Subject Access to a Data Base of Library Holdings

Alice S. CLARK: Assistant Dean for Readers' Services, University of New Mexico General Library, Albuquerque. At the time this research was undertaken, the author was head of the Undergraduate Libraries at Ohio State University.

As more academic and public libraries have some form of bibliographic description of their complete collection available in machine-readable form, public service librarians are devising ways to use the information for better retrieval. Research at the Ohio State University tested user response to paper and COM output from selected areas of the shelflist. Results indicated users at remote locations found such lists helpful, with some indication that paper printout was more popular than microfiche.

While many of the computer applications in special libraries were designed to improve subject access to the collections, the systems adopted in academic and public libraries have often been those which would handle various file operations and improve control of circulation or technical processing functions. Once some of the data describing the items in the collection became available in machine-readable form, reference librarians have been tempted to find ways to use it for subject retrieval.

In November 1970, the Ohio State University (OSU) Libraries began to use its automated circulation system using a data base representing its complete shelflist with limited information on each title:

<table>
<thead>
<tr>
<th>Field No.</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Call number</td>
</tr>
<tr>
<td>2</td>
<td>Author</td>
</tr>
<tr>
<td>3</td>
<td>Title</td>
</tr>
<tr>
<td>4</td>
<td>LC number—or NOLC if none available</td>
</tr>
<tr>
<td>5</td>
<td>Title number</td>
</tr>
<tr>
<td>6</td>
<td>Publication date (if available)</td>
</tr>
<tr>
<td>7</td>
<td>SER—Serial indicator. When present indicates the title is a serial.</td>
</tr>
<tr>
<td>8</td>
<td>NENG—Non-English indicator. When present indicates the title is non-English.</td>
</tr>
<tr>
<td>9</td>
<td>SIZE—Oversize indicator. When present indicates the book is an oversize book.</td>
</tr>
</tbody>
</table>
The system, modified from time to time, provided access by call number, record number, or author-title with an algorithm consisting of the first four letters of the author's name plus the first five letters of the title. A title search was also possible by entering four letters of the first significant word and five letters of the second significant word or five dashes. As soon as the system was implemented, it was immediately evident that the search option was one of the most important features of the system. The circulation clerk at any location either in the main library or in any department library could search the author and title and find: (1) if the OSU Libraries had the book; (2) where it was regularly housed; and (3) its status (charged out, missing, lost, or available for circulation). All of this was possible without checking the card catalog except when problems of identifying the main entry existed.

The immediate lack was, of course, the subject approach. As use of the system continued and library personnel became more sophisticated, various procedures offering some kind of subject approach were developed.

The title search option is one possibility for finding subject access. For example, to find a book on “evolution” one can enter the title search command TLS/EVOL----- and receive a report that there are 757 titles in which evolution is the first significant word. The terminal will then print out items as follows:

TLS/EVOL-----
PAGE 1 757 MATCHES 0 SKIPPED (NOT ALL RETRIEVED)
01 LAN, H. J. EVOLUTIE 1946
02 MOODY, PAUL AMOS. 1903 INTRODUCTION TO EVOLUTION 1970
03 BROSSEAU, GEORGE E EVOLUTION 1967
04 ADLER, IRVING EVOLUTION 1965
05 LOTSY, J. P. EVOLUTION
06 SMITH, JOHN MAYNARD, 1920- ON EVOLUTION 1972
07 MILLER, EDWARD EVOLUTION 1917
08 WATSON, J. A. S. EVOLUTION 1924
09 KELLOGG, V. L. EVOLUTION 1951
10 SHULL, A. FRANKLIN EVOLUTION 1924

When the user types in PG2 or PG3, more titles will come up, and if more than thirty titles are desired, the original command can be reentered with a /SKIP 30 option to display others including all 757 titles if necessary.

