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The Use of Research

Joe A. Hewitt

This paper will emphasize the use of research that is related to technical services and will discuss it from the point of view of a technical services administrator. Perhaps the title of the paper should be “The Use of Research: A Personal View,” because these remarks are experiential, and certainly are not based on the kind of controlled observation that we expect from research. If you recognize at times a presumption that my experience is similar to that of other technical services administrators, please don’t take that as a measure of my scientific standards. Rather, it is an indication of the freedom one feels when talking about a relatively unexplored topic, in this case—the use of research, or the impact of research on practice in librarianship, which, incidentally, would make an excellent research topic.

It is customary in commentaries on library research to make a distinction between basic or theoretical research on the one hand, and empirical or pragmatic research on the other. This distinction has become so habitual that it determines to a large extent the framework in which library research is discussed and imposes on the commentator an obligation to point out the type of research about which he is commenting. Most of my remarks are oriented toward empirical research aimed at serving some practical need of the profession. With respect to theoretical research, suffice it to say that the principal use of theoretical research is to generate more research; its impact is measured in terms of its influence on the literature of the discipline, rather than on the practice of the profession. Inasmuch as its ultimate goal is to develop theories that contribute to an understanding of the basic issues of librarianship, some theoretical research may in time acquire utilitarian value, but that is neither its purpose nor its justification. It is unfair to criticize theoretical research for being useless, as many do, so please keep in mind that I am dealing in this paper with research intended to have some practical application in a real environment. In other words, I am dealing with research that can appropriately be criticized for being useless.

Another distinction that needs to be made is that I am discussing research that has been published or otherwise disseminated for the general good, rather than the studies or information-gathering exercises we conduct in our own libraries to support management decision making. Such

This paper, prepared by Joe A. Hewitt, Associate University Librarian for Technical Services, Wilson Library, University of North Carolina at Chapel Hill, was presented at the conference-within-a-conference, “Research by and for Librarians,” on July 11, 1982.
studies may have researchlike qualities, but for the most part their procedures are tailored to a specific situation and are not designed to meet accepted standards of research, although some may do so. For most of us, this type of quasi research conducted in our own libraries probably plays a greater role in our day-to-day work than published research, but we must begin to recognize its limitations as research. Too many such studies do indeed get published and make their contribution to the clutter in our literature. While recognizing the appropriateness of many degrees of rigor for various purposes, I believe that publication ought to be reserved for research that represents a legitimate attempt to meet a respectable standard.

**PRACTICAL NEEDS FOR RESEARCH**

As a technical services and collection development administrator, I frequently turn to the library literature to gain some information or insight that will be useful in my work. For a period of nine months recently, I have kept a record of the times I have sought out research for some practical use and find that my needs as a consumer of research fall into four general areas:

1. The need to determine predominant or common practice with respect to some aspect of technical services operations, organization, or policy in libraries similar to the one in which I work.
2. The need for in-depth evaluative analyses of systems, procedures, costs, and organizational structures in settings that approximate the environment of my own library.
3. The need for reports on developmental projects similar to projects under way in my own library, or projects that have potential application in my own library.
4. The need for status information on conditions that impinge on the operations of libraries, especially conditions in the publishing industry, but also in areas such as technology, higher education, public finance, and society in general.

I do not presume that these categories include all research of possible utility to the practicing librarian, but I do think that they include a large part of the research we use in the day-to-day management of libraries. I will comment briefly on each of these needs, focusing primarily on the ways that research of each type is limited in its usefulness and how it might be improved from the consumer’s point of view.

**SURVEYS OF PREDOMINANT PRACTICE**

First is the need to determine predominant or common practice with respect to some aspect of technical services operations, organization, or policy. I find to my chagrin that this need often results from the necessity to defend or justify a practice in my own library, but it may also be related to planning, resource allocation, and organization and staff review. This kind of need, which I perceive as both common and urgent among technical services librarians, is one that is frequently not met in any specifically appropriate way by published research. One reason for
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this, it appears to me, is the excessive reliance on survey methods. Sur-
vey research is popular because it is easy; it is easy because survey instru-
ments impose a preconceived and superficial order on a set of data by
asking a target group to respond to the same set of oversimplified ques-
tions. I am sure that most of you have spent your share of time respond-
ing to questionnaires on behalf of your library, and are no doubt familiar
with the discomfort one feels when forcing the complex realities of a li-
brary into a simplistic structure. If you have felt this discomfort, you are
aware of the softness of much survey research.

There are of course many straightforward fact-finding tasks appropri-
ate for the survey approach, but the method often falls short when deal-
ing with issues related to library organization, operational practice, and
policy. In some cases there is a more useful approach to such questions. I
am referring here to the collection, analysis, and synthesis of source doc-

"... publication ought to be reserved for research that repre-
sents a legitimate attempt to meet a respectable standard."

uments from the subject libraries, in combination with direct contact
with staff for clarification and interpretation. With this approach, the
order of the data is discovered rather than imposed, complexity is ex-
posed and can be described, interaction is revealed. As a method, how-
ever, the critical analysis of source documents is inelegant and without
question a more demanding and time-consuming approach than survey
research, but if there is any point that I would emphasize in this paper, it
is that the usefulness of research seems to correlate rather directly with
the amount of effort that goes into it.

I believe that I speak for a large number of technical services librarians
when I say that our greatest need in the area of descriptive research on
library practice and organization is for studies that do not oversimplify
the phenomena we are trying to manage, and I believe that in some cases
the synthesis of source documents is a more promising approach in that
respect than the use of questionnaire surveys.

In that same connection, I would like to mention another tendency of
some present-day research that detracts noticeably from its usefulness,
and in an especially irritating way. This is what I have referred to in
another paper as the "empty box syndrome," which I illustrated in that
paper by referring at length to the Battelle study on linking the bibli-
ographic utilities. The "empty box syndrome" results from an emphasis
on elaborate analytical and modeling techniques at the expense of proce-
dures for gathering accurate data. Allocation of the time and resources of
the project is heavily oriented to the analytical superstructure, rather
than to the development of sound sampling strategies, accurate observa-
tion, and valid instrumentation. The results of such studies are empty
boxes, that is, analytical models or computer programs for analyzing
data, but with no reliable data to analyze. Users of the research are, of course, invited to collect their own data, but this follow-up is rarely possible, because of the complex data collection projects required by the models. Analytical models tend to become impossibly intricate when developed by researchers who are not obligated to fill them with valid data. Thus we have a number of studies with only an illustrative value, which as a general rule, is not what the technical services practitioner needs from decision-oriented research.

**LIBRARY OPERATION CASE STUDIES**

The second category of research which I frequently find useful in my work is that which describes, analyzes, and evaluates particular systems, procedures, organizational structures, and policies in use in other libraries. You recognize, of course, that I am referring here to the "how we do it good" paper, or the more sophisticated version of that form, the case study, held in such low esteem by library school faculty. From the practicing librarian's viewpoint, however, case study research is potentially of great usefulness because, if properly conducted, it provides us with the basis for comparing and measuring the effectiveness of our own operations and can provide information and insight regarding management techniques to emulate or to avoid. The low regard with which case study research is held by the professional research community is based, I believe, on a somewhat doctrinaire perspective with respect to the processes of generalizing research findings. The case study is indeed research based on a sample of one. It does not have, nor does it claim to have, external validity in a statistical sense; the findings of case studies cannot be generalized through inferential statistics in the same manner as a survey. For these reasons the case study is considered a primitive form of research that does not even qualify as legitimate research in some quarters.

What must be recognized, however, is that concepts of external validity, or generalization based on inferential statistics, are quite different from the processes of transferring the findings of research from one specific setting to another. As a practitioner concerned mainly with the practical application of research, I am often less interested in the validity of a research finding to libraries in general than its validity for a single library—my own. In that case the responsibility for generalizing research rests with the consumer and is accomplished by determining the degree to which the specific context of a case study matches that of the library to which it is to be applied. The responsibility of the researcher in this process is to ensure that the study has internal validity and to pro-
vide enough systematic description of the appropriate context for the consumer to make that judgment.

The point that must be emphasized is that case study research can be extremely useful, and practitioners would be better served if researchers, particularly those based in library schools, encouraged this method when it is appropriate and trained students to use it properly. The limitations one finds in the existing body of case study research are not inherent in the form, but in the fact that case studies in librarianship are not conducted within the context of a traditional format or a body of standardized procedure, and in many cases are not competently conducted and reported.

The disdain for case study research on the part of many qualified researchers has diminished the usefulness of this form for practitioners in a number of ways. I will mention only a few:

1. There is a general lack of negative results in case study research because of the almost total dependence on the initiative of practitioners, who are understandably reluctant to report and analyze their failures. The analysis of failed ventures in librarianship represents an area of great potential usefulness that we cannot begin to explore until the independent researcher begins to take an interest in the case study form.

2. Case studies frequently lack objectivity in their design, method, and reporting because they are usually conducted by persons closely associated with the organization or systems being studied. This does not mean that there is any great incidence of intentional bias, but that many who conduct case studies are too close to their subjects to maintain a truly objective perspective and are not sufficiently trained in method to overcome these limitations through protective design. Here again the independent researcher is needed, if not to conduct the research, at least to act as a consultant with respect to design and procedure.

3. The most critical result of the lack of persistent attention to case study research by specialists in methodology is the failure of the profession to develop standardized designs and procedures for conducting various types of case studies in libraries. I can think of no area in which this failure has greater consequence than that of cost studies of technical services operations. In spite of the increasing standardization of practice in technical services, due partly to the growth of networks, there is no similar standardization of our methods for observing, measuring, and costing our operations. Case study research will not live up to its potential for usefulness to the practicing librarian until these standardized methods are developed, accepted, and used on a broad scale in the profession.

Let me add here that another attitude that seems to be an obstacle to the production of useful case study research is an apparent prejudice against replication. Researchers seem compelled to search for uniqueness in design and methodology even when studying a phenomenon that has been studied many times before in other environments. This attitude, in my opinion, relates to the profession’s self-conscious preoccupa-
tion with the status and respectability of our research effort. Replication is not considered creative by those who instill our library school students with their basic research values, nor by those who control the channels of disseminating the results of research. It is, however, through replication that the knowledge base of more mature disciplines is consolidated, and replication can be one means for adding the all-important longitudinal element to research. The prejudice against replication in librarianship is an indication of the immaturity of our attitudes toward research, representing a somewhat romantic view that ignores the fact that a great deal of research is pure drudgery, is not creative, and usually has no dramatic consequence, although it may still be useful.

**DEVELOPMENTAL RESEARCH**

The third type of research for which I have frequent need as a technical services administrator is developmental research. It is at this point that I will end my somewhat critical attack on library research because in recent years developmental research in librarianship has begun to meet reasonable expectations in most areas and appears certain to continue to do so. As an administrator with responsibility for coordinating an effort to develop online catalogs for a network of three research libraries, I have found that for my purposes the reports describing other developmental efforts and the characteristics of the resulting systems have been plentiful, available, and competent. Surveys of developmental activities have also been adequate, although the comparative element needs to be strengthened. There is so much developmental activity in this area that it is sometimes difficult to keep up, and I do have one minor suggestion for those who report development work in the literature: it would be useful if each project attempted to establish a unique identity in terms of the particular orientation, developmental perspectives, and other characteristics that distinguish it from other projects working toward the same general goals.

I do want to note one disturbing tendency that is sometimes evident in developmental research, in particular with respect to commissioned studies. Sponsoring agencies sometimes require, as the product of a single project, a research-based answer to questions of what to do and a consulting report on how to do it. The resulting report is a hybrid, partially a research study and partially a consulting report, which sometimes results in poor performance on both scores. One danger of commissions framed in this way is that the methods and standards of consulting tend to invade research. Consulting is the legitimate and very useful process of applying independent judgment to the facts of a given situation, but it is not research, which applies rigorous methods of observation and analysis in a manner that allows the data to speak for itself. The failure to acknowledge this distinction in conducting, reporting, interpreting, and acting on developmental studies of various types, can undermine the impact of the legitimate research that does exist, and the extent to which practitioners can begin to make this distinction will be a measure of our growing maturity as a knowledge-based profession. To underscore the point that these remarks are not meant to reflect on con-
resulting in a negative way, I should add that one approach to this problem is for sponsoring agencies to make greater use of consultants in writing requests for proposals.

Traditionally, the weak point of developmental research in librarianship has been the lack of follow-up, or the failure to shift into the evaluative mode after systems have been developed and declared operational. All systems are developed according to a set of goals, developmental perspectives, and assumptions about the needs and behaviors of the users or libraries the system is intended to serve. Once a system is in place, it constitutes not only an end in itself as a system serving these needs, but also a means for testing the validity of the goals, perspectives, and assumptions that led to its realization. This view of the developmental process is, of course, rather standard doctrine, but it is often not followed in practice. For that reason a great deal of excellent developmental research in librarianship has never been truly culminated because it has not completed the research cycle.

There are signs, however, that this condition is changing. Among the more notable of these signs is the Council on Library Resources’ Public Online Catalog Study, an extensive multisystem inquiry aimed at evaluating user interface with operational online catalogs. It is hoped that this study will be the first of many such investigations evaluating progressively more refined versions of the online catalog. If so, it will be tremendously useful to librarians attempting to provide cost-effective and responsive online bibliographic access for their users. Perhaps even more important, however, is the possibility that the Public Online Catalog Study could serve as a model for creating a “research front” in a number of areas in librarianship. By research front, I am referring to a broadly based coordinated research effort involving numerous institutions and individuals working on different facets of a general and highly significant research problem. It is a phenomenon rarely witnessed in librarianship, and the Public Online Catalog Study is a rather anemic example of a research front in comparison to those in scientific and medical fields, but at least it could be a start. Possible areas in which a research front might be suitable include cost studies, subject access, economic impact studies, interaction of technology and organization, user studies, and preservation. As a consumer of research for its utilitarian value, I can think of no other development that would be more useful than the creation of several such fronts in the area of technical services.

**ENVIRONMENTAL STATUS REPORTS**

The fourth category of frequently used research is descriptive and statistical status reports on conditions that affect the operation of libraries, particularly trends and prices in publishing, but also those related to technology, economic and public finance, higher education, shifts and developments in various subject disciplines, and social trends in general. Since most libraries are a part of a larger institution or unit of government, any force in the environment that affects the institution has implications for the library, and the practicing librarian must be aware of these forces to perform his or her role. In recent years, for example, *The*
Chronicle of Higher Education has probably become a more important medium for alerting librarians in academic institutions to research relevant to their work than any single library publication.

I have no particular comments to make about the adequacy or status of research on the external environment because it does not represent a coherent category in terms of focus or methodology. The importance of this type of research must be emphasized, however, and particularly the need for librarians to expand their use of social, political, and economic research in the management of libraries. To that end, it would be useful if more library studies were oriented to the context of broadly based research; that is, there is a need for studies that focus on the specific implications for libraries of the findings of research on the external environment. From the opposite perspective, library research might also attempt to contribute more substantially to the understanding of the broader societal context. For example, the massive bibliographic databases being accumulated by the library community represent an unparalleled resource for longitudinal analysis of trends in publishing and scholarship.

I have mentioned four categories that account for approximately 90 percent of my own personal use of research in managing a technical services operation. These are: (1) surveys to determine predominant practice or prevailing conditions in libraries; (2) in-depth critical analyses of specific library operations; (3) developmental research; (4) status research on external conditions of importance to libraries.

Utility of Library Research

The question remains: How and to what extent is such research actually used to affect decisions in a working environment? In my own experience, and in spite of a conscientious habit of seeking out research for a variety of purposes, published research has very little direct, discernible impact on decision making. The reason for this, as we all know, is that decision making in libraries takes place within a complex environment of institutional traditions, practices, and policies. It takes into account the particular qualifications, attitudes, and opinions present among the staff who must carry through with decisions, and it is critically affected by organizational and resource constraints. In short, libraries are a severely restrictive environment for applying generalized research results in their pure form. Decision making in libraries is institution-bound to a very large extent.

How then is research useful in practical terms for the management of libraries? Although the specific impact of research on administrative decision making in libraries can seldom be documented, the awareness of research on the part of librarians is a component of that amorphous attribute that we call "professional judgment." The practicing librarian's knowledge of research findings, along with experience, common sense, intuition, and familiarity with local traditions and politics, all play a role in decision making. It would be my guess that if there were any way to measure the relative influence of these factors in the real world, research would play a rather minor role in most professional judgments.
This situation is regrettable for several reasons. First is the fact that, in all probability, many management decisions in libraries could be improved from the point of view of library effectiveness and service to users if the results of research, rather than idiosyncratic local conditions, were the determining factors. Second is the fact that a greater reliance on the demonstrable results of research, rather than the more subjective elements of professional judgment, would enhance both the effectiveness and image of librarians in their local institutions. And third, the more that research can be brought to bear on practical decision making, the greater the claim of librarianship to the status of a true profession. It would clearly be in the best interests of the users of libraries and of librarians if the findings of research could become a larger and more visible element in the decisions we make in managing libraries.

My own view as to how this objective might be accomplished can be inferred from earlier comments in this paper; it is not the lack of research in librarianship that frustrates the practitioner as much as the lack of quality in much of the research that does exist. If we are to take the potentially risky step of attempting to displace local, situational factors in decision making with research-based factors, then that research must be of dependable quality and capable of withstanding the critical scrutiny of the institutional officers and constituents to whom we are accountable. For this reason, the most critical issues for users of research in librarianship are those having to do with upgrading the quality and usefulness of research, rather than the development of research agendas or expanding the level and scope of research activity. Among these issues are:

1. The need to develop and propagate standard, reproducible research designs specific to the problems of the profession.
2. The need to re-orient some segments of the professional research community to more useful approaches and methodologies.
3. The need for improved training in research design and methods in library schools, both to produce better qualified researchers and more critical and demanding consumers of research.
4. The need for effective orchestration of research efforts in order to create a coordinated approach to major research problems.
5. And finally, the need to acquire a stronger empirical base for understanding the interaction of research and practice in librarianship.

I cannot overemphasize the last issue, for it is only with such a development that we can expect to see an end to subjective, speculative, and somewhat rambling commentaries on "The Use of Research."

REFERENCES

The Last Frontier:
Possibilities for Networking in the Small Academic Library

Mary S. Dagold

Even though small libraries are a clear majority in the academic world, the advantages, disadvantages, and especially the cost to the small library system of participation in an online cataloging network have not been easy to determine. This study was undertaken to provide a cost-benefit analysis for the administrators of a small college in Maryland. Though there are attractive advantages to networking for the small library, disadvantages include possible increased demands on already limited professional staff time and a cost in excess of $3.00 per title cataloged ($4.50 per title during the initial year). Networking is not recommended for the smallest third of the nation's libraries.

Library literature is filled with news of various online cataloging systems. Such systems would seem to offer tremendous advantages to small libraries. However, there is little published information on how costly such systems are, particularly for small libraries.

Two recently published analyses of Higher Education General Information Surveys (HEGIS) data show that a clear majority of academic libraries are both small and inadequate by ACRL standards. Since there are so many more small academic libraries than large, it seems quite reasonable to examine the advantages and disadvantages online systems promise them, and especially how much participation costs.

How small are academic libraries? Seventy-seven percent of all types (graduate public and private and undergraduate public and private) have collections of less than 200,000 volumes. Over half of the total add fewer than 5,000 volumes annually. Fifty-six percent employ five or fewer professionals; 55 percent have a clerical support staff of five or fewer. Forty percent have materials budgets of $50,000 or less, with the median for all being $64,000. Eighty percent have fewer than 5,000 students, and for 30 percent of these institutions, the number is less than 1,000.

It is no surprise at all that speedy and efficient online cataloging service has captured the imagination of almost the entire library commu-
nity. It’s like the railroad’s “coming through”—a final hope that help is on the way. If one postulates two professionals for circulation, reference, interlibrary loan, and bibliographical instruction, only two are left for the technical services of acquisitions, cataloging, and serials control, assuming the director would have a full-time job administering the library.

This profile does not take into account the community and two-year colleges of the country. Standards for two-year colleges are much lower than those for four-year colleges in terms of staffing, budgets, sizes of collections, etc. The latest available HEGIS data for 1,146 two-year colleges show the average size of the book collections to be 33,900 volumes, and the average staff size to be 8 or less: 3.4 FTE professionals and 4.6 FTE support staff. Materials budgets average $39,000 with a median of $27,000. The library is open sixty-two hours per week. Almost no two-year colleges meet all ACRL standards, and the composite picture of academic libraries of all kinds shows that very small libraries, collections, and staffs are in the decisive majority in this country.

It might reasonably be supposed that in a democratic society, the average academic library would be a system whose needs were given some attention, but this is not the case. In a search of Library Literature for the last ten years, only a handful of full-treatment articles on the small library is recorded, and when searching by subjects such as computer operations or online cataloging, one finds equally sparse representation.

Most studies of the various network utilities concentrate on the advantages and disadvantages of implementing online cataloging in large systems. Data on costs, benefits, and problems in small library implementation seem virtually nonexistent. As the director of a small college library in the state of Maryland, I found these lacunae most unfortunate, for the Maryland State Board for Higher Education had recently commissioned a study of networking in the state. The study recommended that libraries in the state join OCLC via membership in Pennsylvania or District of Columbia regional networks.

What would these actions cost Villa Julie College, a two-year private college in the greater Baltimore metropolitan area? The following study, though based on local needs, may be useful in providing guidance to the smallest third of the nation’s academic libraries.

**MINIPROFILE OF THE COLLEGE**

Villa Julie College has fewer than 1,000 FTE students, all commuters, who are enrolled in some ten program areas concentrated in law, business, and medicine. All students are required to take a solid core of liberal arts courses in the sciences, social sciences, fine arts, and humanities in addition to their subject-major requirements. The library must thus provide a good basic general liberal arts library as well as very expensive and specialized professional literature.

The library contains about 25,000 volumes, 2,200 bibliographic unit equivalents of audiovisual materials, subscribes to about 230 serials, and adds approximately 2,000 items to its collection each year. It has a materials budget of approximately $35,000 for fiscal year 1982. It has 3 full-time equivalent employees (2.4 professionals and .6 clerical) and is open
for service sixty hours per week (all times classes are in session).

The college has recently concluded a two-year self-study required by the Middle States Association of Schools and Colleges as an integral part of their every-ten-years re-evaluation process. The library, as its part in this effort, surveyed students, faculty, and administration asking them to evaluate its systems, services, and collections. Goals have been set based on satisfying the user needs identified in this effort: the students want more books primarily, and the faculty, more audiovisual software and equipment.

The library staff has moved on several fronts to satisfy these requests: appealing to private foundations, accepting gifts in kind, and working with faculty to buy only materials that are almost certain to be useful to students. As an overall result, the library workroom contains several thousand uncataloged items, (most of which have been acquired by gift) and the backlog increases weekly.

Though the college has been growing steadily throughout the last decade, the administration is most reluctant to add additional staff in the face of national trends toward decreased enrollments and reduced federal sources of revenue. It has asked if there is any cataloging system available that is faster, makes more efficient use of available staff time, and offers a quality product at an affordable cost.

**THE STUDY**

The librarian in the small library milieu must often undertake studies with limited time to devote to them and even more limited resources. Approaching the problem by reading resources at hand such as *American Libraries* or *Library Journal* is like diving headfirst into a bowl of alphabet soup: OCLC, WLN, RLG, RLIN, SOLINET, PALINET, MINIMARC, MARCFICHE, ROM, BALLOTS.

After sifting out the acronyms, it emerges that of the four large commercial utilities (OCLC, RLIN, WLN, and UTLAS), only OCLC would be a possibility for Villa Julie College, or indeed any small college unless it happens to be located in the Pacific Northwest, where the Washington Library Network (WLN) is located. OCLC is also the cheapest. The University of Toronto Library Automation System (UTLAS) is Canadian; the Research Libraries Information Network (RLIN) is exclusively for large research libraries (though it offers some services to smaller, nonmember clients). Libraries do not join OCLC directly, but through a regional network. Villa Julie College is located in Baltimore, and thus the regional networks it could choose to join are the Pennsylvania Area Library Network (PALINET) or the Capital Consortium (CAPCON).

**THE ADVANTAGES OF ONLINE CATALOGING**

Though the final beneficiary of an online cataloging system is the user, what are the major advantages for the cataloger?

1. OCLC has a very large database (at least 7.75 million entries), containing the complete MARC files and cataloging data from a great many two- and four-year colleges and universities. It is likely
that almost all of the titles purchased by the small college would be in the database.

2. OCLC would eliminate the copy search and/or the card ordering/matching/paying procedures, the typing of main entry cards from CIP or other sources, almost all original cataloging, in-house card production, typing and revision of headings on cards, and some alphabetizing.

3. Through OCLC, the library could automatically acquire its cataloging input in a machine-readable form that could subsequently be used to create a computer output film or fiche catalog.

4. At a very small cost relative to keying cataloging data in-house, the staff could input present library holdings to OCLC, eventually obtaining a magnetic tape of complete holdings in a standard format adaptable to many computer-assisted library programs and systems already on the market. In short, converting enormous masses of cataloging data into a computer-readable format is a sine qua non for computerization of many other library functions.

5. The library could elect to receive from OCLC a hard-copy list of current processing, which would greatly facilitate the task of informing a largely part-time faculty about the library resources available to them and their students.

6. Many libraries have noted a real reduction in the total amount of time expended on cataloging along with increased productivity.

7. It would be easier for the small college to maintain standards of quality in the cataloging of materials. This is by no means a trivial advantage. As noted, professional staffs are very small; clerical support is inadequate in all types of libraries; cataloging rules have changed twice in fifteen years; and LC subject headings proliferate at an alarming rate and in often incomprehensible ways.

THE DISADVANTAGES OF ONLINE CATALOGING

One problem is that online cataloging would require more time from the library's full-time staff. The responsibility for terminal operation would devolve on them, for though there is some student clerical help, library work/study students are limited in the number of hours they can work, and their schedules seldom permit long uninterrupted work periods. It is simply not profitable to teach students sophisticated jobs, or jobs requiring continuous time and effort.

