Libraries Designed for Learning

by Scott Bennett

November 2003

Council on Library and Information Resources
Washington, D.C.

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ISBN 1-932326-05-7

Published by:

Council on Library and Information Resources
1755 Massachusetts Avenue, NW, Suite 500
Washington, DC 20036
Web site at http://www.clir.org

Additional copies are available for $20 per copy. Orders must be placed through CLIR's Web site.

The paper in this publication meets the minimum requirements of the American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials ANSI Z39.48-1984.

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Acknowledgments

The Council on Library and Information Resources (CLIR) and the Council of Independent Colleges (CIC) sponsored this report. The author is especially grateful to Deanna Marcum for her long-sustained interest in this study. The author is, however, solely responsible for the study data and their interpretation. Nothing in this report necessarily reflects the views of CLIR or CIC.

The author wishes to thank most warmly the nearly 250 academic library directors who responded to the survey that was one basis for this report. He is also deeply indebted to the 31 librarians and academic officers who agreed to be interviewed at some length for this study. The author assured all of these persons they would not be identified as individuals in the study, so they cannot be thanked here by name. But whatever merit the study may have comes directly from their generous participation.

At CLIR, Kathlin Smith provided thoughtful advice to the author at every turn, was tolerant of delays, and ably guided the study through to publication.

For other expert assistance, generously given, the author thanks Nicholas Burckel, Robert Burger, Pamela Delphenich, David DeMello, Richard Ekman, Amy Harbur, Lisa Janicke Hinchliffe, Danuta Nitecki, Susan Perry, and Nancy Roderer. The staff and the collections at the University of Illinois Library at Urbana-Champaign made it a joy to do this study. Finally, the author wishes to thank his many colleagues at Yale University—librarians, faculty, academic officers, facilities planners and managers, architects, and engineers—from whom he leaned so much about library space planning.

Preface

For centuries, people have visited libraries to find information, and the practical needs of housing collections and accommodating readers have typically driven library design. In many cases, design has reached further, to create a place that inspires the individual and the intellect. Whatever the form, library buildings have become physical symbols for the life of the mind.

As technological advances of the past 20 years have made it possible for people to find information without entering a library building, some have asked whether the bricks-and-mortar library is doomed to extinction. Yet others maintain that the growth of technology has made the library even more important because it enables access to electronic content, services, and training that would otherwise be unavailable to information seekers.

Library design and construction of the past decade have responded to changes in information technology in a variety of ways, from incorporating electronic classrooms for teaching information literacy to physically integrating the space where electronic and print materials are kept. Some libraries have created "information commons," equipped with technology and staffed by information specialists. Such developments, while responding to new technologies, have nonetheless continued to support the traditional goal of enabling the manipulation and mastery of information.

In his provocative essay, Scott Bennett asks whether the goal of libraries today might more appropriately be described as "supporting collaborative learning by which students turn information into knowledge and sometimes into wisdom." He bases his question on changes in teaching and study habits of the past 20 years—changes distinguished by an increasing emphasis on group and collaborative work. He also references recent literature on learning that discusses knowledge creation as a community project. As Joan Bechtel, whose work is noted in part 4 of this report, writes, "the new paradigm for librarianship . . . is conversation."

To what extent have recent library design projects been driven by an understanding of how students learn and how faculty teach? To find out what motivated academic library renovation and construction in the past decade and how library planning was conducted, Mr. Bennett conducted an extensive survey and did follow-up interviews with library directors and chief academic officers. He concludes that while most recent library projects serve users well, they have rarely been informed by a systematic assessment of how students learn and faculty teach. The author suggests that planning based on such an assessment could equip the library to serve an even more vital function as a space for teaching and learning.

The topic of this report is central to CLIR's interest in exploring the changing role of the library in the digital world. We are grateful to the author for bringing new insight to this question. We are also grateful to the Council on Independent Colleges, and to Richard Ekman, for supporting Mr. Bennett's early work on this topic.

Kathlin Smith
Director of Communications

INTRODUCTION

This report seeks two groups of readers: academic librarians who have significant responsibility for library construction and renovation projects, and campus academic officers who wish to engage substantively with the question of how library space can advance the core learning and teaching missions of their institutions.

Readers of this report will likely have already consulted the exceptionally useful book, *Planning Academic and Research Library Buildings*, by Philip D. Leighton and David C. Weber. For all its merits, this book simply assumes that "those undertaking a major remodeling project, an addition, or a new separate facility have some understanding of the process of analyzing an institution's mission and objectives, [and] can determine the nature of space that should be provided" (p. xxvi). The weight of this assumption is evident in the fact that this 900-page book gives only one page of text to describing academic objectives and the library (chapter 1, section 2), and just two pages to defining the building problem (chapter 1, section 4), where problems are defined primarily in terms of ordinary library operational needs. A slightly longer section, entitled Character and Nature of the Academic or Research Institution (chapter 3, section 1), is little more than an elaborated checklist of routine but important considerations in planning.

The authors of *Planning Academic and Research Library Buildings* might reasonably give little attention to such fundamental issues. It is, after all, commonly the case that severe problems with library space go unaddressed for years, or even decades, ensuring that most members of the academic community have vivid, firsthand experience of them. Living so long with problems usually leaves people certain what the problems are, eager to have them addressed, and confident in judging whether a library project has succeeded.

Where such long-accumulating problems urgently demand attention, opportunities to engage with emerging trends in student

learning and faculty teaching may be less obvious and less compelling to those who set priorities and pay for buildings. This report attempts to understand how library space planning can move beyond the confines of past experience to engage with new visions of what the library should be. It does this by exploring what motivated academic library projects in the 1990s and how the building activity of that decade responded to some key academic needs as well as to the traditional operational needs of libraries.

Another book on library architecture notes that "librarianship may be the only profession that derives its name from a particular type of building, the library, which in turn derives its name from a particular physical object, the book. Quite literally, a librarian is one who takes care of books in a building designed to store them. Physicians and nurses are not hospitalians; attorneys are not courtians; and teachers are not schoolians. But librarians are, well, librarians"(Crosbie and Hickey 2001, 6)* The effort of this report is to get beyond the literal obligation of libraries described here to a more powerful understanding of the responsibility that librarians, along with others who care deeply about libraries, have to make library buildings fit homes for the learning and teaching processes by which knowledge moves between people and its embodiment in printed books and in fleeting electronic digits.

This report is organized in four parts:

- Part 1 interprets the key findings of the research on which the report is based. This section observes that in the 1990s, higher education saw transformative changes in student learning, faculty teaching methods, and information technology. These changes prompted some responses in library space planning over the last decade, but in many respects the libraries designed in the 1990s were not fundamentally different in concept from those designed in the 1960s. There are good reasons why this should be so, but those reasons obscure two important issues: (1) a bias in library space planning that favors the provision of library services at the expense of the social identity of learning and of knowledge; and (2) a fractured responsibility within the campus community for library space planning, which works against planning that is responsive to the institution's fundamental educational goals.
- Part 2 presents the research data of the study in as neutral an interpretative environment as possible. This is done to enable readers to appraise these data independently of the interpretative essay in part 1.
- Part 3 describes the research methodologies used in the study. Its purpose is to enable readers to judge how reliable the study's findings are and to explore further the implications of the study data.
- Part 4 presents a highly selective, annotated list of readings on library space planning. The list is meant to suggest the range and character of available publications and to point the readers of this report to other useful material.

