

Collection Growth and Expenditures in Academic Libraries: A Preliminary Inquiry

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These data, from a group of liberal arts college libraries as well as from the much more scrutinized ARL libraries, raise important questions about certain articles of faith in academic librarianship. These questions relate to: the "doubling time" of library collections; the "60-30-10" division of library expenditures; the growing robustness of materials expenditures as a percentage of total expenditures, especially among the college libraries; and the phenomenon of increases in total expenditures considerably exceeding increases in major price indexes.

"That most librarians dislike statistical records is patent. But without figures capable of intelligent interpretation, we are seriously handicapped indeed. William Thomas Kelvin expressed the need adequately and succinctly, '... when you can measure whatever you are talking about, and express it in numbers, you know something about it.'"
—Lawrence S. Thompson, 1945.

"It is essential that more be known about the present use and management of library budgets."—Warren J. Haas, 1986.¹

Generalizations about academic libraries in the United States are frequently based on data from or experiences in those libraries which are members of the Association of Research Libraries. In order to examine data related to collection growth, expenditures, and automation, I wanted to give my attention to another group of libraries which have collected and shared data for more than twenty years. These are the schools on the so-called "Bowdoin List" of liberal arts college libraries, a group taking its name from the institution whose library director has compiled the statistics since 1967. Examining data and trends among these college libraries should be useful not only in itself, but also in carefully generalizing about other

groups of academic libraries, and in comparing trends with the ARL libraries. In time, perhaps, other researchers will study other groups of academic libraries. These studies will lessen our dependence on the *ARL Statistics* for generalizing about aspects of academic librarianship.

This article is divided into several parts. Sections I through V present the statistical data from the Bowdoin List libraries and compare them with ARL data, both to illustrate and to serve as the basis for discussing significant trends in two important sectors of academic librarianship. Section I covers collection growth, while Sections II through V examine data related to various categories of expenditures, both for the ARL and the college libraries. A subsequent article will report on the state of automation among this group of college libraries.

THE BOWDOIN LIST LIBRARIES

From 1943 until 1960, the Association of College and Research Libraries published library statistics for colleges and universities. The statistics for 1958/59, published in 1960, comprised the last such compilation because ACRL turned the task over to the federal government

and the HEGIS reports.² Soon afterwards, in 1962, the Association of Research Libraries began the annual publication of its members' statistics, and five years later a group of college libraries began to share their statistics with one another.³

In 1967, Richard Harwell, Librarian at Bowdoin College in Brunswick, Maine, prepared a list of thirty-seven college libraries from which he solicited annual statistics to compile and share with the contributors. The first Bowdoin List of library statistics covered the 1966/67 academic year.⁴ It has since been continued annually, with Arthur Monke assuming responsibility for its compilation after he succeeded Harwell as director at Bowdoin. Over the years the list grew to include forty-two institutions (see figure 1).

The colleges on the Bowdoin List are widely recognized as among the most prestigious liberal arts colleges in the country. They are all private institutions, are primarily undergraduate, exercise a high degree of selectivity in admissions, and are nonsectarian. They are also relatively small; in the first year of the Bowdoin List, enrollments ranged from 1,865 at the largest school to 842 at the smallest, with a median of 1,267. Twenty years later the range was between 3,453 (for Bucknell, which had not been on the list at the outset) and 479, with a median of 1,532. As one director commented to me, "It is not an objectively determined list, but it is a very useful list, convincing to administrators and faculty."

Thus, the Bowdoin List college libraries constitute a fairly homogeneous, self-identified group. No attempt is made here to claim that they are "typical" academic or college libraries. Studies of groups of libraries in addition to those which are members of the Association of Research Libraries, the Bowdoin List, and the relatively new "ACRL University Libraries" list would likely give us a fuller understanding of the various sectors in academic librarianship.

METHODOLOGIES

After securing a complete set of the

Amherst*
 Antioch
 Bates
 Beloit*
 Bowdoin*
 Bryn Mawr
 Bucknell*
 Carleton*
 Colby*
 Colgate*
 Connecticut*
 Davidson*
 Dickinson
 Earlham*
 Franklin & Marshall*
 Grinnell*
 Hamilton*
 Haverford*
 Hollins
 Knox
 Lafayette*
 Lawrence*
 Macalester*
 Middlebury*
 Mills*
 Mount Holyoke*
 Oberlin*
 Occidental*
 Randolph-Macon*
 Reed*
 Smith*
 Swarthmore*
 Trinity (Connecticut)*
 Union*
 University of the South*
 Vassar*
 Wabash*
 Washington & Lee
 Wellesley*
 Wesleyan*
 Wheaton*
 Williams*

*Indicates a response to the survey.

FIGURE 1
 The Bowdoin List Institutions

Bowdoin List data since 1966/67, a data sheet was prepared for each library, filling in for each the collection size, expenditures for salaries and wages, for materials, total expenditures, "other"

expenditures (the total less the sum of salaries/wages and materials), and for size of staff.⁵ A questionnaire was also prepared to elicit any additions or corrections to the data (a substantial amount of each was received), as well as information concerning: how various expenditure categories were reported; the status of automation or plans for automation; how automation was being financed; and how the directors felt about the shifts in categories of expenditures.⁶

After the survey was "piloted" with several library directors and other individuals, it was sent to the directors of the forty-two Bowdoin List libraries. Thirty-five were returned, for a response rate of 83%.

In addition to the survey, I received a considerable amount of information during personal interviews of library directors at twenty-two of the colleges. It is evidence of their willingness to be helpful, and perhaps to some extent of their interest in the project, that not a single director declined to be interviewed or was unavailable because of scheduling conflicts.

To describe statistically the "typical" library for any given variable (rate of collection growth, materials expenditures as a proportion of the total, etc.), the median, that point on an arrayed scale where half the observations fall above it and half below, was chosen as the measure of central tendency. This has been the method used by the Association of Research Libraries for many years. The median was also supplemented with the "interquartile ranges," those points which lie halfway in each direction between the median and the farthest observation. Hence, readers can quickly determine the values which incorporate three-fourths of the observations, from an (unknown) end point value through the value expressed by the quartile on the opposite side of the median.

