

The Uses and Limitations of Trueswell

A recent study at Polk Library of the University of Wisconsin-Oshkosh combined statistical and qualitative approaches. Trueswell's statistical method was employed, and, after correction of an apparent fallacy in his analytical procedure, it was found that the proportion of little-used materials in the collection was significantly less than shown in similar studies at other libraries. An examination of a sample of the little-used books showed that, even though Polk Library is a relatively young collection, obsolescence is more important than inappropriate selection as an explanation for unused materials.

FOR THOSE INDIVIDUALS associated with academic libraries, the current "tax revolt" is not a complete novelty. A stock figure of the 1970s has been the politician or administrator who wonders out loud if the library is really cost-effective, if acquisitions, particularly of books and periodicals, couldn't be curtailed without any real harm to academic programs. Various statistical studies—notably the work of Richard Trueswell (as popularized by Daniel Gore and Stanley Slote) and the Pittsburgh study directed by Allen Kent—have encouraged speculation that library service as American colleges and universities have known it is an extravagance.¹

Hard times usually bring a few benefits, of course; and it seems certain that libraries will be made wiser if not wealthier by the new austerity. If we are to get the funding necessary to provide even minimally satisfactory service, we must be able to justify that service with a new thoroughness, using every valid procedure that we have to analyze and describe every aspect of our operations.

One luxury to which we have been partial and that we can no longer afford is a tendency to "choose up sides" on the question of whether in managing collections we should use quantitative, statistical procedures or

qualitative procedures that rely on human judgment.

It has clearly been a fundamental assumption that quantitative and qualitative methods are incompatible. The two most widely used texts for library science courses in materials selection, Carter, Bonk, and Magrill's *Building Library Collections* and Robert Broadus' *Selecting Materials for Libraries*, dismiss the quantitative approach as one more dubious version of a "demand" philosophy of collection building.² Gore and Slote, on the other hand, find the qualitative approach both unscientifically subjective and a proven failure in practice.³

PURPOSES OF A USE STUDY

In planning a use study at Polk Library at the University of Wisconsin-Oshkosh, staff decided to try to combine the quantitative and qualitative approaches. The study had three specific purposes.

First, we wanted to take another critical look at the statistical procedure developed by Richard Trueswell and, if possible, use that procedure to get an overall understanding of how our collection was being used. The Trueswell procedure seemed to be a practical way to obtain the kind of information we needed; but we were aware that many librarians, including some on our own staff, were skeptical and even frightened of it, largely because of the sensational claims by Trueswell and Gore that libraries could dispose of more than half their collections without noticeably affecting their service.

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However, it seemed to us that the approach and the claims could not be ignored. Is the procedure sound? Does it lead to the conclusions that have been claimed?

Second, we wanted to follow up a quantitative study with a qualitative investigation that would try to determine why some materials were infrequently used. Trueswell, Gore, and their followers have generally assumed that to show that a book is little used is both to describe a problem and to imply the solution: get rid of the book. But it seemed to us that it is equally important to know whether the book was inappropriate in the first place—too technical to be useful for our largely undergraduate programs, for example—or whether it had become obsolete. If we had a large proportion of inappropriate books in our collection, we should obviously reconsider our selection policies. If our little-used books were mostly obsolete, on the other hand, our selection policy would be exonerated, but the case for getting rid of the books would be more compelling.

Our third concern was to make a use study at an institution of our particular kind. Previous use studies have focused on large research libraries, special libraries, the libraries of small liberal arts colleges, and public libraries.⁴

The University of Wisconsin-Oshkosh, however, is typical of the scores of public colleges and universities that evolved out of normal schools or were newly established during the 1950s and 1960s. Like most such schools, Oshkosh is primarily concerned with undergraduate instruction. Its library has a relatively young collection that has been growing rapidly: more than half its 400,000 volumes have been acquired since 1969. To what extent can the patterns of use in a library of this kind be expected to match those that have been found elsewhere? More generally, to what extent do specific aspects of Trueswell's procedure provide a valid basis for comparing libraries with different histories and different purposes?

FIRST PHASE: THE TRUESWELL PROCEDURE

Common sense tells us that the longer a book has sat on the shelf without being

used, the less the likelihood that it will be used in the future. Richard Trueswell's procedure, for those not familiar with it, assumes that this principle provides the best way of estimating the amount of future use that a particular book will get.