The literature provided no answer to the question of how many titles can be cataloged in a day, quite possibly because there are too many variables from institution to institution and in the level of difficulty of materials cataloged, but OCLC recommends one terminal if the annual volume of cataloging is less than 10,000 titles, and two terminals for volumes of 20-40,000 titles; three terminals above 40,000. (Notice the ambiguous gap between 10,000 and 20,000.)

Extrapolating from these figures, one might assume that about 200 titles per week, or 40 titles per day, would be the maximum output from one terminal working eight hours per day for fifty five-day weeks. If a library added 2,000 items a year, it would take one-fifth of this time, or a
little less than two hours per day, for fifty five-day weeks, a quite manageable expenditure of staff time, and far less than is presently spent. However, two professional librarians familiar with cataloging on an OCLC terminal independently stated that 8 to 10 titles per day was about average. Admittedly, their hit rates with OCLC were in the 70 percent to 80 percent range, whereas Villa Julie College could expect virtually 100 percent (predicted from experiences with manual card sources). Still, our library operations would be seriously affected if even four full hours a day were required. Since the system would be acquired in part to catalog an additional 1,500 titles, it is inescapable that one-third to two-thirds of the time of one full-time person would be dedicated to the terminal at best, and one to one and a quarter persons might be required to process the yearly total of 3,500 titles.

It is doubtful if there is any way the college library could be managed with only two persons handling all direct public services including teaching (twenty-five classes last year), reference (1,200 direct inquiries, not counting non-library-related informational questions), faculty liaison and committee work (planning acquisitions, student advising), ordering AV materials from other institutions for the faculty, interlibrary loans, and circulation plus other technical services, such as acquisitions and accounting. The library director's time is at least partially consumed with strictly administrative functions and with meetings. Library grant proposals are also time-consuming—but never more necessary.

At present cataloging is accomplished by (1) requesting cards with books ordered from the book jobber; (2) preparing card copy from CIP; (3) ordering cards from the Library of Congress; (4) preparing cataloging copy by searching the American Book Publishing Record; or (5) original cataloging, if all else fails or speed is essential. After this point, most other operations are performed by students, except for the revision of their typing and filing. Each staff member can do some of the work and can do it when no demands for public services are being made. Work can be done and is done between questions, so to speak. The net effect of OCLC probably is increased productivity. The time saved, or at least part of the time saved, will be student time. Time demands on full-time staff who can least afford to give it will be increased. Direct public service to students and faculty would almost certainly be adversely affected.

Second, what about cost? The answer to this question is all-important, but almost impossible to establish definitively. In 1979, the price for card production service alone was, according to Matthews, $1.89 per first time use (FTU) and $.252 per card set. Assuming a 100 percent hit rate, 3,500 titles would cost $7,893 (including a yearly terminal maintenance fee of $396). According to Martín, most libraries in 1980 paid $1.75 per FTU and $0.18 per card set, which would yield a slightly lower figure. Bob Coxe, OCLC coordinator for CAPCON in 1981, stated in a phone conversation with the author that OCLC's 1981 price per FTU was "about $2.00." The "1981-82 PALINET/ULC and OCLC Rate Schedule" lists $1.40 per FTU, and $0.294 per card set (set defined as seven cards in all cases). As Martín puts it, "The multiple variables associated with OCLC use have made it impossible in the
past to determine per-title costs for the system, and difficult for member libraries to predict their annual budgets for the service."

Using the 1981-82 PALINET figures, 3,500 FTU's would equal $4,900, and $0.294 per 3,500 card sets would come to $1,029. The other products listed in the "Advantages" section above would cost about $175 for the hard-copy accessions list, and about $510 for the machine-readable tapes using the cheapest configuration. Total cost thus far: $6,614. Now $2,532 must be added for AT&T telecommunication charges, plus $732 for terminal maintenance (including a new "terminal service fee"). The grand total so far is $9,878."

To this sum of yearly continuing expenses must be added regional network costs. According to Matthews, seven libraries deal directly with OCLC, Inc. Martin claims, however, that in 1979 OCLC, Inc., became "purely a network resource, rather than a membership organization." Mr. Coxe, of CAPCON, said during the same phone conversation cited above, that OCLC, Inc. was very reluctant to deal with libraries directly, but would do so if pressed. Mr. Coxe is a former employee of OCLC, Inc. Contacting OCLC, Inc., should have solved the problem, of course, but in a telephone conversation with its customer services department on November 24, 1982, a representative said that OCLC discourages libraries from joining directly because it feels "libraries get much better service through the regionals." She (the representative is nameless because she preferred not to give her name) did not know what cost differences there would be dealing directly, but she did admit that fifteen or sixteen institutions now dealt with OCLC directly. This is a perfect example of the frustrating ambiguities encountered in trying to establish costs. For the purposes of this study, it was assumed that a regional network affiliation would be necessary.

The two regional networks available to a Baltimore-based library are PALINET and CAPCON. With the demise January 1, 1980, of MALCAP, which was Maryland's regional attempt to provide catalog cards, about eight Maryland libraries, including parts of the University of Maryland system, joined PALINET, and five or six joined CAPCON. A few libraries in the western part of the state went with the Pittsburgh Regional Library Center.

Joining these regionals costs money. CAPCON dues are $750 per year. For this sum, the contract with OCLC is negotiated, an accounting and billing system is provided, along with some manuals and the services of at least Mr. Coxe. CAPCON is undergoing reorganization at this time, with a new executive director to be hired soon. It has no plans to offer anything more to members at the moment. It adds no surcharges to basic OCLC charges. George Arnold, director of technical services at American University, provided the information that CAPCON was formed initially by the consortium of the five Washington, D.C., universities solely to pool costs for the necessary AT&T cables. It seems a shame it did not disband when this single purpose was achieved, for $750 is a lot of money to pay for a contract and bill pass-through function.

PALINET charges are higher. It charges $1,250 yearly for membership. It offers OCLC manuals plus a few of its own, free to members, but
charges for others. Its services are "communication of information es-

tential to participate in OCLC's Shared Cataloging Subsystem . . . ad-

ministrative memoranda, correspondence, consultation, newsletter, 
meetings . . . individual institutional account maintained . . . voting at 
annual membership meetings . . ."

If Villa Julie College joined CAPCON, OCLC costs would be (at 
1981 prices) about $10,629. If we joined PALINET, it would cost 
$11,079. The terminal would still have to be purchased or leased, and 
there would be costs for the installation of AT&T communications 
equipment. The terminal price is $3,700, and installation charges are 
$205; there could and probably would be some additional charges de-

pending on geographical location, proximity of power lines, location 
within library, etc. It would not be cheap. PALINET start-up costs 
would have to be added, too—$800 for a "new library implementation 
fee" plus $175 for an OCLC profile. The price tag for first-year costs for 
cataloging 3,500 items using PALINET cost sheets would be $15,959.

Our problem is how to catalog more titles for the library collection 
with no increase of personnel and for a reasonable cost. A network utility 
connection could be effected, but not at a reasonable cost. Even if a grant 
could be secured to pay for fixed start-up costs and perhaps one year of 
operation, the price of $4.559 per title (PALINET) is too expensive for 
the library to justify, and unconscionable in the face of the students' 
stated need for more books.

If the system were installed, it would consume nearly half the materials 
budget the first year and one-third of it the second and subsequent years. 
During the second and subsequent years of operation, the costs would be 
at least $11,139 with no rise in prices—yet AT&T charges have gone up 
freely as have costs for FTU's, catalog cards, and terminals. 
Maintenance-level costs would be at least $3.182 per title cataloged.

Since about half the budget is already encumbered with serials, standing 
orders, and continuations, the library would be in the curious posi-
tion of being able to catalog 3,500 books or buy some lesser number to 
catalog. It could not do both.

**OFFLINE POSSIBILITIES**

MARCFICHE, a product of MARC Applied Research Company, is 
an inexpensive way to access MARC data. It costs about $400 for the 
initial data and about $300/year for quarterly and weekly updates. It is 
a bit cumbersome to use as it requires looking at a minimum of three 
fiche per entry, then either using a fiche printer to make a copy of the 
entry and then typing it, or typing it at the reader. Though it offers some 
items other than MARC data, it is mostly MARC, and that is the informa-
tion easiest for the small library to find elsewhere. It does not offer 
card production, and thus clerical chores would remain about the same.

LIBCON, produced by Systems Development Corporation, again 
provides MARC data via TELENET at $120 per connect hour plus a 
direct dial charge or an $8/hour charge for TELENET. Informatics' MINIMARC is an interesting turnkey system having 
the decided advantages of being able to stand alone and to produce cata-
log cards from the MARC database with the ability to edit via a keyboard. Present cost for computer, disks, and printer is about $50,000, with an additional $3,600 for MARC updates on floppy disks, or about $9,500 for maintenance and updates. The initial cost for the small library is high, and one would want to know how reliable the equipment is over several years: the amount charged for maintenance is a lot! However, the update cost is reasonable, and any amount of cataloging can be done without adding to the cost. Presumably, retrospective cataloging could also be input little by little to create that all-important machine-readable record. If one were enterprising, one might think of operating a service bureau that provides cards for small libraries!

Unfortunately, none of the online or offline systems will provide the services that Villa Julie College needs. If that were the only ramification of this study, it would be of less than minor concern. But 52 percent of all four-year college or university libraries in that large HEGIS data survey added fewer than 5,000 volumes annually. Martin reports that in fiscal 1980, the average of receipts from all users of OCLC was $12,000. This is just a little more than the $11,139 that a library would pay OCLC for cataloging 3,500 titles. The two figures arrived at quite independently seem to reinforce the impression that most libraries are not buying much and not cataloging much. Considering that OCLC has many extremely large library systems within it, the question of whether there may be small libraries in OCLC that cannot really afford the luxury also comes to mind.

Though the resultant system looks and works like a Rube Goldberg monstrosity, it is far cheaper to buy cards or to create cards in-house from CIP, ABPR, or NUC. The best advice the librarian in a small system can give to administrators is that a good hardworking and flexible clerical assistant will be cheaper than OCLC, Inc., ever will be unless OCLC or the regionals can develop less costly alternative systems for small-budget members.

Perhaps OCLC, Inc., may eventually agree to limited use of its data through purely local agreements, i.e., books at Villa Julie College for which cataloging cannot be had by any mentioned means might be searched and cataloged on a terminal owned at another college, with Villa Julie College paying the other college, and the other college paying OCLC, Inc.

The small library might purchase a terminal and pay initial connection costs, then be billed on a limited use basis by AT&T and OCLC, Inc., using the terminal to produce cataloging copy only for items for which copy is not available elsewhere. (The "cluster" terminal—one shared by several libraries—particularly does not meet the small library's needs as both books and terminal operator have to be transported to another location for long periods of time.)

CONCLUSION

The figure of 3,500 titles was chosen deliberately in determining costs for the OCLC system, for it not only fits the local Villa Julie College needs, but also the needs of over half the four-year and university li-
braries in the country and almost all of the two-year colleges.

Carpenter says, "In sum, for most libraries it seems fair to say that they are underdeveloped, understaffed, and underused." Undoubtedly he is right, but the very fact that these standards exist and most librarians are familiar with them may lead to the belief that libraries are better off than they really are. If public libraries are added to the picture, what emerges is the fact that the nation's scholars and citizens and students by and large are served by uniformly inadequate libraries by all professional standards.

Standards may be too high—but it is more likely librarians are, with no criminal malice but with no less tragic consequences, misappropriating the funds given them by channeling so much money into elaborate national and international systems to "control" information rather than into books and serials and much cheaper local networks for resource sharing. It may be that national library leadership will someday find that all libraries, not just small libraries, can afford either books or the system to catalog them, but not both.

For the small library, look to your jobber. Look to the Library of Congress. At less than $1.00 per card set from both, they remain the wisest and cheapest cataloging sources for libraries on the last frontier. The railroad is not yet "coming through" for us.

REFERENCES

12. "1981/82 PALINET/ULC and OCLC Rate Schedule."
16. A very complete list of networks and individual library memberships is contained in Martin, Library Networks, 1981-82.
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The Centre for Catalogue Research

Philip Bryant

The Centre for Catalogue Research was set up by the British Library Research and Development Department in September 1977 as the Bath University Programme of Catalogue Research, with Centre status being accorded by the British Library in 1980. A new grant was recently awarded to the University of Bath to finance the work until August 31, 1985.

The Centre operates on behalf of all types of libraries in the United Kingdom as the national focal point for research, information, and instruction in the field of catalogue research and development. The word catalogue covers the use of bibliographic records for cataloguing, acquisitions, issue systems, resource sharing schemes, and it also includes the study of methods of subject access. The brief is a large one but the unit is very small—director, research fellow, analyst-programmer, and secretary.

We aim to be valued by the degree to which we can provide library policymakers in the United Kingdom with data on which to base more informed decisions. We believe that we can do this best by effectively disseminating the results of a research programme which can be seen to be relevant to the needs of the national library community. In this endeavour we are aided by an advisory committee which includes representatives of public, academic, and special libraries together with representatives from the Cataloguing & Indexing Group of the Library Association, the MARC Users’ Group, and the Bibliographic Services Division of the British Library.

The Centre undertakes research which attempts to provide answers to such basic questions as:

- What information should be included in bibliographic records?
- How should the records be acquired and created?
- How should the records be accessed?
- How should the files be physically presented?

These questions are considered in relation to cost-effectiveness, cooperation and resource sharing, the influence of new technology, and, very particularly, the user. Some examples of projects we have undertaken, or are undertaking, include:

- Market survey of cataloguing costs in the UK

The editor asked Philip Bryant, Director of the Centre for Catalogue Research, to preface Alan Seal’s research report with a brief description of the centre and its activities.
• Study of the effectiveness of full and short entry catalogues
• Design of keyword catalogues
• Description of external cataloguing services
• Survey of the actual use of CIP by UK libraries
• Monitoring the currency and coverage of UK MARC
• Describing keyword facilities of software packages
• Studying the use of online issue system bibliographic files as online catalogues
• Cost-effectiveness of using CIP compared with producing Extra-Marc Material (EMMA) records
• Evaluation of sources of cataloguing data

The article by my colleague Alan Seal, which follows this brief note, deals with the topic that absorbed the major part of the Centre’s attention from 1977 to 1981. It is planned that the main areas of study during the next three years will be:

1. The design of public access online library systems and their effect on library users with special emphasis on:
   • methods of prompting the users of systems
   • design of data for visual display units.
2. Costing and evaluation of the various sources of bibliographic records—especially the various external services.
3. Comparison of free-language access to library files with more conventional subject systems.
4. The cost-effectiveness of classification as a central or local process.

In addition to selling its publications, the Centre can undertake consultancies considered relevant to the main thrust of the Centre’s work and mount courses and seminars. If you wish to write to us, or be placed on our mailing list to receive our biannual newsletter, our address is: Centre for Catalogue Research, The Library, University of Bath, Claverton Down, Bath, Avon BA2 7AY, England.
Experiments with Full and Short Entry Catalogues: A Study of Library Needs

Alan Seal

This paper reports the work of the Centre for Catalogue Research into the effectiveness of library catalogues with regard to the level of content of the entries. Special emphasis was given to assessing users' needs for bibliographic data elements and the usability of catalogues with different levels of entry. The approach used is described and the main results are presented. Two of the nine projects are described in some detail as examples of two research techniques not commonly used in library investigations. The conclusions suggest that much of the information normally included in the catalogue entry is very rarely used by readers, and its inclusion makes catalogues difficult to use with the result that some items may not be found. If such data were excluded, users would be helped and it would provide an opportunity to consider providing other, more valuable information, particularly subject annotation and access.

The majority of the larger libraries in Britain and North America now have some form of computer-assisted cataloguing and circulation systems. Increasingly, there is a move to online public catalogues, usually providing access both to catalogue and to circulation information. Online public access systems nearly always have two or more levels of bibliographic display. The first is often a brief "browsing" record so that the user can scan either a sequential file of items, as in the Geac or the CLSI systems, or a set of items which match a particular search string, as at Northwestern University or the University of California. Other levels will contain more bibliographic description or information on whether the item is on loan. Librarians must now consider how many levels are necessary and what information should be provided in each. Hildreth found that "none of the ten formats contain exactly the same bibliographic information" and pointed to the necessity for more research.

These online developments have reinforced the need for more research into the usefulness of some of the data elements commonly provided. Even without online access, there has been some justification for a new look at the question of the content of records. The widespread use of

For this issue devoted to research by and for librarians, the editor invited Alan Seal, Research Fellow at the Centre for Catalogue Research, to share with LRTS readers the results of a recent study on catalog entries. The British Library Research and Development Department, which finances the work of the Centre, is in no way responsible for the details and opinions included in this paper.
MARC, automated networks, and COM output has raised many questions about the design and effectiveness of catalogue output, which have not been fully investigated. COM output will be used for some time to come by many libraries without online access and may continue to be needed for backup and to provide catalogue access at remote sites.

The Centre for Catalogue Research was asked by the British Library to evaluate the question of short entry catalogues and to indicate whether there could be a generally acceptable English-language subset of the MARC record. Work began in September 1977 and was completed in 1981. The full report was published in 1982 by Gower Publishing Company, distributed in North America by Lexington Books, D. C. Heath & Co. The results indicate that the vast majority of users' present needs can be met by an entry with a minimum of bibliographic description. Libraries producing COM catalogues would potentially save considerable sums of money on the reduced cost of output and should aim to have an average of at least twenty entries per frame if a double column display of entries is used. This would be possible given a sensible layout and an entry based on a subset of the full MARC record, omitting fields that require a disproportionate amount of space compared to the use made of them. Other results show that, given the choice, most users will prefer a short entry catalogue and will find it quicker and easier to use. Most importantly, a briefer entry makes for more accurate searching in COM sequences; users will be more likely to establish correctly whether an item is held or not.

**THE NEED TO LOOK AT CONTENT**

The amount of information which should be included in a bibliographic record and catalogue entry has long been a topic of debate in the library world. Many of the studies have been listed elsewhere, by Krikelas, Lancaster, Markey, and Weintraub. The full report of the Centre’s projects includes a bibliography of 164 items. The recent growth of bibliographic networks, the escalating cost of output as files increase in size, the use of less-than-full MARC records in CIP programmes, the rapid growth of online information retrieval databases, and several other developments have all highlighted the need for more information on the relative merits of full and short entry catalogues. Previous research has been limited because it rarely made use of experimental techniques and did not take into account the several different factors involved and their interaction.

**THE APPROACH USED**

To avoid repeating the usual type of user surveys, the projects were directed at evaluating a specific alternative (i.e., a short entry catalogue) and looking at its actual performance. Earlier work, particularly that by Lipetz and Palmer, had given some indication of which data elements might be considered for omission; it was now necessary to see how effective a short entry catalogue would be in practice.

This objective in turn meant that it would be necessary to create parallel files of both full and short entries. This technique had been used with
success in a previous project at Bath that investigated alternative forms of physical output."

Finally, the aim was to look at all the factors involved. It was clear that use of a short entry catalogue would affect a library system and library users in three main areas: user needs; usability; and system costs. Any library trying to decide whether to adopt short entry catalogues has to examine all these aspects, and projects were undertaken in all three areas because previous studies had not looked at the interaction among them.

Because of the small number of research staff involved, the scope of the investigations had to be restricted in order to produce any results in a reasonable time. Priority was given to studying user needs (both readers and staff) and usability at the output stage—the point where the catalogue is actually used. Because of the lack of online systems, the investigations were generally concerned with computer output microform. We did not tackle directly the content of records used for other purposes (in particular acquisitions and interlibrary loan), and we were mainly concerned with English-language monographs because these represent the majority of the items in American and UK library catalogues. Since the research made use of real files, it was necessary to base the experiments in actual libraries or on actual files. This requirement meant finding libraries willing to take part and using services willing and able to produce parallel catalogues for the same material but with differing levels of content. The remainder of this article deals with the types of entry under investigation and describes in more detail two of the nine projects which were carried out.

**Experimental Subsets**

Because it was necessary to decide in advance data elements to be included in any experimental catalogues, considerable thought was given to the question and some amount of survey work was undertaken to establish the "subsets" for evaluation.

A bibliographic record may be said to consist of: bibliographic description, access points, heading structure, subject information, and local information. The investigations were not concerned with the content of subject information, such as subject headings or classification schemes, nor with purely local information, such as location indicators, accession numbers, or loan status. Our interest lay primarily in bibliographic description and also in access points and the structure of headings. Two subsets were devised. The first was based on the desire to eliminate as much description as possible while retaining all access points. The main data elements excluded were statements of responsibility, edition author statements, place of publication, publisher, physical description, series statements, notes, and ISBN. A COM catalogue based on this subset would be about 50–60 percent of the size of one which used all the available bibliographic description. Consideration was also given to reducing personal name headings to initials only instead of full forenames, although there were technical difficulties in extracting initials only from the MARC subfields. The second subset went further by reducing the number of traditional access points to two: title
and first author. This subset was identified because it was very similar to those found in many circulation systems where a short record has been created to identify items on overdue notices, etc. The lack of traditional added entries might possibly be outweighed by the provision of access to keywords in the title, and one project was designed to look at this aspect. It should be stressed that both the subsets were experimental in the sense that they were not designed to be tested as standards but to find out how often the data which had been excluded were really needed.

**USER NEEDS**

The objective here was to find out how often users would not be satisfied because they failed to locate sought items or would have to use another source to obtain bibliographic data or to resolve ambiguities. Previous work by Lipetz and Palmer had indicated that some data elements could be excluded but neither had provided parallel files which users could use for their normal searches. One way of finding out whether something is needed and used is to remove it temporarily and observe whether users can still carry out the tasks which they normally do. For the main project in this area, we were fortunate in finding a library willing to have its normal COM catalogue (which contained most of the data elements whose value we were looking at) replaced by a short entry version.

The library was a polytechnic library with a stock of approximately 320,000 books and 160,000 nonbook materials. Automation had been introduced in 1974 when the library joined the cooperative network BLCMP Library Services (formerly known as the Birmingham Libraries Cooperative Mechanisation Project). Retrospective conversion had not been completed and the fiche catalogue contained about 60,000 items acquired since 1974. The stock represented a wide range of subjects in technology and social sciences.

The project involved providing an alternative version of the catalogue in the same numbers and the same locations as the normal catalogue. The normal catalogue was not removed entirely but only one copy was retained and it was provided near the readers' enquiry desk. Notices were displayed at the library entrance and in the experimental catalogue saying that a new type of catalogue was being evaluated and describing how it differed from the usual one. Users were requested to try to use the experimental catalogue for all their searches, but if they were unsatisfied to use the copy of the normal version. Data were collected both by interviewing users of the experimental catalogue to establish whether they were successful and their reactions to it and by a questionnaire survey of the uses made of the remaining copy of the normal catalogue. In addition, an observational survey of catalogue use was carried out to estimate how many people used the two catalogues during the experiment. This survey was based on a 40 percent sample of the hours 9 a.m. to 5 p.m. The experimental catalogue differed from the normal in that its entries did not contain statements of responsibility, place of publication, publisher, series statements, notes, and ISBN; also forenames were omitted entirely from personal name headings. Because of this last omis-
sion, all cross-references were excluded since personal name cross-references could not be reduced to surname only. Collation was missing from both catalogues. The short entry catalogue required about 41 percent fewer COM frames than the normal. The main intention was to focus on the instances where the experimental catalogue was in any way unsuccessful. Both library users and staff (except the cataloguers) were studied, and all the staff were interviewed after the survey to establish the type of use they made of the experimental catalogue and their reactions to it.

The experiment lasted for one month, since the catalogue was updated every month with a complete cumulation being produced each time. During the first two weeks of the experiment, 153 users of the experimental catalogue were interviewed to find out if they had found what they were looking for and, if not, to collect details of their search and the reason for failure. The observational survey indicated that only 118 (8 percent of all catalogue users) used the normal catalogue and that most of these had also searched the experimental catalogue; 62 users completed the questionnaire which was provided next to the normal catalogue. Analysis of both the 153 interviews and the 62 questionnaires showed that the overall failure rate of the experimental catalogue was about 8 percent. Failure was defined as a user's being unable to locate an item which could have been located if the normal catalogue was used or to distinguish between similar entries or to retrieve specific bibliographic details on a particular item. Allowing for the fact that cross-references were excluded because of the rigidities of the structure of references in MARC, then the failure rate would have been about 5 percent. The next most common problem was the omission of personal name forenames. Some users who noticed the omission became disoriented and thought that they would not be able to locate a sought item. These cases were treated as "failures," although clearly the item was still traceable if the user had thought about it (as indeed most users did). However, we do not intend to question the ability of users, merely to note the fact that users are trained to expect catalogues with surnames plus forenames or initials and that the removal of forenames will confuse a small proportion of users. If forenames had been retained, the failure rate would have been in the region of 3 percent rather than 5 percent. The few failures which remained would have been reduced further if the entries had included ISBN, publisher, and bibliographic history note. The most surprising result was that 46 percent of library users had not even noticed that the catalogue was different, despite the publicity given to the change. For those readers who did notice, reaction to the catalogue was positive, though not overwhelming, as shown in table 1. Library staff reacted in much the same way as users.

This experiment was relatively expensive to conduct. The file had to be resorted and reformatted and much of the data had to be collected by interviews. However, two other surveys were carried out in two large university libraries where parallel files were already in existence. One of these, Southampton University Library, had a short entry record created as a by-product of a circulation system. This record was provided
on fiche as a complement to the card catalogue. It was obviously not possible to remove the card catalogue to study the effectiveness of the brief record. However, data were collected on more than 1,000 uses of the card catalogue to obtain details of the search made and the outcome. These searches (in the name sequence only) were rechecked by the research team in the short entry catalogue to see whether they would have been equally successful or unsuccessful. The results again showed that the great majority of uses would have been satisfied. Other surveys, at Newcastle University Library and at Cheshire County Library, showed very similar results. There was a surprising agreement among all the surveys showing that the number of "failures" in a short entry catalogue that excluded the bibliographic data elements mentioned in the previous section would be between 1 percent and 3 percent of uses. The fields which perhaps ought to have been retained were ISBN (which was needed by library staff for stock control) and bibliographic history note. The results from the four projects were based on nearly 4,000 catalogue searches in total. The conclusions relate only to the value of traditionally provided fields; this is not to say that there would be no need for other new fields, particularly relating to subject annotation and access, for which there may be a large latent demand.