It is also possible to manipulate this option further since this first search may turn up the name of an author recognized as an authority on the subject. In this case, when Thomas Huxley's *Evolution and Ethics* appears, the terminal attendant changes to an author-title search, ATS/HUXLEVOLU, and finds eight matches, four books by Thomas Huxley and four by Julian Sorell Huxley on the same subject:

ATS/HUXLEVOLU
PAGE 1 8 MATCHES 0 SKIPPED (ALL RETRIEVED IN 1)
01 HUXLEY, THOMAS HENRY EVOLUTION AND ETHICS, AND OTHER ESSAYS 1970
02 HUXLEY, THOMAS HENRY EVOLUTION AND ETHICS AND OTHER ESSAYS 1916
03 HUXLEY, JULIAN EVOLUTION, THE MODERN SYNTHESIS 1942
04 HUXLEY, THOMAS HENRY EVOLUTION AND ETHICS AND OTHER ESSAYS 1897
05 HUXLEY, JULIAN SORRELL EVOLUTION AS A PROCESS 1954
06 HUXLEY, THOMAS HENRY EVOLUTION AND ETHICS AND OTHER ESSAYS 1896
07 HUXLEY, JULIAN SORRELL EVOLUTION IN ACTION 1ST ED 1953
08 HUXLEY, JULIAN SORRELL EVOLUTION AS A PROCESS 2D ED 1958

To find the call number of any of these, the attendant merely enters a detailed line search DSL/1:

DSL/1
HM106H91896A HUXLEY, THOMAS HENRY EVOLUTION AND ETHICS, AND OTHER
NLC 902452 1970 1
01 001 3WEEK UND
PAGE 1 END

The ability to search by a word in the title, which in the above example gives a form of KWIC subject index, is even more specific if two words are used. For example, the attendant may enter TSL/CHILPSYCH to bring up titles containing the words "child" and "psychology" as follows:

TSL/CHILPSYCH
PAGE 1 52 MATCHES 0 SKIPPED (NOT ALL RETRIEVED)
01 JERSILD, ARTHUR THOMAS, 1902- CHILD PSYCHOLOGY, 4TH 1954
02 JERSILD, ARTHUR THOMAS, 1902- CHILD PSYCHOLOGY 5TH ED 1960
<table>
<thead>
<tr>
<th>Call Number</th>
<th>Title and Author(s)</th>
<th>Edition</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>HM106H9</td>
<td>Thompson, George Greene, 1914-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HM106H3</td>
<td>Kanner, Leo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HM106H57</td>
<td>Curti, Margaret (Wooster)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HM106H6</td>
<td>Clarke, Paul A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HM106H9</td>
<td>Greenberg, Harold A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HM106H3</td>
<td>C. Biological Aspects of Human Problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HM106H63</td>
<td>Hill, G. C. Heredity and Selection in Sociology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HM106H91896</td>
<td>Huxley, Evolution and Ethics and Other Essays</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HM106H91896A</td>
<td>Huxley, Evolution and Ethics and Other Essays</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HM106K29</td>
<td>Keller, Societal Evolution; A Study of the Evolutionary Basis</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The obvious subject approach is, of course, by call number. The system contains an option that permits a search on the general call number. The operator may enter either a real or an imaginary call number and receive the fifteen titles preceding and the fifteen titles subsequent to it in the shelflist.

For example, with the command SPS/HM106H9, using the call number from the previous example, the following ten titles will appear with that call number as the central item:

SPS/HM106H9
11 HM106G77 Graubard, Man the Slave and Master
12 HM106H3 Haycraft, Darwinism and Race Progress
13 HM106H57 Herter, C. Biological Aspects of Human Problems
14 HM106H6 Hill, G. C. Heredity and Selection in Sociology
15 HM106H63 Hoagland, Evolution and Man’s Progress
16 *HM106H9
17 HM106H91896 Huxley, Evolution and Ethics and Other Essays
18 HM106H91896A Huxley, Evolution and Ethics and Other Essays
19 HM106H91897 Huxley, Evolution and Ethics and Other Essays
20 HM106H91916 Huxley, Evolution and Ethics and Other Essays
21 HM106K29 Keller, Societal Evolution; A Study of the Evolutionary Basis

Entering PG1 will bring up the ten preceding titles and PG3 the ten subsequent titles.

One of the best features of this system is that the patron may call in by telephone and have at least some of this information read to him; if he is at a circulation area, he may receive a printout as an instant bibliography.