Because it was desirable to include the 1960s within the coverage of this study and because neither the Bowdoin List nor the *ARL Statistics* existed at the beginning of that decade, other sources of information had to be consulted in order

to capture the data for 1960/61. For the colleges, I relied on the *American Library Directory*, 1962 and obtained data for thirty-three of the forty-two Bowdoin List college libraries in 1960/61.⁷ In that same volume, five other colleges on the list reported data for 1959/60 and four for 1961/62; these were not used. For information about collection size among the research libraries, a list of the forty-two largest university libraries in the country was used, compiled by staff at Princeton University and entitled "Statistics for

George Piternick's sensible observation is worth repeating: 'Statistical inference always involves risk; it is essential, therefore, that any inference be made with much care and some humility.'

College and University Libraries for the Fiscal Year 1960/61."⁸ Because total library expenditures were not provided in the Princeton statistics, this article contains no 1960/61 financial data for the forty-two research libraries.

A CAUTIONARY NOTE ABOUT LIBRARY STATISTICS

Library statistics can be misleading and need to be approached cautiously. Those used in this article are certainly no exception. George Piternick's sensible observation is worth repeating: "Statistical inference always involves risk; it is essential, therefore, that any inferences be made with much care and some humility."⁹

One problem with statistics is the likelihood of errors, ranging from minor and occasional to major and frequent. These can occur at the time of the initial counting, or when first recording the count, or when the number is transcribed at any of several stages, including the final compilation within the library or the compilation by the organization or individual issuing the statistics for a group of libraries. For example, in one edition of

the *ARL Statistics* a library's expenditures are recorded as follows: \$738,188 for materials and binding; \$1,088,292 for salaries and wages; \$34,819 for other operating expenditures; and total expenditures of \$1,123,101.¹⁰ It is clear that an error was made somewhere. When errors are noticed subsequent to publication, errata sheets are sometimes issued.

In addition to errors is the more subtle issue of definitions and categories, over space and over time. Within a group of libraries there will be, at least initially, different opinions about what items should be included in a given category. For instance, in reporting the number of volumes held, should the figure be the bibliographic or the physical count? Should the total reflect just the number of books and bound periodicals, or should it also cover government documents, microform pieces or volume equivalents, or other formats? Should the figure for total expenditures include fringe benefits (which appear on the library's budget sheets at some institutions but not at others)? If so, should the fringe benefits be included as a portion of the reported expenditures for salaries and wages? Not only will these practices of recording and reporting data vary somewhat between libraries, but over a period of time they may well vary even at the same library, either with changes in administrators or with the same administrator deciding (or complying with the request of the extramural compiler) to report the figures differently.

The college library statistics, like their well-studied ARL counterparts, do reflect some differences of definition. The data from several of the libraries over time have shown considerable fluctuations in the numbers of volumes reported. These fluctuations reflect, at least in part, not only weeding (a practice rarely found to a significant degree in research libraries) but also redefinition of what to include in the volume count. Moreover, of the thirty-four library directors responding to a question about reporting fringe benefits, seventeen do not presently include fringes in total expenditures. Of those seventeen

who do, seven report them as part of the salaries and wages expenditures (thereby obtaining a larger percentage for that category of expenditure and a smaller percentage for "other"). There are also significant differences between institutions in terms of what benefits they offer. The important point to make, however, is that few of the libraries appear to have changed the way they handled fringe benefits or student wages between 1967 and 1987. Hence, it is doubtful that such changes have had much impact on the trends described in this article. Beginning with the 1987/88 compilation, however, the Bowdoin List library directors were asked by the compiler of the statistics to include their student wages as a portion of their regular salaries and wages, with the result that salaries/wages as a proportion of total expenditures rose from a median of 42.5% in 1986/87 to 44% in 1987/88, while the "other" category declined from 18% to 17.5%. Materials remained unchanged at 38%.

One change I made involved the number of staff reported for the ARL libraries for some of the years. Before 1974/75, the ARL statistics for staff excluded student workers; in that year they were included and have continued to be. The Bowdoin List data have always excluded student workers from the staff count, capturing their contribution in an "hours of student assistance" category. Hence, for the earlier years of the ARL statistics, FTE student workers were added to the staff figures, resulting in an adjusted figure that makes those years comparable with later ones.¹¹

A common problem in analyzing data from a group of institutions over a period of time is that in one year some institutions are included and in another year they are not. The result is that, in effect, one is comparing different groups of institutions. Thus for each of the tables in this report, data for an institution are included only if that institution's data are also included for each of the years being compared in that table. Consequently, I am not including any library that joined ARL after 1967, which can have an im-

fact on the results one obtains and perhaps on the conclusions one reaches. For example, the median total expenditures figure for sixty-eight ARL libraries grew by 463% between 1967 and 1987. When the 1967 median expenditure is compared to the median expenditure of all 106 ARL libraries in 1987, the increase is only 377%. There were seventy ARL libraries in 1967, sixty-nine of which have retained that status.

I. COLLECTION GROWTH

It has been forty-six years since the appearance of Fremont Rider's *The Scholar and the Future of the Research Library*, in which the author observed that research libraries seem to double every sixteen years or so. Rider's thesis has enjoyed a durable and tenacious credibility; as recently as 1985 Warren Seibert referred to Rider's "near-venerable findings."¹²

Alabama	Nebraska*
Arizona	New York/Buffalo
Boston U.	New York University*
British Columbia	North Carolina*
Brown*	Northwestern*
California/Berkeley*	Notre Dame
California/Los Angeles*	Ohio State*
Chicago*	Oklahoma University
Cincinnati*	Oregon
Colorado*	Pennsylvania State
Columbia*	Pennsylvania University*
Connecticut	Pittsburgh
Cornell*	Princeton*
Duke*	Purdue*
Florida State	Rochester*
Florida University*	Rutgers*
Georgetown	St. Louis University
Georgia	Southern California
Harvard*	Southern Illinois
Illinois*	Stanford*
Indiana*	Syracuse
Iowa State*	Temple
Iowa University*	Tennessee
Johns Hopkins*	Texas A&M
Joint University*	Texas University*
Kansas*	Toronto
Kentucky*	Tulane
Louisiana State*	Utah
Maryland	Virginia*
M.I.T.*	Washington State
McGill	Washington University, Missouri*
Michigan State*	University of Washington*
Michigan University*	Wayne State
Minnesota*	Wisconsin*
Missouri*	Yale*

*Indicates inclusion on the 1960/61 list.