To my knowledge there have been no similar surveys of parallel files conducted in North America. However, research into online public access has been able to quantify how frequently users in the Ohio State University move from the very brief browsing entry to the display of the full record. Analysis indicates that this occurs very infrequently (in perhaps less than 3 percent of searches) and that library staff use the full display even less than readers.

**Usability**

The second major aspect of short entry catalogues is whether they are quicker and more accurate to use. A catalogue entry may contain all the information that is ever likely to be needed, but the result could well be very difficult to use. Much can be done to improve the visual acceptability of catalogue displays in whatever form they are produced. Research in this area has been done at the Royal College of Art, and many of the findings have been summarised in a practical manner in a recent report. The factors of content and layout are inextricably mixed but we have tried to look at catalogue entries with differing content but the same basic layout.

Two controlled experiments were carried out. One used an existing

### TABLE 1

**Reader Reaction to the Experimental Catalogue**

<table>
<thead>
<tr>
<th>Rating of Experimental Catalogue</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Much easier to use than normal</td>
<td>5</td>
</tr>
<tr>
<td>Easier to use than normal</td>
<td>19</td>
</tr>
<tr>
<td>Little difference between</td>
<td>45</td>
</tr>
<tr>
<td>Experimental and normal</td>
<td></td>
</tr>
<tr>
<td>Slightly more difficult to use</td>
<td>6</td>
</tr>
<tr>
<td>Much more difficult to use</td>
<td>1</td>
</tr>
</tbody>
</table>
parallel file and one involved the production of a special file, though based on the stock of an actual library. The former was based on two very different versions of the same file. The short version was a single-line entry and the full was a full MARC entry. The difference in the number of COM frames required was dramatic and the experiment used panels of students and library staff. The short entry version was found to be significantly quicker to use both for correct and incorrect citations. The second experiment is described below in some detail as an example of a controlled experiment.

Two parallel author/title sequences were produced from the machine-readable file of Bristol University Library. Each sequence contained 55,075 entries. Additional records were added to it, specifically for the experiment, to make it more "complex" in certain areas to which panels of users could be directed. The two versions of the catalogue differed in three respects. First, the full entry version contained all the descriptive data present in the MARC records, whereas many were omitted from the short entry version (which was based on the first experimental subset described earlier). Second, uniform titles were used in the full version as an ordering device under personal authors, whereas they were omitted in the short entry version where titles were filed directly by main title within author. Third, subheadings for corporate bodies were omitted in the short entry catalogue so that titles were filed in one sequence under the main name of the body. When the two versions were produced, the full version resulted in a figure of 13.1 entries per frame compared to 20.6 for the short entry version. This difference, which meant that the latter required 37 percent fewer frames than the former, would be reflected in the cost of COM production.

A factorial design was chosen for the experiment. The aim was to identify the effect of the different catalogues on speed and accuracy of searching and to see whether any differences between the catalogues depended on (a) the kind of search being done (e.g., simple personal author, complex corporate name, etc.) and (b) the type of user (i.e., postgraduate, undergraduate, or academic staff). Variables that would affect performance (e.g., the individual, the learning effect, order effect of different versions of the same question) were carefully controlled. Because an individual doing the experiment could not search for the same title in both versions of the catalogue, it was necessary to produce two versions of each set of questions and to ensure that the effect of the different versions of the questions did not affect one catalogue more than the other. Accordingly, the list effect (as it has been called) was treated as a blocking variable in the same way as the user effect. Any difference between the two versions of a list of questions could then be allowed for in the analysis. This meant that a 2 by 2 Latin square design could be used, as shown in figure 1.

In this design any differences due to users and to the two versions of the questions can be allowed for in the analysis. The design allows for any carry-over effects caused by users moving from catalogue A to B and vice versa, since the design is balanced. The effect of the different lists was in fact "confounded" with any learning effect. The next stage was
to incorporate different types of search. Each participant, randomly selected from the university population, was given six lists to search in each catalogue, making a total of 12 lists in all, each consisting of 3 titles. The types of search selected were:

1. Simple personal author—correctly cited
2. Simple personal author—incorrectly cited
3. Common personal author—correctly cited
4. Common personal author—incorrectly cited
5. Complex personal author involving uniform titles
6. Complex corporate author involving subheadings

The order in which participants tackled the types of questions was varied though the order was not completely permuted, as shown in figure 2. A single replication required eight pairs of users, with each pair tackling the type of question in a different order.

The combination of figures 1 and 2 gives the complete design for each pair of users. As an example, the experimental design for the fourth pair is shown in figure 3.

The power of the experiment was increased by making further replications, each with another set of 16 users. The final experiment con-
<table>
<thead>
<tr>
<th>User 7</th>
<th>List 1</th>
<th>List 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Catalogue A</td>
<td>Catalogue B</td>
</tr>
<tr>
<td>(Question type)</td>
<td>1 2 4 3 6 5</td>
<td>1 2 4 3 6 5</td>
</tr>
<tr>
<td>User 8</td>
<td>Catalogue B</td>
<td>Catalogue A</td>
</tr>
<tr>
<td>(Question type)</td>
<td>1 2 4 3 6 5</td>
<td>1 2 4 3 6 5</td>
</tr>
</tbody>
</table>

**Figure 3**

Design for Fourth Pair of Users

sisted of three replications to cover three types of users: undergraduate, postgraduate, and academic staff.

The lists of questions had to be carefully designed and included some titles which were not in fact in the catalogue. In compiling the question lists, a simple personal author was defined as any author whose surname was represented not more than 10 times in the catalogue. Common authors were taken to mean those whose surnames took up more than one complete frame of entries (such as Clarke, Johnson). With complex personal and corporate authors, titles were chosen from those sections of the catalogue where the file had been deliberately enhanced or was already complex. Where the participant was given a title to look for under a corporate author, the correct form of the subheading was given in the form of a statement of responsibility after the title. In this way, the participant was made aware of the subheading in a way that was fair to both catalogues. Incorrectly cited titles were based on the types of errors which occur in practice. All participants were given a warm-up list of questions before starting on each catalogue.

The analysis of variance test was used to assess the results. Figure 4 gives the results, with the $F$ ratios which are significant at the 1 percent level marked by an asterisk. The design is known as a split-split-plot experiment, in which there are three levels of experimental error usually estimated in an analysis of variance by the residual mean squares for whole plots, sub-plots, and sub-sub-plots. However, a complication of using a 2 by 2 Latin square for pairs of users is that the catalogue $\times$ learning/list effect (in the "runs" level of the hierarchy) is confounded with differences between pairs of users so that the sub-plot mean square has to be split into two elements, one providing the "runs" error term, the other providing the "pairs" error term. The whole plot residual is also confounded with possible effects of the order of questions within pairs and is not used. The result of the testing suggests the summary of the results in a single three-way table of the factors $C$, $L$, and $Q$, constructed by averaging results over the three user groups as shown in figure 5.
### Analysis of Variance

#### Whole plot analysis

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Degrees of freedom</th>
<th>Mean of squares</th>
<th>Mean square</th>
<th>F ratio</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Users P/U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Among pairs</td>
<td>U</td>
<td>2</td>
<td>34.56</td>
<td>17.28</td>
<td>2.64</td>
</tr>
<tr>
<td>within user class</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Sub-plot analysis

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Degrees of freedom</th>
<th>Mean of squares</th>
<th>Mean square</th>
<th>F ratio</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pairs</td>
<td>P</td>
<td>23</td>
<td>181.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catalogues</td>
<td>C</td>
<td>1</td>
<td>15.99</td>
<td>15.94</td>
<td>1 (15.32)</td>
</tr>
<tr>
<td>Learning/list</td>
<td>L</td>
<td>1</td>
<td>27.91</td>
<td>27.91</td>
<td>(26.89)</td>
</tr>
<tr>
<td>Interactions</td>
<td>U×C</td>
<td>2</td>
<td>2.41</td>
<td>1.20</td>
<td>1.15</td>
</tr>
<tr>
<td>U×L</td>
<td>2</td>
<td>1.01</td>
<td>0.50</td>
<td>0.48</td>
<td></td>
</tr>
<tr>
<td>P(U×C)</td>
<td>42</td>
<td>43.54</td>
<td></td>
<td>1.04</td>
<td></td>
</tr>
</tbody>
</table>

#### Component providing 'runs error'

- C×L
- U×C×L
- P(U×C)×L

#### Sub-sub plot analysis

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Degrees of freedom</th>
<th>Mean of squares</th>
<th>Mean square</th>
<th>F ratio</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runs</td>
<td>Q</td>
<td>5</td>
<td>61.89</td>
<td>12.38</td>
<td>(16.51)</td>
</tr>
<tr>
<td></td>
<td>U×Q</td>
<td>10</td>
<td>8.90</td>
<td>0.89</td>
<td>(1.19)</td>
</tr>
<tr>
<td></td>
<td>C×O</td>
<td>5</td>
<td>58.63</td>
<td>11.73</td>
<td>(15.64)</td>
</tr>
<tr>
<td></td>
<td>L×O</td>
<td>5</td>
<td>54.35</td>
<td>10.87</td>
<td>(14.49)</td>
</tr>
<tr>
<td></td>
<td>U×C×Q</td>
<td>10</td>
<td>10.12</td>
<td>1.01</td>
<td>1.01</td>
</tr>
<tr>
<td></td>
<td>U×L×Q</td>
<td>10</td>
<td>6.15</td>
<td>0.62</td>
<td>0.83</td>
</tr>
<tr>
<td></td>
<td>C×L×O</td>
<td>5</td>
<td>15.16</td>
<td>3.03</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>U×C×L×Q</td>
<td>10</td>
<td>8.29</td>
<td>0.84</td>
<td>1.12</td>
</tr>
</tbody>
</table>

#### Components providing 'pairs error'

- C×L
- U×C×L
- P(U×C)×L

#### Sub-plots

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Degrees of freedom</th>
<th>Mean of squares</th>
<th>Mean square</th>
<th>F ratio</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual</td>
<td>420</td>
<td>314.19</td>
<td>0.75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Sub-sub-plots

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Degrees of freedom</th>
<th>Mean of squares</th>
<th>Mean square</th>
<th>F ratio</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timings</td>
<td>575</td>
<td>969.61</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Mean Times in Minutes (Means of 24 Observations)

**Figure 5**

- For question types 1 to 4 the pattern of results is essentially the same, and differences can be explained simply on the learning/list effect. We can conclude that there is probably little difference between the catalogues for these types of questions. For question type 5 (complex personal authors), the second version of the list takes longer with both catalogues, so it seems likely that the second list was harder than the first, especially if a learning effect is also assumed. For question type 6 (complex corporate authors), the short catalogue was significantly quicker than the full.

- Speed was only one part of the question under study—another was how accurately people could use the catalogues. The results show a simi-
lar pattern to those for speed of searching. The short entry catalogue was generally more accurate to use though the difference was not statistically significant. Questions relating to corporate authors were an exception in that for them the difference was statistically significant. The results are given in table 2.

Looking at the performance of individual users, we can see whether they were more accurate when they used the full or the short entry catalogue. Table 3 shows that all three types of users were more accurate when using the short entry catalogue. None of the results for the separate types of users was significant using a chi-square test (though that for undergraduates is just significant at 10 percent for a one-sided test). The overall result does show a reliable difference in favour of the short entry catalogue. The probability (two-sided) of there being no difference despite these results is about 0.05 (or 5 percent).

**TABLE 2**

**ACCURACY OF SEARCHING**

<table>
<thead>
<tr>
<th>Question Type</th>
<th>Number Incorrectly Answered</th>
<th>Full Catalogue</th>
<th>Short Entry Catalogue</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Simple personal author</td>
<td></td>
<td>21</td>
<td>15</td>
</tr>
<tr>
<td>—correctly cited</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Simple personal author</td>
<td></td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>—incorrectly cited</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Common personal author</td>
<td></td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>—correctly cited</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Common personal author</td>
<td></td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>—incorrectly cited</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Complex personal author</td>
<td></td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6. Complex corporate author</td>
<td></td>
<td>13</td>
<td>1</td>
</tr>
</tbody>
</table>

**TABLE 3**

**ACCURACY OF SEARCHING**

<table>
<thead>
<tr>
<th>More Accurate on Full Catalogue</th>
<th>More Accurate on Short Entry Catalogue</th>
<th>No Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic staff</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Postgraduates</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Undergraduates</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>22</td>
</tr>
</tbody>
</table>

After the experiment, users were told that the two catalogues were in fact different versions of the same file and were asked whether they found one of them easier to use than the other. The responses are given in table 4 and reflect the preferences found in the other surveys.

The general conclusions that can be drawn from the two controlled experiments are that it is fairly certain that a short entry catalogue will be quicker and easier to use. However, the difference between any two catalogues in terms of the number of entries to the screen has to be relatively large before the difference in speed or accuracy becomes statistically significant.
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TABLE 4

<table>
<thead>
<tr>
<th>User Preference</th>
<th>Prefer Full Version</th>
<th>Prefer Short Entry</th>
<th>No Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic staff</td>
<td>5</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Postgraduates</td>
<td>4</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Undergraduates</td>
<td>4</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>24</td>
<td>11</td>
</tr>
</tbody>
</table>

SUMMARY

The project conducted by the Centre for Catalogue Research dealt with much more than can be properly described in one paper, and there are several areas that could have been explored more fully. The project has provided much quantitative evidence on the ways in which catalogues are used—information that is essential to the provision of effective access to library stock. The projects described show how an experimental approach can be used in library investigations where objective evaluation is needed.

REFERENCES

2. Ibid., p.152.
Library Materials Cost Studies

Frederick C. Lynden

Several years ago the chair of the Library Materials Price Index Committee suggested that the committee become a clearinghouse for research on the costs of material. To collect information on activity in this area, the committee published a notice in several library journals requesting that librarians send it copies of local library materials cost studies. Despite the appeal the response was disappointing—not more than ten studies were received. Yet the rising cost of materials presents one of the greatest challenges faced by libraries in the eighties. One suspects that the poor response was not indicative of the concern librarians feel about this situation. Recently a major conference on the economics and financial management of research libraries noted that the “costs of running research libraries are increasing faster than university budgets can accommodate.” Association of Research Libraries statistics indicate the magnitude of the cost increases for both library materials and personnel, the two major costs in research libraries. “From 1968/69 to 1978/79, ARL member libraries spent 91% more for library materials yet added 22.5% fewer books to their collections.” As this conference concluded: “More information about library costs and economic issues needs to be gathered and disseminated.”

THE NEED FOR COST DATA

The need for better information on the costs of materials is very evident. The following factors contribute to the pressures for data:

First, the inflation rate for books and journals has been unprecedented in the past decade. “If a library had the same acquisitions budget in 1979 as it had in 1967, it would be able to purchase only 29 percent of the periodicals it could have in 1967.”

Second, higher education is in a period of austerity. Institutional budgets now have many more demands placed upon them in a period when there is less governmental support. Personnel, computers, energy, and deferred maintenance are taking a severe toll on the budgets of colleges and universities, which depend heavily on governmental revenues.

Third, the devaluation of the dollar (with the exception of 1981 and 1982) has put continued stress on library budgets since most research libraries buy a significant portion of their materials (from 30 to 40 percent) abroad.

Fourth, the publication rate for library materials continues to be very high. Despite a leveling off of U.S. book production, the total “amount of material being published is increasing rapidly at about 2.5% each year.”

Fifth, new and more expensive formats for publication are beginning to appear. Although they promise long-range savings, at the moment new technology—videodiscs, computer tapes, and other types of media—requires special equipment for use as well as special assistance.

In addition to these changes in the environment in which libraries must purchase materials, there is a disturbing lack of information needed for planning.

First, there are very few data on the prices of foreign library materials, and there is inadequate communication with foreign librarians and publishers on costs. Some progress has been made as a result of price studies by foreign vendors. Otto Harrassowitz and B. H. Blackwell, book and periodical dealers in Germany and England, provide such services.

Second, there is presently no systematic means of obtaining information on the prices of academic materials, i.e., the subset of materials purchased by academic libraries. Two exceptions are the British academic book price study and Faxon university and college price data for periodicals.

Third, there is no regular communication system for discovering how other librarians are coping with the rising costs of materials.

Fourth, there is almost no information on the cost increase of commercial microforms, videodiscs, computer databases and other media.

Fifth, there are few articles in the literature on the results of local resource cost studies and on the preparation of cost data and material budgets. A refreshing exception was the recent account of Montreal’s experience by Bélanger and Lavallée. The guidance on preparing budgets appears to be missing in library school curricula. There is clearly a need for more research into these topics.

**Cost Studies Now Available**

At the same time, one should not deny that much progress has been made in the national reporting systems for the prices of library materials. Most librarians are well aware of the Publishers Weekly annual price study published in the February or March issue which records the price per volume of American book publishing. These are the raw data from which the Library Materials Price Index Committee (LMPIC) publishes its book indexes which appear in the Bowker Annual. Recently the LMPIC began publishing early releases of the price data in the RTSD Newsletter. The Bowker Annual also now contains price data for American paperbacks, periodicals, and serial services; U.S. nonprint media (not including commercial microforms, database services, or videodiscs); U.S. library produced microfilm; U.S. daily newspapers; British books; German books; and Latin American books. The American indexes use a methodology described in the American National Standard Criteria for Price Indexes for Library Materials. Incredibly most of the indexes are still based
upon manual records with the exception of the American book price index developed from the MARC tapes and the paperback book price index from the *Paperbound Books in Print* database, a very new development.

Vendors have also contributed greatly to the progress of price studies. Using its computer databases, the F. W. Faxon Company has been producing periodical price studies since 1974. These studies, based on prices from the Faxon computerized database of 150,000 titles, show prices by type of library and by subject using the titles from periodical indexes, e.g., biology prices are measured by showing the titles from *Biological Abstracts*. Academic book suppliers have also been producing annual price data for some time now. The Blackwell North America Company (BNA), an academic wholesaler, has been publishing price data from its computerized files for its university press and approval plan customers since 1975–76. The BNA studies show average prices by subject classification for all books supplied to BNA academic customers. The Library Materials Price Index Committee is in the process of attempting to synthesize data from BNA, Baker & Taylor, Ballen, and Coutts to produce a "research library price index." As noted before, foreign vendors are now offering price information to their customers.

Library material prices have also been included in the Higher Education Price Index, which uses a synthesis of *Publishers Weekly*, the Faxon study, and the annual Library of Congress foreign book price study. The Higher Education Price Index, developed by D. Kent Halstead, is now published by a consulting firm, Research Associates of Washington.

A number of special research studies using questionnaires, visits, and computer resources have also produced information on the costs of material that are of great value to librarians. A pioneer study by Baumol and Marcus in 1973 was the first to use statistical models to define trends in the cost of libraries, including material costs. They recommended continuing surveillance of cost trends, preparing for electronic modes of operation, and increasing management training for librarians. Another study by Bernard Fry and Herbert White in 1976 was the first major research study on periodicals that established, among other things, the shift to a greater proportion of serial expenditures than book expenditures, reduction in periodical subscriptions, and the inability of research libraries to keep up with the expansion of publications. In 1979, the report of the National Enquiry into Scholarly Publication pointed out the value of dealing with inflationary increases, burgeoning publication rates, and inadequate access to materials by adopting national systems for storage, bibliography, and preservation. More recently two studies have been published on the budgeting process for materials in research libraries and on the development of data on journal subscription prices using random samples of journals. The former emphasizes the importance of long-range planning to successful budget negotiations, and the latter demonstrates the value of statistical methods in developing price projections.

**Methods for Preparing Cost Studies**

A proposed revision of the *American National Standard Criteria for Price*...
Indexes for Library Materials will affect future cost studies. The revised standard requires that indexes developed from price studies identify the total population from which the subset is drawn; describe the methodology of the study; indicate the source of the data; and state precise inclusions or exclusions. In other words, future price indexes will contain “truth in indexing” statements. These requirements should make judgments on the value of indexes easier. Future cost studies will also employ the computer. Vendors have pioneered use of computer databases for cost data, and much better cost data will come from improved cooperation between vendors and libraries. A good example of the employment of institution-specific information using vendor computer files is the Faxon SCOPE index, which allows a library to get automated tabulations of journals purchased from Faxon over a period of three years.

What methodology can be used right now? As it is now, librarians can assemble published information on prices from the Bowker Annual, from the Library Journal, from the Higher Education Price Index, and from the Library of Congress annual monographic cost study. They can also contact their colleagues at other institutions through the Association of Research Libraries (ARL) or the Association of College and Research Libraries (ACRL) or through consortia or networks and discover what costs other institutions are finding and how they are coping. They can do further background reading on the economics of the publishing industry by reading Book Industry Study Group reports; reading articles from Publishers Weekly on various facets of publishing—paper, binding, labor, and printing costs; and by studying reports of conferences and consultants. They can gather information on their own institution; its finances; past expenditure on library materials; ARL or ACRL statistics; and detailed information on local collections. For example, data from unfilled requests, use studies, interlibrary loan analysis, and suggestion boxes can aid the compiler of the cost study in understanding patron needs. Finally, data gathered during the budget year can be utilized in determining local costs, by subject classification, of books and journals.

When preparing local cost data, it is helpful to examine first the American National Standard Criteria for Price Indexes for Library Materials. This standard recommends using volumes rather than titles; using a classification system like Dewey or LC for defining subject categories; and calculating the average price per volume. Compiled over a period of years, this kind of information can be invaluable in convincing university or college administrations about library needs. Local studies must also deal with issues the standard does not address, such as vendor; vendor discounts; vendor service; and payment periods. The local study should resolve these issues in a consistent fashion and document their resolution to preserve comparability. For example, if the average annual exchange rate used is from the International Monetary Fund’s International Financial Statistics, the same source should be used from year to year to ensure consistency and continuity. ARL SPEC Kits can also provide good examples of current research.

Approval plans lend themselves nicely to local cost studies because the approval forms can be collected by discipline, and expenditures tallied at
the end of the fiscal year to arrive at average cost per volume within subject fields. When foreign blanket orders are received with forms, a similar approach can be taken and price changes can be measured from year to year. After four or five years, cost trends can be discerned. In the case of local data, the discount can be included since it will generally be consistent across a vendor’s shipments. However, it is important to include a notation about the discount, remarking on any changes in the discount rate during the reporting period. To put local statistics in perspective, it is also helpful to compare local figures with national data from the library materials price indexes, compiled by the Library Materials Price Index Committee.

THE OPPORTUNITIES

There are still great opportunities for research on the trends in the costs of materials. First, there are certain areas that have not been covered well, such as foreign book and serial prices. Studies by librarians on the cost of foreign materials would be an important contribution. Trends are not reported in a standard way. On the international level, the American National Standard Criteria for Price Indexes for Library Materials could serve as a pattern for an international standard, and a group chaired by Hendrik Edelman, Rutgers University librarian, is currently working on developing a standard means for reporting national publishing statistics.

Second, there are some materials that have no national price indexes: commercial microforms, database services, scores, and the newer media, e.g., videodiscs. There have been some promising attempts to develop a price index for music scores, but there are still some thorny issues to work out, such as no standard bibliography of sheet music from which to derive price data on a regular basis. It is important to include price information in future MARC tapes for microforms, music, and media. For example, the book price index is derived from MARC data published in the Weekly Record.

Third, there are materials which already have price indexes, but these indexes require the kind of refinement that only a computer can provide. For example, the current U.S. periodical index covers only a small portion (ca. 3,400 titles) of a larger universe (ca. 20,000 American periodicals according to estimates from Bowker). The control problems of tracking serial costs are complicated not only by the numbers but by title changes, frequency changes, currency variations, payment years, discounts, and service charges. Application of both computer technology and statistical analysis will be required in the future. Here is one place where cooperation between vendors and libraries may prove fruitful. Another index which has had problems due to a lack of standardized data is “Price Index for Non-Print Media.” Since Previews, its principal source of standardized data for media, ceased publication, no similar publication has replaced it. Again there is an opportunity for the publication of a Weekly Record-type bibliography of media. Two interesting applications of computer technology for price studies are SUNY’s cost information system and the EDUCOM/TRADES financial planning
models. In one application, Glyn Evans has matched OCLC and Bowker tapes to create cost data for SUNY institutions. In the other application, Stanford University has included library material prices in its financial planning model for several years now.

Fourth, studies on the costs of materials need to be encouraged and then disseminated widely. There is surprisingly little published research on the costs of materials. Many librarians and vendors don’t realize the value to others of their research on book and journal prices. One of the best-selling publications at the Stanford University Libraries was a local cost study showing the increases in the costs at Stanford of American and foreign books and journals. Information on cost increases at comparable libraries can often be persuasive to university or college administrators.

Fifth, there also needs to be more basic research in the area. For example, how does one construct a local journal price index? What is the validity of national indexes for predicting library-specific increases? These two questions have been the subject of research by Sally Williams at Harvard College Library. There is a follow-up study on these topics being made now. Her approach uses an automated statistical package for correlation. There are other issues which need to be examined and many of them were raised at the ARL conference on the “Economics and Financial Management of Research Libraries” in 1981. One area for research relates specifically to budgeting for materials. The conference participants agreed that “the way acquisitions budgets are constructed and allocated both to the library, and among publication types (books and journals) and subject areas within the library must be re-examined and changed as necessary.” Modelling was suggested as one solution. Participants also wanted to know more about the effect of electronic publishing on the changing structure and delivery system for information; the process for optimum distribution of materials funds for the subject areas covered; and the uses made of information on costs for decision making.

Sixth, among the opportunities for research, is the development of a U.S. academic price index. In England, the Library Management Research Unit at Loughborough created a price index for British academic books. Copyrighted British books are systematically deposited at Cambridge University. Those selected for retention in the university library are automatically included in the index. Perhaps a similar means of identifying research materials can be found in this country. One promising avenue of research is the work by Nelson Piper and the LMPIC on the synthesizing of vendor price studies.

