



Atherton, Pauline A.

Putting Knowledge to Work; An American View of Ranganathan's Five Laws of Library Science
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Digitization: Susan Ditch, SIRLS, University of Arizona

Quality Control: Megan Plesea, SIRLS, University of Arizona

Digitization Training: Han Yan, Information Systems, University of Arizona & dLIST Editor

Project Coordinator: Cheryl K. Malone, Assoc. Prof. SIRLS, University of Arizona & dLIST Editor

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CHAPTER F

LAW 2: EVERY READER HIS BOOK : HOW TO KNOW THE READER IN SEARCH OF HIS BOOK

There are some things which cannot be learned quickly, and time, which is all we have, must be paid heavily for their acquiring.

—Ernest Hemingway

1 Need for “Use Studies”

Most libraries appear committed to the doctrine of service to patrons, to facilitating the reader's search for his book. Oftentimes, however, doubts have arisen in our minds as to whether or not we are providing those facilities which, in fact, best meet the needs of patrons. Out of these doubts have come numerous “use studies” in the United States and elsewhere which contribute to our knowledge of the reader (or user) and sometimes provide us with the information needed to redesign our libraries to give better performance.

2 Catalogue Use Studies

The 1960's have seen a great many surveys of

use studies, accompanied with justifiable criticism of the research methodologies used and the unreliability of the findings. Two studies in the United States have recently been reported, which rise above these criticisms and serve as fine examples of how to investigate the following questions:

- 1 Who uses the library?
- 2 For what purpose is the card catalogue consulted?
- 3 With what success is the catalogue consulted?
- 4 How was the catalogue card utilised? Which items on the card were used? Do different classes of users make different use of the items on the catalogue card?
- 5 Would a hypothetical reduced catalogue meet the needs of most users of the card catalogue (that is, would a catalogue, consisting of author, title, subject headings, call number, and date of publication, suffice)?

Because this area of library research is so important, I would like to concentrate on these two studies of the user at the card catalogue, explaining the methodology used in some detail, the most interesting findings, and the implications of their work for improvement of library services in general.

Consider this information exchange with me serving as the catalyst, since neither Richard Palmer (10) nor Ben-Ami Lipetz (6) can be here to discuss their work first hand. I will leave behind, in India, however, their reports, with the compliments of the authors. They gave me permission to discuss their work in detail with you. For this, I am grateful.

21 POPULATION STUDIED

The Palmer study consisted of the users of the University of Michigan General Library card catalogue. The sample, obtained by means of a two-stage probability sampling model, consisted of 5,067 users of the card catalogue who completed questionnaires during an eight-week survey during the Fall Term of 1967.

The Lipetz study was conducted in the Sterling Memorial Library of Yale University. The pattern of traffic flow in the catalogue area was determined by means of frequent traffic counts that were continued for more than a year. The observed traffic flow was used as the basis for designing the interview schedule that would encompass a thoroughly representative sample of catalogue users.

The Lipetz study at Yale went beyond catalogue use and traced the users' starting clues at

the catalogue through to use of books and the front matter from these books and their representation on catalogue cards.

Palmer reviewed over eighteen card catalogue use studies and found all but five lacking in their definition of population studied. This is a basic concern in research design and the connection between knowledge of our population and our stated goals of service is very straightforward. One cannot create an ideal tool of any sort on a rational basis (whether that tool be a conventional catalogue, a computerised catalogue, or any other device for any other application) without knowing a good deal about the purpose or purposes for which the tool is to be used, and about the manner in which the users interact with the tool (11).

The careful way in which Palmer and Lipetz established the population for their user surveys deserves repeating.

3 Methodology

31 POPULATION STUDIED: UNIVERSITY OF MICHIGAN LIBRARY

Palmer chose the actual users of the University of Michigan General Library card catalogue as the survey population. In the process of establishing the population for the user survey at Michigan, he

rejected as the survey population such possible populations as all individuals officially connected with the University of Michigan or all users of the University of Michigan General Library because it was not possible to establish from available data that the characteristic of these potential populations matched the population of the users of the card catalogue.