FIGURE 2
The ARL Institutions in 1966/67

Although virtually all of the subsequent literature on collection growth has focused on the larger university libraries, Rider himself was not so limiting, notwithstanding his book's title. In the book, the first table records collection growth in ten American men's college libraries (including Wesleyan, Amherst, and Bowdoin), while the second provides similar information for five

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libraries at American women's colleges (Smith, Vassar, Wellesley, Bryn Mawr, and Mt. Holyoke); thirteen of these fifteen are today Bowdoin List libraries. And just several pages later the author stated categorically: "In fact, this may be asserted as almost axiomatic: unless a college or university is willing to be stagnant, unless it is willing *not* to maintain its place in the steady flow of educational development, it *has* to double its library in size every sixteen years, or thereabouts."¹³ By this exacting stan-

dard, a number of institutions have fallen short.

Data on collection growth between 1967 and 1987 were obtained for thirty-eight of the Bowdoin List libraries, by taking those data from the annual compilations and also by receiving additions and corrections from many of the thirty-five directors who responded to the survey. These libraries ranged in size in 1967 from 636,437 volumes for the largest to 92,892 for the smallest; by 1987, the figures were 996,222 and 151,989 respectively. Table 1 provides a summary of the size of collections.¹⁴

In the twenty years between 1967 and 1987, ten of the thirty-eight college libraries doubled or more than doubled the size of their collections (including the library whose collection grew by 99%). As shown below, the median of the increase in collection size over the twenty-year period was 74.5%. For the first of the two decades, the growth was slightly greater than in the second, with median percentage increases of 33.5% and 30% respectively. Table 2 summarizes the data.

Calculating from the beginning of the 1960s adds considerably to the number of college libraries which at least doubled the size of their collections by 1987. If two libraries that increased by 98%

TABLE 1
NUMBER OF VOLUMES, 1967 TO 1987,
THIRTY-EIGHT COLLEGE LIBRARIES

	1966-67	1976-77	1986-87
Q ₃	317,342	417,920	530,327
Median	222,051	309,299	395,021
Q ₁	173,172	231,017	309,115

TABLE 2
PERCENTAGE INCREASES IN NUMBER OF VOLUMES 1967 TO 1987,
THIRTY-EIGHT COLLEGE LIBRARIES

	1966-67	1976-77	1986-87
Q ₃	49.5	35	97
Median	33.5	30	74.5
Q ₁	26	18	54.5

Note: For this and subsequent tables showing percentage increases, the procedures followed were the same: calculating the percentage increase for each library for the indicated period; arraying the percentages in descending order for each period; identifying the median of the array, and the third and first quartiles. When a mid-point falls between two data points, the value is reported as the average of those two points. By comparison, the median collection size, as opposed to the median percentage of growth, rose by 78% over the twenty years, 30% in the first decade and 28% in the second.

and 99% are counted, there are twenty-one of them, or about two-thirds. (Data for six of the thirty-eight libraries described in tables 1 and 2 were not available for 1960/61.) (See table 3.)

Naturally, research libraries add many more volumes each year than do college libraries. As shown by these data, their collections also have tended to grow at a more rapid rate. This result is, or course, more difficult with a larger number of volumes on hand at the beginning of the measurement period. (As one college library director stated, "Of course we doubled in size over that period of time; we didn't have very much to start with.") Of sixty-nine ARL libraries, thirty-six grew by 100% or more between 1967 and 1987, while thirty-three did not. Tables 4 and 5 provide summaries.

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The increase between 1967 and 1977 was considerably greater than in the subsequent decade.

Going back to 1960/61, and to a smaller group of the forty-two largest research libraries, all but five of them doubled the size of their collections by 1986/87; of those five, Harvard grew by 65%, Yale by 87% and the other three by between 91% and 95% (see table 6).

It is worth noting that the collections of the ten college libraries which at least doubled between 1967 and 1987 (about one-fourth) grew at a faster rate than thirty-three of the research libraries (about half) during the same period. For 1961 to 1987, the ten fastest-growing college library collections (about one-third) increased faster than twenty of the research library collections (about half).¹⁵

II. "OTHER" EXPENDITURES

Library expenditures have for many years been divided into three general categories: materials (traditionally—books, periodicals and other serials, usually binding, and often "other mate-

TABLE 3
NUMBER OF VOLUMES, 1961, AND PERCENTAGE INCREASES IN
NUMBER OF VOLUMES, 1961 TO 1987,
THIRTY-TWO COLLEGE LIBRARIES

	Vols 1961	% Incr. 1961-67	% Incr. 1967-77	% Incr. 1977-87	% Incr. 1967-87	% Incr. 1961-87
Q ₃	258,556	41	46	34	93	165
Median	184,500	22.5	32.5	28.5	73.5	124
Q ₁	134,160	15	25	19	54	82

TABLE 4
NUMBER OF VOLUMES, 1967 TO 1987,
SIXTY-NINE ARL LIBRARIES

	1966-67	1976-77	1986-87
Q ₃	1,863,233	2,910,461	3,881,945
Median	1,213,855	1,852,841	2,484,152
Q ₁	982,860	1,446,011	1,950,400

TABLE 5
PERCENTAGE INCREASES IN NUMBER OF VOLUMES 1967 TO 1987,
SIXTY-NINE ARL LIBRARIES

	1967-77	1977-87	1967-87
Q ₃	68	42	125
Median	52	32	102
Q ₁	33	25	69

TABLE 6
NUMBER OF VOLUMES, 1961, AND PERCENTAGE INCREASES IN
NUMBER OF VOLUMES, 1961 TO 1987,
FORTY-TWO RESEARCH LIBRARIES

	Vols 1961	% Incr. 1961-67	% Incr. 1967-77	% Incr. 1977-87	% Incr. 1967-87	% Incr. 1961-87
Q ₃	1,652,521	40	56	38	110	191.5
Median	1,113,122	32.5	48	27.5	88.5	161.5
Q ₁	911,248	25	32.5	24	66	120

rials"), salaries and wages, and "other" (everything else). Conventional wisdom has been that the normal division among the three categories was "60-30-10": 60% for salaries and wages; 30% for materials; and 10% for "other."¹⁶ This third aggregation has long been a catch-all for supplies of various kinds, noncapital equipment and equipment maintenance, telephone charges, travel expenses, interlibrary loan charges, and the like. More recently it has (usually) included monies for payment to bibliographic utilities. Because many libraries report their fringe benefits and student wages expenditures but do not include them under the "salaries and wages" category, these therefore become, *de facto*, part of the "other" category of expenses.