Trueswell was not the first to call attention to the usefulness of "shelf time" as a statistic. Herman Fussler and Julian Simon in their use study at the University of Chicago had shown that shelf time is a better predictor of future use than the age of a book, the length of time it has been owned, or its language.⁵ It was Trueswell's particular contribution to develop a workable procedure by which shelf time can be related to the circulation patterns of individual libraries.

The first step in the Trueswell procedure is to record the library's circulation for several sample days, recording on a separate card for each book checked out the date of its most recent previous circulation. If the book has not circulated previously, the date that it was first available for circulation is recorded, or the best possible approximation. In our study we recorded student and faculty circulation separately for six sample days. The days were chosen to be representative of different kinds of days in our academic calendar—regular session weekdays and weekends, out-of-session days, and summer school days. In the end, our results did not show that the pattern of use varies significantly with the kind of calendar day. Nor—perhaps more surprising—did the pattern of student use seem to differ significantly from the pattern of faculty use.

When we finished collecting the data for this part of the study, we arranged the cards for each sample day in order of the dates of previous circulation. The results were then cumulated so that all 1,371 titles were classed according to the time since they had last circulated, or since they were added to the collection. The results are shown in table 1.

The results so far were not very meaningful in themselves, because at this point we had no way of knowing what proportions of the books in the collection had accumulated various shelf times. The fact that 64 percent of circulation consisted of books that had a shelf time of one year or less confirmed our

TABLE 1
SIX DAYS' CIRCULATION GROUPED BY SHELF TIME

Shelf Time	Books Checked Out Previously*	Checked Out for First Time	Cumulation for Time Period	Cumulation as Percent of Total Sample (1,371)
0-30 days	157		157	11
30-60 days	140		297	22
60-90 days	95		392	29
90 days-6 months	190		582	42
6 months-1 year	235	62†	879	64
1 year-18 months	118		997	73
18 months-2 years	78	44	1,119	82
2-3 years	81	24	1,224	89
3-4 years	45	6	1,275	93
4-5 years	35	9	1,319	96
5-6 years	12	6	1,337	98
6-7 years	7	8	1,352	98.6
7-8 years	5	3	1,360	99.1
8-9 years	2		1,362	99.3
Before 9th year	1‡	8	1,371	100

*In the Polk circulation routine at the time the data were collected the date that a book was returned from circulation was stamped in the book. Shelf time here is calculated using that date.

†Polk Library records do not indicate the date that a book was first made available for circulation; consequently, figures in this column are estimated from years of accession and may be off by 5 percent or so.

‡The distribution of first-time and previous checkouts for before the ninth year is probably not accurate as circulation records appear to be incomplete.

original supposition that some books circulate much more frequently than others. But to get a more exact idea of how the collection was being used, it was necessary to look at the circulation records of a representative sample of the books in the collection.

A FALLACY IN TRUESWELL?

As we were planning the second phase of our study, however, we became aware of a significant fallacy in Trueswell's method of analyzing his data. In his original work, using essentially the procedure we have described, Trueswell studied the circulation patterns at Deering Library, which is the main research library at Northwestern University, and at Northwestern's Technological Institute Library. At Deering he found that 99 percent of the books circulated had accumulated a shelf time of twenty years or less, while the figure for the Tech Library was eight years or less. His next step was to compute the total number of books that had circulated at least once during the previous twenty years at Deering and during the previous eight years at the Tech Library.⁶ By doing this, he reasoned, he had established the size of a "core collection" that "should satisfy over 99 percent of circulation requirements."⁷ It was this computation that led to his claim that "it was found that

approximately 25 percent of the current holdings of the Tech Library should satisfy over 99 percent of the current circulation requirements. Similarly, a figure of about 40 percent was obtained for the Deering Library."⁸ This claim, in turn, is the basis for Daniel Gore's assertion that "at least half the collection may be removed without perceptibly affecting the availability of books that people will actually read."⁹

Trueswell's meaning is not completely clear at this point, but his computation is either meaningless or fallacious. If he is claiming only to have established the size of the core, then his point comes down to no more than an assertion that, if other factors remain the same, about the same number of books will circulate during the next twenty years as circulated during the past twenty. But if he means that those particular books that have circulated during the past twenty years are more likely to circulate in the future than are the other books in the collection—this is the usual interpretation—then he is wrong.

He has, in effect, established two categories: (1) a core that includes all books that have circulated during the past twenty years (or whatever shelf time has been established) and (2) all others. Books that have not circulated at all, it will be noted, are

excluded from the core regardless of how long or short a time they have been available for circulation. But we have been given no reason to suppose that a book that has been in a collection for a year or two without circulating is less likely to circulate in the future than one that circulated fifteen years ago and has not circulated since.¹⁰

To put the point slightly differently, Trueswell's error was to use the shelf time of all books that circulated in making his first calculation, but then to shift his criteria and consider only books with at least one previous circulation when defining his "core."