* It now appears that some doctors are called "hospitalists"—i.e., doctors that treat patients while they are in the hospital, instead of the patient's primary care physician or the specialist that performed an operation.

PART 1:
LIBRARIES DESIGNED FOR LEARNING

1. Planning Library Space to Advance Learning and Teaching

"I think that libraries have tried to support learning, but I don't think libraries have traditionally said 'We want to make learning happen here.'"
Jill Gremmels, College Librarian, Wartburg College

The 1990s were good years for higher education in the United States and for academic libraries. This was evident not least in the huge investments made in the renovation and expansion of existing libraries and in the construction of new libraries. Between 1992 and 2001, the higher education community spent on average some $449 million annually on library construction. On average, about 2,874,000 gross square feet of space were renovated or built annually.

At the same time that colleges and universities were making these impressive long-term investments in their libraries, they were experiencing at least two fundamental discontinuities with their past. A long-gathering understanding of students' most effective learning behaviors was making itself felt in the adoption of active learning practices. Students everywhere were increasingly working in collaborative study groups of their own making, to engage more strongly and often more adventurously with their coursework. Recognizing the power of this mode of learning, many faculty members built experiential and problem solving materials into their courses and shaped assignments around the expectation of collaborative study. In these and other ways, the daily practices of learning and teaching saw widespread, fundamental change. Quietly but powerfully, American higher education acknowledged and began to engage with the social dimensions of learning and of knowledge.[1]

[1] See, for example, Bruffee 1999. Bruffee holds what he describes as a nonfoundational view of knowledge, where "knowledge is a community project. People construct knowledge working together in groups, interdependently. All knowledge is therefore the 'property' not of an individual person but of some community or other, the community that constructed it in the language spoken by the members of that community" (p. 294–295). "Collaborative learning makes the Kuhnian assumption that knowledge is a consensus; it is something people construct interdependently by talking together. Knowledge in that sense, Kuhn says, is 'intrinsically the common property of a group or else

The second fundamental change, a revolution in information technology, was not at all quiet and was even more pervasive. While the pace of technological change has steadily accelerated since the 1960s, arguably the "take off" point came with the introduction of the World Wide Web in 1993. The Web in just a few short years gave everyone a reason to connect to the Internet and made connection relatively easy. By the end of the 1990s, information in the developed part of the world was networked. The impact on research and on libraries was profound.[2] Complementary changes in teaching and learning were not slow to follow, not least because each year's freshman class brought students to campus with ever-increasing facility with computing and heightened expectations that information technology would be a central feature of their education.[3]

The question this essay addresses is, "How did space planning for academic libraries during the 1990s address these fundamental changes in American colleges and universities?" In essence, this is a question about two quite legitimate conceptions of the library as a place. One of these, which has a long and worthy tradition, conceives of libraries as service places where information is held, organized, and managed on behalf of those who use it, who are often also directly assisted in their use of information by library staff. The other, which springs from a recognition of the essential social dimension of knowledge and learning,[4] conceives of libraries as spaces where learning is the primary activity and where the focus is on facilitating the social exchanges through which information is transformed into the knowledge of some person or group of persons.

One can investigate the library spaces actually built or renovated in the 1990s to see what balance was struck between these two con-

nothing at all'" (p. 133). For the potential impact on libraries of newly adopted pedagogies, see James Wilkinson, "Homesteading on the Electronic Frontier: Technology, Libraries, and Learning," in Dowler 1997, 181–196.

[2] See, for instance, Peter Lyman's essay arguing that scholarly communication was in crisis at the beginning of the 1990s, a crisis that required a fundamental rethinking of the place and function of libraries: "The Library of the (Not-So-Distant) Future," *Change*, 23 (January/February 1991), 31–41. For a broad view of libraries nearly a decade later, see "Digital Revolution, Library Evolution," chapter 1, in *LC21*: *A Digital Strategy for the Library of Congress*, Committee on an Information Technology Strategy for the Library of Congress, Computer Science and Telecommunications Board, National Research Council (Washington, D.C.: National Academy Press, 2000), 23–49.

[3] For one response to the changing environment for teaching and learning, see the Center for Academic Transformation at Rensselaer Polytechnic Institute, led by Carol A. Twigg. The Center at http://www.center.rpi.edu/ "serves as a source of expertise and support for those in higher education who wish to take advantage of the capabilities of information technology to transform their academic practices." It has published an instructive online newsletter, *The Learning MarketSpace*, available at http://www.center.rpi.edu/PewNews1.html. See also R. J. Thompson, Jr., and L. W. Willard, "Duke University: An Agenda for Institutional Change," in Janet Stocks and Linda R. Kauffman, eds., *Reinvigorating the Undergraduate Experience through Research and Inquiry Based Learning* (Washington, DC: Council for Undergraduate Research, 2003; in press). For an effort to measure systematically some dimensions of active and collaborative learning, see the National Survey of Scholarly Engagement at http://www.indiana.edu/~nsse/.

[4] See, for instance, Bruno Latour and Steve Woolgar, *Laboratory Life: The Social Construction of Scientific Facts* (Beverly Hills: Sage, 1979), and John Seely Brown and Paul Duguid, *The Social Life of Information* (Boston: Harvard Business School Press, 2000).

cepts of library space over the last decade. But in many ways, the space planning process itself—especially its earliest phases, where decisions are made about how a library project will be shaped so as to advance fundamental institutional concerns with learning and teaching—is even more informative. It is here that balancing decisions are made, consciously or not, governing how multi-million dollar investments in library space will focus on library services and on broader, institution-wide agendas in education. This essay describes the kinds of library spaces that emerged in the 1990s to respond to fundamental changes in learning modes and information technology. It also describes the planning processes typical of library projects and argues that higher education is missing opportunities to assert the community-wide ownership of library planning necessary for making new investments in library space highly productive for learning and teaching.

This essay also attempts both to understand the extent to which library planning has been conservative in concept, shaping our response to the future by extrapolating from past experience, and to identify key opportunities to interpose fresh visions of libraries that might produce space design decisions quite different from those of the past. Why does thinking "within the box" serve so well in the design of academic library space, and how might "thinking outside the box" serve even better?

A brief story may suggest the importance of the focus proposed for this essay. The provost of a European university was visiting parts of the United States in 2001, garnering ideas for the construction of a major new library building. The provost included Yale University in these visits and spoke with librarians there about their efforts to focus library space planning on student learning behaviors. The Yale librarians were attempting to design not an information commons, but something called a *learning commons*. The visiting provost immediately saw the point of the learning commons and said with some chagrin how little library planning at her own institution had been informed by thinking about student learning. The chagrin came from the fact that the provost's disciplinary expertise was in education.

