

## Research Notes

# Estimating Space Needs for Media Services

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*This paper explores possibilities for remedying the perceived lack of methods for predicting the amount of floor area likely to be required for media services in four-year college and university libraries. Spatial allocations made to such activities were found to vary widely among thirty recently constructed academic libraries. However when the thirty were categorized into one of three groups based upon the specific activities that each was intended to accommodate, some homogeneity began to emerge in the spaces assigned. This result suggests that where such categorization is possible, rough preliminary estimates of the amount of floor area needed for media can be projected as a ratio of the space needed for other library purposes.*



ibrary space planners have a large tool kit of functional criteria and spatial requirements, developed over many decades, for determining the necessary size of a building. Yet these existing space criteria and formulations are neither uniformly available nor equally acceptable for all aspects of all library buildings. In academic libraries, two activities most deficient in space formulas, both in terms of their applicability and in terms of the professional and scholarly attention their formulas have received, are archives and media services. This paper attempts to develop a basis for estimating preliminarily how much floor area is likely to be needed for a media services area in a library building designed to

meet the needs of what might be called a "normal" four-year college or university.

### BACKGROUND

Before architects can design any kind of academic library construction or renovation, of course, very detailed calculations must be made of the spatial requirements of each specific library function to be contained within the structure. The sum of these individual spaces then represents the total number of *net assignable square feet* (nasf) of floor area that must be provided in the completed project.<sup>1</sup> Determining such amounts is understandably an exacting and rigorous task requiring much time and careful analysis of the local need and environment.

Often, however, for purposes of preliminary or long-term projection library, administrators and space planners do not need such exact calculations but rather what might be called *informed estimates* of the amount of space likely to be needed over time. In such cases, say, for long-range capital budgeting or fundraising purposes, or for reserving a building site, approximate figures that are within certain acceptable tolerances, perhaps 3% to 5%, can sometimes meet the need satisfactorily.

There are a number of time-honored rules-of-thumb and simple formulas for roughing up preliminary estimates of the amount of space likely to be required for most of the traditional, conventional activities in libraries. Some of these formulas have been developed by state higher education authorities, the State Education Department of New York, for example, whereas others have been developed by such regional agencies as the Western Interstate Commission for Higher Education.<sup>2</sup> Indeed, a basic set of formulas for the quick assessment of library spatial adequacy was incorporated into the 1975 rendition of the "Standards for College Libraries," promulgated by the Association of College and Research Libraries, and was then continued with some modification into the 1986 revision of that document.<sup>3</sup>

These quick-calculation formulas have been built upon certain predictable space requirements [usually the floor area required by a book on a shelf or a reader in a chair], extrapolated to other conventional but less predictable spaces on the basis of normal, or expected, ratios of the latter to the former. Analyses of a large number of academic library buildings over time had indicated by about 1970 that a fairly predictable, or "normal," ratio existed between the sum of the spaces needed for books and readers on the one hand and the sum of the spaces needed for other traditional library activities on the other. The ratio proved to be 4:1. That 4:1 ratio was, therefore, postulated in the 1973 New York State *Report* cited earlier and then carried forward into the 1975 ACRL

"Standards," as an easy and largely satisfactory method of quickly perceiving the adequacy of the amount of net assignable floor space in a traditional academic library building.

Both the aforementioned New York State study, however, and the ACRL "Standards" that came after it, specifically excluded media services from the aggregation of conventional library activities that were to constitute the second part of their stated ratio. At that time there was no professional consensus that media services even belonged in libraries, to say nothing about the range of services and materials they might purvey or the amount of space they were likely to require. Even as late as 1965, when many of today's buildings were constructed, Keyes D. Metcalf's basic book on academic library buildings tolerated media services in the library building only grudgingly, suggesting that "if funds for *extra* spaces are available, . . . [media services might] be offered space on a *temporary* basis."<sup>4</sup> Given such profession-wide doubt regarding media services at the time, it was certainly not yet possible to agree upon a method for predicting an amount of space necessary to accommodate them. As a result, the 1975 "Standards" simply stated that "the space required for a college library's nonbook services and materials" was to be calculated separately, although by unspecified techniques, and added to the figure produced by the aforementioned 4:1 extrapolation.