In order, however, to provide some background on the general environment in which the survey was conducted, it is noted that the study was conducted at the University of Michigan General Library card catalogue room during the Fall Term, 1967, at which time the student enrolment at the University of Michigan totalled 37,283. Of those enrolled, 21,087 were undergraduates, 9,729 were graduates, and 3,698 were graduate-professionals. Included in the 37,283 students were 2,769 who were enrolled in credit extension (mostly graduate). The faculty numbered more than 3,800; other academic staff, about 2,500; and non-academic staff, including part-time employees, totalled about 13,700. As indicated above, these categories of potential patrons were not selected as the survey population because the configuration of their use of the card catalogue could not be predicted from available data and because users other than those officially connected with the University

of Michigan would be likely to use the card catalogue during the eight-week survey period.

During the survey period (September 11 to November 5, 1967), 186,768 persons passed through the turnstiles at the entrances to the University of Michigan General Library. Thus, an average of 23,346 persons per week patronised the General Library during the eight weeks of the survey. These patrons were not, however, selected as the survey population because the configuration of their use of the card catalogue could not be predicted from available data.

It was therefore the decision of this study that actual users of the University of Michigan General Library card catalogue during the survey period would comprise the survey population. It was further decided that no attempt would be made to ascertain the exact number of such users. Rather, a team of students conducted a physical head count of patrons using the card catalogue during one week, February 20-26, 1967, during the 101 hours that the library was open. The count came to a total of 5,778 persons. On the basis of this count, it was estimated that approximately 48,000 persons would use the card catalogue during the survey period. This estimated number of persons constituted the survey population. The survey was then

designed to sample not less than ten per cent of this estimated population, or not less than 4,800 patrons. It was determined that a ten per cent sample, clustered and systematically randomized, should provide findings of statistical reliability at the .05 level of significance, for which a reasonable confidence interval could be computed, and from which useful predictions regarding the total user population could be made.

32 POPULATION STUDIED: YALE UNIVERSITY

Lipetz chose a similar survey population (7), namely, the actual users of the card catalogue at the Yale University Library, but his technique for sampling this population involved a careful observation over a total of 62 weeks of the traffic flow at the card catalogue.

321 *Traffic Flow Management*

Lipetz thought that the determination of the pattern of people entering the catalogue area was a key factor in the later design of an interviewing schedule which would yield a clearly representative sample of catalogue users. The pattern of entry to the catalogue was determined by having observers assigned to count the number of people entering the catalogue area through different entryways during different times of day and days of the week. Ob-

servers were stationed where they could observe simultaneously either the front three aisles into the catalogue or the rear two aisles into the catalogue. For a period of five minutes' duration, they would count the number of persons entering each of the aisles being observed. Timing periods were rigidly predetermined to cover different hours of the day, different days of the week, and even different tenths of each hour. Observation assignments were rigidly scheduled; the schedule repeated every seven weeks. Observations were continued over a total of 62 weeks so as to provide a ten-week overlap period for determination of any annual variation in traffic which might occur. (During this 62-week period, there was a 5-week interruption in observations, during the late summer, while shifting of catalogue drawers was going on; the abnormal shifting activity tended to interfere with traffic flow).

The total amount of time during which traffic was counted was somewhat over 4 per cent of the time that the library was open during the total time span involved. For practical reasons, the coverage was more intense during weekday working hours (6 per cent) and lower during evening hours and weekends (about 2.5 per cent). However, observed traffic was also lower (by about one-fourth) during evening hours and weekends. Tallies of traffic

counts by hour, day and entryway for the first ten weeks of observation were used as the basis for designing the interviewing schedule. Traffic counts were continued during the interviewing period to check on the continuing validity of the pattern observed during those first ten weeks and to provide a rational basis for weighting of interview results if the interview schedule should prove to be biased with respect to observed traffic.