Still, the smallest of the three categories, "other" expenditures in the Bowdoin List colleges in 1986/87, ranged from a high of \$623,670 (and 29% of total expenditures) to a low of \$38,079 (and 7%). Not surprisingly, perhaps, this is the category which over the last two decades has experienced the largest relative growth, as shown in table 7. In 1966/67 the median college library spent 8% of its budget on costs other than salaries and wages or materials; twenty years later, it was spending 18%.

A subset of this group of the college libraries for which there are 1960/61 data

demonstrates the same overall trend (see table 8).

As shown in table 9, the research libraries display this same general trend, rising from a median expenditure of 6% for "other" in 1966/67 to 13% in 1986/87. Because of differences between the two groups of libraries in terms of what is included in which expenditure categories, readers should be very cautious about comparing this 13% figure with the 18% figure for the median college library. What is significant, and common to both groups, is the growth of "other" as a proportion of the total.

(Because the 1960/61 data for the research libraries did not include data on "total expenditures," this article does not provide a second table covering these forty-two libraries in the several sections dealing with expenditures).

If significantly larger portions of library expenditures are going to "other," they must be coming from one or both of the remaining two budget categories. The chief contributor, and the only one in the case of the college libraries, has been the salaries and wages category.

III. SALARIES AND WAGES

Although still the largest of the three categories, salaries and wages have declined sharply as a percentage of total ex-

TABLE 7
PERCENTAGE OF TOTAL EXPENDITURES DEVOTED TO "OTHER,"
1967 TO 1987, THIRTY-EIGHT COLLEGE LIBRARIES

	1966-67	1976-77	1986-87
Q ₃	11	17.5	21.5
Median	8	14	18
Q ₁	4.5	9	11.5

TABLE 8
PERCENTAGE OF TOTAL EXPENDITURES DEVOTED TO "OTHER,"
1961 TO 1987, TWENTY-EIGHT COLLEGE LIBRARIES

	1960-61	1966-67	1976-77	1986-87
Q ₃	13	13	18	22
Median	9	8	15	18
Q ₁	6	6	9	12

TABLE 9
PERCENTAGE OF TOTAL EXPENDITURES DEVOTED TO "OTHER,"
1967 TO 1987, SIXTY-SEVEN ARL LIBRARIES

	1966-67	1976-77	1986-87
Q ₃	8	10	17
Median	6	8	13
Q ₁	5	6	11

penditures. Between 1967 and 1987, among the Bowdoin List libraries the median expenditure for salaries and wages fell from 55% to 42.5%, as shown in table 10.

Data from the Bowdoin List subset, which includes 1960/61, indicate that for the colleges this trend began earlier. In fact, the median library in this group matched exactly the 60% funding level for salaries and wages found in the 60-30-10 guideline, as shown in table 11.

The picture for the ARL libraries likewise shows a decline in the salaries and wages percentage since the 1960s, but not nearly so great a decline, and one which occurred only after an increase between the mid-1960s and the mid-70s. Table 12 summarizes the data.

Although by 1987 both the research li-

braries and the college libraries were spending a smaller proportion (and for the colleges a significantly smaller proportion) of their budgets on salaries and wages, they were not spending those dollars on fewer people. Both sets of libraries experienced growth in the number of employees over the course of these twenty years, the median college library by 25% and the median ARL library by some 37%. Consequently, although the numbers of staff in ARL libraries are much larger than in the college libraries, the rate of increase in the ARL libraries has still been 50% greater than that in the colleges. At the same time, the percentage increase in the number of librarians has been greater among the college libraries (see table 13).

TABLE 10
SALARIES AND WAGES AS A PERCENTAGE OF TOTAL EXPENDITURES,
1967 TO 1987, THIRTY-EIGHT COLLEGE LIBRARIES

	1966-67	1976-77	1986-87
Q ₃	60.5	51.5	49.5
Median	55.5	47	42.5
Q ₁	51	44	38

TABLE 11
SALARIES AND WAGES AS A PERCENTAGE OF TOTAL EXPENDITURES,
1961 TO 1987, TWENTY-EIGHT COLLEGE LIBRARIES

	1960-61	1966-67	1976-77	1986-87
Q ₃	64	60	51	48
Median	60	55.5	46	43
Q ₁	51	50	44	38

IV. MATERIALS EXPENDITURES

Thus far, for the "other" and the "salaries/wages" categories, both the college and the ARL libraries have exhib-

ited the same general trends (albeit to varying degrees)—an increase in the first and a decline in the second. It is in the case of the third category, materials expenditures, that they part company. For

TABLE 12
SALARIES AND WAGES AS A PERCENTAGE OF TOTAL EXPENDITURES,
1967 TO 1987, SIXTY-EIGHT ARL LIBRARIES

	1966-67	1976-77	1986-87
Q ₃	60	63	54
Median	55	58	51
Q ₁	52	53	47

TABLE 13
NUMBER OF STAFF, 1967 TO 1987,
THIRTY-FIVE COLLEGE LIBRARIES

	1966-67		1976-77		1986-87	
	Libns.	Total	Libns.	Total	Libns.	Total
Q ₃	9.8	23.4	10	25.6	11.8	32.5
Median	7	17.5	8	22	10	23.7
Q ₁	5	11.5	5.9	12.9	6.4	17.3

Note: Numbers are for full-time equivalent staff. Data for the colleges do not include student workers. Because there are data for only sixteen of the college libraries for 1960-61 and each of the other years reported in these tables, no attempt is made to compare college library staffing in 1960-61 with subsequent years.

