

Output Measures and Library Space Planning

NOLAN LUSHINGTON

Toward Output Measures

FOR HALF A CENTURY dating from the work of Joseph Wheeler as a library building consultant, public library planning has depended almost exclusively on population as the basis for determining book and seating capacity which in turn are the main determinants of building area requirements. This system on which the old American Library Association and most state library standards are based is an excellent one because it makes the democratic assumption that every community should have equal access to information and that equal access to information is based on providing books and seating in proportion to the service population.

At its most sophisticated, this standard even provided for increased seating and book proportions in smaller communities. For example, towns of under 10,000 population would have ten seats per thousand population instead of the five per thousand standard for larger towns. Similarly, five books per capita might be the standard for towns of under 10,000 while three books per capita were recommended for larger communities.

In the 1950s, public library leadership decided to promote library systems. Any town smaller than 150,000 was urged to group with other communities so that they could benefit from the optimum library services that would be available to 150,000 population library systems

Nolan Lushington is Assistant Professor, Southern Connecticut State University, School of Library Science, New Haven, Connecticut.

with the staff expertise, book collections, facilities, and services that could be organized, financed, and administered with such a population base.

Community analysis as the basis for library planning emerged in the 1970s, culminating in the publication of *A Planning Process for Public Libraries*.¹ This was an elaborate manual in which a community planning team composed of citizens and librarians studied the demographics, economics, educational background, and geography of the community as well as its library use to come up with a long-range plan for the library.

In the early 1970s, several public library practitioners with the help of some library school faculty members began studying the new public library systems to measure the effectiveness of library services. It became clear that book circulation, although predominant, was by no means the only measure of service.

Library program attendance; the answering of reference questions by staff; and the reading of newspapers, magazines, and books in the library are significant ways to measure library performance. Ernest de Prosop, Ellen Altman, and Kenneth Beasley, in their 1972 study of library performance, found that of people using various size libraries, the percentage of people entering libraries in order to *borrow* books was smaller in larger libraries.² This suggests that larger reference libraries should provide more seating than do smaller libraries, since library users were staying in the larger libraries to use large reference collections in the library.

ALA published *Output Measures for Public Libraries* in 1982. Output measures were developed to gather data on "what a library gives to a community (OUTPUT), rather than what a library receives from a community (INPUT)."³ Output measures are use and user oriented. However, neither in *A Planning Process* nor in *Output Measures* is there any indication as to how these studies can be used to plan library buildings beyond a vague indication that facilities should relate to community needs.

Facilities Planning

How then can *Output Measures* be used to plan facilities? It will probably be several years before we know enough about the output measures relationships within libraries and among libraries. However, a place to begin is by asking some questions—e.g., given a number of

Output Measures and Library Space Planning

different library facilities, will the ones with the most seats attract the highest use?

Circulation per capita and its corollaries—title, author, and subject fill rates—could be affected by the book capacity of a library, so that, for example, a library with a per capita circulation of ten and a present subject fill rate of 70 percent might require an additional 20,000 book capacity to reach an 80 percent fill rate at that intensity of book circulation.

Intensity of use and fill rates are probably closely related. That is, libraries with a high percentage of their books out in circulation probably will have lower fill rates than libraries with lower circulation. It will cost more in book budget dollars to raise these fill rates than it would cost to increase fill rates in lesser-used libraries.

Standards recently issued by one state do not acknowledge this problem.⁴ By requiring libraries to reach certain fill rates they are requiring much greater effort and cost of those high intensity of use libraries than they are of lesser used libraries. Public libraries with five books per capita circulation can much more easily have 80 percent title and subject fill rates than libraries circulating ten books per capita. A brief and far from conclusive study by the author of some recently completed buildings suggests that increased seating even has the effect of increasing book circulation.

Perhaps an even more beneficial use of output measures in public library facility planning will be in adopting service objectives for the building program. Statements of goals and objectives are notoriously vague in most library planning documents. Yet in a building program, these goals and objectives are often quickly transformed into very concrete terms calling for substantial numbers of book shelves and reader seats that will cost millions of dollars.

Output measures provide an opportunity for directly relating service objectives and building program sizes. In-library use of seven per capita in a library that currently has a four per capita use figure may be achievable only by increasing seating from its current three per 1000 population to six per 1000 population. This is not to say that facilities changes alone will lead to increased use (although there is some evidence that this is the case) but facilities improvements may be a necessary part of the service plan to reach that objective.

Postoccupancy evaluation has been desperately needed by library planners for decades. Now that output measures provide a reasonably uniform and broad form of measurement, this kind of evaluation will go a long way toward developing correlative measures of service and

facilities. Future studies may document how doubling seating capacity affects in-library use.

