

## Subject Access to a Data Base of Library Holdings

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*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:

<i>Field No.</i>	<i>Field</i>
1	Call number
2	Author
3	Title
4	LC number—or NOLC if none available
5	Title number
6	Publication date (if available)
7	SER—Serial indicator. When present indicates the title is a serial.
8	NENG—Non-English indicator. When present indicates the title is non-English.
9	SIZE—Oversize indicator. When present indicates the book is an oversize book.

<i>Field No.</i>	<i>Field</i>
10	PORTxxxx—Portfolio number in which book is located (main library only).
11	MONO—Monographic Set indicator. When present indicates title has been designated a monographic set.
12	Number of holdings (not displayed if copy 1, main library)
13	Reference line number
14	Volume number
15	Copy number
16	Holdings condition code
17	Library location
18	Patron identification
19	Number of specific saves for the copy
20	Circulation status
21	Date charged in the form of year, month, day
22	Date due in the form of year, month, day

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:

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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
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06 SMITH, JOHN MAYNARD, 1920-	ON EVOLUTION	1972
07 MILLER, EDWARD	EVOLUTION	1917
08 WATSON, J. A. S.	EVOLUTION	19--
09 KELLOGG, V. L.	EVOLUTION	1924
10 SHULL, A. FRANKLIN	EVOLUTION	1951

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:

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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 SORELL  EVOLUTION AS A PROCESS  1954
06 HUXLEY, THOMAS HENRY  EVOLUTION AND ETHICS AND
                        OTHER ESSAYS      1896
07 HUXLEY, JULIAN SORELL  EVOLUTION IN ACTION 1ST ED  1953
08 HUXLEY, JULIAN SORELL  EVOLUTION AS A PROCESS 2D ED  1958
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To find the call number of any of these, the attendant merely enters a detailed line search DSL/1:

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

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TLS/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
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03 THOMPSON, GEORGE GREENE, 1914-	CHILD PSYCHOLOGY	1952
04 KANNER, LEO	CHILD PSYCHIATRY 3D ED	1957
05 CURTI, MARGARET (WOOSTER)	CHILD PSYCHOLOGY	1930
06 CLARKE, PAUL A	CHILD-ADOLESCENT PSYCHOLOGY	1968
07 GREENBERG, HAROLD A	CHILD PSYCHIATRY IN THE COMMUN	1950
08 ENGLISH, HORACE BIDWELL	CHILD PSYCHOLOGY	1951
09 CHESS, STELIA	AN INTRODUCTION TO CHILD PSYCH	1969
10 CURTI, MARGARET (WOOSTER)	CHILD PSYCHOLOGY 2D ED	1938

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

PAGE 2 INPUT:HM106H9

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

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:

Agricultural economics	HD1401-2210	2,121 titles
Botany	QK10-942	1,039 titles
Agriculture	S	17,157 titles
Agricultural machinery	TJ1480-1496	6 titles
Wood technology	TS800-937	197 titles
Woodworking	TT130-200	152 titles

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:

DE1-DE98	History—The Mediterranean World
DF101-DF289	History—Greece
DG11-DG209	History—Italy
N5630-N5790	History of Art—Greek and Roman
NA200-NA335	Architecture—History—Greek and Roman
PA—all	Language and Literature of Greece and Rome
Z7001-Z7005	Bibliographies in linguistics, Roman and Greek literature, teaching languages

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., SHEFLIST—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.<sup>1</sup> 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.<sup>2</sup> 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.<sup>3</sup> 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 Bolef, "Computer-Output Microfilm," *Special Libraries* 65:169-75 (April 1974). In describing the use of COM at the Washington University School of Medicine, Bolef 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).
3. *The Georgia Tech Library's Complete Card Catalog Is Now Available in Microfiche Form*, brochure (Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology, 1972).