TABLE 14
PERCENTAGE INCREASES IN STAFF 1967 TO 1987,
THIRTY-FIVE COLLEGE LIBRARIES

	1967-77		1977-87		1967-87	
	Libns.	Total	Libns.	Total	Libns.	Total
Q ₃	41.5	38	27.5	23.5	71	70.5
Median	13	20	15	9	40	25
Q ₁	-2	5.5	0	1	5.5	7.5

TABLE 15
NUMBER OF STAFF, 1967 TO 1987,
SIXTY-FIVE ARL LIBRARIES

	1966-67		1976-77		1986-87	
	Libns.	Total	Libns.	Total	Libns.	Total
Q ₃	85	312	104	406	113	428
Median	64	213	73	262	87	321
Q ₁	44	167	54	205	61	255

Note: Numbers are for full-time equivalent staff. Data for the research libraries include student workers, calculated at 1,800 hours per year equalling one full-time staff member. See *ARL Statistics* for 1966-67.

TABLE 16
PERCENTAGE INCREASES IN STAFF 1967 TO 1987,
SIXTY-FIVE ARL LIBRARIES

	1967-77		1977-87		1967-87	
	Libns.	Total	Libns.	Total	Libns.	Total
Q ₃	42	45	28	28	56	72
Median	13	19	10	14	30	37
Q ₁	0	9	-2	4	7	22

the colleges, the increase in the "other" category as a proportion of expenditures has come entirely from the reduction in the salaries/wages portion. Indeed, the materials expenditures portion has even increased over the years, as seen in table 17. (The median amount expended for materials was \$31,000 in 1960/61; \$69,000 in 1966/67; \$189,000 in 1976/77; and \$520,000 in 1986/87—all rounded to the nearest thousand.) (See table 18.)

The subset of college libraries with 1960/61 data shows the median library with materials expenditures accounting for 30.5% of the total in that year. When taken together with the information from tables 8 and 11, the median library in each of the three groups shows 60% going toward salaries/wages, 30.5% for materials, and 9% for other, conforming almost exactly to the time-honored 60-30-10 breakdown.

The research libraries, on the other hand, show a decline over the years,

with only a partial recovery between 1977 and 1987, as table 19 demonstrates.

Another way of looking at the growth of materials expenditures for the three sets of libraries is to compare it with increases in the prices of books and periodicals. Tables 20, 21 and 22 provide such a comparison.¹⁸ They show that despite the concern expressed in recent years about the soaring prices of library books and periodicals, the prices of books and periodicals published in the United States grew much more rapidly between 1967 and 1977 than during the ensuing decade. Moreover, for the most part, the materials expenditures of these college libraries kept pace with those price increases although they certainly fell behind the proliferation of book and journal publishing. Typically, these colleges spend a considerably larger proportion of their materials budgets on books than on journals.¹⁹ The typical research library spends over half its mate-

TABLE 17
MATERIALS EXPENDITURES AS A PERCENTAGE OF TOTAL EXPENDITURES,
1967 TO 1987, THIRTY-EIGHT COLLEGE LIBRARIES

	1966-67	1976-77	1986-87
Q ₃	40	42	43
Median	35.5	38	38
Q ₁	31	35	35.5

Note: All the data pertaining to "materials expenditures" reflect the inclusion of binding expenditures, which is the traditional approach. It is the one still used among the Bowdoin List libraries and was used for the research libraries until the 1985-86 ARL Statistics. They do not include the category of "Miscellaneous Materials Expenditures," dollars for which in fact go not for materials, but instead for "expenditures for bibliographic utilities, literature searching, security devices, memberships for the purposes of publications, etc." (See ARL Statistics)¹⁷.

TABLE 18
MATERIALS EXPENDITURES AS A PERCENTAGE OF TOTAL EXPENDITURES,
1961 TO 1987, TWENTY-EIGHT COLLEGE LIBRARIES

	1960-61	1966-67	1976-77	1986-87
Q ₃	36	41	42	43
Median	30.5	34.5	37.5	38
Q ₁	28	31	33	36

TABLE 19
MATERIALS EXPENDITURES AS A PERCENTAGE OF TOTAL EXPENDITURES,
1967 TO 1987, SIXTY-EIGHT ARL LIBRARIES

	1966-67	1976-77	1986-87
Q ₃	41	37	38
Median	38.5	32	34
Q ₁	34	29	30

TABLE 20
PERCENTAGE INCREASES IN MATERIALS EXPENDITURES 1967 TO 1987,
THIRTY-EIGHT COLLEGE LIBRARIES

	1967-77	1977-87	1967-87
Q ₃	213	187	719
Median	152.5	148	518.5
Q ₁	96	112	390
U.S. Book Prices	130	86	325
U.S. Periodical Prices	207	190	790

TABLE 21
PERCENTAGE INCREASES IN MATERIALS EXPENDITURES 1961 TO 1987,
THIRTY-THREE COLLEGE LIBRARIES

	1961-67	1967-77	1977-87	1961-87
Q ₃	158	215	182	1,828
Median	119	155	147	1,399
Q ₁	74	91	118	1,019
U.S. Book Prices	44	130	86	513
U.S. Periodical Prices	42	207	190	1,168

TABLE 22
PERCENTAGE INCREASES IN MATERIALS EXPENDITURES 1967 TO 1987,
SIXTY-EIGHT ARL LIBRARIES

	1967-77	1977-87	1967-87
Q ₃	149	185	519
Median	104.5	160.5	406
Q ₁	64	115	321
U.S. Book Prices	130	86	325
U.S. Periodical Prices	207	190	790

rials budget on journals.

For the twenty-year period and the 1967-77 decade, materials expenditures for the median college library rose considerably more than for its ARL counterpart. For the 1977-87 decade, the median ARL library was slightly ahead.

V. TOTAL EXPENDITURES

In addition to the growth and decline of different budget components is the issue of total library expenditures. It is likely that many, if not most, academic librarians share the oft-cited view that library budgets in higher education have long been anemic. For example, in a recent article in *College & Research Libraries*, Barbara Moran refers to the "stringent budgets of the '70s and '80s."²⁰ "Stringency," of course, is in the eye of the beholder, although there is no question that during the 1970s and 1980s, particularly when measured in terms of constant dollars, library budgets did not

sustain the growth they had experienced in the 1960s.

Table 23 summarizes total library expenditures for the Bowdoin List libraries over a twenty-year period.