Book Capacity

Output measures can be applied to suggest directions for collection development given a library's goals for service to its community. Collection development strategies affect collection size, and that in turn affects the gross area needed.

With the advent of high circulation, small book collection libraries with rapid turnover and heavy duplication of popular titles, the question of how large a public library to build for a given community becomes a more open one than in the 1950s and 1960s.

In the late 1970s, the Baltimore County approach of concentrating on the traditional role of libraries as book circulation centers coupled with the introduction of display shelving resulted in a circulation emphasis but with a display twist that success in circulation depended on buying and displaying many popular books. Baltimore County suburban libraries with book capacity of less than 100,000 circulate over 1 million books a year—a turnover rate of ten. The implication for sizing library facilities in this instance is that attractive display shelving makes more books go out, keeping a large percentage of books circulating, so less shelving is needed.

A recent *Library Journal* summary of library construction shows a wide variance in book capacity of recently completed libraries serving similar size populations. How did the planners arrive at their recommendations? Public libraries, from this author's viewpoint, serve two primary functions—information and knowledge. Information may be as brief as a telephone number or as complex as a financial prediction, and knowledge can help shape people's lives, give them comfort, joy, and understanding. It is difficult to draw a hard line between the two functions, but libraries are useful in helping users with both. Understanding users' wants as well as their needs is a vital part of the helping process. This understanding helps planners determine key measures like projected collection size.

What do users want as evidenced by their behavior and how are these wants related to the library use process and its statistical and building implications? Users want:

—*Convenience*. The library must be in the main traffic flow, and parking must be convenient. Books displayed with front covers

Output Measures and Library Space Planning

emphasized by zigzag display shelving and lighting contrast and in the traffic flow of the library building.

—*Browsing*. Fifty percent of the users come to browse—not to find a particular subject or title—so display space for browsing must accommodate many people and books. Much more space is needed than is presently assigned in most buildings.

—*To find books easily*. Finding books easily means no hard-to-reach top and bottom shelves, no oversize books in a separate location, no catalog that leads you to books already checked out.

All of these factors affect a library's space needs.

Popular book display libraries such as those exemplified by the Baltimore County branches and the Que Bronson bookstore display techniques look at library users as a group of clones that statistically use libraries in a predictable pattern. Baltimore County studies show that patrons come to libraries to browse (50 percent), or to find subjects (35 percent), and few are seeking a specific title. Those not finding a particular title can be served by interlibrary loan depending on library systems or on more extensive regional or urban library collections. Depending on the nature of the population served and the location, response, and size of the larger library resource center, this kind of library service may be a reasonable approach.

However, library use patterns are not uniform in my experience. In many communities a much larger percentage of users may be seeking specific titles and, if so, the collection should be responsive to this need. This may result in a larger bookstack and a wider variety of bookstack environments including compact high density storage.

In the perception of the user, title availability may well have a higher value than browsing or subject availability. Finding a specific title may have a greater effect in perceiving that the library is useful and in encouraging repeated use.

In addition, there are some important cost and use factors to be considered before determining a policy on collection management. Costs must be considered from various points of view:

1. Housing a book and increasing library size is costly from an initial building and operational view and may make the library more difficult to use.
2. Discarding books is costly, and changing location symbols in a card catalog is even more costly.
3. Professional weeding routines are most costly of all.

4. Interlibrary loan is costly both to obtain the book and to maintain the system. It is much less costly for the user to get the book directly.

Well-known maxims about library use can also affect the size of a collection needed by a given library. Eighty percent of the people are coming to the library to use only 20 percent of the book collection, while the other 80 percent of the books are only used by 20 percent of the people. With computerized circulation it is easy to identify which books are most used, assure that these books are available in sufficient quantity, and, with an online catalog, to make them easy to find. The present public library practice of shelving both popular and less used books in the same area may not be what the public wants.

How are lesser used books found? Are the 80 percent of lesser used books located by users browsing on the shelves or by users using the catalog? If we knew that lesser used materials are seldom picked up by browsers in the stacks but more often by using the catalog, then a major argument against their separate location would be eliminated.

Frequency of Use

We know that even in small libraries the majority of books may not circulate in a given year. In these libraries we could discard or relocate these books elsewhere in the building on high density stacks or remotely in a different building. This arrangement could greatly improve access to the books people want more frequently by:

1. making the building smaller,
2. eliminating hard-to-reach top and bottom shelves,
3. interfiling oversize books with the regular collection, and
4. providing wider aisles for browsing.

The disadvantages might be:

1. even less use of the classics,
2. complex shifting of the collection,
3. inconvenience of high-density storage, and
4. confusing arrangement of *two* subject sequences.