SECOND PHASE:

SAMPLING THE COLLECTION

At this point it should be obvious that the categories that can be validly established on the basis of Trueswell's procedure are (1) the little-used books—those that were in the collection previous to some established cut-off date and have not circulated since—and (2) all others. For the second part of our study we decided to follow Trueswell and assume that those books should be counted as central to a library's collection that can be expected to account for 99 percent of current use. As table 1 shows, about 99 percent of the books that circulate at Polk have accumulated a shelf time of less than 7½ years; all books with a shelf-time longer than this, consequently, could be counted as little used.

As a sample for the second part of the study, we drew 800 titles at random from the shelflist and, as a cross check, an additional 400 from the title section of our divided card catalog. These 1,200 books were checked, insofar as they could be found, and their dates of most recent circulation were recorded. The results of this part of the study are given in table 2.

In other words, as shown in table 2, only about 12 percent of those books we were able to locate could be classified as little used according to the most reasonable application of Trueswell's procedure. Even allowing for our correction of the computation, this seemed to be a smaller proportion of little-used materials than Trueswell had found at any of the libraries he had investigated, and so it seemed to imply a distinctly

TABLE 2
RANDOM SAMPLE OF ITEMS FROM
COLLECTION GROUPED BY RELATIONSHIP
TO 7½-YEAR CUTOFF

Category	Number in Category	Percent of Number Located (n=1,096)
Could not be located:	102	—
Acquired since 7½-year cutoff:	618	56.3
Purchased before cutoff and circulated since:	351	32
Purchased before cutoff, not circulated since:	129	11.8

favorable judgment of the relationship between our collection and the needs of its users.

PROBLEMS IN COMPARING LIBRARIES

Up to a point, our acquisitions staff probably can take satisfaction in our results. But a consideration of all the information we had accumulated up to this point suggests a more basic conclusion: the Trueswell procedure must be used with great caution when one library is compared with another.

In his research at Northwestern, as we have seen, Trueswell found that at Deering, a large research library, the shelf time necessary to account for 99 percent of circulation was twenty years, but at the Tech Library only eight years. On the basis of both these results and common sense, we are likely to guess that if the shelf time necessary to account for a given percent of use is relatively short, it indicates an uneven pattern of use, with part of the collection, probably a rather small part, getting heavy use and a large part getting little. If a long shelf time is necessary to account for a given percent of use, on the other hand, we would expect a more even distribution of use, with a large proportion of the collection being used occasionally.

But our Oshkosh figures show that such an inference would be wrong, or at best premature. At Polk we found on the one hand that a shelf time of only 7½ years could account for 99 percent of circulation, but on the other hand we found that a relatively small proportion of our collection

could be classified as little used. The explanation for this initially surprising result is obvious from table 2.

Since the size of our collection has more than doubled in the past eight years, the collection is relatively young. This rate of doubling can hardly be expected to continue, of course; and as it slows, the proportion of older books in the collection will inevitably increase. This, in turn, seems certain to have two results: the shelf time necessary to account for a given proportion of circulation will increase as the average age of the items in the collection becomes greater, but at the same time the proportion of the collection consisting of books that are little used because of obsolescence will also increase.

As a readily acquired statistic, the shelf time necessary to account for a given proportion of use is an extremely valuable part of an attempt to understand and judge the effectiveness of library collections. But it does not by itself provide an indication of what the pattern of use is in a particular library, nor does it by itself provide a valid basis for comparing libraries.

Not only the age of collections but also such factors as the predominant use—graduate research as opposed to assigned readings for undergraduates, for example—and the amount of use that is made of books in various subject areas must be taken into account in making comparisons. The different patterns of use that Trueswell found at Deering and at the Tech Library, for example, presumably resulted at least in part from the tendency of scientists and engineers to make heavy use of more recent materials.

WHY ARE SOME BOOKS LITTLE USED?

The third phase of our study was an attempt to determine the most important reasons why some books in the collection were not being used. Since they were already chosen and made a convenient number, we used as a sample the 129 books that had been identified as little used in the preceding phase of the study. In carrying out this part of the study, we were interested not only in the results, but in the practicality of using the procedure for weeding. Would it require time-consuming research on indi-

vidual titles? Could the classification involved be done with reasonable accuracy by professional librarians who did not have subject-area expertise?