The data from both sets of libraries, Bowdoin List and ARL alike, record a significant increase in total expenditures for the years under consideration. For comparative purposes, increases in the Consumer Price Index and the Higher Education Price Index are also provided. The latter index, which is concerned with the prices of those goods and services purchased by colleges and universities, has grown at a significantly faster rate than the Consumer Price Index. Nevertheless, the data in tables 24, 25, 26 and 27 show that percentage increases in total expenditures for both the college and the research libraries, even for some libraries in the lowest quartile of each group, have considerably outstripped price increases as measured by the HEPI.²¹

TABLE 23
TOTAL EXPENDITURES, 1967 TO 1987,
THIRTY-EIGHT COLLEGE LIBRARIES

	1966-67	1976-77	1986-87
Q ₃	240,860	574,616	1,590,942
Median	199,786	448,911	1,213,180
Q ₁	143,202	308,552	853,778

To underscore the relative prosperity of the 1960s for academic libraries, table 25 shows that for the median Bowdoin List library total expenditures rose almost nine times faster between 1961 and 1967 than the Consumer Price Index and more than three times faster than the Higher Education Price Index. For the next two decades, the differences are not nearly so great (and not nearly so great between the CPI and the HEPI, either).

For both sets of college libraries, the median library experienced a greater increase in total expenditures than the median ARL library, particularly from 1977 to 1987.

For the most part, the college directors were not concerned about the shift in expenditures to "other." To the question of how they viewed the significantly more rapid growth of the "other" expenditures category, first in terms of their own library, and then in terms of academic librarianship as a whole, thirty-five directors provided thirty-seven and thirty-eight responses respectively. The breakdown of their responses was as follows:

	Own Library (#)	In General(#)
"Very concerned"	2	2
"Somewhat concerned"	6	5
"Neutral"	2	3
"Fairly satisfied"	2	1

	Own Library (#)	In General(#)
"Very satisfied"	2	1
"As irrelevant, since what is important is having enough money for materials, staff, and 'other' regardless of their relative proportions"	22	24
"As irrelevant for other reasons"	—	2
"Not the trend here"	1	—
	37	38

In terms of their own libraries, eight of the directors (between one-fourth and one-fifth) expressed concern, while four were satisfied. Regarding this trend in the profession, seven were concerned and two satisfied. In both theaters, of course, the great majority of respondents considered this relative growth in the "other" category of expenditures to be irrelevant.

The college library directors were divided in their responses to several questions related to collection growth which were raised in the course of the interviews, and they were unanimous in their responses to one other. Eleven of the directors thought that the number of volumes their library was adding each year would remain constant, six that they would increase, and four that they

TABLE 24
PERCENTAGE INCREASES IN TOTAL EXPENDITURES 1967 TO 1987,
THIRTY-EIGHT COLLEGE LIBRARIES

	1967-77	1977-87	1967-87
Q ₃	184	174	612
Median	142.5	151.5	505.5
Q ₁	107.5	120.5	384
CPI	78	90	238
HEPI	89	102	278

TABLE 25
TOTAL EXPENDITURES, 1960-61, AND PERCENTAGE INCREASES IN TOTAL
EXPENDITURES 1961 TO 1987, TWENTY-EIGHT COLLEGE LIBRARIES

	Total Expend. 1960-61	% Incr. 1961-67	% Incr. 1967-77	% Incr. 1977-87	% Incr. 1961-87
Q ₃	133,466	126	189	178	1,505
Median	100,797	97	147.5	159.5	1,122
Q ₁	75,123	83	110	123	934
CPI		11	78	90	274
HEPI		29	89	102	386

TABLE 26
TOTAL EXPENDITURES, 1967 TO 1987,
SIXTY-EIGHT ARL LIBRARIES

	1966-67	1976-77	1986-87
Q ₃	2,799,073	6,406,850	13,967,683
Median	1,777,012	4,174,622	10,564,074
Q ₁	1,314,158	3,309,771	7,772,439

TABLE 27
PERCENTAGE INCREASES IN TOTAL EXPENDITURES, 1967 TO 1987,
SIXTY-EIGHT ARL LIBRARIES

	1967-77	1977-87	1967-87
Q ₃	170	161	549
Median	135	141.5	455
Q ₁	98	118	361
CPI	78	90	238
HEPI	89	102	278

would decrease. At the same time, twelve of the directors believed that the number of added volumes could decline to some extent because of telefacsimile, other delivery mechanisms, special arrangements with other libraries, etc. Seven thought that the number could not decline, one responded "possibly" and another did not know. Also, eleven of the directors believed that ownership was significantly less important than it used to be in terms of providing access, while seven thought it was not. Taken together, these responses indicate a combination of two factors: that the directors are more willing to contemplate such a decline than are other influentials on campus, and that they believe that such a course is more practicable once effective resource-sharing mechanisms become more common.

Finally, not one of the directors responded affirmatively to the following

question: "Are we approaching a time of 'no-growth' collections, and, hence, can we stop worrying about increasing the amount of space devoted to library materials? Or at least a time of very slight collection growth?" Seventeen directors responded "no," three "not now, but in the foreseeable future," and one director thought that the number of volumes would continue to grow, but in formats that would not require much additional space. One director responded: "No. Show me one no-growth library." Another commented: "The number of volumes and titles will grow, but not in a way that will require much more space. Information will be coming in compact forms. In twenty years most back issues of periodicals will be on disk; presently we devote a lot of space to periodical backfiles. Supplementing this development are weeding and

the use of compact shelving. We've put our pre-1970 bound periodicals into compact shelving."

CONCLUSIONS

This study is both heuristic and empirical. It may raise as many questions as it answers. Among the most important conclusions are the following:

Between 1967 and 1987, about one-fourth of the college libraries in this study doubled the size of their collections; during the same period, about half the libraries belonging to the Association of Research Libraries grew by at least that same rate. Conversely, three-fourths of these college libraries and half the ARL libraries failed to double the size of their collections in this twenty-year period. It would seem, therefore, that there are by now enough exceptions to the "doubling-every-sixteen-years" rule for academic libraries to render it highly suspect as a general expectation in the last years of the twentieth century.

Although the rate of collection growth is probably slowing, none of the college library directors interviewed believes that he or she is presently facing a "no-growth" library situation. The interviews with directors revealed that many are still very collections conscious. Only four directors think that the number of volumes they are adding each year is likely to decrease in the near future.

Notwithstanding the concern expressed in recent years about the soaring prices of library books and periodicals, the prices of books and periodicals published in the United States grew much more rapidly between 1967 and 1977 than during the ensuing decade. A corollary finding is that, for the most part, the materials expenditures of the college libraries included in this study kept pace with those price increases. Indeed, expenditures for materials as a percentage of total expenditures have risen in the college libraries over the last twenty years. However, they have declined in the research libraries over the same period.