Technological Developments

Some libraries such as the Portland (Maine) Public Library with high density storage stacks for public use are already experimenting with some of these techniques. New technological developments call in

Output Measures and Library Space Planning

question the implied relationship between book collection size and the notion of equal access opportunity on which per capita library standards were based.

Compact storage of materials, a promise for thirty years, is finally becoming a reality. CD ROM discs, inexpensively duplicated, await only the complex negotiations among disc vendors and information database owners to make masses of full text integrated periodical holdings available with incredibly flexible search indexes. Online searching of massive bibliographic databases with consequent dramatic increases in interlibrary loan hit rates (from 60 percent to 90 percent for a medium-sized library) and the rapidity of delivery (less than a week) transform small- and medium-sized libraries into the equivalent of huge ones and should make the construction of new million volume book-stacks about as relevant to good library service as the brontosaurus was in the evolution of intelligent mammals. What will be even more important to equal access will be the ability of the librarian to gain electronic access to the resources and the ability of libraries to create networks of service. Here are some alternatives that need further study and experimentation:

1. Shelving lesser used books in high density shelving removed from regular book shelving.
2. Relocating lesser used materials to regional high density storage libraries.
3. Online catalogs designed for hierarchies of use
 - (a) only display books on shelves
 - (b) display books on the shelves in bold print
 - (c) secondary display of books in other locations.

In collection management, the effect of discarding based on book circulation is an important issue. What percentage of a circulation is represented by books that have not been used for a specified period of time? Librarians tend to wait for three to five years before discarding books. If we can determine that only 1 percent of a library's circulation comes from books that have not been used in a year, then the discarding process can be speeded up and space requirements reduced. If on the other hand books unused for a year represent 10 percent of a library's circulation, more shelf space will be needed.

Automated collection management information is now available from many circulation system vendors. This means that the system will generate lists in shelf order of all titles that have not circulated so that discarding is much easier to accomplish. Alternately, these books can

even be temporarily relocated to compact storage with an automatic indication of the new location.

Hierarchies of Use

Hierarchies of use is an idea found in architectural solutions to several building needs. It is especially applicable to libraries and to libraries designed with output measure objectives. A hierarchy of use based on circulation frequency would result in four environments for housing the collection:

1. reference books used daily would be housed at stand-up use counters;
2. best-sellers and other new material used weekly would be housed on face-out display shelving spread out for access by many users;
3. books used at least once a year would be on conventional shelving; and
4. less frequently used materials accessed by catalog only would be stored in compact, high-density stacks, or in a remote location.

In-library use hierarchies would suggest environments for: stand-up reference counters, seated terminal searching locations, study carrels, and study rooms. Output measure surveys could suggest the relative demand for these varieties of in-library use environments.

Summary

This article suggests that over the next decade library performance measures—such as output measures—can become the basis for library space planning programs that will determine the quantity and relative location of user hierarchies for each type of public service.

References

1. Palmour, Vernon, et al. *A Planning Process for Public Libraries*. Chicago: ALA, 1980.
2. de Prosopo, Ernest, et al. *Performance Measures for Public Libraries*. Chicago: Public Library Association, 1973, p. 48.
3. Zweizig, Douglas, and Rodger, Eleanor Jo. *Output Measures for Public Libraries: A Manual of Standardized Procedures*. Chicago: ALA, 1982, p. 2.
4. Ohio Library Association. *Interim Standards for the Public Libraries of Ohio*. Columbus: OLA, 1984.

A measure space is a basic object of measure theory, a branch of mathematics that studies generalized notions of volumes. It contains an underlying set, the subsets of this set that are feasible for measuring (the σ -algebra) and the method that is used for measuring (the measure). One important example of a measure space is a probability space. A measurable space consists of the first two components without a specific measure. Space planning is an important part of building design and is used to determine how a space (or spaces) should be laid out and used. It may be undertaken as part of the building design process, or as a stand alone exercise looking at how best to plan an existing space, or a space that is being developed (for example, a tenant determining how to fit out their part of a new development). It can be used for very simple spaces such as hotel bedrooms, through to very complex industrial buildings. Parametric modelling can simplify space planning by allowing the automatic application of pre-defined rules to the entire space. So for example, if a colour scheme for particular part of the space is changed, every object that has that colour attribute will also change. Library output measure. As use intensifies, a larger collection will be needed. See Appendix 2, for additional books per capita. The new planning for results. Business and Career Information While some libraries provide a separate business and career information desk, this service is often provided from the same physical space as other reference and information services. Typically, a great deal of space and furnishings is shared. Library space planning guide. THE NEW PLANNING FOR RESULTS contâ€™d. Current Topics and Titles

Display shelving, display end panels, and other furnishings that allow for the effective merchandising of materials should be provided.