Seventh, there is a need for better exchange of information among institutions. Perhaps the SPEC center at ARL, one of the bibliographic utilities, or the RTSD Newsletter could regularly report on cost studies in progress or completed.
Finally, increasing communication and cooperation between vendors and librarians, publishers and librarians, and university administrators and librarians will begin to encourage the development of the more sophisticated cost information required in today’s complex library environment.

REFERENCES

2. Ibid., p.2.
3. Ibid., p.12.
A Test of Two Citation Checking Techniques for Evaluating Political Science Collections in University Libraries

Thomas E. Nisonger

The history of the citation checking approach to collection evaluation is reviewed briefly. Two specific techniques that employ citations from journal articles are proposed and tested by evaluating university library political science collections. The results of the tests in five university libraries in the greater Washington, D.C., area are analyzed, as are some of the practical problems in implementing the techniques. The results indicate that these two techniques constitute reliable and valid collection evaluation methods.

Every academic research library at some point confronts the challenge of evaluating all or part of its collection. The ideal tool for accomplishing this objective would be a scientifically based, versatile collection evaluation technique that results in empirical data and can be implemented at a relatively low cost to the library. Numerous techniques which might fulfill these criteria have been described in the library literature, but few have actually been tested to assess their reliability and validity as evaluation tools, and none has been uniformly accepted by the library profession. The use of citation checking as an evaluation tool promises to meet many of the above criteria. This paper describes the use of two closely related variations of the citation checking method to evaluate, on an experimental basis, the political science collections in five university libraries in the greater Washington, D.C., area. The objective was not to evaluate the five libraries, but to test the utility of the citation checking evaluation method. By working through the procedure it was hoped to test reliability and validity as well as to identify any problems or deficiencies inherent in the method.

In this report the term citation refers to a bibliographical entry in a footnote, list of references, or bibliography accompanying a scholarly book or article for a work presumably consulted by the author. Because of this presumed use, citation checking differs from other forms of the checklist approach, such as the checking of entries from standard cata-

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logs or basic general lists, catalogs of selected libraries, specialized bibliographies, lists of current publications, reference works, etc. The citation checking method is based on the principle that the actual use of the material is indicative of its relevance to current research. It, therefore, produces empirical data for a qualitative judgment about the ability of a collection to support research. The technique is often used to determine whether or not a specific scholarly work could have been written with the resources of the library being evaluated.

Citation checking is described as one of the seven major methods of collection evaluation in the ALA Guidelines for Collection Development. Bonn also considers the checklist method in all its variants as important a method as compiling statistics, ascertaining user opinions, observing patterns of use, applying standards, or examining the collection.

A number of disadvantages to the use of citation checking as a collection evaluation technique have been pointed out: (1) the most recently published literature is not included, or, at minimum, underrepresented; (2) abstracts and indexes are seldom cited, and thus not included in the evaluation; (3) secondary sources, such as handbooks and textbooks, are underrepresented; (4) frequency of use is generally not included; (5) an author may not have cited the best material simply because it was not available; (6) some authors do not cite every publication they use; (7) the citations may be limited to a restricted segment of the collection; (8) some of the citations will be of a peripheral nature; (9) the technique is oriented towards the needs of library patrons who publish; and (10) the author may have limited himself to the resources of the library being evaluated.

**HISTORY OF CITATION CHECKING**

Even before library science existed as a distinct discipline or modern statistical methods had been developed, checking the sources cited in a number of major scholarly works had been used as a method of evaluating the collective holdings of American libraries. In his 1848 report as assistant secretary of the Smithsonian Institution, Charles Coffin Jewett described the results of his survey of library collections in this country. After checking against the holdings of numerous American libraries, the 139 references in Wheaton's *History of International Law*, the 251 citations in Hoefer's *History of Commerce*, the 38 citations in a report on the progress of chemistry by Berzelius, and the 204 contained in J. A. Bartlett's report on ethnology, Jewett concluded American library collections were inadequate.

More recently, William L. Emerson analyzed the 181 cited serial titles and 192 monographic citations in the twenty-three engineering doctoral dissertations completed at Columbia University between 1950 and 1954 to determine the percentages held by the Engineering Library, by other campus libraries, and not held at all by Columbia. The Latin American colonial history collection at Chicago's Newberry Library was evaluated in the early 1960s by checking against its holdings the bibliographies in numerous scholarly monographs concerning the history of Mexico, Peru, Chile, Colombia, and Venezuela. For comparative pur-
poses, the bibliographies were also checked against the holdings of three other libraries with noted Latin American collections: the University of California at Berkeley; the University of Texas; and the Hispanic Society of America Library.

In a 1970 Ph.D. dissertation, Timothy W. Sineath used 465 citations from faculty publications in eighty-three departments at the University of Michigan and 494 citations from eighty-seven departments at the University of Illinois to assess the availability of their source material in their respective libraries. One citation was randomly chosen from each item in samples compiled from lists of faculty publications during the mid-1960s. At Rhode Island University the journal collection was assessed by checking the library's holdings of periodical citations from master's theses completed there between 1959 and 1968: 1,484 citations in English Department theses and 714 from Education Department theses. The James Madison University Library checked against the collection the periodical citations in the master's theses written during a five-year period in three unnamed departments.

A creative variation of the citation checking approach employing four levels of checking was proposed by Manuel D. Lopez in 1969. His technique entails selecting references at random from a critical bibliography in a discrete subject area and checking them against the library's holdings. For each item found in the collection, one checks the first citation in the bibliography or the first bibliographical reference. Then, for each of those items which are available, the second citation is checked. For the fourth and final level, one checks the third citation in the works found at the preceding level. A 10-20-40-80 scoring system is applied to the results. During 1977-78 this technique was implemented on an experimental basis in the University of Manitoba library system in four fairly narrow subject areas: medieval French literature, modern British history, family therapy, and the American novel. In 1969 the Capability Index of Orr's Document Delivery Test—a technique that takes into consideration a library's ability to obtain material on interlibrary loan—was experimentally administered in two unnamed Canadian schools of library and information science. The sample consisted of 310 citations randomly drawn from a citation pool of 4,859 items from twenty-four library science journals.

In the 1960s and 1970s many authors suggested the use of citation checking without reporting an actual application of the technique. R. E. Maizell has recommended that the journal holdings in technical libraries be evaluated by comparing them with lists of the most frequently cited periodicals in various fields. Mary B. Cassata and Gene L. Dewey proposed checking the bibliography and footnotes in a "definitive" dissertation or scholarly monograph to ascertain whether the research for the work could have been undertaken in the State University of New York at Buffalo libraries. Marcia S. Strayer argued that some form of citation checking would be an especially creative method of assessing a university library's collection. An excellent essay by R. Marvin McInnis, an economics professor, recommended checking the availability in a library of a random sample of citations from published research in a particular
subject area as a scientific, low-cost evaluation method. As one example of a possible sample design, McInnis suggests selecting at random one citation from each of 625 randomly selected books and articles in a specific discipline. However, he allows considerable flexibility in sample design. It is obvious that a salient characteristic of the citation checking approach is its flexibility. When using this technique, the evaluator has great leeway in focusing the evaluation and designing the sample. The technique can be employed to assess the collections of a group of libraries, a single collection in its entirety, a collection supplemented by external resources, a discipline, a subdiscipline, or even the resources relating to a single topic. It can be used to evaluate the periodical holdings only, or, more commonly, all components of the collection. The sample design can be varied in terms of size, number of authors included, the number and type of sources, and in the manner of selecting citations from the sources.

**Two Specific Techniques for Testing**

It was decided to select for testing in this project varieties of the method that would focus on the discipline level, a level at which collections are likely to be evaluated in a contemporary academic library. Hence, two sample designs were devised for evaluating the political science research collections of university libraries. In both designs, journal articles rather than books were used as the source for the citations because the former offers a quicker, more efficient means for compiling the samples. A selection method of taking one item from each of many articles was employed so as to allow the maximum possible subject coverage.

For the first design, one citation was selected at random from each article in the *American Political Science Review* during a three-year period, from volume 71, number 1, March 1977 through volume 73, number 4, December 1979. The design contained a total of 150 citations. This periodical was selected since it is the most prestigious one in the field and is a logical choice if only one is needed. A three-year time span was used in order to obtain the desired sample size.

The second sample design was constructed by randomly selecting one citation from each article in a recent single bibliographical volume of five political science journals: *Comparative Politics*, *World Politics*, *American Journal of Political Science*, *Journal of Politics*, and *Political Theory*. A sample of 142 citations resulted. These journals were chosen so as to give representation to each of the major branches of political science: American politics, comparative politics, international relations, and political theory. Because more journals were included, it was necessary to reduce the time reference from three years to one to obtain a sample of comparable size to the first design.

Bonn notes that the citation checking method assumes that the library to be evaluated is quite "similar in purpose, size and subject coverage" to the one used by the author and that the work used as the source of
citations “could be and ought to be” written in the library under evaluation. Both these requirements are fulfilled by the composite samples for this study, as articles in scholarly political science journals not only “are,” but also “ought to be” written with the resources of university research libraries.

To test reliability, i.e., consistency in results, two samples were taken for each sample design resulting in a total of four different samples containing 584 citations altogether. Throughout this paper, the samples taken from the American Political Science Review are labeled I and II, while the samples constructed from the five other journals are labeled III and IV.

A table of random numbers was used to avoid any bias—conscious or unconscious—in the selection of references. A citation was selected from each article (plus comments on articles and rejoinders), methodological essay, and literature review that contained bibliographical references. Communications to the editor, regular book reviews, and “Research Notes” in Journal of Politics were excluded, even if they contained references. The four samples were checked against the holdings of five university libraries in the greater Washington, D.C., area: George Washington, Georgetown, Catholic, Howard (all located in the District of Columbia), and George Mason (in Fairfax, Virginia).

**RELIABILITY OF THE RESULTS**

The following criteria can be used to help determine whether the techniques are reliable: (1) Are consistent results obtained between samples I and II as well as III and IV? (2) Are the relative rankings of the five universities consistent throughout the four samples? and (3) Do the relative rankings of the five universities correspond to what one would expect based on their academic programs?

Table 1 presents the statistical results obtained from checking samples I and II against the collections in the five university libraries. The final column is the most important for our purposes because it reveals the percentage difference in the raw score between the two samples, i.e., it indicates the degree of consistency in the results. It is evident that the results fell within an acceptable range of consistency. In three of five cases the percentage difference was 2.5 percent or less (at Catholic, George Mason, and Howard) and in no instance was it higher than 6.4 percent (at Georgetown). Moreover, the relative rankings of the five libraries were identical in both samples: Georgetown, George Washington, Howard, Catholic, and George Mason in that order.

The results from samples III and IV are summarized in table 2, which follows the format of the first table. The results obtained here were just as consistent as those from the first set of samples, if not more so. In three of the five libraries the percentage difference was no greater than 2.6 percent (at Catholic, George Mason, and Howard, as in the first two samples). The greatest difference was again at Georgetown, but in this instance it was only 3.9 percent. It is especially noteworthy that the relative rankings of the five libraries are the same here as in samples I and II, except that in sample IV Howard and Catholic are tied for the third/
TABLE 1
RESULTS FROM SAMPLES I AND II* (N = 150)

<table>
<thead>
<tr>
<th>Library</th>
<th>Sample I</th>
<th>Sample II</th>
<th>% Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. Held</td>
<td>% Held</td>
<td>No. Held</td>
</tr>
<tr>
<td>Georgetown</td>
<td>125</td>
<td>83.3</td>
<td>133.5†</td>
</tr>
<tr>
<td>George Washington</td>
<td>122</td>
<td>81.3</td>
<td>128</td>
</tr>
<tr>
<td>Howard</td>
<td>118</td>
<td>78.7</td>
<td>116.5†</td>
</tr>
<tr>
<td>Catholic</td>
<td>112</td>
<td>74.7</td>
<td>109.5†</td>
</tr>
<tr>
<td>George Mason</td>
<td>102</td>
<td>68.0</td>
<td>99.5†</td>
</tr>
</tbody>
</table>

*Samples compiled by randomly selecting one citation from every article in the American Political Science Review, 1977–79.
†If the edition in the collection varied from the one cited, it was counted as 0.5.

TABLE 2
RESULTS FROM SAMPLES III AND IV* (N = 142)

<table>
<thead>
<tr>
<th>Library</th>
<th>Sample III</th>
<th>Sample IV</th>
<th>% Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. Held</td>
<td>% Held</td>
<td>No. Held</td>
</tr>
<tr>
<td>Georgetown</td>
<td>116.5†</td>
<td>82.0</td>
<td>112</td>
</tr>
<tr>
<td>George Washington</td>
<td>109</td>
<td>76.8</td>
<td>105</td>
</tr>
<tr>
<td>Howard</td>
<td>97.5†</td>
<td>68.7</td>
<td>95</td>
</tr>
<tr>
<td>Catholic</td>
<td>92.5†</td>
<td>65.1</td>
<td>95</td>
</tr>
<tr>
<td>George Mason</td>
<td>78</td>
<td>54.9</td>
<td>79</td>
</tr>
</tbody>
</table>

*Samples compiled by randomly selecting one citation from every article in a recent year of the American Journal of Political Science, Comparative Politics, Political Theory, Journal of Politics, and World Politics.
†If the edition in the collection varied from the one cited, it was counted as 0.5.

fourth position. In samples I through III Howard ranked third and Catholic fourth.

Table 3 presents the relative rankings of the five libraries based on the combined totals from the four samples. As anticipated, the four libraries whose universities offer Ph.D. programs in political science (Georgetown, George Washington, Catholic, and Howard) occupy the top four positions. George Mason University offers an M.A. in public administration.2 The ranking also corresponds to what one would expect based on subjective judgment. Thus, the three criteria for establishing reliability, as outlined above, are met.

A caveat should be added about the use of these techniques for comparing the collections of different universities as was done in this project. As previously noted, the comparison is intended to test consistency in the results rather than to evaluate per se the five university libraries in the study. One cannot necessarily conclude that a library with a higher score is really "better" than one with a lower score because the holdings are measured absolutely rather than relatively. In other words, the techniques do not take into account the consideration that collections will legitimately vary from library to library due to the particular requirements of the university programs they support. This reasoning would apply to almost any type of checklist evaluation method.
TABLE 3

Composite Rankings Based on Four Samples (N = 584)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Library</th>
<th>Citations Held</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Georgetown</td>
<td>487</td>
<td>83.4</td>
</tr>
<tr>
<td>2</td>
<td>George Washington</td>
<td>464</td>
<td>79.5</td>
</tr>
<tr>
<td>3</td>
<td>Howard</td>
<td>427</td>
<td>73.1</td>
</tr>
<tr>
<td>4</td>
<td>Catholic</td>
<td>409</td>
<td>70.0</td>
</tr>
<tr>
<td>5</td>
<td>George Mason</td>
<td>358.5</td>
<td>61.4</td>
</tr>
</tbody>
</table>

PROBLEMS IN USE OF THE TECHNIQUES

No major obstacles were encountered in using these procedures, but several minor difficulties—none of which were really unexpected—became apparent. When the citations were selected, three problems occurred: (1) some randomly chosen items referred to unpublished material; (2) citations (both within and between samples) were duplicates; and (3) there were a large number of citations to a few journals, especially the American Political Science Review.

On twenty-nine occasions the selected item referred to an obviously unpublished source, such as mimeographed papers, private communications, forthcoming items, papers from scholarly conferences, or Ph.D. dissertations completed at other universities. There were three options for handling this situation: (1) treating these citations the same as all the others; (2) eliminating them from consideration in the final statistics; or (3) substituting another randomly selected citation from the same journal article. The first option was ruled out because it did not seem reasonable to use items a library would not normally be expected to possess as a basis for collection evaluation; the second also was ruled out because it would reduce the comparability of the final statistics by causing the samples to be different sizes. Thus, option three was adopted. There was some question about including doctoral dissertations from other universities because a research library conceivably could contain them in its collection. However, it was finally decided to treat dissertations according to option three because an academic library would not generally collect on a systematic basis dissertations completed at another university.

An analysis of the duplicate citations reveals that sample I contained four citations in duplicate, and sample II five duplicate citations, while one citation was duplicated in sample IV. There was also some duplication between samples. The option was always available of eliminating all duplicate citations within a sample by randomly selecting another citation whenever duplication took place. This option was rejected, however, because it seemed justified to give a greater weight to more frequently cited material. In any case, duplication within samples did not occur often enough to have a significant impact on the final results.

The concentrated number of citations to a few journals is more significant because it occurred more frequently. Specifically, 58 of the 222 serial citations referred to the American Political Science Review, 11 were to the
Journal of Politics, and 5 were to Comparative Political Studies. The American Economic Review, the American Journal of Political Science, the British Journal of Political Science, and Comparative Politics were each cited 4 times. Eight journals were cited 3 times each; 16 were cited twice; and 76 titles were cited once each. A total of 107 separate titles were cited.

This pattern has been substantiated by numerous earlier studies. June L. Stewart's analysis of 1,910 political science periodical citations found that 386 different titles were cited with 201 cited at least twice. Just as in the present study, the two most frequently cited journals were the American Political Science Review and the Journal of Politics, the former having been cited 277 times and the latter 87. Altogether 37 periodicals were cited ten or more times. A dissertation by William C. Robinson revealed that 35 percent of the citations in the American Political Science Review in 1960 referred back to that same journal.

As in the case of duplicate citations, the option is available of limiting the number of citations to any one journal. However, this does not seem an advisable tactic. Not only would it violate the randomized selection method, but more frequently cited journals are presumably more important to research and thus may legitimately be given a greater weight. As McInnis has stated, "We can then use the frequency of citation as a sort of objectively-determined weighting system. By this standard it is more important that a library have a frequently cited source than one which crops up only once in a sample of cited literature." In short, this phenomenon should not be viewed as a difficulty, but merely as a feature of the technique.

Another problem that surfaced while searching the samples was that of deciding whether or not the work in a collection adequately matched the citation. Editor, edition, translator, format, or imprint might vary, even though author and title were identical. During the tabulation of the final statistics, the problem was resolved in the following manner. A variant edition was counted as one-half—on the premise that a different edition would be of some use to a researcher, but not as valuable as the precise one in the original citation. Full credit was given for reprints of the original citation, the original citation in a different format (e.g., microform), and imprints that varied from the original in cases where a different edition was not explicitly specified. For classic works in translation, such as Plato's Republic, full credit was given if the collection contained the cited translation (regardless of date) and half credit for other translations. This general problem would appear in any type of checklist method.

Another dilemma that had to be resolved was that of counting or not counting unverifiable citations. No special attempt at verification was undertaken until the checking was completed, since finding a citation in the holdings of any of the five libraries in the project was considered adequate verification. Initially, 59 citations did not appear in any collection. These were checked against both the actual Library of Congress catalog and the National Union Catalog. Serial titles were searched in New Serial Titles and the Union List of Serials. This procedure resulted in information concerning 37 citations. In 35 instances the complete accuracy of the ini-
tial citation was verified. In two cases additional information was derived which necessitated further checking in the five libraries. Finally, all but 22 of the 584 citations (96.2 percent) could be verified. For two reasons it was decided not to eliminate these unverified citations from the final statistics: (1) there would be no discernible change in the final results; and (2) in almost all cases they appeared to be legitimate citations rather than errors on the part of the citing author. A library wishing to implement these techniques or a similar citation checking method with a minimum degree of effort could undoubtedly forego the verification procedure without unduly damaging the evaluation project.

Like any type of checklist, the citation checking approach does not define what level, e.g., 70, 80, or 90 percent constitutes adequacy or excellence in a collection. Thus, somewhat ironically, a technique that renders an empirically based statistical result still contains a subjective element—how to interpret what the statistics indicate. This problem, of course, is not unique to checklist-type techniques. Of the many approaches to collection evaluation, only formulas and standards contain a definition of adequacy built into the technique. Consequently, when analyzing the results of a checklist-type evaluation in a particular library—including the present study—one must ultimately rely upon his or her own judgment and any available statistical data that offer a comparison with other libraries. For this reason, the data in tables 1 through 3 could be of use to other academic libraries desiring to replicate the evaluation techniques described here.

**ANALYSIS OF SAMPLES**

As a further device for assessing the specific techniques tested in this project, the citations from the four samples were analyzed in terms of basic characteristics, including language, format, date, and subject area. It should be added that this was a worthwhile exercise in its own right because it helps describe the structure of contemporary political science literature in this country. Also, it allows comparison with earlier studies of political science citations.

A tabulation by format shows that 362 of the 584 total citations (62.0 percent) referred to monographs, while 222 (38.0 percent) were to serials. For comparison, Gordon P. Martin’s analysis of 3,024 political science citations found 51.3 percent to be monographs and the Stewart study revealed that 66 percent of 1,700 citations from Apter and Eckstein’s *Comparative Politics* were monographs. James G. Baughman calculated that 34.59 percent of all the citations in the 1974 *American Political Science Review* were serials, whereas 65.36 percent were “nonserial.”

William C. Baum et al. also analyzed the 1974 *American Political Science Review* and found 59.8 percent of the citations were to books, 31.5 percent to serials, and 8.7 percent to “other.”

Table 4 presents a statistical breakdown by language. The final column indicates that 93.5 percent of the citations in the four samples (546 out of 584) were in English with nine other languages represented. Martin’s analysis found the following language distribution: English 89.4 percent, French 4.2 percent, Russian 2.7 percent, German 1.4 per-
cent, and "others" 2.3 percent. In Stewart's study, 967 of 1,124 monographic citations (86.0 percent) from Apter and Eckstein's Comparative Politics were in English with the remaining citations divided as follows: French 58 (5.2 percent), German 58 (5.2 percent), Russian 24 (2.1 percent), Italian 5 (0.4 percent), Spanish 5 (0.4 percent), Chinese 2 (0.2 percent), Polish 2 (0.2 percent), Bulgarian 1 (0.1 percent), and undetermined from her data 2 (0.2 percent).

The distribution of the citations by date is illustrated in table 5. One can calculate that 90 percent of all the citations (89.9 percent to be precise) date from 1960 or later, while 59.2 percent have imprint dates from the 1970s. The distribution confirms the assertion that the most recently published material is underrepresented. There were no citations with an imprint date later than 1978, and, in fact, only 7 (1.2 percent) were from that year. In the Martin study, 47.6 percent of the material had been published within ten years. One can assume the pattern of distribution

### TABLE 4

**Distribution of Citations by Language**

<table>
<thead>
<tr>
<th>Language</th>
<th>Sample I No.</th>
<th>Sample II No.</th>
<th>Sample III No.</th>
<th>Sample IV No.</th>
<th>Total No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>145 96.7</td>
<td>145 96.7</td>
<td>126 88.7</td>
<td>130 91.5</td>
<td>546 93.5</td>
</tr>
<tr>
<td>French</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
</tr>
<tr>
<td>German</td>
<td>1 0.7</td>
<td>2 1.3</td>
<td>2 1.4</td>
<td>0 0</td>
<td>5 0.9</td>
</tr>
<tr>
<td>Russian</td>
<td>0 0</td>
<td>0 0</td>
<td>2 1.4</td>
<td>3 2.1</td>
<td>5 0.9</td>
</tr>
<tr>
<td>Chinese</td>
<td>0 0</td>
<td>1 0.7</td>
<td>1 0.7</td>
<td>1 0.7</td>
<td>3 0.5</td>
</tr>
<tr>
<td>Italian</td>
<td>2 1.3</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
<td>2 0.3</td>
</tr>
<tr>
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<td>1 0.7</td>
<td>0 0</td>
<td>0 0</td>
<td>2 0.3</td>
</tr>
<tr>
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<td>0 0</td>
<td>0 0</td>
<td>2 0.3</td>
</tr>
<tr>
<td>Hebrew</td>
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<td>0 0</td>
<td>1 0.7</td>
<td>0 0</td>
<td>1 0.2</td>
</tr>
<tr>
<td>Latin</td>
<td>1 0.7</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
<td>1 0.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>150 100.1</td>
<td>150 100.1</td>
<td>142 99.9</td>
<td>142 99.9</td>
<td>584 100.1</td>
</tr>
</tbody>
</table>

### TABLE 5

**Distribution of Citations by Date**

<table>
<thead>
<tr>
<th>Date</th>
<th>Sample I No.</th>
<th>Sample II No.</th>
<th>Sample III No.</th>
<th>Sample IV No.</th>
<th>Total No.</th>
</tr>
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<tr>
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<td>2 1.3</td>
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</tr>
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<td>9 6.4</td>
<td>27 4.7</td>
</tr>
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</tr>
<tr>
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<td>11 7.9</td>
<td>42 7.3</td>
</tr>
<tr>
<td>1970-74</td>
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<td>72 48.3</td>
<td>49 35.5</td>
<td>57 40.7</td>
<td>233 40.5</td>
</tr>
<tr>
<td>1965-69</td>
<td>29 19.5</td>
<td>29 19.5</td>
<td>32 23.2</td>
<td>22 15.7</td>
<td>112 19.4</td>
</tr>
<tr>
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<td>11 7.4</td>
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<td>23 16.4</td>
<td>65 11.3</td>
</tr>
<tr>
<td>pre-1960</td>
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<td>11 7.9</td>
<td>58 10.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>149 100.1</td>
<td>149 99.9</td>
<td>138 99.9</td>
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<table>
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<tbody>
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<td>140 100.0</td>
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<tr>
<td>8</td>
<td></td>
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<tr>
<td>142 142</td>
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</tr>
<tr>
<td>584</td>
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</tr>
</tbody>
</table>
by date would vary from discipline to discipline, depending upon each
discipline's research requirements.

None of these statistics concerning the statistical composition of the
four samples is surprising. However, the fact that the findings here are
generally consistent with those of earlier studies further testifies to the
validity of the techniques used in this project. The pattern of subject dis-
persion, which will be discussed below, has far greater implications for
the use of citation checking as an evaluation method.

Table 6 presents a sample-by-sample breakdown of the subject disper-
sion according to the Library of Congress classification system. It was
possible to identify Library of Congress class numbers for 547 of the 584
citations. Slightly less than half—254 of 547 (46.4 percent)—were
classed in J (political science). The second largest concentration was in
H (social sciences). Thus, 69.8 percent of the citations for which class
numbers were available (382 of 547) fell within political science or the
other social sciences. The remaining 30.2 percent were distributed
among twelve other LC schedules. It should, of course, be recognized
that many titles classed outside the J schedule can legitimately be consid-
ered to lie within the political science discipline, such as Samuel H.
Beer's *British Politics in the Collectivist Age*, which is classed in D.