Clearly, the weight of traditional thinking about libraries at this provost's university—and at many institutions in the United States—keeps planning focused not on the educational impact but on the service operations of libraries. Traditionally, library buildings are places where we shelve material, circulate things to readers, assist readers with questions about information resources, create instruments such as the catalog for navigating information, and teach readers how to master the complexities of both printed and networked information. Libraries also provide reading accommodations, but historically these accommodations are vulnerable to competing service functions of library space, particularly the need to shelve library materials. Library after library has sacrificed reader accommodations to the imperatives of shelving. The crowding out of readers by reading matter is one of the most common and disturbing ironies in library

space planning.[5] These outcomes must be acknowledged, in fact, to be a failure in planning. Such failures are the result of what the visiting provost saw so clearly: close attention in library space planning to library operations and unfocused attention—or outright inattention—to the learning modes of students and the teaching behaviors of faculty. This essay argues that as long as the accommodation of reader needs is narrowly conceived and secondary to provisions for library service operations, the full value of higher education's investments in library space will go unrealized.

2. Level of and Motivations for Investment in Library Space

Writing in 1996, James Neal predicted that colleges and universities would increasingly direct limited capital funds to the renovation of existing library space and would avoid massive investments in new library space.[6] This prediction sensibly reflected the keen competition for campus capital funds, the good economies to be secured through renovation, the diminishing emphasis in many libraries on technical services and the space they require, and—most importantly—the requirements of information technology for virtual rather than physical space.

It turns out that this eminently sensible prediction was wrong. What actually happened between 1992 and 2001 was a substantial and consistent level of investment in library space, year after year. As indicated in Figure 1, each year during this decade saw, on average, some 38 library projects completed. Taken together, these projects cost an annual average of $449 million (in 2001 dollars) and involved on average some 2.9 million gross square feet of space. Of this, new construction accounted for an average of 1.1 million gross square feet, or about 40% of the total space involved.[7] There was no trend, either up or down over the decade, in this percentage of new construction. There was considerable variation in all of these averages from year to year, but the variations fell well within the range of a normal distribution of values.

In addition to spending nearly $4.5 billion on renovating or building new library space during the 1990s, the higher education community incurred substantial new costs for operating and main-

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[5] In the "Defining the Building Problem" section of *Planning Academic and Research Library Buildings*, Leighton and Weber comment that "a shortage of reader space is less likely to be compelling [to those who must set priorities and pay for campus capital projects], even though in educational terms it is as important for effective library use as adequate book or staff space. The consequence of students being forced to seek alternative libraries or to use classrooms or residence rooms for study is not easily determined" (p. 12). The inability to see such consequences has all too often ensured that traditional operational needs of libraries prevail over reader needs when a choice between them had to be made.

[6] See James G. Neal, "Academic Libraries: 2000 and Beyond." *Library Journal* 121 (July 1996), 74–76.

[7] These annual averages are understated for two reasons. First, the colleges and universities contributing data to the *Library Journal* sometimes do not report project costs. Second, community colleges are significantly under-represented in the *Library Journal* data (see Table 1).

FIGURE 1: INVESTMENT IN LIBRARY SPACE, 1992–2001

Source: *Library Journal* (Table 1)

	Project No.	*Total Real $ Cost*	*Total GSF*	*New GSF*
Annual Average	**37.9**	**$449,453,000**	**2,873,559**	**1,130,872**
Standard deviation	*8.1*	*$159,030,000*	*816,834*	*386,986*

taining that space. Putting operation and maintenance costs at $8 per square foot of space, and disregarding any increased costs associated with renovated space, the cost of operating new academic library space alone on average required at least an additional $9 million every year. These costs cumulate, so that by 2001 higher education had incorporated about $90.5 million of new operating costs into its budgets.

By these measures, there was nothing in the 1990s to indicate any slowing in new investment in academic library space. The age-old truth about libraries—that they always grow in size and demand more space—remained fully in force. It is hard to find evidence that breathtaking innovation in information technology and the "virtual space" it occupies slowed traditional investment in library bricks and mortar.

What motivated this consistently substantial, decade-long investment in new and renovated library space?

A survey of library directors at the institutions making these investments asked this question. Situations at individual colleges and universities varied substantially, and several different motivators were frequently in play at each institution. But five factors, summarized in Figure 2,[8] emerged as clearly most important for colleges and universities considered as a whole.

FIGURE 2: STRONGEST PROJECT MOTIVATORS

Source: CLIR Survey (Table 3a)

Factor	*% Projects Strongly Motivated*	*± confidence interval*
Growth of the collections	**57%**	**6%**
Changing character of student study space needs	**45%**	**6%**
Dysfunctional design of previous space	**40%**	**6%**
Changes in or growth of library instruction programs	**32%**	**6%**
Changes in public services other than reference	**26%**	**6%**

Predicted frequency in random distribution = 17%

[8] Figures 2–6 report the percentage of survey respondents answering in a particular way, along with an accompanying plus-or-minus confidence level also stated as a percentage. So for instance, in Figure 2, 57% of the survey respondents reported that their projects (representing a random sample of the larger population of projects) were strongly motivated by the growth of the collections, and one can be 95% confident that all responses for the larger population of projects would fall between 51% and 63%. Note that the practice of reporting percentages of responses along with a plus-or-minus confidence level is used throughout the text and notes of this report. In addition, Figures 2–6 also report, in italics at the bottom of each figure, the percentage response one would expect in a random distribution of responses. In such a distribution, no one or more responses emerge as dominant among the survey respondents. All of the responses reported in Figures 2–5 vary by statistically significant measures from a random distribution, meaning that these are the dominant responses among survey respondents to the question involved.

Survey respondents were asked to rank the strength of these and other possible project motivators on a six-point scale, with values ranging from "not a motivating factor" to "strong motivating factor." A random distribution of responses would result in a given factor being a strong motivator only 17% of the time. All five factors in Figure 2 vary significantly from a random distribution, the first four occurring as strong motivators about twice or more frequently as one would expect in a random distribution of responses.[9]

Survey respondents also identified a number of possible motivators as not influencing their projects. These are shown in Figure 3:

FIGURE 3: WEAKEST PROJECT MOTIVATORS

Source: CLIR Survey (Table 3a)

Factor	*% Projects Not Motivated*	*± confidence interval*
Building structural problems	**50%**	**7%**
Increase in the number of service points	**42%**	**7%**
Growth of library staff	**39%**	**6%**
Building safety issues	**32%**	**6%**
Changes in technical services	**27%**	**6%**

Predicted frequency in random distribution = 17%

Here again, survey respondents identified these as non-motivating factors significantly more often than would have occurred in a random distribution of responses. The first four were identified as non-factors about twice or more frequently as one would expect in a random distribution of responses.