We began this part of the study with the tentative assumption that we would be able to classify the books in the sample according to one of three main reasons for their not being used: their subject matter might be irrelevant to the curriculum of the school and to the interests of students and faculty, they might be obsolete, or they might be highly specialized in their subject matter. Early in the study we decided to add a fourth major category: out-of-fashion art and literature. Later, as we shall see, it seemed desirable in practice to elaborate the scheme into a few subclasses.

We found fewer books than expected that seemed to fit none of the categories and fewer than expected that seemed to belong to more than one. In the end, in fact, no books seemed to demand classification into more than one category. The number of "irrelevant" books was also smaller than expected, and there seemed to be little difficulty in identifying them. Distinguishing the "obsolete" from the "specialized" was more difficult, and we soon found ourselves trying to define "obsolete" in a way that would be appropriate to the kind of research library we were studying.

The Obsolete

According to one school of thought, of course, no book is obsolete from the standpoint of a research library, as a use can always be found for any given book in some hypothetical research situation. But even for a research library there is clearly a sense in which some books can be counted obsolete—a thirty-year-old psychology text, for example, or a book from the 1930s by an author of no intrinsic interest that is arguing the merits of Prohibition.

The critical fact about such books, it seemed to us, is that they do not have information about their subjects that is both significant and unique: they tell us nothing important that is not told as well or better in other, usually more recent books. In some research situations such books can be vitally useful, but only as examples of their types. And it is characteristic of such re-

search situations that researchers must have access to all books of the type they are interested in, or at least to a large number that are known to be representative.

Historians investigating the treatment in American high school history texts of the relationship between the United States and Panama, for example, could not be satisfied with looking at a few old textbooks that they happened to find in a library where they were working. At a minimum they would need to have access to a substantial proportion of all the high school history texts published in the United States during the past several decades. For the convenience of researchers as well as librarians and library browsers, it makes sense that books likely to be used only in this way should be kept only in a few large depositories.

The books that we finally judged "obsolete" broke down into two clear-cut subcategories.

The first included "superseded" works—old textbooks, reference manuals and the like, and older editions and translations of books of all kinds that had been superseded by newer versions.

In the second subcategory were books of "outdated controversy"—books from the 1930s and 1940s on tariff policies and international cooperation that had no significance as firsthand testimony to events, for example.

One factor that helped in this part of the classification is the direct relationship that generally pertains between the extent to which a book provides general coverage of a broad subject area and the speed with which it becomes obsolete. Typically, the basic purpose of a general book is either to present in a series of broad statements the structure of knowledge in a field as it is understood at the time of writing, or else to present in the form of a handbook the most commonly used quantitative data in a field.

In any field where active research is going on, some of the broad statements and bits of data are continually being proved wrong or, more frequently, misdirected in emphasis or incomplete. Because they are open to correction at so many points and also, of course, because they are so much used and in such great demand, general surveys are usually superseded in a relatively short time. It was relatively easy for

us to single out a large, well-defined group of general books that were clearly not being used because they were obsolete.

The Specialized

The "specialized" books seemed to fall into three subclasses.

First was a group rather like the "outdated controversy" subclass in that most of its members had once had a broad appeal that they had since lost. But they differed in that they seemed to have retained significant information value for some kinds of research, sometimes because they contained significant eyewitness testimony about significant events, sometimes because they were written by persons who themselves were of historical interest. We labeled this group with the rather inadequate phrase "historical sources, etc.," among the items in it were *The New Reformation*, by the physicist Michael Pupin; *East of Siam: Ramblings in the Five Divisions of French Indo-China*, by Harry A. Franck; and Henry Seidel Canby's *Alma Mater: The Gothic Age of the American College*.

Most of the remaining books in the "specialized" category were technical works of scholarship; but it seemed worthwhile to make a separate subclass for the small number of books whose failure to circulate appeared to be attributable partly to their being in a foreign language.

The results of the third part of our study are shown in table 3.

TABLE 3
LITTLE-USED BOOKS AND
PRESUMED REASONS FOR LACK OF USE

Reason	Number
No obvious reason	2
Irrelevant	5
Out-of-fashion art and literature	23
Obsolete	
Superseded	27
Outdated controversy	8
Specialized	
Historical sources, etc.	27
Technical, scholarly	33
Foreign language	4

Inevitably, the classification involved some arbitrary decisions. Other persons working

with the same group of books might have developed a somewhat different classification scheme. Given the same classification scheme, they would probably have come up with somewhat different results—but not, we think, with dramatically different results.