## RESEARCH METHOD

The present study set out to learn if circumstances have changed sufficiently in the 1990s to permit constructing a method for estimating preliminarily the amount of media space needed. Has a reasonably recognizable quantitative relationship, to be expressed as a ratio, yet come to exist between the amount of floor area needed for media services and the amount needed for other assignable functions in four-year college and university library buildings? For this study, the possibility of constructing a random sampling for all existing academic li-

brary buildings in search of such a ratio was rejected because many of today's buildings were erected before media services gained their present level of acceptance. Although their acceptance and configuration in academic libraries had been growing for many decades, it was not until the appearance of the 1975 ACRL "Standards" that their essential role was unequivocally written into a consensual document adopted by a majority of the practicing academic library community sitting in conference.<sup>5</sup>

On the assumption that the full impact of the 1975 "Standards" on new academic library building planning ought to have made itself felt within eight years, we decided to examine the buildings built during the period from 1984 through 1988. Since the December issues of *Library Journal* attempt to list all library construction completed during the previous twelve months, we reviewed those issues in 1984 through 1988 for the identities of all four-year colleges and universities in the United States that had built new or had enlarged existing central library buildings. Special or departmental libraries, being largely irrelevant to the study at hand, were not included.

Eighty-six institutions were identified as meeting these requirements. Letters were sent to the directors of all of these libraries inquiring if building program documents had been written for their new libraries and, if so, whether or not copies of them could be obtained by the authors. Fifty-two responded, 10 of whom reported that they had not prepared building program documents. The remaining 42 respondents supplied copies of their building programs.

### FINDINGS

When the 42 building programs were examined, we found that 4 of them (or slightly under 10%) did not call for the inclusion of any media services in the building at all, although those institutions may, of course, have maintained media services outside their library buildings per se. Four additional documents were solely descriptive and did not quantify the requisite square foot-

ages of floor area for any of their functional areas. Four more lacked some other item of information essential to this investigation. When these 12 documents were excluded from the group, it left 30 building projects for which complete usable information was available. These documents constituted the working database for the present investigation.

Table 1 shows the total net assignable square feet of floor area designated in each of these 30 building programs. For buildings that were enlarged, these numbers include the spaces in both the original structure and the new addition. All are arranged in descending order by their sizes, excluding media. The amount of additional floor area occupied by media is also shown, and the percentage the latter comprises of the former is then calculated. Preparing this table required some rationalizing of the figures given in the program documents. Several libraries, for example, included their microform operations in the media services units, but most did not. In order, therefore, to gain comparability of the figures across all the institutions, we followed the majority and subtracted their allocated areas from the media spaces given. The same was true of some computer labs. On the other hand, since most of the buildings that contained curriculum laboratories located them in their media services units but some did not, the majority was again followed. Space was added to the media totals to accommodate those that had been left outside.

As table 1 shows, the amount of net assignable square feet allocated to media displayed no apparent relationship to the overall size of the building. There was, however, wide disparity in the percentages of space that needed to be added for media, ranging from a low of 1.4% to a high of 24.6%, with a mean of 8.0% and a standard deviation of 5.63%. Moreover, a tendency was noted for smaller buildings to require larger percentages.

Further examination of the texts of the 30 building program documents revealed that, as expected, both the amounts of space needed and their relative percentages were driven by the specific media