<table>
<thead>
<tr>
<th>Class</th>
<th>Sample I</th>
<th>Sample II</th>
<th>Sample III</th>
<th>Sample IV</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>A</td>
<td>3</td>
<td>2.1</td>
<td>1</td>
<td>0.7</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>7</td>
<td>4.9</td>
<td>7</td>
<td>4.9</td>
<td>17</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>0.7</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td>3.5</td>
<td>8</td>
<td>5.6</td>
<td>9</td>
</tr>
<tr>
<td>E</td>
<td>1</td>
<td>0.7</td>
<td>2</td>
<td>1.4</td>
<td>4</td>
</tr>
<tr>
<td>F</td>
<td>2</td>
<td>1.4</td>
<td>2</td>
<td>1.4</td>
<td>1</td>
</tr>
<tr>
<td>H</td>
<td>35</td>
<td>24.5</td>
<td>35</td>
<td>24.5</td>
<td>28</td>
</tr>
<tr>
<td>J</td>
<td>72</td>
<td>50.3</td>
<td>70</td>
<td>49.0</td>
<td>59</td>
</tr>
<tr>
<td>K</td>
<td>6</td>
<td>4.2</td>
<td>5</td>
<td>3.5</td>
<td>4</td>
</tr>
<tr>
<td>L</td>
<td>2</td>
<td>1.4</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>P</td>
<td>3</td>
<td>2.1</td>
<td>4</td>
<td>2.8</td>
<td>5</td>
</tr>
<tr>
<td>Q</td>
<td>4</td>
<td>2.8</td>
<td>5</td>
<td>3.5</td>
<td>0</td>
</tr>
<tr>
<td>T</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0.7</td>
<td>0</td>
</tr>
<tr>
<td>U</td>
<td>2</td>
<td>1.4</td>
<td>3</td>
<td>2.1</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>143</td>
<td>100.0</td>
<td>143</td>
<td>100.1</td>
<td>131</td>
</tr>
</tbody>
</table>

Having checked his citations against the LC classification system also,
Martin found that 30.9 percent fell in the J schedule and 66.2 percent
within the social sciences (including political science). Robinson's cita-
analysis of select political science journals in 1960 revealed that 30.7
percent of the references were classed in J. Stewart calculated that 76.2 percent of the monographic citations (857 of 1,124) in Apter and Eckstein’s *Comparative Politics* were in the field of “politics.” Elliot S. Palais compared periodical references from the Stewart study with the subject classifications in *Ulrich’s International Periodicals Directory* and discovered that 29.05 percent of the journal titles were placed under political science and 70.95 percent were in the social sciences (including political science). Using individual articles rather than journals as the basis of calculation, he found that 60.85 percent were in political science and 86.21 percent in the social sciences.

It is apparent from the preceding data that the references generated by a sampling of citations fall into three categories in terms of subject dispersion: (1) the core discipline itself; (2) tangential disciplines closely allied to the core discipline; and (3) peripheral areas, often far removed from the main discipline. This pattern has profound implications (both positive and negative) for the use of citation checking as a collection evaluation method. On the positive side, it illustrates the importance to scholarly research of material which would ordinarily be considered outside the domain of the subject area being evaluated—material which would not be included in the so-called standard bibliographies. Therefore, one may conclude that citation checking represents a more realistic means of collection assessment than other kinds of checklists, which normally would not take tangential subject areas into consideration. On the debit side, the fact that some references to peripheral items far removed from the core discipline are used as a basis of evaluation may legitimately be questioned. Although the data presented in this paper are drawn from political science, Broadus’ summary of ten citation studies in economics, sociology, business administration, education, and general social studies and Shirley A. Fitzgibbons’ survey of 115 social science citation studies both demonstrate that despite some fluctuation from discipline to discipline, the basic pattern would be evident in other social sciences and humanities subject areas.

**Summary**

Two specific permutations of the citation checking evaluation method, using a random selection of citations from journal articles, have been tested in this project. The results lead to the conclusion that these techniques constitute reliable and valid methods for evaluating university library research collections in political science with a relatively small expenditure of effort. It is reasonable to conclude with equal confidence that the techniques can be used to evaluate research collections in other disciplines as well. Needless to say, this approach is obviously not appropriate for evaluating a collection’s ability to support teaching at the undergraduate level.

The following difficulties in implementing a citation checking evaluation project can be anticipated: duplication of citations, citations to unpublished material, unverifiable citations, a concentrated number of citations to a few journals, and citations that differ in certain bibliographical details from the ones held by the library under evalua-
The approach generates empirical data for reaching a qualitative assessment of the collection, but one’s subjective judgment is still necessary to determine if the collection is adequate. An analysis of the citations indicates that approximately 60 percent were monographs while about 90 percent were in English and had been published within the last two decades. A significant portion of the citations were in subject areas either tangential or peripheral to the core discipline.

**References**


27. Based on examination of the university catalogs.
38. Ibid., p.238.

John Rutledge and Willy Owen

To reduce the chances of acquiring retrospective materials from France on paper of inferior quality, the authors surveyed the French-language holdings in history and literature at the Wilson Library, University of North Carolina at Chapel Hill. In their attempt to create guidelines, they discovered that the history collection is in slightly better condition than the literature collection, but that a serious decline in the quality of paper used in French books began around 1885 and continued through the rest of the period under study. Only 36 percent of the books printed between 1905 and 1909 may be said to be still in good condition. Data from the study about specific publishers and about paper quality by quinquennial periods will help to inform selection and choice of format decisions.

Although by now the woeful story of the decline in paper quality in the nineteenth century is a thrice-told tale to all librarians, the truth of it was brought home to the Wilson Library by an unfortunate experience that provided the impetus for this study. We bought a small collection of French literature with late-nineteenth-century imprint dates, many of which turned out to be in terrible condition. Several volumes fell into two parts—one in each hand—when opened for inspection after their arrival. For some time after this, we were quite wary of buying French books from this period. Then we began to consider ways of predicting paper quality in advance so that we could continue to support our programs in French literature and history and to build the collections retrospectively.

In our most optimistic moments, we hoped to devise a guide covering every publisher and year, so constructed that a bibliographer/book selector could consult it by year and publisher and get an instant evalu-
tion of the condition of the paper used. At the very least we hoped to be able to chart the course of the deterioration in paper quality and to list the percentages of bad and good paper for a given period of time. Our results fell somewhere in between. We have produced charts showing the percentages of good, fair, and bad paper quality by five-year groupings; by consulting these before purchase, we believe we can significantly reduce our chances of getting books printed on poor-quality paper. In addition, it was possible to trace several firms through their publishing history; for these firms, we know what years to avoid. Where indications are strong that the paper is likely to be of poor quality, microform copy will be preferred, since a library generally buys a book for its intellectual content, not for its paper quality.

We do not claim to have examined a representative sample of the estimated 675,000 titles published between 1860 and 1914. Our study was restricted to French literature (including criticism) and history; thus our findings may correlate only crudely with the results of studies on the quality of books in areas such as mathematics or theology. Our limited explorations of other fields suggest that there are yet many specialist publishers not accounted for in this study. While our sample does not include some standard subject areas and includes no ephemeral subjects, it likely corresponds closely to what research libraries in the United States will want to hold or buy in the fields of French literature and history, which are considered to be areas of strength and quality in our collection.

The unhappy experience with the collection of late-nineteenth-century imprints mentioned earlier made us look to that period as the focus of our study. A casual, preliminary sample indicated that books printed before 1860 were in consistently good condition and that by the 1920s, yellow, brittle paper was becoming general. Furthermore, we knew that the introduction of wood pulp was neither sudden nor uniform. While it would have been helpful to study the years of the Great War, les années folles, and the thirties, we felt that sampling nearly a century’s worth of our holdings in French literature and history would have made demands on the time available for the study that were simply too great to be met. Since it was desirable to learn when the decline in paper quality became a serious problem, we chose to limit this study to the earlier period, the time of transition when the quality of the paper would (presumably) be more difficult to predict. There is no universally acknowledged terminus ante quem for the decline in paper quality. After attending an international meeting of preservation officers, Norman J. Shaffer reported that the “French . . . use the period 1875–1960 as the bad paper period. The British use the date 1860 + , while we generally believe that the serious problem started to develop in paper made after 1850.”

As nearly as we can determine, there is no standard layperson’s terminology for describing paper quality for library books, at least not one that could be used conveniently. The three terms applied in this study were designed to aid those without an intense interest in the chemistry and physics of paper technology.
GOOD: the book can be used in an ordinary manner with no damage to it; the book does not require special care in handling to prevent edges and corners from chipping off; the paper is clear and not discolored, or only slightly discolored at the edges; the paper resists two folds without severe creasing.

FAIR: the book may need to be handled gently to facilitate use and to prevent damage; edges of the paper are brittle, corners usually do not survive two folds; discoloration is general on the page, but does not prevent easy reading.

BAD: the book needs special care to prevent further damage and even to be used; ordinary usage, flipping and turning pages, may result in accidental damage to the paper; corners succumb to the first fold; discoloration makes use of the book in good light a necessity.

In examining the books we had to resist constantly the temptation to make further distinctions (e.g., excellent, abysmal) in paper quality. To do so would have served no practical purpose, but would rather have complicated the task of assessing paper quality. So the “rigid discipline” of three categories was maintained. The standards are not those of a bibliophile or private collector, but they should be sufficiently distinctive to facilitate decision making for research library materials where support of academic programs and research interests normally take precedence over bibliophilic considerations.

It is interesting to note that Magrill and Rinehart, in a study of the collections at the University of Michigan, also designed three categories to describe the physical condition of book paper (“good,” “fair,” and “brittle”). Their rating system for paper condition takes into account the width of the inner margins, a factor we did not consider since few French books from the period 1860–1914 would be rebound here.

A primary aim of this study was to uncover information about the current condition of ordinary books in our collections. Quite a few books in this library were printed on better-than-average paper, and in general they are not nearly so brittle or browned as books on the average run of the paper mill. While the French publishers acceded to the economic necessities of their time by producing great quantities of a title on poor paper, they nevertheless deserve accolades for their general practice of issuing a small run on very good paper.

The rule followed in this study was to suspect any book that appeared to be on extraordinary paper. If suspect, we examined the flyleaves, title pages, verso, and colophon for statements by the publisher about paper quality. Limited editions and numbered copies of an edition were excluded from this study, as were oversize books and specialty items. For this reason our collections are slightly better than the statistics in the study indicate.

If the book was to be included in our survey, it had to have a reliable date in the imprint information. A few publishers were quite lax about this. We did not rely on information supplied by catalogers because the rules for supplying dates appear to have varied with differing sets of cataloging rules. If the book contained a date between 1860 and 1914 (inclusive), we next bent corners in two or three places in the text; at the same
time we examined for discoloration, being guided in both by the qualities outlined above. Proceeding in this fashion, we systematically examined a great many monographs in French history and literature. Generally, only one volume in a set or series was examined, unless it was obvious to sight that different paper qualities had been used in different years.

In assigning a book to one of the three categories, we tried not to let ourselves be influenced too greatly by the quality or condition of the binding. While the bindings were often of leather, the endpapers were frequently of poorer quality than the text, and there might be serious discoloration and acid migration on the first and last few pages of the text. Our investigation focused mainly on embrittlement and yellowing.

Once a judgment was made as to quality, the result—a G, F, or B—was written on a chart after the publisher’s name and under the year of imprint. Different colors of ink were used to distinguish history titles from literature. The tabulation procedure actually became quite cumbersome as more and more publishers were discovered. Eventually the list grew to more than 185 names, and the tabulation often took longer than the physical examination of the book itself.

**RESULTS OF THE STUDY**

Table 1 presents our data in rawest form. In it we list year, number of books in each category (good, fair, bad), and total number of books examined. There is a gradual rise in the number of books held and examined over the fifty-five-year period with a sudden rise around 1908 to 1912. It does not correlate with total French book production for the period, which remained amazingly constant throughout the entire period at about 12,000 titles of every kind per annum. The significant reduction in output during the Franco-Prussian War (1870–71) is reflected only in our figures for 1871. The cause for the fluctuation in the number of books available here for examination probably results more from the acquisitions habits of this library and from the nature of scholarly production than from variation in total French book production.

Table 2 shows the percentages of the sample arranged in five-year groupings. The choice of five-year groupings is a matter of convenience, but it allows a greater degree of accuracy statistically. Other groupings are possible and might have been chosen, for example, historical dates or literary events. However, no fluctuations in the publishing output of France (except for the decline during the Franco-Prussian War) indicate a more obvious or rational division into periods.

From our figures expressed in percentages, we note with delight that the percentage of books with good paper quality remains fairly constant (more than 80 percent) until 1884. Beginning with the quinquennial period 1885–89, the percentage of books in fair condition grows to 19 percent and the bad category grows to 14 percent of the total examined. From 1890 the percentage of books in good condition continues its decline until it reaches an all-time low of 36 percent during the period 1905–9. The percentage of books in bad condition remains fairly steady from 1895 to 1914.
### TABLE 1

**A Sample of the Paper Quality of French Imprints**

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<thead>
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</tr>
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</tr>
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<td>17</td>
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<td>1</td>
<td>18</td>
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<td>1884</td>
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</tr>
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<td>Totals</td>
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<td>322</td>
<td>225</td>
<td>1349</td>
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</tbody>
</table>

### TABLE 2

**The Sample Expressed in Percentages with Margins of Error**

<table>
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<tr>
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<th></th>
<th></th>
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<th></th>
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</thead>
<tbody>
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<td>1860-1864</td>
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<td>94</td>
<td>± 6</td>
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<td>± 3</td>
<td>3</td>
<td>4</td>
<td>± 5</td>
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</tr>
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<td>1865-1869</td>
<td>82</td>
<td>96</td>
<td>± 4</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>3</td>
<td>4</td>
<td>± 4</td>
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</tr>
<tr>
<td>1870-1874</td>
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<td>80</td>
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<td>± 9</td>
<td>5</td>
<td>9</td>
<td>± 8</td>
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</tr>
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<td>± 5</td>
<td>5</td>
<td>5</td>
<td>± 4</td>
<td></td>
</tr>
<tr>
<td>1880-1884</td>
<td>105</td>
<td>79</td>
<td>± 7</td>
<td>17</td>
<td>13</td>
<td>± 6</td>
<td>11</td>
<td>8</td>
<td>± 5</td>
<td></td>
</tr>
<tr>
<td>1885-1889</td>
<td>83</td>
<td>67</td>
<td>± 8</td>
<td>23</td>
<td>19</td>
<td>± 7</td>
<td>17</td>
<td>14</td>
<td>± 6</td>
<td></td>
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<tr>
<td>1890-1894</td>
<td>77</td>
<td>56</td>
<td>± 8</td>
<td>37</td>
<td>27</td>
<td>± 8</td>
<td>24</td>
<td>17</td>
<td>± 9</td>
<td></td>
</tr>
<tr>
<td>1895-1899</td>
<td>45</td>
<td>39</td>
<td>± 9</td>
<td>40</td>
<td>34</td>
<td>± 9</td>
<td>31</td>
<td>27</td>
<td>± 8</td>
<td></td>
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<tr>
<td>1900-1904</td>
<td>44</td>
<td>40</td>
<td>± 9</td>
<td>41</td>
<td>38</td>
<td>± 9</td>
<td>24</td>
<td>22</td>
<td>± 8</td>
<td></td>
</tr>
<tr>
<td>1905-1909</td>
<td>72</td>
<td>36</td>
<td>± 7</td>
<td>72</td>
<td>36</td>
<td>± 7</td>
<td>55</td>
<td>28</td>
<td>± 6</td>
<td></td>
</tr>
<tr>
<td>1910-1914</td>
<td>91</td>
<td>41</td>
<td>± 7</td>
<td>84</td>
<td>38</td>
<td>± 7</td>
<td>47</td>
<td>21</td>
<td>± 5</td>
<td></td>
</tr>
<tr>
<td>1860-1894</td>
<td>543</td>
<td>77</td>
<td>± 3</td>
<td>92</td>
<td>13</td>
<td>± 3</td>
<td>68</td>
<td>10</td>
<td>± 2</td>
<td></td>
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<tr>
<td>1895-1914</td>
<td>252</td>
<td>39</td>
<td>± 4</td>
<td>237</td>
<td>37</td>
<td>± 4</td>
<td>157</td>
<td>24</td>
<td>± 3</td>
<td></td>
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<tr>
<td>1860-1914</td>
<td>795</td>
<td>59</td>
<td>± 3</td>
<td>329</td>
<td>24</td>
<td>± 2</td>
<td>225</td>
<td>17</td>
<td>± 2</td>
<td></td>
</tr>
</tbody>
</table>

*M.E. = Margin of Error*
Overall, the accuracy of our sample is probably high. The margins of error given in table 2 were computed using the formula for the standard error in a binomial population, and we should point out that these figures are generous estimates. They represent the upper range of error; in fact, they are probably more reliable than they appear at first glance. A 2 to 3 percent margin of error for the entire fifty-five-year period is respectable, and likewise our estimates for the periods 1860–94 and 1895–1914 can be trusted. In any of the five-year groupings, the margin of error is necessarily larger because of the reduced sample size. While this limits the practical applications of our study somewhat, it does not invalidate the conclusions. Our study was designed to produce an in-house guide for book selectors and to examine the quality of paper in the collections, not to satisfy some more-abstract goal. We felt that the edge of our tool was sufficiently honed when it could predict book condition with some accuracy. And this goal has been achieved in our experience with retrospective materials received in the library since we concluded the original study.

The graph (figure 1) shows at a glance the percentages of books examined in each of the three categories for the five-year periods. It shows, in rather dramatic fashion, the gradual increase in use of highly acidic paper and the resulting deterioration that now afflicts the French literature and history collections. Of the total holdings, 24 percent are in fair condition and 17 percent must be considered to be in bad condition, but 59 percent can be labeled as in good condition. We now use this graph to assess our chances of getting an older book in bad condition. Until the end of the period 1885–89 about two-thirds of the material can still be reckoned to be in good condition in 1982.

Originally we had hoped to trace the changes in paper quality in the products of many of the more important publishing firms of France. We now know that during the years 1860–1914 more than 185 firms were publishing. Unfortunately, our examination did not provide a sample large enough to trace the paper quality of each publisher through the years. We do believe, however, that there are sufficient data to present figures for several of the larger firms.

Table 3 compares the output of seven of the largest and/or most popular publishers with the production of all publishing houses sampled. When we consider the purchase of a Hachette imprint from the period 1895–1914, we find it helpful to know that only 16 percent of this firm’s titles in this period may be considered good. This fact might sway us to obtain a microfilm copy instead. By contrast, a Hachette title from the earlier period is more likely to be in good condition, and we could purchase hard copy with realistic hope of receiving materials in good condition. For works by other firms we can consult the chronological groupings of table 2.

As noted earlier, we gathered our data in such a way as to distinguish history books from literature. These are normally two important areas of retrospective collecting interest at a research library. Our study found that history titles are, in general, in better condition than belles lettres titles. Table 4 compares the paper quality of literature and history titles.
Figure 1
Percentage of Books with Paper in Good, Fair, and Bad Condition by Five-Year Groupings, 1860-1914

TABLE 3
COMPARISON OF THE PRODUCTION OF SELECTED PUBLISHERS

<table>
<thead>
<tr>
<th>Publisher</th>
<th>1860-1894</th>
<th>1895-1914</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good</td>
<td>Fair</td>
</tr>
<tr>
<td>Calmann-Lévy</td>
<td>70%</td>
<td>25%</td>
</tr>
<tr>
<td>Champion</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Charpentier</td>
<td>70</td>
<td>14</td>
</tr>
<tr>
<td>Hachette</td>
<td>80</td>
<td>5</td>
</tr>
<tr>
<td>Mercure de France</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Perrin</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Plon</td>
<td>91</td>
<td>5</td>
</tr>
<tr>
<td>All publishers sampled</td>
<td>77</td>
<td>13</td>
</tr>
</tbody>
</table>

*The number of titles sampled in this category was too small to establish reliable percentages.*
Beginning with the five-year period 1876–79, history titles appear to be in better condition than belles lettres. This trend continued through the rest of the period under investigation. Ten to 15 percent more of the history books published near the turn of the century are in good condition compared to those in literature. Predictably, far fewer history titles are in bad condition. Thus we think that we can purchase history titles with greater assurance of getting good paper quality.

Several reasons may be adduced to explain the better quality of history titles. History publications, unlike literary titles, which were most often commercial ventures, were frequently subsidized by an organization or learned institution. There is also the matter of national pride: studies and documents of the nation’s past, if not carved in granite, can at least be printed on fine paper. So we can rejoice in the fact that most of the “monumenta” of French history have been handed down to us on good paper. All the publications of the Société de l’histoire de France, and most of those by the Société de l’histoire de la révolution française, seem to be in very good condition. Likewise, all of the historical publications from the firm of Renouard are still in good condition. Titles from the firm of Lemerre, which specialized in the classics of French literature and became the most important literary publishing house, are almost without exception in good condition.

**OTHER RECENT STUDIES**

While this study was limited to the period 1860–1914, we think that there is little ground for optimism about the paper quality of French books from later years. In fact, there is some reason to believe that later paper may be of worse quality than that used from 1860 to 1914. Magrill and Rinehart reported on the overall physical condition of French books from the middle decades of the twentieth century. They found that French books of the 1960s “rated lower in comparison with the other countries than they had in the 1970s. Publications of the 1950s show a
further decline in the relative standing of French publications." During the 1940s the French publications "held up reasonably well" in comparison with the German. Looking specifically at paper quality, as the present study does, Magrill and Rinehart found that 35 percent of French paper from 1950 to 1959 is now "clearly brittle." During the 1940s less than 40 percent of French paper can be labeled good.

Insofar as we are aware, ours is the only study of paper quality which has so specific a subject focus. There have been studies that share many of our concerns, but their methodology and scope have generally been more elaborate than ours. Since these studies tend to corroborate and support our findings, we think it helpful to provide some brief account of them here. Since most of them were in process or in press as we were completing our study, we shall attempt to review them as they relate to our work.

The Speer Library of Princeton Theological Seminary conducted an evaluation of their holdings in 1976 based on a random-sampling technique. They measured the "paper stability" of their sample by bending the fortieth page up to five times: a book either failed or passed the test. They further applied chlorophenol to inner margins to ascertain alkalinity. Although the standards applied were rather more exigent than ours, the results were similar. They note that the problem of paper quality is most severe beginning around 1860. Of 329 books (from all countries) sampled from the period 1860 to 1899, 83 percent failed their test for stability. Books from 1900 to 1939 failed in 67 percent of the cases examined. The severity of these findings is due in part to the stringency of the testing standards. If in our study we had counted "bad" and "fair" as one category, our results would more nearly approximate those of the Princeton study.

The findings of the Princeton study helped to sway the Committee for the Preservation of Theological Materials of the American Theological Association to work toward the development of a comprehensive microfilming project for theological materials. Books from the period 1860–1929 were identified as "crisis books"—too brittle to be rebound—and a comprehensive microfilming project is being developed. Not surprisingly, French materials account for less than 3 percent of the sample drawn by the committee in its study of theological materials.

Librarians at Stanford University conducted an elaborate, scientific survey of book deterioration in the Green Library. They examined a random sample of paper, binding, and board and cover condition. As in our study, paper condition was divided into three categories; their criteria appear to be slightly more lenient than ours. (It should be evident now that no consensus has been achieved for lay description of paper condition, although efforts to describe it usually work very similarly.) The Stanford team discovered that a "significant fraction" of books printed before 1949 are deteriorated: more than one-fourth of the titles in each decade before 1949 are deteriorated and for the decade 1910–19, more than one-half of the titles are deteriorated. The Stanford study fortunately breaks down its sample by place of publication. For French
materials (all periods held in Green stacks), 28 percent were described as "0 level of deterioration" (no yellowing, no flaking, no tearing or breaking of corners when the pages were pulled gently). Another 37 percent were in the middle category; 34 percent were in the worst condition described. The condition of French paper is slightly worse than that of the total sample of books in the Green Library.

Since the present study was restricted to the period 1860-1914, it is difficult to make comparisons. Our nonsystematic observations of mid-twentieth-century paper, which in many cases seems to be as bad as some of the older papers, lead us to think that the Stanford figures are accurate and reliable. We shall keep Stanford's figures in mind when selecting retrospective French titles.

Another large examination of holdings for the deterioration of book paper was carried out in the University of California libraries. Their findings, based on a sample of more than 2,000 volumes in the University of California library system, indicate that monographs produced between 1850 and 1944 have the poorest folding endurance (measured according to Barrows). Monographs produced between 1860 and 1919 have, as a group, the poorest resistance to tearing.

Yale University has also completed a survey of book condition in Sterling Library. It too evolved a random-sampling technique. A complete statistical report was not yet available at the time of this writing, but preliminary interpretations are as depressing as the rest of the findings reported in this study. On the basis of acidity level, 45 percent of the books in the collection "were printed on paper which broke off after two double-folds, not very flexible paper. These books will need preservation attention, and probably replacement, in the very near future."

Having physically examined the paper quality of the French books in history and literature in the Wilson Library printed between 1860 and 1914, we feel that we are better armed to shape the retrospective development and the preservation of our collections. The figures presented on paper quality in this study, our observations on the output of various publishing houses, and the more general findings of studies which cover all periods of publishing will together guide us in avoidance and preferential selection in and in the better management of our collections. Although the reports about paper quality depress one's spirits, one can rejoice in the fact that, in the absence of a national preservation policy for intellectual materials on paper, many libraries or groups of librarians are attacking the problem independently.