CONCLUSIONS

What does this part of our study show? It would seem that the lack of use of the books in all our categories except “irrelevant,” “technical, scholarly,” and “foreign language” results from processes of change—the growth of knowledge and shifts in taste and interest—that are beyond the control of the library. Only items in these three categories, in other words, can be taken as reflecting on past acquisition policies.

No acquisition policy, obviously, can anticipate future needs perfectly: we can be sure of buying nothing superfluous only if we refrain from buying much that is needed. That only forty-three items—less than 5 percent of our sample of 1,098—have turned out to be bad investments suggests that, even on the basis of a rather narrow criterion of usefulness, our past performance has been acceptable.

Ours is only one library, but we have no reason to suppose that our faculty and staff have any unusual prescience in acquisitions matters. At least for our library and probably for others of our type, these results seem to call in question the recent series of claims that a very large proportion of most library collections are little used and that a

large proportion of acquisitions are superfluous.

As we have suggested, as our collection becomes older, the proportion of little-used materials will almost certainly increase. But that increase will result in the main from materials' becoming obsolete, and the materials will become obsolete, of course, whether or not new ones are purchased.

By combining the quantitative and qualitative approaches to collection study, we have learned things that we could not have learned from either taken alone. In a more qualified way, our experience suggests that such a combined approach is practical for weeding projects that must deal with entire collections rather than samples. Such we would rest on the assumption that the kind of books we have called “obsolete” should be stored or discarded before the “specialized.” The relatively small subclass of “outdated controversy” was difficult to separate from the more useful “specialized” books, and in most cases we think the benefits would not repay the effort. The much larger subclass of “superseded,” on the other hand, was relatively easy to pick out.

Rather than adopting a strictly quantitative approach and discarding or storing all books that have not circulated in twelve years, for example, a library—particularly if it has an automated circulation system—might be well advised to identify all books that have not circulated in six years and select for storage, or discard, only those that obviously fit the “superseded” category.

REFERENCES

1. Richard W. Trueswell has given his research with respect to book collections, which was originally published in a series of articles during the 1960s, an apparently definitive summary in “Growing Libraries: Who Needs Them? A Statistical Basis for the No-Growth Collection,” in Daniel Gore, ed., *Farewell to Alexandria* (Westport, Conn.: Greenwood, 1976), p.72–104. Gore elaborated on the application of Trueswell's approach in “The View from the Tower of Babel,” *Library Journal*, 100:1599–1604 (1975), and in the title essay of the aforementioned *Farewell to Alexandria*, p.164–80. Stanley S. Slotte summarizes Trueswell's research along with his own in *Weeding Library Collections* (Littleton, Colo.: Libraries Unlimited, 1975), p.67–70, 76–93. Thomas J. Galvin and Allen Kent provided a preliminary report in “Use of a University Library Collection: A Progress Report on the Pittsburgh Study,” *Library Journal* 102:2317–20 (1977), with the final report published in the volume *Use of Library Materials: The University of Pittsburgh Study* (New York: Marcel Dekker, 1979).
2. Mary Duncan Carter, Wallace John Bonk, and Rose Mary Magrill, *Building Library Collections*, 4th ed. (Metuchen, N.J.: Scarecrow, 1974), p.164–65; Robert N. Broadus, *Selecting Materials for Libraries* (New York: Wilson, 1973), p.21.
3. Gore, “The View from the Tower of Babel,” p.1600, 1604; Slotte, *Weeding Library Collections*, p.20–21, 35–38.

4. Trueswell studied two large research libraries, a special library, and the library of a small liberal arts college. Herman H. Fussler and Julian L. Simon did a more elaborate study of a large research library, *Patterns in the Use of Books in Large Research Libraries* (Chicago: Univ. of Chicago Pr., 1969). Slotter described his studies of several public libraries in *Weeding Library Collections*, p.76-93, 117-65.
5. Fussler and Simon, *Patterns in the Use of Books*, p.31.
6. Trueswell, "Growing Libraries," p.84-85.
7. *Ibid.*, p.85.
8. *Ibid.*
9. Gore, ed., *Farewell to Alexandria*, p.173.
10. Fussler and Simon found that, of books that have accumulated equal shelf time, those that have never circulated have somewhat less chance than those that have circulated of being used during a given period in the future (*Patterns in the Use of Books*, p.32-33); but the difference is clearly not great enough to justify Trueswell's procedure.