TABLE 1  
LIBRARY FLOOR AREA FOR MEDIA AND WITHOUT MEDIA

Library	Area without Media	Area for Media	Add for Media
A	271,190 nasf	4,260 nasf	1.6%
B	235,581	17,700	7.5
C	188,314	7,730	4.1
D	125,404	4,900	3.9
E	118,110	7,955	6.7
F	116,000	6,296	5.4
G	103,940	2,060	2.0
H	101,287	1,450	1.4
I	84,276	3,360	4.0
J	76,695	2,800	3.7
K	67,916	16,696	24.6
L	60,127	3,690	6.1
M	56,200	7,400	13.2
N	54,375	3,000	5.5
O	52,781	7,780	14.7
P	51,284	1,453	2.8
Q	50,750	6,550	12.9
R	49,500	1,980	4.0
S	46,600	1,400	3.0
T	46,580	4,040	8.7
U	39,075	5,635	14.4
V	37,747	2,435	6.5
W	36,650	2,300	6.3
X	35,886	2,485	6.9
Y	28,513	5,225	18.3
Z	28,100	3,905	13.9
Aa	27,435	880	3.2
Bb	25,306	1,810	7.2
Cc	21,774	2,391	11.0
Dd	14,756	2,244	15.2

Mean percentage added for media = 8.0%.

Standard deviation = 5.63%.

Range = 2.37% to 13.63%.

activities to be accommodated within them. Accordingly, an effort was made to construct a taxonomy of the 30 media service units according to the profile of services they were individually expected to perform. It was found that they

all fell rather markedly into 1 of 3 quite distinct groupings: a first that concentrated largely on passive delivery of media documents; a second that embraced also some generation of materials in support of instruction; and a third that

TABLE 2  
PERCENT OF SPACE ADDED FOR MEDIA, BY SERVICE CATEGORY

	Category I	Category II	Category III
Libraries included	A, H, P, S, W, X	B, C, D, F, G, J, M, O, T, U, V, Aa, Cc, Dd	E, I, K, L, N, Q, R, Y, Z, Bb
Percentages of total cases	20% (N = 6)	46.7% (N = 14)	33.3% (N = 10)
Means	3.67%	8.11%	10.32%
Ranges	5.5% (1.4% — 6.9%)	13.2% (2.0% — 15.2%)	20.6% (4.0% — 24.6%)
Standard deviations	2.37%	4.75%	6.92%
± 1 SD from means	1.30% — 6.04%	3.36% — 12.86%	3.40% — 17.24%

engaged as well in full production of media in various formats. For purposes of this study, these 3 service categories are defined and described here as follows:

- Category I—Basic Service. The media service units in this group limited their activities to the provision of one or more of the following: individual and/or group viewing (still, motion picture, and/or video); individual or group listening (spoken and/or music recordings in any or all formats, language laboratories, etc.); special resources for the handicapped; as well as facilities for administering, storing, and servicing the requisite hardware and software.
- Category II—Advanced Service. Media service units in this group provided some or all of the services included in category I above, plus one or more of the following: graphics laboratory, curriculum laboratory, and mediated classroom(s).
- Category III—Full Service. Units in this group provided some or all of the services rendered in both categories I and II above, and, in addition, one or more of the following: audio and/or video production, closed-circuit television, and/or radio transmission.

The 30 building program documents were then sorted into their relevant categories, where their distribution was found to be skewed toward category III. This distribution is shown in table 2. Six institutions (A, H, P, S, W, and X) were comprised within category I, in which the percentages of their floor areas to be

added for media ranged from 1.4% to 6.9%, with a mean of 3.67% (SD 2.37%). Category II contained 14 institutions (B, C, D, F, G, J, M, O, T, U, V, Aa, Cc, and Dd); percentages assigned by them to media ranged from 2% to 15.2%, with a mean of 8.11% (SD 4.75%). Category III included 10 libraries (E, I, K, L, N, Q, R, Y, Z, and Bb); their media percentages ranged

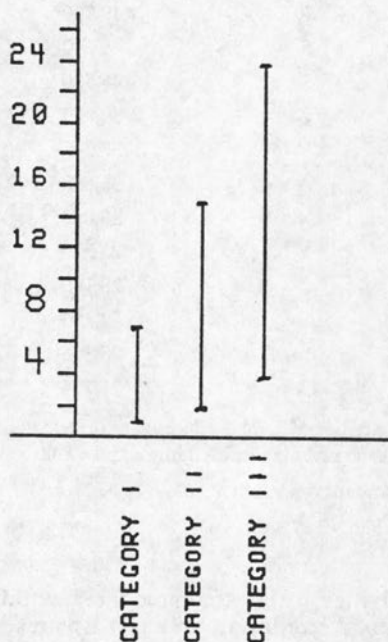


FIGURE 1  
Percents for Media Showing  
Overlap by Category

from 4% to 24.6% of the other library space, with a mean of 10.32% (SD 6.92%).