Finally, two factors figured in the survey responses in a bipolar way: i.e., they were both non-factors and strong project motivators almost twice as frequently as one would expect in a random distribution of responses. Figure 4 lists these bipolar motivators:

FIGURE 4: BIPOLAR PROJECT MOTIVATORS

Source: CLIR Survey (Table 3a)

Factor	*% Projects Strongly Motivated*	*± confidence interval*	*% Projects Not Motivated*	*± confidence interval*
Building mechanical systems obsolescence	**33%**	**7%**	**27%**	**6%**
Need to accommodate non-library operations	**26%**	**6%**	**34%**	**6%**

Predicted total frequency in random distribution = 33%

Judging from the absence of comments associated with many of these factors (e.g., collection growth, mechanical systems obsolescence), respondents regarded them as largely self-explanatory. Responses pertinent to some other factors indicated the particular meaning or application they had in individual projects. See "Accom-

[9] A November 2001 survey of library directors and chief academic officers at institutions belonging to the Council of Independent Colleges provides parallel data. Respondents at these generally smaller, tuition-dependent institutions indicated the following functions would have high priority in any new library space they might have: instruction in information literacy (79±8%), student study space (75±9%), and shelving library collections (67±9%). See Table 6b for more information.

modating Improved Library Services" on page 13 for a further description of these motivators.[10]

Aside from the factors described in Figures 2–4, the survey inquired about two other possible motivators: changes in reference service and the preservation of the collections. Responses to these factors approximated a random distribution, indicating that while these factors were important to some projects they were not significant motivators for the projects covered in the survey as a whole. The survey also asked about other possible motivators. Respondents mentioned the provision of improved space for archives and special collections and the influence of accreditation requirements a number of times. It is impossible to apply any statistical measures of significance to these "other" responses.

The factors identified here bear only on library space planning and by no means exhaust the possibility for significant change in libraries. Survey responses to the question about changes in reference service as a project motivator illustrate this point. While there was unquestionably much ferment in the library community's thinking about reference service in the 1990s, it did not figure as a significant motivating factor in library space design, presumably because changes in reference service did not consistently drive new ideas for how reference space should be designed.

How might one understand these strong and weak motivators? If one is looking for factors most likely to motivate extrapolative planning,[11] that is to say factors that embody traditional library operations, they are found in the need to

- accommodate growing library collections
- correct for the dysfunctional design of previous library space
- effect changes in public services other than reference (given that these changes most often aimed at increased efficiency in traditional operations)
- overhaul obsolete mechanical systems

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[10] The analysis presented here applies to all survey respondents, taken as a whole. When one looks at project motivators sorted by date of project completion or by type of institution (using the Carnegie Foundation for the Advancement of Education classification of higher education institutions), the picture is much more varied and less coherent than that presented here. However, only one of the eleven date-of-completion groups and only two of the eleven Carnegie classification groups in which survey respondents fell had thirty or more institutions in them. The small size of most groups reduces the statistical significance of the variations. Possibly the most significant of these variations is that Doctoral/Research Universities (Extensive) were noticeably less strongly motivated by the need to accommodate collection growth than were other types of institutions. This might result from the noticeable turn to off-campus shelving facilities among these institutions, which generally experience robust collection growth. For more information, see Tables 3b–c and 4b–c, provided in the online version of this report, available at http://www.clir.org/pubs/abstract/pub122abst.html.

[11] Robert C. Heterick and Carol A. Twigg describe the difference between extrapolative and interpolative planning in a pair of essays written for *Educom Review* (January/February 1997) and in their online newsletter, *The Learning MarketSpace* (February 2003). See http://www.educause.edu/pub/er/review/reviewArticles/32160.html and http://www.center.rpi.edu/LForum/LM/Feb03.html.

Factors that might, by contrast, drive interpolative planning—where the focus is on uses of library space that cannot be simply predicted from past patterns of use—were found in the need to

- accommodate the changing character of student study needs
- accommodate changes in or the growth of library instruction programs
- accommodate non-library operations

One may fairly conclude that traditional library needs were very strong motivators for the construction and renovation of American academic libraries in the 1990s.[12] The weight of these traditional library needs will become all the more evident in the next parts of the essay, which consider what was built to satisfy these needs and the planning processes used to act on library space needs.

3. Library Project Responses to Motivating Factors

Accommodating Growing Collections

The survey of library directors did not ask whether additional shelving was actually a feature of their projects. The assumption was that projects in some good measure meet the needs that most strongly motivated them. A number of follow-up phone interviews with the library directors who responded to the survey indicated this assumption was appropriate.

The phone interviews provided information about how library directors and academic officers were thinking about collection growth in the 1990s. They had little choice but to consider this issue, as collections of print material continued to grow, just as publishing output grew.[13] To accommodate this growth, new library construc-

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[12] Steven M. Foote, an architect with extensive experience with libraries and president of Perry Dean Rogers, reported in 1995 that architects and librarians agree that print collections will continue to dominate libraries, that flexible shelving is essential and that compact shelving will be a feature of every library, that adjacencies must be fluid, and that floor-to-ceiling heights must be generous. Regarding information technology, they agree that it should be accommodated but that it will not reduce library space needs. The modest impact of revolutionary change in information technology is evident as well in the most fundamental thinking about library buildings, according to Foote: "At times, even the most erudite and far-thinking clients cannot overcome their traditional ideas of appropriate library design; classical monumentality has been accepted for libraries for centuries. The competition for the main branch of the Chicago Public Library . . . was a case in point. In the end, that jury rather poignantly selected the winner mainly on the grounds that 'It looked like a library.' The standards and values of the nineteenth century still applied, because no more modern imagery [for the library] has convincingly captured our cultural endorsement." See "An Architect's Perspective on Contemporary Academic Library Design," *Bulletin of the Medical Library Association*, 11 (1997), 351.

[13] For instance, the collections at the university libraries that are members of the Association of Research Libraries (ARL) grew by some 94.5 million volumes, or about 29%, in the decade from 1991–1992 through 2000–2001. The number of hardcover books (only) published annually in the United States grew by some 25,000 volumes, or about 90%, in the decade from 1990 to 1999. For information about the growth of library collections, see the annual statistics published by the Association of College and Research Libraries at http://www.ala.org/Content/NavigationMenu/ACRL/Publications/Academic_Library_Statistics/Academic_Library_Statistics.htm, and by ARL at http://www.arl.org/stats/arlstat/index.html. For publishing industry figures, see the yearly statistics published in the *Bowker Annual* (New York: Bowker).

tion and renovation in the 1990s provided shelving space for some 145 million additional volumes, with some 34% of that capacity provided in new construction (see Table 1). Clearly, traditional library needs had a very strong hold on library construction and renovation in the 1990s.

What are the prospects for change regarding this single strongest motivating factor and most traditional of library needs?

None of the 26 library directors interviewed for the study saw electronic publications as offering any relief from the pressure on shelving space as regards monographs, either now or in the foreseeable future. Most did comment, however, that the online availability of journals now offers and will continue to offer appreciable relief from shelving space needs. Library directors regularly commented on their newly acquired ability to remove back files of journals from prime shelving space or from their collections altogether. A number of directors specifically mentioned JSTOR, along with other publishers of electronic journals, as providing this leverage on shelving problems.

Some library directors mentioned designing specialized off-campus shelving facilities, often as a future possibility rather than as a present option for meeting shelving needs. There were probably only three specialized shelving facilities in the study's database of 438 projects undertaken in the 1990s, and only one such facility responded to the survey. It appears from these limited data that the largest research libraries are investing in such facilities and that most of those built in the 1990s were designed for the use of a single institution, rather than as collaborative ventures among a number of institutions.[14] Several directors at libraries with smaller collections expressed the wish to participate, sometime in the future, in a collaboratively managed shelving facility.