REFERENCES

1. The pioneering work of W. J. Barrow in his study on Strength and Other Characteristics of Book Papers 1800-1899 (Richmond: W. J. Barrow Research Laboratory, 1967) provides little aid to West Europeanists since Barrow's sample of books, although it was chosen to represent a good cross section of nineteenth-century books likely to be found in American research libraries, does not include fiction; furthermore, no French imprints from the period 1860-99 figure in his sample.
6. Ibid.
7. Ibid., p.55.
11. Ibid., p.21.
A Comparison of the OCLC Database and New Serial Titles as an Information Resource for Serials

Jim Williams and Nancy Romero

To compare two tools often consulted for information about serials, a random sample of 200 titles was drawn from the OCLC online database and another sample of 200 titles was drawn from New Serial Titles. Each title was searched for a corresponding entry in the tool in which it did not originally appear. The 217 titles found in both tools were compared for holdings reports, selected bibliographic data elements, and supplementary notes. The OCLC database appeared to be the superior resource for current material, while New Serial Titles was found to be the stronger resource for older titles. Reasons were suggested for the appearance of certain titles in only a single tool. It was concluded that both tools are important information resources for serials.

By the Spring of 1978, OCLC had become the first tool consulted for serial title information by catalogers and bibliographers in the University of Illinois at Urbana-Champaign Library (UIUC). Use continued to be made of New Serial Titles (NST), but only after no record had been found online or if that displayed lacked the data desired. Reports of newly cataloged titles were still prepared and mailed from UIUC to the Library of Congress. The value of staff spending time with this activity seemed questionable, particularly if a very large number of the same serial titles had records in OCLC providing comparable data and displaying identical reporting libraries. The study that resulted in the present article was undertaken at that time to examine the comparative value of the two tools for serial information.*

Comparison of Tools

NST was intended to be and has functioned basically as an acquisition tool and bibliographic service, while OCLC was established as an online cataloging agency. The MARC format for serial titles provides for the

*In 1981 New Serial Titles became a product of the CONSER Project. Identical bibliographic and holdings information as that appearing in OCLC at the time the issue is printed are now given.

Jim Williams, Applied Social Sciences Bibliographer, and Nancy Romero, Head, Original Cataloguing, are members of the staff of the University Library, University of Illinois at Urbana-Champaign.
inclusion of descriptive and analytical detail beyond that for which NST was designed as well as for those bibliographical data for which it is primarily consulted: ISSN, Dewey class number, beginning date (or numerical designation), place of publication, name of issuing body for title entries where one exists, address of publisher, subscription price as it appears on the piece, frequency, notes needed to present further bibliographical information, and libraries with holdings reported.

Unlike NST, where serials that began publication prior to January 1, 1950, and "newspapers, looseleaf publications, books in parts, municipal government serial documents, publishers' series, motion pictures, filmstrips, and phonorecords are excluded," OCLC's scope of serials is unrestricted. Moreover, OCLC's online base makes new or changed information regarding a title and added reporting institutions available immediately in a single file. NST is issued monthly, with every third issue a quarterly cumulation. Annual cumulations and cumulations for longer time periods are published. Cumulative volumes are now available for 1950-70, 1971-75, and 1976-78. In addition to the several issues that it may be necessary to check, a thorough search of NST requires consulting a separate section to learn about changes in bibliographical data, and new library reports appear only as cumulations are issued.

**METHODOLOGY**

To compare OCLC and NST as information resources for serial titles, a random sample of 200 titles was taken from each tool. Each title was searched in the opposite tool for a corresponding record. Titles located in both were compared with regard to the following: identity of reporting institutions; time of report; presence or absence of the following data elements in the record: ISSN, Dewey class number, beginning date and/or numerical designation, place of publication, publisher's address, price and frequency; and types of supplementary notes. Records from either OCLC or NST not located in the alternate resource were examined to determine the probable reason for their absence.

OCLC assigns a sequential number to each record input into its system. Helen M. Hughes, User Advisor, User Services Division of OCLC, supplied the information that the first serial title to be entered into OCLC was probably the American Association for the Advancement of Science's *AAAS Bulletin*, input February 19, 1974. The number assigned was OCLC: 807421. This was taken as the low number for the random sample from OCLC. The high number, OCLC: 3923031, was assigned to *Gesar: Buddhist Perspectives*, a title input by the University of Illinois at Urbana-Champaign Library on May 24, 1978. The date range for the entire sample and the number range for the OCLC area were thereby established.

A random-number table was then used to generate a pool of seven-digit numbers. Those within the range 0807421-3923031 were recorded.

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*The time of appearance in OCLC and NST, which was also compared, will be discussed in a separate article.*
and searched in OCLC. Approximately 2,450 such random numbers for both monographic and serial records were called up to obtain the desired sample of 200 serial titles.

The NST sample was compiled from the monthly classified issues of *New Serial Titles*, the coverage of which is identical to the monthly and quarterly alphabetical lists. Two sets of random numbers were devised, one for determining pages and a second for determining titles upon a page. The former number range was established by checking the last page number of each issue within the February 1974-May 1978 time frame. The issue found to have the greatest number of pages was that for February 1977 with 61 pages, making the page number range 01-61. Entries were counted on five fully covered pages within this issue to establish the title number range. The high number proved to be 38, thus making a title number range of 01-38. Again a random-number table was employed to devise the two sets of numbers.

Using the two number sets, one title was sequentially selected from each issue of NST from February 1974 through May 1978 until the sample of 200 titles was obtained.* When a random page number was higher than the last page of the issue being checked, the number was discarded and the next used until a random number and page number were matched. The same procedure was followed for title numbers.

Each sample of 200 titles was searched in the alternate resource during the summer and autumn months of 1978. Although OCLC expands daily and NST updates information when cumulations are issued, no title was searched a second time. The monthly “Changes in Serials” section of NST was not consulted.

Three titles from the NST sample, found in OCLC, had been input after the cutoff of May 1978, and one title from the OCLC sample was located in the July 1978 issue of NST. Although these records were not within the time range of the study, they were accepted since the small number was unlikely to distort the results.

**Characteristics of the Sample**

The titles from the two resources proved rather different in nature. The NST sample consisted of titles being currently input into both OCLC and NST during the February 1974-May 1978 time span and was largely new serials. The OCLC sample was discovered to include many older titles, a reflection of the large number of retrospective serial records loaded into the database during this time frame. This was particularly the case with the sample titles for which no same NST reporters were found.

**Results of the Search**

An NST record was located for 96 of the 200 random titles (48 percent) taken from OCLC. No record was found for 104 (52 percent). An OCLC serial record was found for 121 of the 200 sample NST titles (60.5 percent). One or more monographic records were discovered in OCLC

*No titles were drawn from the March 1974 issue, which was not available in the University of Illinois at Urbana-Champaign Library.
for another 10 (5 percent). No record could be located for 69 titles (34.5 percent).

For purposes of analysis and discussion, the titles with records in both OCLC and NST were divided into four categories:

A. titles from the OCLC sample, found also in NST, for which one or more reporting institutions were the same (51)
B. titles from the OCLC sample, found also in NST, for which no reporting institutions were the same (45)
C. titles from the NST sample, found also in OCLC, for which one or more reporting institutions were the same (93)
D. titles from the NST sample, found also in OCLC, for which no reporting institutions were the same (28)

Within these categories, each OCLC entry was compared with the corresponding NST entry to assess the differences in reports of holdings, types of bibliographic data elements, supplementary notes, and content of the supplementary notes not found in the corresponding record.

**Libraries Reported**

The differences between the two tools with regard to reports of holdings are summarized in table 1.

For titles originating in the OCLC sample, NST reported a larger number of libraries, with almost twice those of OCLC where some reporting institutions were the same (category A) and more than three times as many where none of the reporting institutions were the same (category B). This finding is reasonable given that the OCLC sample contained many older serials and that NST was available for holdings reports many years before OCLC. Libraries participating in both would in many cases add holdings to OCLC records for previously cataloged material only as titles came to their attention for some reason.

For titles originating in the NST sample, a larger number of reporting institutions were found in OCLC than in NST. In category C, with some of the same libraries reporting, OCLC recorded twice as many as NST, while in category D, with no identical reporters, OCLC’s holdings reported were more than three times as large. Logically, OCLC would be the better resource for newer serials as its online base displays added reports immediately. Overall holdings were lower for the newer titles.

Among the titles reported in both tools by the same institutions, the older material was found to have a higher ratio of identical reporters per title, an expected finding from the standpoint of time. The 51 titles in category A had a total of 81 identical reporters while the 93 in category C had only 98. An examination of the identities of these institutions made evident Library of Congress’ role in serials control and cataloging during the February 1974–May 1978 time period. LC was the same reporter for 75 titles (76.5 percent) in the NST sample and for 34 (42 percent) in the OCLC sample. This information should not be interpreted to mean that LC reported fewer serials in the past. LC holdings for many older titles had probably not been added to OCLC records during the period when the data for this study were collected.

Five other institutions reported more than one title to both tools for a
combined total of 27 reports (Cornell 14, Johns Hopkins 4, Drexel 3, Yale 3, National Library of Canada 3). The one major contributor whose records were unique was the University of Minnesota Union List, which had holdings for 17 of the 45 titles (37.7 percent) from the OCLC sample in category B.

In each category there was a large number of titles reported by only one library. In keeping with the overall pattern, NST had fewer titles listing a single reporter in categories A (13 versus 17) and B (10 versus 15) while OCLC had fewer in categories C (56 versus 78) and D (8 versus 16). Seventy-seven of the entire 217 titles (35.5 percent) had 1 report in each tool.

A very few records carried no holdings. Among the OCLC sample for which no identical institutions reported to NST (category B) were two OCLC records that listed “no holding present.” In accordance with its editorial policies, NST gave no holdings for one United Nations document and one United States federal document in category D.

In addition to the records for which no holdings were given, the 45 titles in category B included 13 OCLC records that listed only holdings of institutions that do not report to NST and three NST records with only reporting institutions that are not OCLC participants. Similarly, the 28 titles in category D included 10 for which NST records had exclusively non-OCLC participants and 6 for which OCLC records named solely institutions that do not report to NST.

The above data would suggest that a few serial titles list extensive holdings in both OCLC and NST while many others carry relatively few reporters in both resources. Given the high number of reports in all categories from institutions participating in both OCLC and NST, the fact that more titles did not have reports from the same institutions in both sources may be attributed to OCLC’s comparative newness as a serial resource during the time period of this study, a factor that favored the reporting of older titles, and NST’s slowness as a printed source in updating holdings, a factor that favored the inclusion of newer titles.

**INCLUSION OF DATA ELEMENTS**

The two samples were next examined to ascertain the presence or absence of selected bibliographic data elements in the entries in each tool. Table 2 summarizes for the entire sample the number of entries in which the following data have been included: ISSN, Dewey class number, beginning date (or numerical designation), place of publication, publisher’s address, price, and frequency.

The analysis suggests that different information is contributed by OCLC and NST for the same serial titles. When the provision of Dewey classification is excluded, OCLC records led in the additional elements of data supplied by 144 to 89. For the very oldest material (category B), NST was understandably ahead of OCLC (43 versus 24) as many of the OCLC records were incomplete and had not been updated when the study was done. OCLC scored higher in categories A (40 versus 22), C (51 versus 9) and D (29 versus 15) where more current serial titles were represented.
### Table 1
Comparison of Holdings Institutions Reported

<table>
<thead>
<tr>
<th>Libraries Reporting Holdings</th>
<th>Number of Libraries Reported in OCLC</th>
<th>Number of Libraries Reported in NST</th>
<th>Mean Per Title</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Titles</td>
<td>By All</td>
<td>By NST Participants</td>
</tr>
<tr>
<td>OCLC Sample</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>A. One or More Duplicated in NST</td>
<td>51</td>
<td>366</td>
<td>201</td>
</tr>
<tr>
<td>B. None Duplicated in NST</td>
<td>45</td>
<td>120</td>
<td>53</td>
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<tr>
<td>NST Sample</td>
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<td></td>
</tr>
<tr>
<td>C. One or More Duplicated in OCLC</td>
<td>93</td>
<td>321</td>
<td>189</td>
</tr>
<tr>
<td>D. None Duplicated in OCLC</td>
<td>28</td>
<td>168</td>
<td>84</td>
</tr>
<tr>
<td>Total</td>
<td>217</td>
<td>975</td>
<td>527</td>
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</table>

### Table 2
Inclusion of Data Elements (N = 217)

<table>
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<th>Data Element</th>
<th>In Corresponding OCLC/NST Record</th>
<th>In OCLC/Absent from Corresponding NST Record</th>
<th>In NST/Absent from Corresponding OCLC Record</th>
<th>Absent from Corresponding OCLC/NST Record</th>
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<tr>
<td></td>
<td>No.</td>
<td>%</td>
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<td>%</td>
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<td>31</td>
<td>14.3</td>
</tr>
<tr>
<td>Frequency</td>
<td>84</td>
<td>38.7</td>
<td>35</td>
<td>16.1</td>
</tr>
</tbody>
</table>
The most significant conclusion to be drawn from this section of the study relates to the absence of certain data from records in both OCLC and NST. Only Dewey classification, an item always given in NST entries, and place of publication were available for every title. Since frequency and beginning date and/or numerical designation are traditional data in serials control and cataloging, the absence of the former for a total of 89 (41 percent) titles and the latter for a total of 76 (35 percent) in all likelihood means that the issues from which NST reports were made and cataloging for OCLC done simply failed to supply the information. The absence ratios are not particularly surprising given the varied nature of serial publications.

More unexpected was the absence of an ISSN for 108 titles (49.8 percent). In recent years emphasis has been placed on this element of bibliographic control as a unique serial identifier. Certain automated systems, including that of OCLC, provide for its use as an access point. The inclusion of this information in one of the two resources under study was significantly higher for the very oldest material with an ISSN located for a full 80 percent of the 45 titles in category B. This finding would suggest a slowness in the assignment of ISSNs during the time frame of the study. An added factor is perhaps the failure of cataloging codes prior to AACR2[1] to provide for its inclusion, although LC was adding the information to its entries by 1976.

Publisher’s address and price were the two data least often found. The absence of publisher’s address from 54.8 percent and of price from 74.2 percent of the records was an obvious statement that participating institutions seldom supplied this information to either OCLC or NST. The absence ratio of address surely should not be read to indicate that such information exists in library acquisition files for less than half of the serial titles received but taken to mean that as a matter of reporting policies the information is either excluded or more likely included only when it appears on the issue(s). Price is likely to be unavailable for serial titles received through gift and exchange and difficult or impossible to determine for those received on institutional subscriptions. The fact that price information is subject to frequent change may deter participating institutions from including it.

**SUPPLEMENTARY NOTES**

Catalogers provide valuable information in the supplementary notes they add to serial entries. The two samples were examined to compare the quantity of the supplementary notes found in each tool. As can be seen from table 3, OCLC records contained more notes than NST records for each category of the sample. Of the 273 notes in OCLC records, 102 or 37.4 percent supply information not found in NST records. Of the 220 notes in NST records, 15.9 percent give information absent from OCLC records. OCLC’s higher tally was probably a result of its online database, which makes updated information available quickly, and its mission as a cataloging agency, from which more detailed information can be expected.

A closer inspection of the samples suggests that diversity in note con-
tent is likely with older materials. Complexities in the bibliographic histories of long-lived serials and changing catalog codes readily account for this finding. Nor is it surprising that notes tend to differ in content when none of the reporting libraries are the same.

The content of the notes available in a single tool was scrutinized. This note was most frequently the one linking serial publications or that identifying issuing agencies (see table 4). Notes concerning language, title, and frequency also often tended to be in one tool only.

**Titles Not Located in the Alternate Resource**

Of the 104 titles from the OCLC sample for which an entry did not exist in NST, 44 were excluded from the scope of NST by time and 8 by format. These 52 titles constituted exactly half the total number not located. When they are omitted from consideration, the percentage of titles not located in the alternate resource was very close for the two samples. No NST record was found for 35.1 percent (52 of 148) of the OCLC sample titles not definitely excluded from the scope of NST, while no OCLC record was located for 34.5 percent (69 of 200) of the NST sample titles.

The status of another 13 titles from the OCLC sample that were input from the University of Minnesota Union List was in doubt because beginning dates could not be determined from the OCLC records. The remaining 39 titles definitely came within the scope of NST. Ten records gave no holdings for NST reporting institutions.

The 69 titles from the NST sample included 13 entries that reported no holdings for OCLC participants. Eleven titles drew over 256 entries in OCLC, rendering the search as entered impossible. The alternate searches that were possible in 5 cases failed to locate a record. None of the 11 carried an ISSN by which they might have been retrievable.

OCLC’s rapidity as an online base in adding new holdings is the most obvious explanation for the absence of the OCLC sample titles from NST. Possible factors in the NST sample titles having no record in OCLC include the variations in institutional reporting policies with some libraries sending information in advance of cataloging and the reporting of ephemeral titles that will never be cataloged. Given that the majority of titles did in fact carry holdings of institutions that participate in both OCLC and NST, many would seem likely in the future to appear in the second resource.

**Conclusions**

The OCLC database and New Serial Titles were each found to make a significant contribution to serial information. For titles located in both resources, a comparison of corresponding records on the several points of this study indicated that New Serial Titles is probably the stronger resource for retrospective material, while OCLC emerged as the better resource for current serial titles. Records from each tool were seen to furnish information not available in corresponding records for the same titles. This was particularly true when reporting institutions for no one
# TABLE 3

## COMPARISON OF THE SUPPLEMENTARY NOTES

<table>
<thead>
<tr>
<th>Libraries Reporting Holdings</th>
<th>No. of Titles</th>
<th>Total Notes by OCLC</th>
<th>Total Notes by NST</th>
<th>Same in Content</th>
<th>Information Elsewhere in Corresponding Record</th>
<th>Comparable but Not Identical</th>
<th>Different in Content</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>OCLC</td>
<td>NST</td>
<td>OCLC</td>
</tr>
<tr>
<td><strong>OCLC Sample</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. One or More Duplicated in NST</td>
<td>51</td>
<td>55</td>
<td>46</td>
<td>35</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>B. None Duplicated in NST</td>
<td>45</td>
<td>68</td>
<td>47</td>
<td>14</td>
<td>0</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td><strong>NST Sample</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. One or More Duplicated in OCLC</td>
<td>93</td>
<td>113</td>
<td>94</td>
<td>93</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>D. None Duplicated in OCLC</td>
<td>28</td>
<td>37</td>
<td>33</td>
<td>15</td>
<td>1</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>217</td>
<td>273</td>
<td>220</td>
<td>157</td>
<td>2</td>
<td>19</td>
<td>11</td>
</tr>
</tbody>
</table>

*OCLC records in this sample area had 45 notes, but since one repeated information given elsewhere in the record, it was disqualified as a note that provided additional information.
### TABLE 4

**Content Analysis of Differing Notes**

<table>
<thead>
<tr>
<th>Libraries Reporting Holdings</th>
<th>No. of Titles</th>
<th>Notes by</th>
<th>Frequency</th>
<th>Scope</th>
<th>Phys-</th>
<th>Physical Format</th>
<th>Issuing Body</th>
<th>Language</th>
<th>Misc.*</th>
<th>Linking</th>
<th>Run of Publication†</th>
<th>Series</th>
<th>Editors</th>
<th>Coverage</th>
<th>Numer-</th>
<th>Edition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OCLC Sample</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. One or More Duplicated in NST</td>
<td>51</td>
<td>OCLC</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B. None Duplicated in NST</td>
<td>45</td>
<td>OCLC</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>7</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>9</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

| **NST Sample**               |              |          |           |       |       |                |             |          |        |         |                   |        |         |          |        |         |
| C. One or More Duplicated in OCLC | 93         | OCLC     | 0         | 4     | 0     | 2             | 5           | 3        | 1      | 1       | 5                 | 1      | 0       | 0        | 0      | 0       |
| D. None Duplicated in OCLC   | 28          | OCLC     | 0         | 1     | 1     | 3             | 5           | 4        | 0      | 3       | 0                 | 0      | 1       | 0        | 0      | 1       |

|                          |              |          |           |       |       |                |             |          |        |         |                   |        |         |          |        |         |
| **OCLC Total**            | 5            | OCLC     | 6         | 14    | 19    | 13            | 5           | 22       | 6      | 1       | 3                 | 1      | 0       | 1        | 0      | 1       |
| **NST Total**             | 7            | OCLC     | 3         | 5     | 3     | 3             | 10          | 0        | 0      | 0       | 1                 | 2      | 0       | 2        | 1      | 2       |
| **Total**                 | 12           | OCLC     | 9         | 14    | 24    | 16            | 8           | 32       | 6      | 1       | 3                 | 2      | 1       | 2        | 1      | 1       |

* *i.e.*, at head of title, on spine, added t.p., added table of contents, includes section called...

† *i.e.*, began publication, ceased publication, publication suspended.
title were the same. Finally, when the titles from the OCLC sample that could be determined not to be within the scope of NST were excluded from consideration, the finding that just more than one-third of the records from each of the two samples was not located in the alternate resource bears further testimony to the value of both OCLC and NST in supplying serial data.

A large number of retrospective records for serial titles was loaded into the OCLC database during the time frame of this study. The random sample of 200 titles from OCLC drew 44 titles that were excluded from the scope of NST by time and 44 titles which were located in the 1950-70 cumulation of New Serial Titles. While many of the records had not been updated at the time the data for this study were collected, the presence in OCLC would seem to provide the system with much potential toward becoming the single outstanding serial resource of the future.

REFERENCES
Technical Services Research Needs for the 1990s

Allen B. Veaner

THE APPROACH IN THIS PAPER to the identification of research needs in technical services will be from the viewpoint of the administrator and will reflect experience from both private and public universities, and it will be biased toward research librarianship.

WHY CONDUCT RESEARCH IN TECHNICAL SERVICES?

When the financial crunch in education began in the early 1970s, library administrators were forced to turn their concerns away from collection development, the key emphasis of the 1960s, and look to realizing economies in other operations. Processing, a complex and labor-intensive area, was hoped to be the first arena where automation could offset increasing labor costs. Since a large research library might spend $1 million or more each year just in cataloging its collections, the scope and genesis of this concern are obvious.

About ten years ago, when the first networks and large-scale computerized cataloging systems went operational, it was widely hoped that a book once cataloged in one library would not have to be recataloged in another. Seventy years earlier, when the Library of Congress began its public card distribution service, it was hoped that LC would do most of the nation’s cataloging and that libraries would need only to purchase LC copy for the bulk of their cataloging work. In this way, local resources could be applied to original cataloging for those titles not within the scope of LC’s own cataloging.

It is useful to consider why, after nearly a century of work, neither the economies of scale nor the efficiencies of centralized shared cataloging have been realized and material savings have been insignificant. One factor has been that the budgets of cataloging operations, unlike those for book purchasing, have always been of a “low visibility” character, and there was little reason to break out unit costs. Another is that, until comparatively recently, librarians have not been experienced in conducting well-reasoned, sound unit cost studies. More money always seemed to pour out of the cornucopia during the expansionist decade of

Based on a speech given at the conference-within-a-conference, “Research by and for Librarians,” on July 11, 1982, by Allen B. Veaner, University Librarian, University of California at Santa Barbara. The author thanks Herbert Linville, Head of the Government Publications Dept., and Patricia Cronshaw, Head of the Serials Dept., for their valuable suggestions.
the sixties, and there was little opportunity or need to develop sound budget justifications. Perhaps a still more cogent reason is that librarianship and library management provided little incentive to catalogers to increase productivity; rewards nearly always went to the "grand acquisitors," those who built collections, not to those who cataloged them. Furthermore, decades of library science education have seen a great emphasis on the technical aspects of librarianship and the perfection of the bibliographic record. Yet there has been little equivalent emphasis on the practicalities and responsibilities of financial management.

Finally, it must be conceded that the hoped-for "simplifications" that automation would bring never materialized. Developments, in fact, moved in quite the opposite direction toward greater and greater complexity. MARC I evolved into the more complex and more expensive MARC II; more powerful capabilities evolved at terminals for which new command languages had to be learned; the challenge of integrating heretofore separately conducted technical operations introduced its own new complexities.

Other more specific reasons in support of a need for research in technical services can be adduced. The first of these is evidenced by a study conducted between 1968 and 1978. It demonstrated that Association of Research Libraries (ARL) member libraries spent 91 percent more for library materials during those years, yet added 22½ percent fewer books to their collections.1 During this same period, personnel costs increased 106 percent even though very few new positions were added. The number of new items published increased at the rate of approximately 2.5 percent per year. These factors plus increased work load, heightened expectations of clients, and a diminution of resources combine to form at least one sure justification for research.

A second justification for research is the seemingly insatiable appetite that the various networks exhibit for the library's resources. Each new successful application of technology and each network affiliation implies a substantial cash outflow. Until recently, the services provided by the networks were largely automated versions of services that libraries had been supplying all along with manual systems, chiefly the preparation of catalog cards. Now they are reaching out with truly new, innovative services likely to increase our cash outflow even further. We have to do some research to determine how to use these remarkable new facilities best.

A third influence or motivation is what some feel is the "intrusion" of the for-profit sector into librarianship. Commercial organizations have long been quick to realize there is money to be made in the library business. Years ago the big bucks were in microform publishing. Today, opportunities seem especially attractive when the commercial organizations need not bother with the labor- and space-intensive stockpiling and shipping of materials, but can simply transmit bits of information over communication channels. Even the billing is fully computerized. Thus, we appear to be in a transitional stage where control of information is passing from an agency which stockpiles it in the form of graphic data that any literate person can read to an agency which "stockpiles" data in
invisible, machine-readable form and provides access only through strict accounting mechanisms and via costly hardware and software. This shift represents a fundamental, radical change in the generation, production, distribution, and economics of information.\(^2\)

These new social and technical forces make research appropriate or potentially useful especially in the following thirteen areas.

1. **The High Cost of Technical Services**

Cuadra Associates recently prepared *A Library and Information Science Research Agenda for the 1980s.* One hundred project proposals were reviewed by some two dozen library and information science researchers and practitioners. The presidents of fifteen major library and information science organizations also participated in the review. None of the top twenty projects in the *Research Agenda* is specifically related to cataloging or technical services. Yet five relate to cost and two are related to public funding of library services. Cost is easy to zero in on because we all face financial limits. Research into the costs of processing—with the aim of cost reduction—is a most critical need.

