced continuous growth in circulation statistics and assumed increasing importance in library collections.

With this persistent and growing interest in, and use of, videos by the library user, it is surprising that so few books have been published to help librarians establish, acquire, catalog, process, circulate, shelve, and care for video collections. Only three other books on the management of video collections, in addition to the author's books, are included in the selected bibliography at the end of this work. Librarians need many resources to help them make competent decisions about the many aspects of managing video collections. Therefore, a new book about videos in libraries deserves attention and careful consideration.

In 1989 James C. Scholtz published *Developing and Maintaining Video Collections in Libraries* (ABC-Clio), a practical, useful handbook that covered many aspects of videos as part of library collections. In 1991 Scholtz published *Video Policies and Procedures for Libraries* (ABC-Clio), a work in which he discusses collection development, circulation, copyright, and intellectual freedom issues and provides sample policy statements from various libraries. In this latest work, *Video Acquisitions and Cataloging: A Handbook*, he deals with another part of the larger topic. These three books could

function as a set. *Developing and Maintaining Video Collections in Libraries* may be regarded as the basic volume to be consulted for topics not discussed in Scholtz' later books, such as the selection and maintenance of video equipment and the storage of videos. The later books update his earliest work and elaborate on some of the topics previously considered.

The focus of his most recent book, *Video Acquisitions and Cataloging: A Handbook*, is reflected in its title. Scholtz, the director of the Yankton Community Library in South Dakota, has placed the emphasis on acquisition in its broadest sense; five of the six chapters are devoted to this aspect of the book. Cataloging is discussed in only one chapter.

The book is logically organized. It begins with the history of the video industry and works its way through methods of distribution as they affect libraries, vendors of videos, acquisition procedures, and cataloging procedures. The text is accompanied by bibliographic notes, and the book concludes with a two-page selected bibliography and an index.

This book seems less "user-friendly" than Scholtz' other two books, especially the first one. The type is smaller, there are no illustrations, and the book design (to me at least) is less pleasing. Putting aside these initial visual impressions, we find a very practical book that can be understood by anyone interested in videos as part of library collections.

The content runs from very basic how-to procedures (with many analogies to book acquisitions) to discussions of topics not essential to the operation of a video collection, such as studies of video sales patterns. The text is studded with practical aids that include examples of many things involved in the acquisition and cataloging of videos: public performance rights agreements and request letters, forms that can be used in the acquisitions process, copyright warning labels, and sample catalog records. There are lists with the names, addresses, and telephone and fax numbers of eighty-seven vendors including catalogers, distributors, wholesale jobbers, pre-viewed video sellers, and vendors of non-mainstream videos. A list

of genre headings for feature films with an explanation of each term and examples of videocassette titles that would properly be assigned the heading is particularly useful for catalogers.

People interested in video collections who do not work in libraries in the United States should be aware that this is a book obviously written for American libraries. Some of the content is not pertinent to, and may not be useful in, the libraries in other countries, e.g., the chapter on the United States copyright laws. All the firms named in the extensive lists of vendors have United States addresses with no indication of their branches in other countries.

Though this book will be very useful for American video collections, nothing is perfect. Following are my quibbles with the book:

- Statistics about the percentage of United States public libraries and public school libraries that possess videocassettes and the number of videocassettes circulated by public libraries are taken from one paper written in 1962 and two articles published in 1988. These figures are inappropriate for a book published in 1995. Aren't there more current sources for these figures? Scholtz' work in other regards displays an up-to-date knowledge of the video field, so it is possible that these are the latest available statistics. If so, some enterprising student in a school or department of library science, or an interested librarian, should be encouraged to undertake the task of filling this gap in our knowledge of the current extent and use of video collections.
- Scholtz makes a point when he uses the term "videographic record" in place of "bibliographic record," the commonly used term. For many years some nonbook librarians, especially nonbook catalogers, have chafed at the word "bibliographic" because its meaning is related to books and because of their fight to have nonbook materials given equal status to books in a library's collection. Nevertheless, most librarians have ceased to make this connection between books and

"bibliographic"; a bibliographic record for most of us is a record in a catalog for any type of material. If "videographic record" were to become an accepted term, the analogy would have to be extended to other nonbook materials. Would the library community accept "audiographic record," "cartographic record," "pictographic record," "computergraphic record," "artgraphic record," etc.? Are these terms necessary? Many times in the past both successful and unsuccessful attempts to change or establish standard terms for use in libraries has occasioned much time-consuming controversy. I would prefer to save our collective professional energies for more important issues.

- On page 144 Scholtz mentions that the National Film Board of Canada developed the PRECIS (PREserved Context Index System) method of subject analysis in 1979. The National Film Board of Canada did choose PRECIS for its bibliographic records, but, although fellow Canadians would be proud to claim responsibility for

this interesting subject analysis system, its real genesis must be acknowledged. The system was developed initially for the British National Bibliography and was first used in January 1971. In the 1970s there was a flurry of interest among nonbook librarians about the precision that PRECIS could bring to subject access for nonbook materials. This interest died after the Library of Congress studied PRECIS and decided against its use for Library of Congress records.

There is no indication that the public's appetite for videos is lessening. Libraries contribute an important service to their communities in circulating videos that commercial outlets do not find profitable to obtain and loan. The effective management of a library's video collection is necessary in this era of budgetary restraints. The more that information about this topic becomes available, the more libraries will be able to live up to their image as providers of both information and high-quality entertainment.—*Jean Weihs, Technical Services Group, Toronto, Ontario.*

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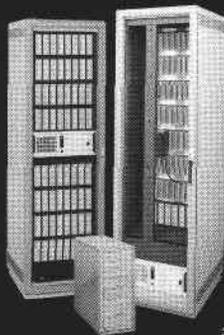
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