For many librarians, the prospect of off-campus facilities remains comfortably in the future; their strong preference for the present is to maintain collections on open, browsable shelving. The facilities manager at one large research library (Interview 11)[15] spoke of having fewer than 10 years of collection growth space, even after a major renovation aimed at providing new compact shelving. He described the pleasure readers take in improved collection access made possible by recent renovations; the relief librarians feel in avoiding off-campus shelving for the present; and a resolve not to assume that such shelving will be the right solution to future shelving problems.

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[14] For information about facilities built collaboratively, see Bernard F. Reilly, Jr., and Barbara DesRosiers, *Developing Print Repositories: Models for Shared Preservation and Access* (Washington, D.C.: Council on Library and Information Resources, 2003). See also Danuta A. Nitecki and Curtis L. Kendrick, eds., *Library Off-site Shelving: Guide for High-Density Facilities* (Englewood, Colo.: Libraries Unlimited, 2001).

[15] When individual interviews are referred to in the text of this essay, the kind of institution involved is identified using terms akin to those used by the Carnegie Foundation for the Advancement of Education, and the interview itself (described in part 2 of the report) is referenced. Quoted comments by individuals that are not so referenced come from comments supplied on the survey instrument (described in part 3). Both the interview transcriptions and the survey comments are provided in the online version of this report, available at http://www.clir.org/pubs/abstract/pub122abst.html.

Indeed, a general preference was clear in the interviews for on-site shelving, whether of conventional or movable, high-density design. Most library directors tried to more than meet existing needs with such shelving, some seeking as much as 20 years of additional collection growth space. Though all library directors acknowledged the difficulty of predicting future rates of collection growth, none expressed willingness to forgo any of the shelving they could reasonably include in recently completed projects.

With present shelving needs met, most of the library directors interviewed for this study expressed little anxiety about future shelving needs. Few could imagine such needs becoming urgent during their tenure as directors. More important, many felt that—with burgeoning online resources and off-site shelving facilities a possibility—it was unlikely that shelving needs would ever again drive library space design in the way it had in the past. These directors sensed in the relaxing hold of collection growth on space needs some possibility for interpolating new ideas about the use of library space.[16] The ambiguous force of such thinking was, however, evident in the view of one liberal arts college dean (Interview 6) that it was quite possible in the next 20 years for pressure from the college's growing collections to displace reader accommodations, as it had before.

> It certainly could [happen]. It's probably 10 years down the line . . . but I could see that happening. . . . It's just the realities of working within a fairly tight budget. . . . One of the things that happened when we got done with the renovation and expansion is that the space got so much more attractive that the number of visitors [i.e., readers] simply doubled or tripled. It went way, way up. And so the question is, can the library if it gets significantly more full [with print material] still accommodate that number of students? And it will be difficult.

Library directors and chief academic officers alike observed how commonly in the past the need to add shelving crowded readers out of library buildings. In this way, libraries became ever more simply places to house printed collections. When choices were forced, shelving the collections has been more important than maintaining reader accommodations. New construction and renovation are commonly designed to counter—for shorter or longer periods of time—this apparently unstoppable tendency of the collection to consume space and, ironically, to drive readers away from libraries. It is going to take more than a decade of experience with electronic publications and alternative shelving practices to free higher education from the threat that print collections pose to good libraries. There is evidence

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[16] See, for instance, a 1992 account of the study, requested of the Minnesota State University system by the state legislature, to envision the library of the future: Linda Bunnel Jones, "Linking Undergraduate Education and Libraries: Minnesota's Approach," *New Directions for Higher Education*, no. 78 (1992), 27–35. The Minnesota study held that because libraries would, in the future, rely extensively on one another for collection sharing, there would be more space available "to devote to students' learning environments. [The study's architects recommended] a reversal of the ratio of books to study space from the previous 50% for collections and 38% for study space" (p. 33).

that many involved with library planning hope a process of gradual change has moved us past the point where this familiar cycle of behaviors will entrap us again. But there is little evidence that the higher education community has reached the point in its thinking about libraries where it is ready to affirm that readers will assuredly have first claim on space even when space becomes highly constrained by collection growth.

Accommodating Improved Library Services

Library projects in the 1990s were designed to meet a host of operational needs beyond that of shelving collections. As indicated in Figure 2, the single most frequently expressed such need was for space to support the library staff's instructional activities in information literacy and staff development. The need for electronic classrooms has become so apparent that survey respondents felt little need to comment on anything beyond the number, size, technical capabilities, and use policies for such instructional spaces.[17]

Figure 2 also indicates that library projects in the 1990s were strongly motivated by the need to accommodate the delivery of public services other than reference. Survey respondents described numerous public service activities—prominently including circulation, interlibrary loan (ILL), and special collections—that benefited from new or renovated space. The automation of library functions and concomitant changes in workflows were often mentioned as factors that motivated capital projects. Respondent comments suggested renovations rarely reached beyond the operational needs of individual library departments in their consequences. The comment of one doctoral university respondent typifies the description of these operational goals:

> [We wanted] to consolidate access services functions to reduce service points and to better utilize both space and staff. For example, we felt that reserve processing and ILL services should be adjacent to one another to maximize the use of equipment and staff. We envisioned using reserve staff to assist ILL staff in ILL during the summer and during other slow times in course reserve processing. We also envisioned using ILL staff for copying and scanning course reserve materials during Reserves' peak times. We have been able to make these staffing changes work because of the reconfigured spaces.

There was also some need to accommodate non-library operations in library projects. As indicated in Figure 4, such needs produced a bipolar response. Significantly more respondents (25±6%)

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[17] The survey among Council of Independent Colleges institutions confirmed the importance of teaching space for the library's own instructional program. Some 75±8% of those respondents strongly agreed that existing library space should support such activities, while 79±8% of the respondents would assign high priority to such activities in any new library space. There was a statistically significant difference of opinion on this matter between library directors and chief academic officers, of whom 96±4% and 66±9% respectively would give high priority to such activities in new library space (see Tables 6a–b).

than one would expect in a random distribution indicated that the need to accommodate non-library operations was not a factor in their planning, while at the same time significantly more than one would expect (34±6%) indicated it was a strong motivator. Respondents mentioned media services, academic computing services, centers for instructional technology, centers for teaching and learning (often but not necessarily rooted in instructional technology), and student writing centers as academic operations not administered by the library but sometimes housed in library buildings. Interviews with library directors suggested that decisions to place these functions in library buildings were most often simply pragmatic—i.e., library space existed or could be created for these units—rather than a product of strategic collaboration between such units and the library. Strategic partnerships can indeed develop out of the experience of library and other academic staff working in close proximity with one another, but such partnerships seem most often to develop after the fact and slowly.[18]

By far the most common provision for the changing operational needs of libraries was to design for as much flexibility in future uses of space as possible.[19] Some 72±6% of survey respondents said their projects provided for future changes in space use, a figure substantially above what one would expect in a random distribution of responses. Survey respondents frequently mentioned open, modular floor plans, floor loading capability for both conventional and moveable shelving, pervasive conduits for electrical power and telecommunications, and flexibility in providing networking technology as key strategies for meeting future, mostly unpredictable, needs. One respondent at a master's degree institution commented soberly that such flexibility in providing for an unknowable future comes at a cost, and that "budget realities forced us to cut back somewhat on flexibility." Costly as such flexibility may be, the certainty of change makes it a good investment. Some 61±6% of survey respondents reported having experienced the need to make further space changes relatively soon after completing their projects (Table 4a, question

[18] The Council of Independent Colleges survey asked specifically about the inclusion in libraries of centers for innovation in teaching and learning. Responses suggest changing views about the desirability of including such activities in library buildings. Only 16±7% of those respondents strongly agreed that existing library space should support such activities, while 30±9% of the respondents would assign high priority to such activities in new library space. There was a statistically significant difference of opinion on this matter between library directors and chief academic officers, of whom 44±10% and 18±8% respectively would give high priority to such space use (see Tables 6a–b).