Administrators always ask how much it costs to do something in technical services. Sometimes in librarianship it seems that only administrators ask this question. Yet some persons in technical services continue to behave as if money to support this activity is obtained by turning on a tap. The continuing escalation of costs is exceedingly disturbing. How much of the increase is attributable to the complexity of MARC? How much to network charges? How much to a lack of enthusiasm for accepting contributed copy from the networks or the Library of Congress? How much to the absence of management-oriented instruction in the library schools? (How many library schools teach their students when to stop cataloging and go on to the next title?) How much does any technical processing activity really cost? And, perhaps even more important, how much *should* we pay for it? What is it "worth"? The answer cannot be some indefinite figure. There has to be an upper limit beyond which a cost is unreasonable or unaffordable. Agencies other than library administrators are now beginning to ask questions about cost: city and county budget officers; academic and financial planning officers; presidents, chancellors, and provosts. Of greatest concern to me are the questions coming from those who supply the funds, the public and private sector funding officials. Should they be paying $35 per title for original cataloging . . . $50 per title? What would we do if our funders decided to give us just $10 per title to achieve bibliographic control? Suppose we got only $5 to do the job? What great tragedy will occur if we accept into our files contributed copy that is not 100 percent consistent with local practices? Preliminary experience with online catalogs, such as the University of California’s MELVYL system, suggests that minor inconsistencies in records do not deny access.

A vital aspect of cost control lies in creating production systems. Some parallels may be drawn from a recently published study of the aircraft industry.\(^4\) Typically, an early phase of new aircraft development is construction of a hand-built prototype. Then, early series production is
characterized by a "learning curve," such that the employees learn during production of the first twenty to thirty units how to do complex jobs very efficiently and quickly, and thus drive down unit costs. In this comparison it is important to remember that, in practice, two aircraft in the same series are rarely identical. Even within the same airline, operational experience dictates improved configurations in subsequent units.

"We urgently need some research into redesigning and reengineering cataloging into a kind of production industry—an industry where we cease to make an expensive, hand-built prototype each time we process an item."

Now, I am generally wary of applying industrial models to bibliography. But, like aircraft, bibliography is a kind of industry, and both deal with exceedingly complex systems and constant changes. Despite the virtual customizing of each airframe, the aircraft industry has been able to develop true production systems that are characterized by a learning curve and consequent increases in productivity and lowered unit costs. Yet bibliography—specifically the cataloging component—remains our largest, oldest, and most expensive cottage industry, seemingly without learning curve and without economies of scale. We urgently need some research into redesigning and reengineering cataloging into a kind of production industry—an industry where we cease to make an expensive, hand-built prototype each time we process an item.

As stated earlier, the total annual personnel budget for cataloging in a medium-sized research library may aggregate as much as a million dollars these days; this amount is in addition to the cost of network services. Personnel costs have risen approximately 50 percent in the past five years. During the same period, library administrations have faced significant demands for new services, e.g., database access, online catalogs, accelerated interlibrary loan, and consortium-related services. As an administrator, I would prefer to reallocate significant portions of the technical processing budget toward these new activities that have a direct relationship to clients' needs. That represents a value decision rather than a cost decision. In summary, I would like to see some new constructs in processing, especially in cataloging, concepts and designs that will help build production systems out of a cottage industry, and I think this is a key area for research.

2. THE COSTS AND VALUES OF THE BIBLIOGRAPHIC INTEGRITY OF THE CATALOG

A good deal of the case for the high cost of cataloging is that the "bibliographic integrity" of the catalog must be maintained. I often wonder whether the integrity claim is not based upon a false premise: how much bibliographic integrity has there ever been in very large catalogs? Not much, I suspect. I wonder to what extent the "integrity of the catalog"
has contributed to a reluctance to truly share cataloging, to accept cataloging copy from elsewhere? A great deal, I suspect. Is not the integrity issue really geared to the card format and its filing protocols? Has anybody ever figured the cost of integrity? And do we need it anymore? Or, if we need it, how should it be redefined? What relationship would a national authority file or a network-supported authority control system bear to this issue? What connection is there to the redesign of the cataloging component of a library school’s curriculum?

3. FORMAT, EXTENT, AND ACCURACY OF BIBLIOGRAPHIC DATA

The format of bibliographic data has generally been perceived as arcane and mysterious to the nonbibliographer. It has only been recently, with the redesign of bibliographic format for CRT displays, that researchers and scholars have begun to notice the extent of vital and useful information available in our records. Were our traditional formats designed to hide information? With the University of California’s MELVYL system, faculty and students delight in observing information that they now understand for the first time, in part because a computer terminal can transform much implicit information into clear and explicit meaning. The closing of our major card catalogs and the opening up of bibliographic access via decentralized terminals will have an incalculable impact upon scholarship and research. In my personal experience with faculty, the degree of excitement elicited by a demonstration of the online catalog is incredible. Continuing research into improved formats is not only worthwhile, but essential. The demise of the unit card concept opens the door for design of tailored formats from which new standards might emerge. But the new formats should be derived from research into observed user needs and actual user behavior—not from the armchair philosophy of bibliographers.

At the ALA Annual Conference in Milwaukee forty years ago, Wyllis Wright felt impelled to remind catalogers that “they were engaged in the making of a tool, not a work of art.” (Is it not ironic that Wright reported this statement in 1951 in an article entitled “Cataloging in a Period of Economic Stringency”?) In 1954, when asked to speak on the theme “How Little Cataloging Can Be Effective?,” Wright listed a large inventory of data elements that were unnecessary in an open-stack college library. He then observed: “Not even LC printed cards are entirely free from typographical errors, so we may allow a few to occur in our own typing without feeling the need to be too apologetic.” But the really significant and portentous observation Wright made was that “as long as our purposes [in preparing a catalog] are ill-defined and vague, our cataloging will be expensive.” And he concluded that, “until we know in fairly exact terms how much cataloging is effective, we really have no basis for discussing how little cataloging can be effective.” The online catalog, with its capacities for self-examination through analysis of its use, for the first time provides this profession with an incalculably valuable tool—the opportunity to study and learn just how much cataloging is needed and what data elements are appropriate to a varied pop-
ulation of users, collections, and institutions with their varying missions, goals, and objectives. Wyllis Wright had to conclude his 1954 presentation with a confessed sense of frustration for lack of knowledge of "how our catalogs are actually used, and for what uses they should be constructed." The extremely rapid shift to the online catalog now taking place offers the researcher golden opportunities to devise and invent new access methods that can bring an end to the expensive notion that the catalog must be universal, all things to all people. We stand on the threshold of a very powerful, new knowledge, and the heretofore unattainable ability to alter dynamically file designs and access methods tailored to meet real user needs.

4. Preparation for a New Cataloging Code

A legitimate question is, what new code? We just started using a new code! But no code can be static. Is it time to prepare for the transition to AACR3?

Beginning with 1949, there have been three cataloging codes and in each case the economic consequences of applying the code were significant. Yet codes have been built largely on the basis of trying to achieve an intellectually sound, consistent construct—not something that would be cheap and easy to implement. Interconnecting existing and developing codes with the widely varying formats of bibliographic data was itself a substantial challenge. MARC, an instrument of great flexibility and precision, turned out to be a format that is not only very expensive to process on a computer, but that also requires well-paid, highly competent technical processing personnel.

Clemenceau said, "War is much too serious a matter to be entrusted to the military." Likewise, code preparation is too vital a concern to be left solely to bibliographic experts. A new code is a political and financial instrument as much as it is a technical device. Thus it should not be surprising that at the 1981 fall Association of Research Libraries meeting, James Govan, university librarian at the University of North Carolina and chair of ARL's Task Force on Bibliographical Control, said that the only solution was to get management directly involved in the cost of cataloging and to urge the ALA/RTSD Board to develop cost-related questions that code designers must answer before changes are made. It was similarly concluded at the winter 1981 meeting of the Board of Governors of the Research Libraries Group (RLG) that it is vital for management to exercise a controlling policy influence in the cataloging process. How these changes are to be considered and implemented is a major professional challenge. We must find ways of easing the financial and training impact of the transition to any new or revised code. These impacts can be better understood if administrators, systems and financial analysts, and computer experts will participate in the next code revision committee.

5. Subject Access in an Online Catalog Environment

Perhaps many of you attended the preconference, "Prospects for the Online Catalog," which took place here just a short time ago. Others of
you may have read Pauline Cochrane’s earlier papers on subject access." Whatever you have read, I am sure you have quickly become aware of the extent to which users are demanding subject access, a distinct change in the presumed behavior we have come to expect with card catalogs, i.e., the assumption that people come to a catalog for known item searches. A great example of the self-fulfilling prophecy: people use the limited access we provide; ergo, that is what they want! Present catalog designs grafted upon card catalog structures, as Cochrane points out, either perpetuate old constructs or frustrate the user. While it is clear that the online catalog is an enormous departure from its card catalog antecedent, it is equally plain that some even more radical new departures are required.

Online systems give researchers an unequalled opportunity to design systems based upon actual user requirements and actual user behavior, a refreshing change from the past where systems design has evolved from the views of curators, publishers, scholars, librarians, administrators, and other persons who basically designed catalogs and access tools to meet their own expectations, conveniences, and abilities. Here, my expectation is that a variety of systems will evolve and will continue to evolve, for the nature of human thinking is such that no one best system will emerge—human beings are too variable.

6. ACQUISITIONS

Historically, much more attention was applied to automating cataloging systems than acquisitions on the grounds that a cataloging record was the most complex of any bibliographic record. I have never been convinced that this is a true assumption. Cataloging always proceeds from the book in hand and from much known or knowable data. Acquisitions hardly ever has the book in hand and deals with records that are much more volatile, information that is temporarily essential yet discarded after a very short lifetime. An acquisition record is subject to far more activity and update transactions than the busiest cataloging record. The networks have paid very little attention to creating effective acquisitions systems—perhaps justifiably, as their telecommunications and processing capacities might be overwhelmed by acquisitions work.

Because acquisitions work is so transaction-intensive, "star" networks will probably never be able to cope. Another facet of the problem is the widely varying bureaucratic, financial, and auditing requirements of the various jurisdictions; the accounting tasks may all together be too complex for any single network to undertake. Is this not an excellent opportunity for vendors to devise stand-alone systems tailored to a jurisdiction’s accounting requirements? One vendor has built and is marketing an attractive stand-alone system. It remains to be seen whether the networks or the vendors of stand-alone systems will triumph.

7. AN INTEGRATED, COMPUTERIZED SERIALS CONTROL SYSTEM

Many years ago, before people understood how difficult library automation was, pioneers typically selected serials for their early efforts. The
“regularity” of serials seemed so attractive! One network has developed a system that is not very extensively used; one major research library has developed an extremely effective but very expensive internal system; another has developed an effective control system that is part of an integrated package now being marketed. A number of turnkey systems have been developed for small libraries. Union lists of serials are becoming available as online databases. It would be nice to have a self-contained, turnkey serials system that would suffice for, say, all but the ten largest ARL academic libraries. Much effort has gone into the conversion of existing files—now is the time to undertake a study of improved methods of managing the enormous check-in task. An opportunity for bar code systems? For wands to read ISSN and issue numbers? An opportunity to foster national and international standardization?

8. **Universal Technical Processing Terminal**

Even if the next decade should bring more rationalization, and hence a reduction in institutional work load for monograph cataloging, there remain pamphlets, maps, foreign government documents, art auction and exhibition catalogs, manuscripts and archives, sound recordings, videotapes, computer programs, and a host of other research materials, including museum objects. For the foreseeable future, there will be plenty of technical processing work to do, but it won’t necessarily be along the lines currently followed. The terminal hardware needed to create a database will probably remain much more complex, at least for a while, than that used to access and search a database. Although the number of terminals for access will ultimately greatly exceed those for processing, it is essential to be able to talk to any network from a single terminal in order to facilitate building the database. Several of the networks have indicated an intention to join in a research project to develop a standard bibliographic input terminal. A standardized terminal that could access any of the major networks would be most helpful in maintaining internal work flow and in helping us attack library materials that have been neglected in comparison with books. Current research by the Library of Congress, RLG, and the Washington Library Network (WLN) aimed at developing a telecommunication protocol to foster internetwork communication might obviate the need for a standard terminal. Still, there would be at least one major benefit to a standard terminal—reduced unit cost.

9. **Data Storage Devices; Catalogs and Full Text in Digital Form; Decline of the Star Network**

Although the capacity of magnetic disk storage continually increases, magnetic media remain fragile and erasable. For data that do not change significantly over time, the optical disk may be a better medium. You are all familiar with the Library of Congress’ successful application of the optical disk to its Card Distribution Service. Now, the Library of Congress is ready to go beyond catalog cards to full text, complete with indexing, so that a text may be searched and read at the same terminal.
and using the same software package. The availability of full text at a
terminal offers the exciting possibility of converting to machine-
readable form the full text of the world’s major bibliographic indexes
and catalogs. The scale and complexities of conversion, editing, and the
costs of providing such an access boggle the mind. But remember that in
the late 1960s, it hardly seemed possible that we would, in the 1980s, be
as close as we actually are to conversion of the full Library of Congress
catalog to machine-readable form. And how many libraries already see
the end in sight of conversion of their own catalogs!

The development of new and improved data storage media can free us
from our expensive dependence upon the conventional “star” network
configuration. A critical need is research into patterns of telecommunica-
tions traffic. Rule of thumb tells us that 80 percent of the demand for
bibliographic access to local holdings is satisfied by 20 percent of the
records—the so-called 80/20 rule that characterizes many other
transaction-oriented systems. If this is conclusively the case, bibli-
ographic data can profitably be redistributed so that the highly active rec-
ords are maintained locally and less frequently accessed records are kept
at “network central.” Both the technology and the economics of tele-
communications are changing with extreme rapidity, in part because
deregulation is increasing competition. Careful, continuous study and
research will be needed to assure the library community that it can main-
tain a fluid responsiveness to change and avoid becoming “locked in” to
rapidly obsolescing systems for too long a time.

“A critical need is research into patterns of telecommunications
traffic.”

All this change opens up opportunities for vendors to develop and
market turnkey computerized catalogs. At this stage, it is too early to
know whether some national or industry standard approach will evolve
or whether the route taken will more closely resemble the automobile
industry with many different products and options satisfying basic and
special needs.

10. ROBOTS AND ARTIFICIAL INTELLIGENCE

Robots are widely applied in manufacturing industries where there
are repetitive or dangerous tasks, as in automobile manufacturing and
handling of radioactive materials. Could they be applied to the retrieval
of library materials from remote storage? The past record in this area has
been poor. Some years ago the now-defunct Richard Abel Company de-
veloped a still-untried research concept in remote book retrieval, a con-
cept quite different from others. If, like the University of California,
other large library systems want to consider remote shelving facilities,
labor costs will have to be minimized. There may be a role here for ro-
bots, or at least some form of remote retrieval device similar to that pro-
posed by Abel.

Could robots also be used to prepare materials for mass deacidifica-
Some of the compounds used in deacidification are dangerous or unstable—an ideal application for robots. Could robots be used for the huge amount of physical handling that is needed to microfilm printed data or scan it for digitizing? The record on mechanical page turners for microfilming is not very good, but does that mean that the problem is unsolvable?

Enormous advances in pattern recognition, language decoding, and voice synthesizing have been made in recent years. Artificial intelligence is now moving out of the experimental laboratory and into the marketplace. It would be useful to see to what extent queries can be entered into a computerized database by voice command—the opposite problem of voice synthesis—rather than by a keyboard, or perhaps a combination of both. There are some computer systems that are already "fluent" in limited subject areas. It is reported that IBM has a system designated Epistle, which reads mail and informs recipients of the important parts.*

Even query language entered at a keyboard could use improvement. There is a need for software with greater flexibility, greater forgiveness, easier branching, and easier backtracking. The several networks are already conducting research in query language.

11. CAN TECHNICAL PROCESSING BE FARMED OUT?

Librarianship is a young profession. Not many decades ago, most librarianship was learned on the job. Even some of the early library schools were actually run by libraries. In the old days, many libraries also maintained their own binderies. But, eventually, binding was contracted out to commercial firms. Is it time to consider whether medium-size and large academic libraries should contract certain technical processing activities to commercial firms? Can they do it cheaper, better, faster?* A dozen years ago Brett Butler, former president of Information Access Corporation, and I held extensive discussions on this topic over a period of about a year. We realized that, while the concept might be valid, there could be no implementation without rapid, cheap access to very large bibliographic databases that did not then exist. But now the situation is altogether different and the idea may be worth reconsidering.

In another paper I have suggested that it may be time to "dismantle the current managerial structures in technical processing and replace them with structures that are production-oriented, standards-oriented, goal-oriented, and client-oriented." I also stated that because of the complexity of MARC and the general reluctance to accept contributed cataloging, that cataloging was "more 'the same' than ever"—despite the tools the networks have given us.†

How much longer can this go on? Just as the commercial organiza-

*It is doubtful whether physical check-in of serials could ever be contracted to an agency working outside the library, although the F. W. Faxon Company now offers a system of maintaining an online account of what issues have been sent to a library. But the development of electronic publishing may radically alter the whole pattern of access to and control of serials. Elsevier's new joint project with BRS to put up to 50,000 pages per annum into an online database will be an experiment observed with great interest.
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tions have taken over the business of providing access to journal articles and just as the not-for-profit outfits and consortia (OCLC, RLG) are helping us to create new bibliographic control structures and mechanisms, might we one day find commercial organizations with the tools, the talents, and the people to undertake the bulk of our processing? It is said that, "If you can't beat 'em, join 'em." I'd go one step further: if processing is to be done outside the library, I'd prefer to see the initiative, the leadership, and the creativity demanded by this kind of "social engineering" come directly from the library community—to ensure that we retain control over our own destiny and to ensure that new or changed services serve our goals and objectives, not someone else's. That takes leadership—not passive acquiescence.

12. BIBLIOGRAPHIC INSTRUCTION

What will happen to bibliographic instruction in this new world? Early experience with online systems indicates clearly that users can easily teach themselves. To me, this does not mean bibliographic instruction is no longer needed. Rather, we need a new spectrum of software, software beyond lecture, films, slide tapes, and programmed text. Maybe we need canned packages—perhaps cassettes—that fit into personal computers. What Arthur Clarke has called the electronic tutor may be one answer. The challenge to develop self-instructional software packages for students' personal computers should be a substantial research project for imaginative librarians.

13. HUMAN RELATIONS, ORGANIZATION AND MANAGEMENT ISSUES

According to one European report, the future in information methods will require us to help our staff, as well as our users, adapt to "the prospects of a life of eternal retraining to keep up with rapidly changing technologies... ." This is a significant challenge to library personnel and management programs. People who work in certain kinds of industries—aircraft, computers, electronics, the military, medicine—are accustomed to continuous change. Perhaps the library industry is more nearly comparable to the U.S. automobile industry. Some claim that industry's sluggish performance is attributable to failure to be responsive to changes in market demand. All our old librarianship is built on rock-steady foundations. But, like an earthquake, the computer has not only shaken but shattered those foundations and our job is to reconstruct from the rubble systems, policies, procedures, and attitudes that will be more resilient and flexible, more open to change. This is one of the major challenges of future research in technical processing. Perhaps we have a great opportunity to reunify our profession by off-loading a good deal of our technical work to other organizations, systems, or agencies. Research aimed at developing new approaches in technical processing may be one of the keys to redefining this profession, to creating vibrant and responsive librarianship where services for the clients—access to citations and data, delivery of products—may become the preeminent activity and consume the bulk of the resources.
POSTSCRIPT AND CONCLUSION

The tall ships, here to celebrate the start of Philadelphia’s fourth century, have left now. How primitive they seem! But these ships were the science fiction space shuttles of their day, the first successful effort to amplify human strength by harnessing solar power. Long, arduous trial and error—a primitive style of research—gave us the tall ships. Systematic research has produced the transistor, the space shuttle, the digital computer, and broadband communications. Nothing worthwhile in librarianship is likely to happen by accident. We must count on research to light the way for the future of technical processing—a future as different from today as the space shuttle is from the tall ship.

REFERENCES

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Duplicate Records in the Bibliographic Utilities: A Historical Review of the Printing versus Edition Problem

Barbara Jones and Arno Kastner

A major cause of duplicate bibliographic records in the OCLC and RLIN bibliographic utilities is the difficulty of distinguishing printings and editions of a given monographic title. This decision is complex because the cataloger must consider the history of printing technology, cataloging rules, Library of Congress policy, and local practices, as they apply to the standards of the bibliographic utilities. Understanding these elements will help catalogers achieve consistency and accuracy in the creating and editing of bibliographic records at the local, national, and international level.

Charles A. Cutter’s 1904 Rules for a Dictionary Catalog state that one of the “objects” of a multiple-entry catalog is “to assist in the choice of a book as to the edition.” The means and place for recording this information are “edition and imprint, with notes when necessary.” Essentially the same objective was reaffirmed at the 1961 International Federation of Library Associations (IFLA) meeting in Paris; from the author-title catalog, one should be able to ascertain “which editions of a particular work are in the library.” Through numerous interpretations of and changes in the cataloging rules, catalogers have honored the collocating function of the card catalog; when all works by a single author are assembled under one form of the author’s name, versions of a single title must be further distinguished by edition. Thus for various versions of Huckleberry Finn assembled under Twain, Mark (AACR2) the catalog entry should record dates, publishers, and textual alteration in editions. Catalogers responsible for such collocation turn to the title page verso, preliminaries, and colophon to begin a decision-making process complicated by such factors as publishers’ variant definitions of such words as edition, printing, impression, and reprint; Library of Congress versus local practice as applied to copy cataloging; and, of course, the cataloging rules.

The problem has been magnified considerably by the advent of shared cataloging through the automated bibliographic utilities, as member libraries use other members’ records and Library of Congress cataloging...
displayed in the MARC tape records. Catalogers searching the database must decide whether or not the record describes the edition in hand. Such decisions can prevent or create "duplicate records," which take up valuable computer storage space, make unnecessarily large files resulting in cumbersome searching, and waste time as catalogers must decide which record, if any, to use. If a narrow interpretation of "edition" forces the cataloger to decide that a new record must be created for the item, extra time is often necessary to upgrade the bibliographic description and access points to AACR2 form, according to the standards of such utilities as OCLC and the Research Libraries Information Network (RLIN). Patricia Wanninger's article in the October/December 1982 Library Resources & Technical Services details the impact of such duplication on the effectiveness of the OCLC database, and postulates the causes: "careless searching, difficulty in searching, desire to input the 'perfect' record, difficulty in editing and updating, desire to escape first-time use charges . . ."

While this study acknowledges the validity of Wanninger's speculation, it approaches the problem from a historical perspective. Many duplicate records result from the cataloger's difficulty juggling the following factors in identifying a unique monographic edition: history of printing technology, cataloging rules, Library of Congress rule interpretations, local practice, and bibliographic utility standards—all applied to the format and content of the book in hand. Combining these factors in the decision-making process will help catalogers achieve consistency and accuracy in the creating and editing of bibliographic records.

**History of Printing Technology**

Understanding printing technology can facilitate the cataloger's ability to distinguish an "edition," which is defined by two considerations: text content and typesetting format. Printing technology is conveniently divided into three periods: the hand press, 1500-1800; the machine press, 1800-1950; and subsequent developments, particularly phototypesetting and computers. Prominent printing history scholar Philip Gaskell describes the first two periods in *A New Introduction to Bibliography*. In the hand press period, the compositor set enough pages of type to fill a sheet of paper and locked these pages into "formes," which were then reviewed for errors. The formes were then placed on the printing press and sheets of paper pressed to the inked surfaces of the type. The pressman worked through the pile of paper, printing as many sheets "as there were to be books in the edition." Then the type was broken up and sorted back into the compartmentalized trays. This important technical account demonstrates that "edition" and "printing" were the same thing in the hand press period, since type was not kept standing for subsequent printings. A second printing meant a resetting of type and thus a new edition. This distinction explains why rare-book catalogers may apply a different set of criteria for judging uniqueness of an edition. This paper does not cover rare-book cataloging; catalogers are referred to the Library of Congress' *Bibliographic Description of Rare Books.*

In the machine press period, extensive reprinting from standing type
or reusable plates was possible. Stereotype and electrotyping utilized casts of the original typesetting, made into metal plates and used at press instead of the original type. In the nineteenth century, such technology as Monotype used a "program" set by punches on a paper spool that could be run through the caster several times to produce duplicate typesettings. Thus in the machine press period, printing technology transformed "edition" and "printing" into two separate terms and processes.

The same situation applies in the contemporary period of photocomposition and computer text composition, both processes in which a typed image is converted to film or tape, stored, and is reusable upon retrieval. Thus after the hand press period, images of the typed page can be preserved and "rerun"; a second "printing" can be part of any "edition," unless substantial textual change has taken place.

After format, textual change is the second criterion for "edition," and is possible in all the printing technologies: in the hand press period, by replacing type after the printing of trial proofs; in the machine press period by soldering replacements into the metal plates; and in the computer period by retrieving and updating the record stored in the database.

Such changing technology has thus forced the cataloger to consider, on a case-by-case basis, whether the distinction between "edition" and "printing" is significant. This informed judgment is based upon the considerations that follow.

**CATALOGING RULES**

The two latest versions of the Anglo-American cataloging code (AACR) state principles regarding the edition decision for two areas of description: the edition and publication statements.