Several other traffic measurements were made in addition to the counts of persons entering the catalogue area: At precise preassigned times, observers would follow anyone entering the catalogue to observe where he went (which catalogue drawer), how long he stayed at the catalogue, and how many call-number notations he wrote down. Intervals for conducting these observations were scheduled in exactly the same pattern as intervals for gross traffic counts so as to cover all times of catalogue availability.

Observers of catalogue traffic were instructed to avoid counting those library staff members who regularly work in the catalogue area (filers, verifiers, reference librarians). The intent of the measurements was to count, as far as possible, only the "consumers" of the catalogue service, rather than the suppliers and interpreters.

Methods for the collection of data differed in the two studies, but both appear to have been rigorous applications of the statistically reliable methods they chose to employ. They are explained here to illustrate how two different methods can be employed for achieving the same objective. The survey periods were at first approximately the same — eight weeks at Michigan and ten weeks at Yale, but Yale continued their interviewing over a full year. The questions asked and techniques used varied as the following excerpts from the two reports show.

33 SAMPLING: MICHIGAN UNIVERSITY LIBRARY

At Michigan, the population was defined as the users of the card catalogue during the survey period, September 11 to November 5, 1967 (12). The sample size was established as ten per cent of the population. A one-page questionnaire, including an illustrative catalogue card, with items on the card identified by means of red exponential numbers and a list of items on the catalogue card numbered in red placed immediately below the illustrative card, was selected as the survey instrument. Questionnaires were distributed to selected patrons as they entered the catalogue room and were collected as they left.

A two-stage probability sample using systematic selection was chosen for the survey. (*See* Sec 31).

The estimated figure of 48,000 patrons was based, as mentioned earlier, on a physical head count of users conducted during the week ending 26 February 1967. In this two-stage probability sample, the frame of the sample was taken to be all users of the General Library card catalogue during the eight-week period, September 11 to November 5, 1967. The hours of the week in which the library was open were the first-stage sample units, and the users in each of the selected hours were the second-stage sample units. The outline of the sample design is as follows:

- 1 Measures of size were assigned to hours (clusters) according to the probable number of users in each of them. As it was expected that there would be some random fluctuation in the number of users, the measures of size were corrected to the nearest unit of twenty to simplify the operation.

- 2 Under-sized clusters (hours when few users were expected) were linked or combined to insure that each selected cluster would yield a reasonable number of users.

- 3 The method of selection used was probability proportional to size in the first-stage and probability inversely proportional to size in the second stage in order to give an overall equal probability of selection to each user.

4 Systematic selection was employed in both the first-stage and second-stage selections.

331 *Questionnaire*

A survey team composed of eleven students enrolled in the Department of Library Science conducted the survey. During systematically selected hours, questionnaires were handed to a random sample of about twenty patrons as they entered the catalogue room, were completed by the patrons while in the catalogue room, and were collected by the survey team as the patrons left. The survey team was available throughout the 240 survey hours to answer any questions that the patrons surveyed might have about the questionnaire.

The survey team found that such outside factors as weather, football games, or major campus events, occasionally caused the actual number of patrons who utilised the catalogue room during a survey hour to drop below the estimated number of patrons who would use the card catalogue as listed in the sampling procedure. To obtain the desired twenty completed questionnaires per hour on these few occasions, the survey team reduced the interval between sampling units, or patrons, by one. Questionnaires were given to each $(a-1)$ th patron, so that, for example, in an hour when every fifth patron was to have been given a questionnaire, one

was given to every fourth patron. Since this procedure modified the basic sampling pattern, it increased the chance for selection of the patrons using the catalogue during these hours. As these changes were made rarely, they are unlikely to have any noticeable effect on the findings of the survey.

Of the 5,073 patrons who were given questionnaires, 4,456 completed them, giving a completion rate of 88 per cent. The rejection level was, therefore, 12 per cent. The total of usable survey units was 5,067.

The questionnaire used at Michigan sought information on a variety of aspects of catalogue use (See Sec 35). A question was also asked as to whether or not a hypothetical computer catalogue consisting of five items per entry, namely, name of author, title, subject headings, call number (including location), and date of publication, would meet their needs, and if not, what additional catalogue card items of information would be required.