The increases in total expenditures for these college libraries and for the ARL li-

braries from the 1960s to the 1980s have significantly exceeded the increases in both the Consumer Price Index and the Higher Education Price Index, between 1977 and 1987 as well as between 1967 and 1977. The college libraries have fared better than the ARL libraries. This phenomenon of expenditures rising considerably more than inflation is likely related to the competition among colleges and universities for better students and faculty and for enhanced reputations.²²

There are by now enough exceptions to the 'doubling every sixteen years' rule for academic libraries to render it highly suspect as a general expectation in the last years of the twentieth century.

The 60-30-10 rule, which reflected reality in the "typical" Bowdoin List library in 1960, certainly no longer applies either in the group of colleges studied here, or in the ARL libraries. As of 1986/87, the "typical" library showed a division closer to 40-40-20 in the former group, while in the ARL libraries the corresponding division is closer to 50-35-15. Kendon Stubbs explicitly, and Jerry Campbell rather more implicitly, have already called our attention to this shift away from 60-30-10 for the ARL libraries.²³

The trends recorded here contradict Richard Talbot's contentions in 1984 that "the pattern of library budgetary allocation remains unaffected," that salaries and wages as a percentage of library expenditures have remained at 60% "since at least 1960," and that "the percentage of the library internal budget for acquisitions is fixed."²⁴ They also demonstrate that Herbert White was in error when he recently asserted (without documentation) that there has been a "transfer of funds from all other sources to the academic library materials budget over the last fifteen years."²⁵ Conversely, these

findings also raise questions about assertions that libraries generally have funded automation by taking funds from acquisitions.

It would be surprising if the college libraries were able to sustain this high a percentage for materials during the next decade, as they spend more on maintaining automated reference products and other automated library systems.

In the college libraries studied here, the proportion of expenditures going to the "other" category has grown enormously, from 9% in 1960/61 and 8% in 1966/67, to 18% in 1986/87. Contrary to authorities such as Barbara Moran and Charles Churchwell, and contrary to the initial supposition of this study, this growth has generally not come at the expense of the materials budget.²⁶ Instead, expenditures for materials have grown as a proportion of total expenditures, from 31% in 1960/61 to 38% by 1976/77 and holding at that percentage a decade later. (Indeed, data just received for the Bowdoin List libraries in 1988/89 show a 39% figure for the median library.) Rather, the relative decline of salaries/wages expenditures has accompanied the increase in the other two categories although the numbers of both professional and support staff have grown. The explanation for this set of circumstances is likely that costs for materials, and for items in the "other" category, have risen more rapidly than have the costs of people. Most consumers, including college and university administrators, will buy goods and services with an eye on economizing, and the services of library workers have been obtainable at a lower rate of dollar increase than have books, journals, supplies, maintenance, etc. This phenomenon is likely true of most categories of workers in the United States during recent decades, and it would seem to merit further study.

Among the college libraries, the growth in materials expenditures as a percentage of total expenditures is likely understated when the investigator takes into account the situation on many college or university campuses regarding audiovisual centers for housing films or videotapes, records, and slides, and for distributing audiovisual equipment around the campus. During the past twenty years or so, a number of audiovisual centers were either created within the administrative/budgetary structure of the library or were moved there. Such entities are generally more staff- and equipment-intensive than they are materials-intensive. To the extent that ARL libraries have come to contain media units, their materials expenditures as a proportion of the total are likewise probably understated.²⁷

Conversely, another factor serves to inflate the reported materials expenditures of the ARL libraries. It is widely known that these expenditures include significant amounts for bibliographic utilities and other nonmaterials costs, thus exaggerating the amount actually spent on library materials. One librarian, from a medium-sized, non-ARL library, explained his library's practice of charging computerized cataloging costs to its materials budget as follows: "Our 'other' budget categories have not received the support for growth that our materials budgets have, so we find it logical to charge this major expense to materials."²⁸ In recent years, the *ARL Statistics* have included "Miscellaneous Materials Expenditures" (in addition to the more traditional "Other Library Materials") as a separate category to capture these expenditures, but it is likely that the new category does not presently include all nonmaterials costs reported as materials expenditures. As for the colleges, in only three instances did the Bowdoin List directors indicate that significant portions of materials funds were spent for electronic services, such as OCLC charges. Several more indicated that they were including as a part of their reported materials expenditures funds for online computer searching (ranging

between \$2,000 and \$9,000 annually).

It would be surprising if the college libraries were able to sustain this high a percentage for materials during the next decade because they spend more on maintaining automated reference products and other automated library systems. Some of them may be tempted to follow the lead of other libraries by "burying" some of their automation costs in what has traditionally been the materials budget. A subsequent article in this journal will discuss the state of automation within these college libraries and will make certain connections with the findings and opinions reported here.

The rate of increase in materials expenditures was substantially greater in the college libraries than in the ARL libraries between 1967 and 1977 and was also well ahead of that in ARL libraries for the 1967-87 period. For 1977-87, those increases were slightly greater in the ARL libraries. For both sets of libraries between 1967 and 1987, rates of growth in materials expenditures considerably outpaced the increases in U.S. book prices, but they fell considerably short of rising prices for U.S. periodicals (with a commensurately heavier burden on the research libraries, which have been devoting a larger proportion of their materials expenditures to periodicals than have the college libraries).²⁹ At the same time, to underscore once again the relative prosperity of the 1960s for academic libraries, between 1961 and 1987 the median increase in materials expenditures among thirty-three college libraries was 1,399% (see table 21), far outstripping even the 1,168% increase in U.S. periodicals prices for the same period. U.S. book prices increased by a comparatively modest 513%.

If, in fact, the prices of books and journals rose at a much faster rate between 1967 and 1977 than they have since, and if the rate of increase in materials expenditures during these decades has

significantly exceeded the increases in book prices, why all the concern and frustration during the 1980s about inadequate acquisitions budgets? Two reasons appear to be especially germane, and they are quite familiar to collection development librarians although probably still not to many college and university administrators. One has been the rapidly rising prices of scholarly journals, with the bulk of the impact (though by no means all) felt by the research libraries. These libraries generally serve institutions which are relatively more research-oriented than the colleges and, hence, are more journal dependent than the college libraries. Consequently, they spend not only many more dollars on journals but also a higher proportion of their materials budgets on journals than the college libraries.