**Edition Statement (MARC Field 250)**

AACR has always described "edition" in terms of the format and content of the book in hand. The *Anglo-American Cataloging Rules* (AACR1) acknowledge the confusion over "edition" and "printing" in Rule 135A: "This makes it necessary for the cataloger to be aware of the lack of uniformity among publishers in the use of the terms "edition" and "impression" or "printing" and their equivalents in other languages, and to interpret them according to the accepted definitions." Textual changes justifying a distinct edition include: "number or name of the edition, name of the editor, illustrator, translator, or publisher, date of publication, name of the series to which the edition belongs, or some detail of physical description such as the number of pages or volumes in the work." When in doubt, the cataloger is instructed to include an edition statement. These criteria are also to be applied to "issues," which "may be cataloged as copies, as different issues, or as different editions." The philosophy of AACR1 is, therefore, to include all distinguishing information whenever there is the slightest uncertainty, "since the user of the catalog rarely knows all of these details ... and since in a growing library it cannot be foreseen which of them will be necessary to distinguish the various editions to be acquired ..." The revision of AACR1's
chapter 6 reiterates the AACR1 principles, thus perpetuating the trend toward multiple records for what may well be the same edition.\textsuperscript{11}

In the second edition of the Anglo-American Cataloguing Rules (AACR2), definitions are fuller but the principles remain unchanged. \textit{Edition} is defined in the AACR2 glossary as \textquote{\textit{all those copies of an item produced from substantially the same type image, whether by direct contact or by photographic methods.}}\textsuperscript{12} An \textit{impression} is \textquote{\textit{all those copies of an edition printed at one time}},\textsuperscript{13} and an \textit{issue} is \textquote{\textit{those copies of an edition forming a distinct group that is distinguished from other copies of the edition by more or less slight but well-defined variations; most commonly a new impression for which corrections or revisions have been incorporated into the original type image.}}\textsuperscript{14} Rule 1.2B3 instructs: \textquote{In case of doubt about whether a statement is an edition statement, take the presence of such words as \textit{edition, issue, version}, (or their equivalents in other languages) as evidence that such a statement is an edition statement ...}\textsuperscript{15}

Optional rule 1.2B4 gives the choice of adding a cataloger-supplied bracketed edition statement if he or she happens to know that the work includes \textquote{significant changes from previous editions.}\textsuperscript{16}

By acknowledging the lack of uniform definitions among publishers and adding, in AACR2, definitions to explain the format and content considerations involved, the cataloging rules encourage a cataloger to distinguish among editions whenever there is doubt. Such refinement contributes to creation of multiple records for one work, and actually confuses the situation further. For example, the AACR2 glossary defines \textquote{issue},\textsuperscript{17} but the rules do not provide clear instructions on how to handle one. The cataloger is expected to use judgment and experience in deciding whether an item is an issue or edition, but catalogers working in a shared cataloging environment are also dependent upon the decisions of others in choosing among database records. Also, the cataloger is still expected to accept a publisher’s statement that an item constitutes a new edition, regardless of whether this new manifestation differs from earlier ones in content and format.

\textbf{Publication, Distribution, Etc., Area (MARC Field 260)}

The cataloging rules covering the publication area have changed considerably since the publication of AACR1. These changes partly reflect a publishing trend of moving date information from the title page to the verso and recognize that location of the date is less important than what it signifies: publication, rather than printing, of the edition.

AACR1 Rule 141A instructs the cataloger to record any imprint date found on the title page of a work.\textsuperscript{17} Since few currently published materials give a publication date on the title page, this rule is an anachronism and the 1974 revision of chapter 6 begins to address the problem. The cataloger is still instructed to record the date on the title page but Rule 139A adds: \textquote{The date is the year of publication of the first impression of the edition.}\textsuperscript{18} This definition is a move in the right direction, for the real significance of date information—distinguishing true editions—is recognized.

Finally, in AACR2 the cataloger is allowed to ignore the title page
date: "Give the date of publication, distribution, etc., of the edition
named in the edition area."19 Furthermore, Rule 1.4F3 instructs the
cataloger to "give the date of a particular reissue of an edition as the date of
publication only if the reissue is specified in the edition area."20 Optional
Rule 1.4G4 suggests adding the date of manufacture if it is different
from the date of publication and considered important by the cataloging
agency.21 These rules are relatively straightforward, once a cataloger has
decided whether he is dealing with an edition or printing. As will be
seen, the date portion of the publication statement has as great an impact
on the usability of a utility's cataloging record as the edition statement.

LIBRARY OF CONGRESS RULE INTERPRETATIONS

In recognition of the often ambiguous instructions in the code regard-
ing editions, and with an eye toward automated cataloging, the Office
for Descriptive Cataloging Policy at the Library of Congress has issued
cataloging guidelines that historically have moved toward a collocation
decision in cases of doubt. Cataloging Service Bulletin (CSB) 11 contains a
helpful statement further refined in CSB 12 and 13. It is assumed that
changes in content signal a new edition. Also, the item should be consid-
ered a new edition "whenever anything in the following areas or ele-
ments of areas would be different from one bibliographic record to an-
other: title and statement of responsibility area, edition area, the extent
statement of the physical description area, and series area . . . ."22
Though these criteria are helpful in pinpointing areas giving crucial in-
formation, they still do not help the cataloger distinguish an edition
statement from what may in fact be a printing statement. A publisher's
edition statement is still to be accepted on faith.

But the CSB rule interpretation goes on to discuss dates as a consider-
ation in determining whether the item is a new edition. The original CSB
11 interpretation and first revision in CSB 12 permit the cataloger to con-
sider the item a "copy" if there is a variation in the "publication, printing
or copyright date."23 The second revision of the interpretation states
the difference can only be in printing or copyright date.24 This revision
acknowledges that a difference in publication date by definition constitutes
a new edition, since each edition can only have one publication date but
might have several printing dates. The interpretation of AACR2 Rule
1.4F6 in CSB 14 describes at length how to record printing, publication,
and copyright dates in the MARC 260 field. The interpretation is
straightforward, but as with the rule itself, the problem lies in its implic-
ation for shared cataloging.25

CSB 17 finally contains the latest and most direct guideline for the
problem of distinguishing editions. Acknowledging the inconsistency of
the "printing" and "edition" terminology in certain foreign-language
publications, the bulletin advises the cataloger to interpret a statement
that "appears only in conjunction with printing information, such as the
date of impression, the name of the printer or the number of copies
printed" as a printing statement.26 Furthermore, when "successive 'edi-
tions' appear within a short time and without apparent changes of colla-
tion, etc." the statement is probably one of printing, not of edition."
Thus the Library of Congress, through a series of policy decisions, has clarified the cataloging rules in the direction of avoidance of duplication of records, by acknowledging the unclear use by publishers of "printing." This direction should encourage catalogers to think twice before creating a new bibliographic record and should help cut down on database duplication for items otherwise identical in content and format.

LOCAL PRACTICE

In individual libraries, the guidance provided by the cataloging rules and LC interpretations in distinguishing editions is often adapted to local needs and preferences. Quite often in special collections, an item's format is just as important as its content. A popular collection with a comprehensive coverage of early paperbacks might deem the cover art important enough to distinguish items otherwise identical. The fact that the spine title of John Updike's Buchanan Dying (New York: Knopf, 1974) is off approximately one-quarter inch in the first printing and thus does not match his other novels is an important distinction in some special collections. Other common distinguishing features are typefaces, provenance, and autographs. The differentiation is usually indicated on the bibliographic record by local notes (MARC field 590) or subject headings (MARC field 690); some standards are specified in the previously cited rare-book cataloging manual, and some are dictated by locally established files.

Sometimes the opposite situation applies—for a general library collection, in which content is the foremost consideration, a local option might be to consider all printings of an edition as "copies" and adjust the bibliographic record to reflect uniformity. Sometimes an otherwise identical hardcover and paperback edition are parts of different series; here again, many libraries consider these items as "copies" and adjust records locally to reflect this.

THE BIBLIOGRAPHIC UTILITIES

In a manual cataloging system, libraries can freely edit and change their purchased LC catalog cards so that they exactly match the item in hand. Locally developed policies and decisions provide specific guidelines on how LC copy is to be used. Libraries that are members of bibliographic utilities, however, have been forced to adjust their local policies to conform to utility guidelines. A cataloger must consider the utility's policies regarding the creation of new cataloging records and their criteria for determining what constitutes a new edition.

Unfortunately, the utilities have often been slow to acknowledge and offer guidance on the issue of what constitutes a unique bibliographic entity; and sometimes the criteria for distinguishing have not exactly matched those of Library of Congress or the cataloging rules. OCLC's Bibliographic Input Standards state that a new record may be created if any of the following differ: publisher, distributor; copyright date; date of impression if the later impression contains textual variations; edition; medium; extent of item; other physical details; series; and illustrator or translator. The inclusion of date of impression if the later impression contains textual variations allows the cataloger to treat what AACR2...
might call an "issue" as an edition—and thus give it its own bibliographic record. The guidelines do not address the problem of interpreting edition statements supplied by the publisher when the cataloger is reasonably convinced that there is no textual variation. This is an important consideration for OCLC users because of the structure of the utility's database, in which there should be only one "master record" for each separate bibliographic entity. Member libraries may modify and correct certain elements of this record to satisfy local needs; but if the existing record does not really match the item in hand, a new record must be created. By interpreting a publisher's "edition" statement literally, a cataloger may be unnecessarily adding a record to the database. Catalogers of the same or another manifestation of that item are forced to deal with that record in their searching and cataloging routine. Often the question arises: To which record, if any, should holdings be attached? It is the kind of decision that often requires costly consultation and investigation before the record can be produced. In a March 1982 letter to the authors, Richard Greene, manager of the Bibliographic Maintenance Section of OCLC, acknowledges that OCLC documentation does not definitively address the problem:

Various attempts to develop a definition of uniqueness of bibliographic records have grappled with this unsuccessfully... as a result OCLC does not have an official policy except to follow AACR2 and LC practice. We leave it to the cataloger's judgment... These problems have confounded catalogers for years, but the confusion has become worse with the development of cooperatively built bibliographic data bases.

The situation with RLIN is different because there is no single "master record" for a bibliographic entity; instead, each institution enters and maintains its own record for each item cataloged. All bibliographic records are available to all member libraries for searching and deriving their cataloging. Whether a cataloger uses a record already in the database or inputs a new record is important only in terms of local cost factors; the library may input a new record without charge, but will be charged for using and modifying another library's record. RLIN's most recent Bibliographic Standards are very vague on this problem; they merely define "edition" as a "unique manifestation of a work," which must be distinguished by physical format. They also advise that "a new printing of a published book is not necessarily considered as a separate bibliographic entity."

Because of the RLIN database organization, variations in edition statement and imprint, whether due to creation of a new record or modification of an existing one in the database, will affect search results. An LC card number search ideally results in a screen that displays one brief bibliographic record followed by the identifying codes of all the libraries that have cataloged the item. If, however, the libraries have modified information in the bibliographic record, the display will be a screen with perhaps several abbreviated bibliographic records, each followed by the identifying library codes of those libraries whose bibliographic records are the same. To "cluster" together, the records must match in the MARC fields: 300 #a, 245 #a & #b, 260 #a, #b, and #c within a year either
way, and 250. Thus, differing edition statements will put records into different clusters, with the exception that a first edition will cluster with a record with no edition statement at all. Literal interpretation of edition statements will increase the number of separate clusters, thus creating extra searching for a cataloger trying to choose the appropriate record. With OCLC, when a library chooses to modify a record in the database rather than create a new record, the resulting altered record is not available for other libraries to use. For users of either utility, however, the decision-making process is basically the same: the item must be examined and its relation to its other manifestations in the library’s collection determined. The cataloger must then check to see how it relates to its other manifestations in the online cataloging database. Catalogers working in a shared cataloging environment are dependent upon the judgment and experience of their peers in other institutions. Sometimes, the cataloging record will reflect the cataloger’s own interpretation of the situation. Otherwise, it is necessary to decide whether to take the easy route and use the available record, or remain steadfast in one's own judgment and create a new record. Taking the latter course involves a considerable amount of time, and creation of an original, “related edition” cataloging record will usually have to be handled by a professional cataloger. Authority linkage between pre-AACR2 and AACR2 is established and then the record must be input and revised. Although one recent study has shown that related edition cataloging does not take much longer than modifying an existing record, it still involves some unnecessary work that is unjustifiable in light of growing backlogs. It is little wonder, then, that a cataloger will spend considerable time struggling between doing what his or her judgment and experience dictate and doing what a colleague in another institution thought was right.

Two common conflicts illustrate the problems inherent in this decision-making process: the use of the word **printing** in foreign publications and the distinction between hardcover and paperback editions. If the Library of Congress has cataloged the “1. Aufl. 1980” of a title, determined that it is truly an edition statement, and recorded “1. Aufl.” in the 250 field of a MARC record, a cataloger with a “3. Aufl. 1982” must decide whether the title is in fact, a third edition or third printing. If the cataloger is convinced that the Library of Congress was correct in interpreting “1. Aufl.” as an edition statement, and is sure that the title being cataloged is indeed a third edition, he or she will create a new cataloging record. OCLC and RLIN would require creation of a new record if a new edition statement is involved. If the cataloger decides that the title is really the third printing and that the Library of Congress has the first but has interpreted it incorrectly as an edition statement, the cataloger can “correct” the Library of Congress record. Both RLIN and OCLC instruct their users to modify an incorrect record rather than create a new one. In this case, the correction would be deletion of the edition statement. The date in the 260 field would not change, since according to the cataloging rules the date recorded should be the date of the first impression of the edition, i.e., the printing date of the item that the Library of Congress cataloged. The date would be enclosed in brackets if it did not appear in the book in hand.
The date could be followed by the later printing date, depending upon the library’s application of optional rule 1.4G4. This printing date might help identify the book, but it would make adding a second copy of a later printing awkward. More important, identifying separate printings defeats the purpose of bringing bibliographically identical items together on one record. As long as there has been no change in text or format, it probably does not matter to a user that he or she has a first or fifth printing.

A similar problem is encountered with paperback editions. If there is a record in the database for the hardbound edition and the cataloger has received the paperback, he or she must decide if the two items are identical in content. If they are identical except for the ISBN and a statement “1st paperback edition,” the cataloger must decide whether the statement is an edition statement or printing statement. If it is construed as an edition statement, a new record must be entered into the database. If it is construed as a printing statement, the record already in the database can be used if the paperback ISBN number is added. (According to the Library of Congress’ rule interpretation, if the two items are otherwise identical, differing ISBN numbers should not be regarded as a reason for considering the items as separate editions.)

To facilitate the decision-making process described above, and to reduce the amount of time needed to process a book, the authors make the following recommendations:

1. On the local level, cataloging departments should establish clear guidelines to help all levels of staff distinguish edition statements from printing statements. Catalogers should be instructed to interpret an ambiguous statement as a printing statement, not an edition statement. In the case of foreign imprints, “edition” statements should be construed as printing statements unless there is explicit evidence that corrections or additions have been made to the text. In a shared cataloging environment, member and Library of Congress copy should be freely edited to reflect application of these guidelines, and no effort should be made to create another “new” record.

2. The utilities should help catalogers by addressing the edition/printing problem more explicitly. A statement in their bibliographic input standards about the situation might make catalogers feel less compelled to create new records and more comfortable about modifying or correcting records already in the database.

3. If the rule interpretations in Cataloging Service Bulletin 17 do not reduce the number of printing statements appearing in the edition area, a rewording might be in order. Specifically, when in doubt, a questionable statement of publishing history should not be considered an edition statement.

As was intended long ago by Charles Cutter, catalogers should be encouraged to use the edition statement for identifying and bringing together all manifestations of an item, not to create unnecessary duplicate records for the same entity. In a shared cataloging environment, the only way for this to be accomplished is for catalogers’ judgment, biblio-
graphic utilities, and Library of Congress policy to be directed toward a common goal of eliminating costly duplication.

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Treating IEEE Conference Publications as Serials

Michael E. Unsworth

Conference publications of the Institute of Electrical and Electronics Engineers (IEEE) have been difficult to catalog. Serials cataloging of these publications can provide adequate access for the primary user community at a reasonable cost. The IEEE has recognized the value of serials cataloging for these publications and is taking steps to ensure that most of them will be issued as serials. A model procedure for cataloging them is presented.

CONFERENCE PUBLICATIONS of the Institute of Electrical and Electronics Engineers are simultaneously a blessing and a curse for research libraries. They are a blessing in that they provide a staggering amount of authoritative information on electrical engineering and computer science at a reasonable cost. Under one of its subscription plans, a library automatically receives all IEEE conference publications issued in a year (approximately 125) for a fixed price of $4,200. If 125 publications were purchased separately, the cost would be approximately $4,725! Controlling this formidable mass of royal-blue volumes is the attendant curse. One means of getting the proverbial “handle” on these items is to treat as many as possible as serials.

THE CASE AGAINST SERIALS CATALOGING

Conference proceedings are notoriously tricky to treat as serials. In fact, Cole in his article on cataloging conference publications, singled out the IEEE publications as being poor candidates for serials treatment. His objection was that bibliographic data varied significantly from conference to conference, especially for sponsoring bodies and editors. It was his opinion that with conference publications in general and IEEE publications in particular, there is too much instability to warrant serials treatment. In addition to changing editors and sponsoring bodies, Cole listed title problems (thematic titles appearing alongside “generic” titles, title changes, titles in different languages) and problems of entry when conferences changed their names. Because of these factors, Cole advocated the cataloging of all conference publications as monographs.

In addition to handling the above problems, monographic cataloging would appear to have other virtues. Since most issues arrive separately at libraries, it is often convenient to handle them as monographs. Rarely

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do they arrive in batches in a numeric or chronological order that would give some evidence the title is a serial. Moreover, monographic treatment provides more detailed subject and classification treatment than would be possible for serials. In short, there are some very good theoretical reasons for treating all conference proceedings as monographs.

**The Case for Serials Cataloging**

There are very good practical reasons for treating conference publications as serials, assuming stability in conference name and title exist. The first and, in many cases, foremost reason is space in a card catalog. Despite advances in technology, adequate space in card catalogs will be a concern in many libraries for the next several years. Monographic cataloging of conference publications that have the same name and title quickly fills drawer space, especially since many conferences have multiple card sets (due to lengthy descriptive cataloging). Serials cataloging, on the other hand, replaces many bibliographic card sets with one set. A related benefit of serials cataloging is reduced processing time and cost. It is easier and cheaper to make an incoming conference publication an “add” than to have it go through monographic cataloging procedures. Thus, from a purely technical processing standpoint, cataloging conference publications as serials can be very attractive.

Moreover, it can be argued that serials cataloging is beneficial to the primary users of IEEE conference publications: electrical engineering/computer science graduate students and faculty. Personal experience of the author and discussion with other engineering librarians suggest that these users are mainly concerned with locating particular conferences. Thematic titles, editors, occasional sponsoring bodies, subject headings, and individual classification (the main virtues of monographic cataloging) are often of minor concern. What is important to these users is the name of the conference and having all of the conferences shelved together. Monographic cataloging does provide the conference name (over a range of cards), but it does not automatically ensure that the publications are shelved together. Serials cataloging meets the above criteria with fewer cards and less expense. If it is determined that extensive bibliographic information is necessary for a particular conference, it could be cataloged as a classed together-analyzed serial. This treatment would incur increased costs. In summary, from a viewpoint of usefulness to the primary user population, serials cataloging can be very valuable.

A key qualifier in the above discussion is that a conference publication show stability (i.e., the same conference name and title) over a period of time. Do IEEE conference publications display such stability? The answer is yes.

The vast majority of IEEE conference publications qualify for serials cataloging. Frequent title variations have occasionally interrupted serials cataloging and introduced monographic entries. Many have subsequently undergone re-cataloging at the Library of Congress and new main entries have been established, some replete with conference title changes and corresponding dates. IEEE and LC have joined efforts to solve IEEE conference cataloging prob-
lems. Procedures are also being implemented that assure consistency in conference titling and the referral of problems to LC for recataloging.

IEEE is apparently now concerned about the usefulness of its publications and is making an effort to ensure that as many as possible can be catalogued as serials. Thus, a library can establish procedures to take advantage of this situation.

**MODEL PROCEDURE**

Because of the fact that many but not all conference publications can be serials, any work flow must have some mechanism for separating monographs. The procedure at the Colorado State University Libraries utilizes a serials cataloger early in the processing to make this decision. This procedure is geared to provide as much information about the conference as possible. When the IEEE conference publications arrive on standing order in the serials check-in unit, they are immediately sent to a searcher. No internal documentation is made (a departure from the normal serials procedure). The searcher then checks an online bibliographic database for both serial and monographic copy for the piece in hand and any other related records. Next, the searcher checks the card catalog for any previous cataloging of the conference. The conference publications are then routed to a serials cataloger who examines the piece(s) and the bibliographic copy provided by the searcher. The cataloger looks for the following indications that the work is a serial:

1. Stable conference name.
2. Stable title (when individual conferences have thematic titles, the "generic" title is checked to see if it remains constant).
3. Numbering (e.g., "Proceedings of the third symposium") and/or acronyms (e.g., "Mimi '78").

Pieces without any of the above signs are considered monographs and will be cataloged as such. The conference publications are then returned to the serials check-in unit where appropriate documentation is prepared.

When the serial conference publications are routed back to the serials cataloger, the goal is to provide serials cataloging that describes the run of the conferences. The cataloger relies heavily on LC monograph and serial copy for subject headings and classification. The most frequently used headings and classification are likely candidates; when necessary, subject specialists are consulted. Issuing body information is limited to those organizations that have consistently been involved with the conference. Other organizations are covered by the phrase "and other similar bodies." Thus, these procedures try to produce serials cataloging that provides adequate information about the conference.

**SUMMARY**

Serials cataloging thus can provide bibliographic control for most IEEE conference publications. When space in a card catalog is at a premium and when the user population does not require detailed monographic information, serials cataloging can be extremely effective.
REFERENCES

3. Ibid.

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Several of the points in the penultimate paragraph are either quoted or paraphrased from a paper by Anne Grodzins Lipow entitled “Principles of Online Public Catalogs,” presented to a regional meeting of the Association of College and Research Libraries in October 1981.

From: John Gilbert, Manager, Library of Congress Subject Systems, Bibliographic Services Division, The British Library. — In John McKinlay’s paper “Australia, LCSH and FLASH” in the April/June 1982 issue, it is stated that “the British Library Bibliographic Services Division freely amends LCSH for its UKMARC records.” This statement is seriously misleading. In fact, it is BLBSD policy to apply LCSH in a way that matches as closely as possible the policies of the Library of Congress.

Our practice varies from LC’s in two ways only:

(a) LCSH for persons, organizations, intellectual and artistic works and publications are based on headings established by BLBSD’s Descriptive Cataloging Office. In some cases, of course, these differ from headings established by LC’s descriptive catalogers.

(b) If there is no LCSH for a subject, we may create one. However, these ‘LCSH’ are not re-used once we find out that LC has created a different LCSH. Fortunately, in most cases the ‘official’ LCSH turns out to be the same as BLBSD’s.

Neither of these differences amounts to anything like “freely amending” LCSH.
From: Callie B. McGinnis, Associate Librarian, Columbus College, Columbus, Ga. [Abridged].—As an OCLC user, I certainly share Patricia Wanninger’s frustration as described in her article “Is the OCLC Database Too Large?” (LRTS 26:353-61). I agree that having to wade through screen after screen of Shakespeare entries for that one special item is a database searcher’s nightmare . . .

However, while sharing her concern for the negative effect that rapid growth rate of the OCLC database is having on search procedures, I do not agree with Wanninger’s main suggestion for easing the problem. Her idea of “splitting the database into separate files based on type of format,” is, in essence, the same thing as searching by format type qualifier. Of course, as she says, successful retrieval via such qualifiers depends on accurate fixed field information—but so will separating the entire OCLC database into format sub-databases.

I like Wanninger’s plea to expand alphabetic search keys, but think it would be even more helpful to have increased qualifier capabilities. Added to “date” and “format type” qualifiers, perhaps OCLC could provide publisher and/or added personal name entry qualifiers. With a publisher qualifier, Wanninger’s search for The Poetical Works of Thomas Moore, could, perhaps, be keyed in with something like “MOOR, POET/P.J”—which would certainly limit the initial number of possible entries.

From: James A. Wueg, Catalog Librarian, The Cone Library, Marycrest College, Davenport, Iowa.—Few would contest that the OCLC database suffers from imperfect quality control, but I would disagree with Patricia Wanninger’s assessment (LRTS 26:353-61) that duplicate records are crippling the system. She decries the utility of query enhancements which limit a search by format or date because inputting errors may have impaired system indexing accuracy. Certainly, this is a problem, but I have found that the use of these query enhancements increases the precision of most searches to such an extent that duplicate records are but a minor nuisance. If a precisely formulated query does not retrieve the desired information, the searcher should be sufficiently skilled as to be able to broaden the search without suffering an inordinate number of false drops. The effect of duplicate records could be further minimized by more powerful indexing; if a search could be qualified by place of publication or limited to LC copy, duplicates could be largely excluded. Presently, however, few searchers use the enhancements that are already available, so additional indexing may not now be warranted. Moreover, if searchers now find it inconvenient to limit their queries by format type, they will hardly find the practice of searching separate files based on format a more serviceable alternative. It should also be noted that “mirror records” are not in fact duplicate records at all, and OCLC input standards do not suggest that a differing printing date is sufficient justification for entering a new record except where textual differences also exist.

From: James R. Dwyer, Cataloging Coordinator, Northern Arizona University [Abridged].—While the articles on authority control in the Oct./Dec. 1982 LRTS were generally accurate and informative, I found it curious that so little attention was paid to the highly sophisticated authority control system developed by the Washington Library Network. In WLN, authority records are truly authoritative and appear directly on cataloging screens, eliminating the need to page back and forth between biblio and authority files.

Wanninger is correct in her observation that OCLC is hampered by duplicate records and that we are “all already paying the price” in terms of slow response time, etc. . . .
INSTRUCTIONS TO AUTHORS

Please follow these procedures when preparing manuscripts to be submitted to Library Resources & Technical Services.

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2. Write the article in a grammatically correct, simple, readable style. Remember that the author is responsible for the accuracy of all statements in the article.

3. Give the article a brief title; if the title is not descriptive of the content, add a brief subtitle. On a separate page give the title, the name(s) of the author(s), and the title and affiliation of each. If the paper has been presented at a conference (the proceedings of which will not be published), identify the conference by name and date on the cover page.

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8. Jo Anne Quoddy, “Problems in Sending Book Orders by Space Shuttle,” in Technical Services Tomorrow (see ref. 3).

If no other reference intervenes, use “Ibid.” to take the place of the ele-
ments of the previous reference that apply. Do not underline "Ibid."
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