Patrons were instructed to answer questions in accordance with their specific use of the catalogue on this particular occasion. Answers were not to reflect previous recollected use of the catalogue.

Since the clustering of hours and thus of samples taken in this survey introduced a higher level of

probability that the sample population may not represent the total population as nearly as a simple random sample would, the design effect and related statistical measures were computed.

34 INTERVIEW SCHEDULE

The schedule for conducting interviews with the Yale catalogue users was based on observed traffic flow into the catalogue during an initial *10-week observation period*. Projection of observed traffic for this period suggested that the annual traffic into the catalogue would be of the order of 300,000. (Full-year traffic observations later showed this estimate to be low.) When one adjusted this count to omit individuals who were found to be entering the catalogue area merely to use it as a shortcut between the front entrance and the main reading room, the indicated annual total of real catalogue users was closer to 250,000. It was decided that about 2,500 interviews or more (that is, at least something approaching one per cent) should be attempted.

The interview schedule adopted at Yale (8) called for an interviewer to be at a particular entryway to the catalogue area at a specified time on a specified day of the week. The first individual other than library staff to enter the catalogue through that entryway during the next six minutes



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and to begin to use the catalogue would be the person to be interviewed. (If no one entered during that interval, no one was interviewed until the next assigned time and place.) Interview assignments were set up on a revolving schedule much like the schedule for traffic measurements. As with traffic measurements, the schedule for interviewing during the evening and weekend periods was made lighter than during the regular weekday periods; this was done with the knowledge that compensations could be made later by weighting the results of actual evening and weekend interviews somewhat more heavily than the results of weekday interviews in compiling final statistics.

Interview content and technique were designed to elicit quite specific information from catalogue users, with a minimum amount of bias due to prompting or leading by the interviewer. The method adopted made use of an interview guide in the form of a multiple-part questionnaire which interviewers were required to follow uniformly. Interviews would begin with very vague, nondirective questions ("Please tell me precisely what you were about to do at the catalogue the moment I interrupted you."), in order to give the user full opportunity to state whatever he happened to regard as important or significant.

The underlying pattern of the interview identifying rather quickly the basic type of search which the user was about to make in the catalogue (for example, a search for the purpose of borrowing a specific known document; a search for finding documents on a specific subject; a search for the identity of documents from a specific source, as by a particular author or by a particular organisation; a search for descriptive bibliographic information regarding a known document without any intent of borrowing the actual document). Identification of this basic type of search would then determine which of several possible lines of questioning to follow in the remainder of the interview.

When it appeared that no more useful information could be gathered regarding the immediate search being conducted by the user, the interview would be terminated with a series of questions on the user and his personal background (but not his name). Background questions related to the user's status at Yale, his field of specialisation, the length of his residence in the Yale community, and the general level of his use of the Sterling Memorial Library and other libraries at Yale.

35 ITEMS OF INFORMATION COLLECTED

Questions asked during the main portion of the interview were intended to bring out everything of

possible document-finding value that the user knew about the material he desired at the time of starting his search. This would include, as appropriate, the type of document (whether an ordinary book, or periodical, report, etc), descriptive data (author, title, date, publisher, etc), physical characteristics of a document (size, colour), contents (index, illustrations, bibliography), terms in the name of subject, translation specification, edition specification, and so forth. The questions also established whether or not the user was already familiar with the material he wanted, how he had first learned of the existence of the material, the connection in which he wanted to make use of the material, and the particular clue which he intended to use to begin his search of the catalogue. Particular pains were taken to record descriptive data elements exactly as they were known to the user, taking nothing for granted: If the data came only from his memory, he was asked to spell out the name of the author and the longer title words; if the data came from class notes or duplicated lists which he had brought to the library, these were photocopied by the interviewer.

Both the Michigan and the Yale studies uncovered a great deal of information about the user of a card catalogue in search of his book. From the selected catalogue users, the following information

was obtained:

1 The user's status: undergraduate, graduate, special student, library science student, faculty, teaching fellow, university staff (except Library), university library staff, or other.