[19] For an extended treatment of this subject, see Brand 1994. Brand identifies libraries as "a glorious case for study [of what he calls High Road buildings]. They exude architectural permanence. Meanwhile their collections grow and grow, and the pressure [for change] builds" (p. 44). Writing of the Boston Athenaeum and the London Library, Brand says that "the product of careful continuity is love. Members of both libraries adore their buildings. . . . Trust, intimacy, intense use, and time are what made these buildings work so well" (p. 49).

13).[20] Several respondents described the benefits already realized from flexible designs, one of them from a doctoral university saying that "flexibility was a big issue, thus, big open floors not filled with stacks has been a big boon. We have moved services, technology, and collections multiple times since completion [in 2001]."

Beyond specific operational needs, planning for new and renovated library space commonly aimed at accommodating broad shifts in information technology. The comment of one respondent from a master's degree institution explains the importance of such planning:

> [We had] a tremendous need to transform a 1960/1970s facility into a twenty-first century academic library. The library renovation and expansion project was as much about preparing for new technologies as it was about our need for additional space. This gets a #5 [i.e., a strong motivation rating in the survey]!

Survey respondents often commented on efforts to link print and electronic resources by locating workstations in the midst of print collections; to provide readers with ubiquitous connectivity through wired or wireless systems; and to develop information commons that provide workstations with a variety of information management software and access to broad-ranging information resources. Taken together, such efforts could go some distance toward changing a library's authority on campus and its image of itself, as another respondent from a doctoral university made clear in describing the impact of a major consultant's study of information technology:

> That report from an outside group made it possible for the library to have influence that it would not otherwise have had. The campus had made the decision to focus on technology. This provided somewhat of a blueprint. And I think frankly it allowed the library to present a picture that was not entirely dependent on the campus computing center's perspectives, which were probably not as ambitious as were [those] involved in this report. . . . [The report] really changed the nature of the conversation rather than making any specific recommendations. It really positioned the library to be a different thing than it would have been, in the way the whole campus thought about it, rather than the specific projections on the technology. . . .
>
> Importantly, the library went from being a small underfunded library at a second tier university to one of the most technologically sophisticated academic libraries in the country. Over several years the library's conception of itself changed to

[20] One would predict this need to be more evident in projects completed earlier in the 1990s and less evident in projects completed later in the decade. Analysis of the responses by year provides weak support for this hypothesis. The actual distribution of responses on this matter differed significantly from a random distribution for 1994, 1997, and 1998, where the number of positive responses (i.e., responses indicating the need to accommodate further change) was statistically high, and in 2000 and 2001, where the number of positive responses was statistically low.

> view itself as a leader. The new building and the technology that came with it in many ways transformed the whole library's view of itself.[21]

The architectural challenges involved in making the changes described here, though surely important, are nonetheless relatively ordinary: attention to adjacencies, the more effective use of space, designing to support efficient workflows, open floor plans, and robust telecommunications capabilities. Success in handling such commonplace design issues can pay remarkable dividends. Library operations become notably more convenient and more efficient for readers and staff alike. Due especially to the capabilities of library management systems and the provision of online information resources, readers are no longer required to visit the library to discover and make effective use of information. They readily command immense library and other information resources in their offices, laboratories, and residence halls, at home, and even on the campus green. Readers have embraced the virtual library and value it highly. In the 1990s, libraries dramatically enhanced their utility by moving much of their services into virtual space and reducing the necessity of using actual library space.[22]

Accommodating Students' Need for Learning Spaces

Libraries succeeded so well in improving their services and supporting electronic information resources that many—especially those asked to pay for it—began to question the need for bricks and mortar library space. The dean of a liberal arts college (Interview 6) wanted particularly to counter the view that libraries as places are becoming obsolete because of the emergence of information technology. He wanted to protect the idea of a traditional library as a vital component in the life of the college. "There are voices out there that would tend to feel that the library is something of an albatross around an institution's neck, and that's not the case at all." Understanding better the behaviors of those who continue to make frequent and significant use of library space, especially students who are by far the most frequent users of library space,[23] and responding to those needs became an important counter to the skepticism voiced about the value of library space.

The dean just quoted argued that the library is "probably the most important place for learning on campus. . . ." Recognizing this

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[21] The last sentence of this quotation comes from the respondent's written comments made on the study's survey; the rest of the quotation is from the respondent's interview (Interview 17).

[22] See Scott Carlson, "The Deserted Library: As Students Work Online, Reading Rooms Empty Out—Leading Some Campuses to Add Starbucks," *Chronicle of Higher Education*, November 16, 2001, A35–A38. See also Amy Friedlander, *Dimensions and Use of the Scholarly Information Environment. Introduction to a Data Set Assembled by the Digital Library Federation and Outsell, Inc.* (Washington, D.C.: Digital Library Federation and Council on Library and Information Resources, 2002), part 2: Infrastructure, Facilities, Services, and Table 66, available at http://www.clir.org/pubs/reports/pub110/introduction.html#part2.

[23] See Friedlander, part 2 and Table 32.

value, the study survey asked a number of questions about the ways reader accommodations, and especially student accommodations, were improved. These questions were not concerned with the direct operational needs of libraries (for instance, to shelve its collections or improve circulation functions), but with the need to accommodate the learning behaviors of students. These questions were asked to help understand how library design in the 1990s responded to the needs of students not simply as users of information but more broadly as learners.

Asked about student learning spaces, library directors reported providing group study space much more frequently than one would expect in a random distribution of responses (see Table 4a, question 7).[24] Interviews with library directors and academic officers suggested that the need for such space became newly apparent to them during the 1990s, as they consulted with students and observed what succeeded in other library projects. Tellingly, one research library project (completed in 1996) that was strongly oriented toward students nonetheless missed the importance of group study, at least in one respect, and had to reconfigure its space after the fact as student preferences became apparent. The institution's chief academic officer (Interview 1) affirmed that the project was informed by a

> deep conviction . . . that students would drive the evolution of this facility. . . . And for many years, we'd had the philosophy in other parts of the university that you build a very powerful and flexible environment, and then you let the students shape it. So for example, when we first built the place, we built it in the traditional way in which each student would have their own workstation and so forth. And then we began to realize that's not the way students work these days. They work in teams where three or four students will gather round, and they have three or four workstations. So we reconfigured all of that, to let the students define how they learned and how they approached their activities. . . . We felt that if we built the space, and did it in a flexible way, the students would define their own learning environment. I think that's what's been happening.