Recently an attempt has been made to use the file of data in other ways. In an attempt to provide better access to the main campus collection for the people at the five regional campuses of the university, an experiment was tried using a computer printout of certain selected parts of the shelflist. Since microfiche is less expensive and more compact to handle, there were good reasons for using this form rather than the paper printout form. This was an obvious application for computer output microfiche (COM). Once
Subject Access/CLARK 271

a master frame has been produced by COM, the cost of additional copies is negligible. In order to test acceptance of form more accurately, it was decided to provide a list in each form to test on sample populations.

To cover some of the subjects taught at the Agricultural and Technical Institute at Wooster, a total of 20,672 titles were selected in the following areas:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Call Number</th>
<th>Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural economics</td>
<td>HD1401-2210</td>
<td>2,121</td>
</tr>
<tr>
<td>Botany</td>
<td>QK10-942</td>
<td>1,039</td>
</tr>
<tr>
<td>Agriculture</td>
<td>S</td>
<td>17,157</td>
</tr>
<tr>
<td>Agricultural machinery</td>
<td>TJ1480-1496</td>
<td>6</td>
</tr>
<tr>
<td>Wood technology</td>
<td>TS800-937</td>
<td>197</td>
</tr>
<tr>
<td>Woodworking</td>
<td>TT130-200</td>
<td>152</td>
</tr>
</tbody>
</table>

These titles were printed in a hard-copy printout in the following format with a program designed by Gerry Guthrie of the Research and Development Division of the OSU Libraries:

CALL NUMBER = TJ1496C3A3        TITLE NUMBER = 196795
AUTHOR = CATERPILLAR TRACTOR COMPANY
TITLE = FIFTY YEARS ON TRACKS
PUBL. DATE = 1954
HOLDINGS = COO1 COM REGULAR LC NUMBER = 55-20529

The physical form of the resulting documents varied somewhat due to the fact that each subject area was put in one cover. This meant “Agriculture” (S) with 17,157 titles was too bulky to carry around, but “Wood technology” was compact and easily carried to one’s office or home for leisurely browsing.

A brief questionnaire was used to test the reaction to the list. Responses were received from 6 percent of the students and faculty at the Agricultural and Technical Institute. With the usual assumption that some students are not library users, there was some validity to the sample.

Results tabulated from these questionnaires fell into three categories: (1) nature of use; (2) value of the list; and (3) response to its form and format. Since some questions were left blank, the totals were often less than 100 percent.

NATURE OF USE

The responses turned out to be evenly divided between faculty and students, 46 percent for each with some leaving this question blank. The faculty indicated that two-thirds of the use was for themselves and one-third for the students. Students, of course, used it totally for their own purposes.

The actual purpose of the list had been envisioned as access to the main campus collection, and increases in interlibrary loans indicated that it was
effective. Loans during the month of October 1973 totaled four while November’s loans totaled thirty-four, showing a marked difference after the delivery of this search tool on October 31. The questionnaire showed that 77 percent indicated they used the information for this purpose. It should not have been a surprise to librarians to find that 34 percent of the sample population used the information to order a duplicate copy for the Wooster ATI Library, an indication of readers’ known proclivity for wanting their material close at hand.

**USERS’ EVALUATION**

The increase in interlibrary loans was probably a better reflection of the users’ approval than the actual questionnaire results, although the results themselves were also highly positive. Seventy-seven percent checked that they found it valuable, against 15 percent who did not. Eighty-five percent said they wanted more lists. Requests for additional suggestions included a request to keep it up to date and a request to limit it to just recently published items, while another person asked for all of the titles located in the Agricultural Engineering Library. The requests indicated that several additional subject areas were wanted: communication skills, personnel management, human relations, use of airplanes in agricultural, irrigation, and drainage engineering, and environmental pollution.

**SUITABILITY OF FORM AND FORMAT**

Some attempt was made to determine how people react to the admittedly inconvenient form of a computer printout. Since financial considerations limited the possibilities to either this form or microfiche, those options were presented in the questionnaire. Preference for the paper form was expressed by the users of the list in this form—84 percent to 8 percent who would have preferred microfiche.

The population was evenly divided as to whether or not they wished to have the list in this call number order—50 percent wanted it by straight shelflist or call number order and 50 percent wanted it alphabetically by author. The latter response may very well reflect the proportionally large number of respondents who were faculty and who supposedly would know the authors in their fields and do not use a subject approach when seeking materials.