2 The user's school, department, or field of interest.

3 Whether the language of the work or information which the user was seeking was in English or a foreign language.

4 The subject on which the user desired a work or information.

5 The purpose for which the user came to the catalogue: class assignment, personal use, teaching, research, or other purpose.

6 The approximate date of publication of the desired work or information.

7 The object of this specific catalogue use: a specific work, information on a subject, bibliographic information, or other.

8 Which items on the catalogue card were used.

36 FOLLOW-UP

At Yale, at the conclusion of the interview, the user was left alone to complete his catalogue search.

However, he was observed discretely from a distance. The amount of time spent at the catalogue and the number of catalogue drawers searched were noted on the interview record. As the user was leaving the catalogue area, he was stopped again and asked whether his search had been successful. If the answer was affirmative, he was asked to let the interviewer copy any call numbers that he had found in the catalogue that satisfied his search needs. Users who were not certain whether their searches had been successful, but who were going elsewhere in the library to find out (usually these were people who had identified a potentially useful stack area by finding some representative class numbers in the catalogue and who intended to browse the stack for known and/or unknown documents) were given a self-mailing follow-up form on which they could conveniently note any call numbers that were subsequently found to satisfy their needs.

4 Objectivity in Study

Several months were spent at Yale in developing and testing the interview outline and technique before starting the full year's run of data collection for the project. Only very minor changes were made as the year progressed. Five individuals performed practically all of the interviews. A comparison of the results of interviews conducted by different interviewers was made about four months after the

start of the interviewing year; no serious biasing of results could be associated with the interviewers compared. Therefore the interviewing technique was judged to be quite objective, as had been hoped.

The interviewing schedule that was adopted at Yale provided for a maximum of some 2,700 interviews during the full year studied. Because of various random factors (for example, no user at the catalogue at the scheduled time and place, unexpected library closings, or illness of the interviewer), the number of interviews actually completed in the year was 2,134.

5 Findings

The numerous tables and charts in the two studies document the findings from their work. I have a series of slides which highlight these findings which it would be appropriate to show at this time.

51 TRAFFIC PATTERN

The traffic studies in the Lipetz study are unique and deserve special attention. Both the figures for catalogue use *and* borrowing are remarkably similar. They both show only two significant seasons: the regular academic year, and the summer vacation period. The activity pattern of the regular academic

year is punctuated by irregular declines that are associated with holidays and recesses, but the mean and median for the academic year appear to be very close. Even so, Dr Lipetz felt that the complexity of the traffic pattern strongly justified the original decision to conduct interviews throughout an entire year, with representative coverage of different days of the week, hours of the day, periods within the hour, and portals of entry to the catalogue area.

A clear pattern of the catalogue traffic variation with day of the week was observed, however. It can be seen that the rate of use of the catalogue is heaviest during the early part of the week, especially on Tuesdays, and that it is lowest on Saturdays and Sundays, as one would expect.

52 USER STATUS

Both studies found that more use is made of the library card catalogue by graduate students than by other classes of users.

Faculty rank below undergraduates and graduate students in terms of absolute use of the catalogue.

53 OBJECTIVES OF USE OF CATALOGUE

Most of the users seek a known item at the card catalogue. The Yale study differentiated between

four basic types of objectives in using the catalogue:

1 In a *document search* (often called a "known item" search), the catalogue user is aware of the existence of some particular book or other publication that he wants to locate;

2 In a *subject search*, the catalogue user is interested in both identifying and locating one or more documents pertaining to some known topic;

3 In an *author search*, the catalogue user is aware of the name of some author, publisher's series, or other source of literature and is interested in identifying and possibly selecting specific documents from that source; and

4 In a *bibliographic search*, the catalogue user is interested in using the catalogue itself to supply or verify bibliographic information regarding a known document; he is not interested in locating and using the document.