The library director at another doctoral university (Interview 12) spoke with obvious pleasure of the way his project enables effective student learning:

> Just the most notable thing about usage is . . . the extreme growth in group study. . . . We're seeing that virtually all of [some 250 tables seating four to six students] are filled with students working together, and . . . the thing that makes us happiest is that we somehow stumbled into a really high-use kind of thing here that reflects how people function within their classes and work

[24] This was also the case in the survey conducted among institutions belonging to the CIC. Of these respondents, 51±10% indicated that accommodations for collaborative learning among students would have high priority in new library space. There was a statistically significant difference of opinion on this matter between library directors and chief academic officers, of whom 64±9% and 41±10% respectively would give high priority to such uses of new library space (see Table 6b).

> with their fellow students. . . . [This space] will be filled, literally every chair, . . . and they're all talking at the same time. And the hum that rises above this is just amazing. And they don't care. . . . There's all this din that occurs [from] hundreds of students in this same space, all working together and all talking at the same time. Immediately adjacent to a typical space like this is a space with like 60 computers, and they're all clustered around the computers as well, working together in some cases. Somehow it just all came together as a very useful space for students. . . . We just beam with pride. Every time I come down the elevator to leave, and I see these hundreds of students out there—that just never happened before."

Group study space was the only kind of student accommodation that respondents mentioned more often than would occur in a random distribution of responses. Other student-oriented spaces (e.g., computing laboratories,[25] conference or other information meeting space) did, however, figure in the responses, as did traditional ways of meeting student study needs, such as carrels and general purpose or subject- or format-specialized reading rooms. Several respondents described accommodations provided for students with disabilities. One library director at a master's degree institution emphasized the need to accommodate a variety of student learning modes: "We pride ourselves on creating as many different study environments as there are 'study styles.' Large and open, small and intimate, lots of sunlight, low light, etc. etc."

Two other kinds of space directly responsive to student needs deserve mention here: space for social purposes and for food. The view that food should be kept out of libraries seems largely to have collapsed in the 1990s. Survey respondents reported that 50±9% of the projects included vending machine food and beverages, while 23±8% reported including staffed food services and another 27±8% reported some other type of food service. The provision of vended food occurs more often than one would expect in a random distribution of responses (see Table 4a, question 9). It would seem that new library construction or renovation now regularly provides some kind of food service. This surely responds to student desires (often expressed in defiance of library rules against food and beverages) and to the practices of some bookstores. If one acknowledges the social dimensions of learning and knowledge, the provision of food—so often strongly associated with social activities—seems quite appropriate. One respondent at a doctoral university commented on the extraordinary success of its library's food service:

> Three years ago . . . the library built a donor-funded café serving beverages, espresso, sandwiches, pastries, and grilled sandwiches. The café is open 90 hours a week and 24 hours [a

[25] Most respondents to the survey among CIC institutions assigned only medium priority to general computing laboratories for students as a feature of new library space. Statistically, the responses to this question approximated a random distribution, so it cannot be said that respondents were decidedly of one view about how important such a facility would be in new library space (see Table 6b).

> day] during finals. An outside vendor is operating the [café name]. The café is proving to be the most successful on-campus food operation.

The social dimensions of learning and knowledge found many other architectural expressions in projects of the 1990s. Survey respondents frequently described entrance lobbies and atria, group study rooms and other study areas, computer laboratories, and lounges as social space. Other responses indicate a wide variety of spaces (from elevator lobbies to rooftop gardens) are used as social space. Several respondents mentioned outdoor spaces adjacent to the library as having been built and landscaped explicitly as social spaces. It is clear that students will create social spaces for themselves, whether or not space is designed for this purpose. A respondent at a doctoral university commented that "in the old library, social groups making noise were disruptive so this activity was designed out of the new building. The students of course found their own way to socialize and noise is an issue." Another respondent at a master's degree university happily affirmed that "I consider the entire facility a social space for students." Still another respondent at a doctoral university reported that "fortunately or un[fortunately], the entire library has become a huge social space. Our usage is soaring, it is hard to find a seat at many times, and we are a most popular destination for our students."

This last comment suggests some ambivalence about the library being so popular a social space among students. Statistically, survey respondents reported providing social spaces for students some 47±7% of the time, close to what one would see in a random distribution of responses. Ambivalence about concepts of the library as a place for individual and for social study is more evident in a separate survey, conducted in November 2001 among library directors and chief academic officers at institutions belonging to the CIC (see Tables 6a and 6b). Respondents at these typically smaller, tuition-dependent institutions agreed strongly only 16±7% of the time that socializing among students (without food service) should have high priority in *existing* library space. This view was expressed much less often than one would expect in a random distribution of responses. The same respondents, however, assigned high priority 26±8% of the time to such socializing space in any *new* library space that might be created on their campuses. And while most of these respondents (41±10%) gave social space only medium priority, the upward shift in priority for the social uses of existing and new library space may suggest a growing acceptance of the importance of the social dimensions of learning and knowledge.

Thinking about the library as a social space, rather than as space primarily for undisturbed reading and individual study, involves some recasting of ideas about what makes for success in library planning. The importance to students of this recasting was strikingly evident at one liberal arts college, where the library director (Interview 25) reported there had been no place on campus for students to study together, except the dormitories, which did not work

well. Students, he said, were sitting on hallway floors and in vacant classrooms. They "wanted to come together in some other place, and in fact they do come together now [at the library]. This is both a very social and a very studious library. . . . . And it's been that way since we opened up." In their behavior, students at this college and elsewhere have affirmed quite decidedly there is no contradiction in thinking of the library as both a social and a studious place.[26]

4. Project Planning Methods

Recognizing the importance of the initial steps in project planning, institutions engaged seriously with various assessment, goal-setting, and programming activities. Significant variation in these activities is, however, apparent. One respondent at a general baccalaureate college commented that "we had done . . . [assessment] activities as a matter of course," while another respondent at a doctoral university reported that "very little time [was] given to assessment, due to the press of work and the small number of staff members." A number of respondents distanced themselves from the survey's emphasis on *systematic* assessment by describing their planning as "thorough" or "extensive," if not "systematic." This comment from the library director at a doctoral university typified such caveats:

> While we could not claim to having done formal assessments, we certainly spent time analyzing not only the present but also the future trends in student learning, teaching, and . . . learning spaces and learning technologies. Our goal was to be ahead of the curve and proactive—not just a responder.

Follow-up interviews with library directors made it clear how informal many assessment activities were.

Figure 5 lists the planning methods survey respondents reported using significantly more often than one would expect in a random distribution of responses.