While the original purpose of the research was to provide better subject access to a remote collection, it was also important to find out more about the user’s response to microfiche if he could be given an improvement in service or a service he did not previously have. Microfiche would be both more compact and less expensive if lists of this type were to be provided in many subjects and continually updated.

For the microfiche section of the research project the Library of Congress classifications covering classics and related fields were chosen, partly
on the basis that faculty in these areas had agreed to participate and encourage their students to use the list. Included were:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE1–DE98</td>
<td>History—The Mediterranean World</td>
</tr>
<tr>
<td>DF101–DF289</td>
<td>History—Greece</td>
</tr>
<tr>
<td>DG11–DG209</td>
<td>History—Italy</td>
</tr>
<tr>
<td>N5630–N5790</td>
<td>History of Art—Greek and Roman</td>
</tr>
<tr>
<td>NA200–NA335</td>
<td>Architecture—History—Greek and Roman</td>
</tr>
<tr>
<td>PA—all</td>
<td>Language and Literature of Greece and Rome</td>
</tr>
<tr>
<td>Z7001–Z7005</td>
<td>Bibliographies in linguistics, Roman and Greek literature, teaching languages</td>
</tr>
</tbody>
</table>

This subset produced about eleven thousand titles.

The format of the COM was the same as that on the paper printout, with general titles appearing at the top of each sheet or frame, e.g., SHELFLIST—CLASSICS—GREECE. This took twenty-two microfiche with sixty-nine frames each listing seven or eight titles. The last frame on each fiche was an index to that fiche. A nonreduced (eyeball) character at the top listed the first call number on the fiche.

It was envisioned that the user might know the general classification number, search for it by the eyeball character, then consult the index in the last frame to locate the proper frame for a specific class. In this way the user could browse through the subject area. The chief advantage of COM lay in the fact that the small envelope of microfiche and a portable reader were easy to check out of the library and carry home or to an office where the user could browse through the library shelflist at a leisurely pace.

Since initial reaction was negative, a subject index was prepared to make the list more usable to undergraduate students. This index was made up of the appropriate entries which appeared in the Library of Congress classification schedules, with all entries consolidated into one alphabet. Using this index to find an entry—for example, “Caesar, C. Julius”—the student would find two areas to search: DG261–267 and PA6235–6269. He would find these areas on the microfiche with the eyeball characters, then search the index frame to find the appropriate pages. The classics list with its index and instructions was packaged in neat, loose-leaf notebook form and, together with a portable reader, presented to classics faculty at two regional campuses. A set was also available in the library.

The results were completely negative. Reliance upon the cooperation of too small a number of cooperating teachers may have invalidated this part of the research, but the contrast in response to the similar printed list raised serious questions about user response to microfiche in an index or reference book situation. It had been anticipated that a population in the humanities or social sciences would have had more need than the science group for what was essentially a book list since serial titles did not include
holdings. The complete lack of interest from the faculty in the field of classics was an unexpected disappointment but no firm conclusions could be drawn without a research strategy designed to remove any possible variables.

CONCLUSION

Increased use of MARC cataloging through such systems as OCLC and BALLOTS will mean many more libraries will have their total holdings in machine-readable form with the capability of using their records in new ways. Programs for distributing microfiche copies of library catalogs such as Georgia Tech's LENDS program provide inspiration for public service librarians to make use of the data and technology that technical services automation projects are supplying. This experiment in manipulating machine-readable library records for use in subject searching was an attempt toward better retrieval of a library's collection and indicated that such programs would be useful to extend service outside a single library location.

REFERENCES

1. It may soon be possible to do this in a much simpler fashion by using the Combined Indexes to the Library of Congress Classification Schedules (Washington, D.C.: U.S. Historical Documents Institute, 1974).
2. Doris Boles, "Computer-Output Microfilm," Special Libraries 65:169-75 (April 1974). In describing the use of COM at the Washington University School of Medicine, Boles said, "There is, however, an additional disadvantage, namely, the resistance of users to the use of microforms because of their inconvenience. Patrons will sometimes choose not to read a publication when told it is available in some sort of microform only. It is assumed that librarians are not quite as reluctant, but it would be a mistake not to take this reluctance into consideration. This resistance by both librarians and patrons is stronger than is usually reported by COM manufacturers and service bureaus" (p.170-71).