The distribution of searches among these four basic types is given in Table 1. The distribution was determined in two different ways, yielding two different results. The first column is based on the *immediate* objective of the catalogue user at the moment of his approach to the catalogue. Most of the questions asked during an interview pertained

to this immediate objective. The distribution of *underlying* objectives is given in the second column of Table 1.

531 Table 1. *Distribution of Search Objectives*

Search Type	Immediate, %	Underlying, %
Document	73	56
Subject	16	33
Author	6	6
Bibliographic	5	5
	100	100

About a third of the catalogue users are basically interested in subject or topical information, but that half of these users attempt to use a document search to make do for a subject search. In terms of underlying interest, document searches account for only 56 per cent (not 73 per cent) of catalogue use.

It is interesting to note that no significant variations in the distribution of search objectives with respect to season of the year, academic status of user, departmental affiliation, or newness to the Yale library were detected in this study.

54 OTHER FINDINGS AT MICHIGAN

The group at Michigan analysed their data a

little differently and came up with the following findings: The card catalogue is used primarily for academic purposes.

1 The catalogue is used most heavily for preparing class assignments.

2 Few patrons use the catalogue as a source of bibliographical data.

3 Few users seek foreign language materials; the proportion of users seeking them increases as the educational level increases.

55 FAILURE OF SEARCH

Both studies found that most users are successful in using the card catalogue. Only approximately 15 per cent of the searches turned up nothing at all or could be counted as unsuccessful. Yale analysed the 256 unsuccessful searches to learn more about the reasons for failure. Some 31 per cent apparently failed because of faulty search techniques or because of failure to persevere. The desired document was catalogued under entries known to the user at the time of the interview, but unfortunately he missed the clue! A table from the report shows this analysis of follow-up document searches.

56 USE OF THE ITEMS OF INFORMATION IN AN ENTRY

The use of different items of information on the

catalogue card was carefully analysed in both studies. The Michigan study by Palmer meticulously analysed the use of over twenty items and found that many items appearing on the catalogue card are seldom used. A hypothetical reduced computer catalogue would appear to meet the needs of most users of the card catalogue. Few users, they found at Michigan, would require more than a five-item catalogue, and the number of additional catalogue items desired increases slightly as the educational level of the patron increases.

57 MAIN ENTRY: LEADING SECTION

The Yale study found something very interesting for anyone who has considered challenging the right of main entry to be all important in library cataloguing. Their results would seem to show that neither the name of author nor the title of document has an overwhelming advantage as candidate for the leading section of the main entry and for preferred search approach. There seems to be an advantage to the title approach, but only a slight one. One can question why there is such a strong tendency for library users to approach the catalogue by name of author if the title approach is just about as good if not better.

6 Computer-Based Catalogue

The analysis of failures in searching the cata-

logue could not be compensated for in computerised catalogue, unless a near-human facility compensating for inadequacies in search clues were built in. The computer will fail to select unless it is given some definite programme that will cause it to ignore particular kinds of mismatches. Until such methods are available, Dr Lipetz concluded that it seems highly unlikely that computer methods of document finding will seriously rival document finding capacity of human beings. He recommended further intensive research work on the user of our catalogues and the relative-odds in usefulness and cost of including additional data elements in a computerized record. If, as Dr Palmer at Michigan found, a five-item catalogue record suffices, then we need to study the interface between the user and such a new catalogue before we proceed much further toward library automation.

7 Improving Catalogue Use

Having learned so much about the reader in search of his book, one of the most important conclusions seems to be that user-education or self-education methods need to be improved before our libraries can give efficient service. Increasing the complexity and accessibility of the catalogue offers comparatively little potential for improvement of

the success rate of searches currently attempted. Improving the convenience of the catalogue use might attract heavier use of the catalogue and the library collection. Providing access through a greater variety of title-like entries is a promising approach to helping document search. Filing by date within subject headings is a promising approach to helping search by name of subject. Data elements other than name of author, title, and subject are of most value in resolving many searches in which the entry clues are ambiguous or inaccurate.

With this much new information about the user, it is well to turn our attention to the next law of library science, and consider our techniques for every book finding its reader.



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