The other reason, somewhat more subtle, is that scholarly publishing continues to grow, so that even if academic libraries' acquisitions budgets kept pace with price increases, those acquisitions would continue to constitute, each year, a diminishing fraction of the world's output of recorded information. At the same time, it is not at all clear that this is a new problem; the topic warrants an in-depth study. The number of book titles published in the United States appears to have grown by some 77% between 1966 and 1986 (30,000 titles to 53,000), yet grew by 100% during the much shorter period between 1960 and 1966 (15,000 to 30,000).³⁰ In 1974, the Faxon Company's database held 38,000 serial titles as "active" and available for purchase; by 1988 that number had grown to 105,000 such titles.³¹ Perhaps it is time that more academic librarians occasionally adopt the skepticism articulated by the director of one major research library early in 1990 at a public forum: "Perish the thought that any academic thought will go unpublished and that we will fail to store it."³²

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2. *College & Research Libraries* 4:153 (March 1943), and 21:316 (July 1960).
3. Jim Skipper, executive director of ARL, to directors of ARL libraries, July 26, 1963; copy in author's possession.
4. Richard Harwell, library director at Bowdoin College, to thirty-six college library directors, October 23, 1967, copy in author's possession.
5. The author is much indebted to Arthur Monke, library director at Bowdoin College, for providing a complete set of the data.
6. Readers interested in seeing a copy of the questionnaire should consult Richard Hume Werking, "Collection Growth, Expenditures, and Automation in Academic Libraries: A Preliminary Inquiry," Educational Resources Information Center, Document #318482, 1990. A report on the automation portion of the project is forthcoming in the next issue of this journal.
7. *The American Library Directory, 1962* (New York: Bowker, 1962).
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9. George Piternick, "ARL Statistics—Handle With Care," *College & Research Libraries*, 38:419-23 (Sept. 1977). See also Kendon Stubbs, "Apples, Oranges, and ARL Statistics," *Journal of Academic Librarianship* 14:231-35 (Sept. 1988); Robert M. Hayes, Ann M. Pollack, and Shirley Nordhaus, "An Application of the Cobb-Douglas Model to the Association of Research Libraries," *Library and Information Science Research*, 5:297-306 (1983); Eli M. Oboler, "The Accuracy of Federal Academic Library Statistics," *College & Research Libraries* 25:494-96 (Nov. 1964).
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13. Fremont Rider, *The Scholar and the Future of the Research Library* (New York: Hadham, 1944), p.3-5, 9 (emphasis in the original).
14. The author's ERIC document, cited above, contains more complete data for each of this article's tables.
15. *Ibid.*, Appendix D.
16. Richard J. Talbot, "College and University Libraries: Lean Years and Fat Years—Lessons to Be Learned," *The Bowker Annual of Library and Book Trade Information* (New York: Bowker 1984), p.77-81; Kendon Stubbs, "Introduction," *ARL Statistics, 1987-88* (Washington, D.C.: ARL, 1989), p.8; Barbara Moran, "The Unintended Revolution in Academic Libraries: 1939 to 1989 and Beyond," *College & Research Libraries* 50:30 (Jan. 1989); Jerry D. Campbell, "Academic Library Budgets: Changing 'The Sixty-Forty Split,'" *Library Administration & Management* 3:78 (Spring 1989).
17. *ARL Statistics, 1986-87*, p.56.
18. The price data for books and periodicals are from *The Bowker Annual of Library and Book Trade Information* for the following years: 1963, p.95-96; 1968, p.103, 105; 1978, p.318, 320; 1979, p.337; 1988, p.426-27. This information about price increases for books and periodicals is offered as a comparison to the materials expenditures increase. Because the data are for U.S. publications only, they do not capture price trends during these years for foreign publications, of particular significance for the research libraries. To provide a price for the cost of books in an academic year, an average price was derived for the two relevant calendar years. Periodicals, on the other hand, are paid for in advance for an ensuing calendar year; hence, price information for the appropriate calendar year was used.
19. Data concerning serials expenditures as a percentage of materials expenditures for a group of sixty-two liberal arts college libraries, in the author's possession.
20. Moran, "Unintended Revolution," p.29.

21. Data from which calculations were made for both indexes may be found in U.S. National Center for Education Statistics, *Digest of Education Statistics, 1988* (Washington, D.C.: U.S. National Center for Education Statistics, 1988), p.35. The HEPI data for 1986-87 were obtained by telephone from the National Center. See also D. Kent Halstead, *Inflation Measures for Schools and Colleges* (Washington, D.C.: National Institute for Education, 1983), p.50-51.
22. President Hanna Gray of the University of Chicago recently noted that in the years ahead, universities and colleges will face "sharpened competition for students, faculty and dollars at all levels." *The New York Times*, December 17, 1989, I, p.1. See also William O. Beeman, "Assessing Intensive Computing on the College Campus," in *Integrated Planning for Campus Information Systems*, Daphne N. Layton, ed. (Dublin, Ohio: OCLC, 1989), p.12.
23. Stubbs, "Introduction," p.8; Campbell, "Academic Library Budgets," p.78.
24. Talbot, "College and University Libraries," p.77, 80.
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27. Michael S. Freeman, library director at Haverford College, provided author with this insight.
28. Sherman Hayes, "Budgeting for and Controlling the Cost of Other in Library Expenditures: The Distant Relative in the Budgetary Process," *Journal of Library Administration* 3:129 (Fall/Winter 1982).
29. See note 18, above.
30. *The Bowker Annual of Library and Book Trade Information*, 1962, p.59; 1967, p.45; 1988, p.403. To be sure, the proportion of these titles that would be appropriate acquisitions for academic libraries is not readily apparent.
31. Rebecca T. Lenzini, "Serial Prices: What's Happening and Why," *Collection Management* 12:23 (1990).
32. Discussion sponsored by the Financial Management Committee, Library Organization and Management Section, Library Administration and Management Association, Chicago, January 8, 1990.

Statement of Changes

Beginning with this issue, *College & Research Libraries* appears in a slightly different format. The size of the journal is now smaller to take advantage of standard paper size economies.