### CONCLUSIONS

Several extraneous but useful observations can be drawn from this exercise. Perhaps the most obvious and most expected one is that the higher the service category selected for implementation, the larger the floor area required for media. Perhaps the most significant one, however, is that a substantial majority of these newer 1980s buildings studied—more than 90% of the programs received—provided space for media activities of some kind, doubtless indicating a much more accepting attitude toward media today than when Metcalf wrote a quarter century ago. Nonetheless, wide variation was encountered in the extent and configuration of media services mandated in the descriptive portions of the program documents. The libraries in all 3 categories ranged over the entire spectrum of sizes (A to X in category I, B to Dd in category II, and E to Bb in category III). As expected, the 3 categories overlapped in terms of the percentages of space that had to be added to accommodate media activities. Nonetheless, as is shown in table 2, there were substantive advances at each step upward from category to category. This is shown most clearly in the mean percentages at the three levels, being 3.67%, 8.11%, and 10.32% respectively.

Some new questions are raised by this study. The wide ranges displayed by these percentages indicate that greater consensus is still needed among librarians as to the appropriate range and configuration of media services appropriate to academic libraries, but it suggests

neither what those services should be nor how they should be determined. These latter matters await exploration. Also the observed tendency of smaller buildings to require higher percentages of space for media activities than large ones suggests that, in some cases, a predetermined or set amount of space may be allocated to media rather than a percentage of the total building space. Although outside the scope of the present investigation, this observation invites future study, and if it proves to be uniformly true in all cases, the question should be asked, "Why is this occurring?"

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**A substantial majority of these newer 1980s buildings studied provided space for media activities of some kind.**

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However, the ranges of percentages being used for media still vary so widely as to diminish confidence in the possibility of using the numbers so generated for extrapolating their spatial requirements. Nonetheless where there is a need for "quick-and-dirty" projections only, and where the general categorical profile of media accommodations desired is fairly distinct, some may be comfortable adding 3% to 4% to the rest of the building's net assignable square footage to accommodate *basic* media service activities, 8 to 8.5% for *advanced-level* activities, and 10% to 10.5% for *full-service* media activities. It does appear, however, that professional consensus on these matters continues to rise and that the accuracy of this method of estimating space for media in four-year college and university libraries is likely to sharpen in the years ahead.

### REFERENCES AND NOTES

1. This term, or *net assignable area*, is used here to mean "the sum of all areas on all floors of a building, assignable to, or useful for, library functions or purposes." For discussion of its ramifications, see "The Measurement and Comparison of Physical Facilities for Libraries," ALA, LAD, 1969, mimeo, p.11.
2. New York State Education Department, "Report of the Advisory Committee on Planning for the Academic Libraries of New York State," (Albany, N.Y.: State Education Department, 1973); Western Interstate Commission for Higher Education, *Higher Edu-*

*ation Facilities Planning and Management Manuals*, v. 4 (Boulder, Colo.: Western Interstate Commission for Higher Education, 1971).

3. Association of College and Research Libraries, "Standards for College Libraries," *College & Research Libraries News* 36:277-79 (Oct. 1975); revised in *College & Research Libraries News* 48:189-200 (Mar. 1986).
4. Keyes D. Metcalf, *Planning Academic and Research Library Buildings* (New York: McGraw-Hill, 1965), p.268. Although media were not widely accepted in academic libraries at the time, there was already useful discussion of the relative merits of putting them there. See, for example, C. Walter Stone, "Planning for Media within University Library Buildings," *Library Trends* 18:235-45 (Oct. 1969).
5. The 1975 Standard 2 reads as follows: "The library's collections shall comprise all corpuses of recorded information owned by the college for educational, inspirational, and recreational purposes, including multi-dimensional, aural, pictorial, and print materials."