FIGURE 5: FREQUENTLY USED PLANNING METHODS

Source: CLIR Survey (Table 4a)

Planning method	*% of affirmative responses*	*± confidence interval*
Systematic assessment of library operations	**85%**	**5%**
Faculty involvement in planning	**75%**	**6%**
Project influenced by overall "vision" statement	**65%**	**6%**
Systematic assessment of reader or user wishes	**64%**	**6%**
Systematic assessment of fit with other spaces	**58%**	**7%**

Predicted frequency in random distribution = 50%

By far the most frequent planning method was the assessment of library operations. Survey respondents describe surveying faculty and student opinion about operations, projecting collection growth, identifying appropriate environmental standards for preserving collections, studying adjacencies, and doing environmental

[26] Another library director, serving at a doctoral university (Interview 8), observed that "the library is one of the few places on campus where you can be productive and social at the same time."

scans—especially of information technology. These assessments were sometimes done by or with the assistance of a library consultant. Site visits to other libraries, reference to library space standards set by the Association of College and Research Libraries (ACRL), and statistical comparisons with peer institutions were also mentioned as means of systematic assessment.

To meet needs without wasteful duplication, library projects were often planned with reference to other spaces available on campus, especially student gathering spaces, auditoriums, and computer laboratories. Survey respondents reported planning the library as an element in a larger plan of campus accommodations 58±7% of the time, a rate that differs just slightly from what one would expect in a random distribution of responses.

As Figure 5 indicates, faculty were regularly involved, especially in the preliminary stages of planning, when project goals were determined. Commonly, such involvement was achieved through standing library advisory committees or committees appointed especially for the building project. Normally, students served on these committees as well, but their involvement appears to be less certain and their impact less significant. Some 51±7% of the respondents reported students being involved in space planning, a rate indistinguishable from a random distribution of responses.[27] Many survey comments indicate that faculty and student views had little impact on the planning process; no comments identified faculty or students as having a major impact. One librarian at a liberal arts college (Interview 26) commented that both faculty and student representatives on the project planning committee showed little significant interest in detailed planning, attending meetings only when the architect made presentations. The role of faculty in library planning is described more fully in section 7.

Some 65±6% of survey respondents reported that their projects were meaningfully influenced by an overall vision statement describing the library's mission and services. These documents are typically the products of substantial planning exercises that can be either independent of library space planning or integral to it. Vision statements commonly serve to explain and validate the library's mission and win broad adherence to that mission within the academic community.[28] In actuality, by far the most important audience for such statements is the library staff that develops them. Other audiences include the faculty and student committee that commonly advises the library director, the administrative officer to whom the library reports, and—where appropriate—those charged with space planning.

While vision statements typically assert the centrality of libraries to academic life and the role libraries play in supporting teaching and learning, these statements are rarely informed by any systematic

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[27] The same percentage of respondents reported consulting with still other constituencies, including institutional governing boards, alumni, community members, donors, and Library Friends.

[28] See, for instance, Jo McClamroch, Jacqueline J. Byrd, and Steven L. Sowell, "Strategic Planning: Politics, Leadership, and Learning," *Journal of Academic Librarianship*, 27 (2001), 372–378.

assessment of how students actually learn or how faculty teach. The same is true of space planning. Figure 6 lists the planning methods respondents reported using significantly less often that one would expect in a random distribution of responses.

FIGURE 6: INFREQUENTLY USED PLANNING METHODS

Source: CLIR Survey (Table 4a)

Planning method	*% of affirmative responses*	*± confidence interval*
Systematic assessment of modes of student learning	**41%**	**6%**
Systematic assessment of modes of faculty teaching	**31%**	**6%**
Post-occupancy assessment	**16%**	**5%**

Predicted frequency in random distribution = 50%

It is regrettable that library claims to support learning and teaching are so rarely backed by any formal, systematic understanding of these most fundamental activities of higher education. Interviews with library directors made clear that even when, in the survey, the director had affirmed doing a systematic assessment of student modes of learning, what had typically been done was a survey of student preferences regarding group study space and types of seating.

Although it spends hundreds of millions of dollars every year on building and renovating library space, the academic community in America rarely feels the need, as Figure 6 indicates, to undertake any formal post-occupancy study of the success of library projects.[29] No doubt the daily experience of working in and of serving readers in new or renovated space provides telling evidence about project success. And library directors are not slow to recognize the need for further change. As noted on page 14, some 61±6% of survey respondents reported the need to make further changes in their libraries relatively soon after the completion of their projects (see Table 4a, question 13). The data most commonly cited to support claims of project success are counts of people entering the library. These and library circulation figures often increase dramatically after the completion of a library project.[30] These figures often match campus-wide changes in the perception of the library as an object of institutional pride and as a prized means of advancing teaching and learning. The library director at a master's degree institution (Interview 21) proudly reported that "one faculty member said to me, . . . this [renovation of the library] is the best thing to happen to students on our campus in 30 years. And I think that's absolutely true."

[29] For an exception to this practice, see Lynda H. Schneekloth and Ellen Bruce Keable, "Evaluation of Library Facilities: A Tool for Managing Change," *Occasional Papers*, University of Illinois Graduate School of Library and Information Science, Number 191, November 1991.

[30] See, for instance, Harold B. Shill and Shawn Tonner, "Does the Building Really Matter? Facility Improvements and Academic Library Usage," contributed paper, ACRL 11th National Conference, Charlotte, N.C., April 12, 2003. PowerPoint slides are available at http://www.hbg.psu.edu/library/presentations.html.

5. Character of Planning Methods and their Outcomes

Was library space planning in the 1990s still primarily extrapolating on past experience, in the belief that the only prediction about the future that could confidently be made was that it would look rather like the past? Or was planning in some way attempting to interpolate a significantly different vision of the future and hoping to bring that future into being through planning decisions?

It appears from the survey data that library space planning was still primarily extrapolative, responding strongly to traditional needs and ideas of library service.[31] To test this perception, the following proposition and questions were put to the library directors interviewed for this study:

> Survey results indicate that while changes in technology frequently drive the need to reconfigure library space for specific services and operations, there is relatively little fundamental rethinking of the need for and uses of library space. Aside from the omnipresent computer (often presented in clusters), group study space, and electronic classrooms, library space today has much the same character and basic function as library space built a generation ago.
> • Do you agree with this characterization of your project? If not, how would you modify it?
> • Should we expect major changes in library space design to evolve in largely incremental and experimental ways, building on what we know has worked well in the past?
> • Are there opportunities to break with an evolutionary process of library design and adopt more radical, revolutionary, and possibly risky views of what library space should be?

The phone interviews did not always adhere closely to their script, with the result that only 21 of the 25 library directors (84%) interviewed were asked these questions, and of them 19 (76%) responded in ways that were directly pertinent.

Nine library directors affirmed that the projects they had helped to plan were intentionally aimed at traditional needs and designed to affirm the traditional identity of the library. Seven others offered "Yes, but . . ." answers, saying that the proposition fit their library project, with only some qualification. Only two library directors described their projects as aiming at and achieving some fundamentally different vision of the library. One respondent (Interview 14) reported that efforts to reconceive the library as a "teaching library" had failed. Staff members were not enthusiastic about the idea and were glad to see this emphasis die with the departure of the library director who advocated it. "Looking back on these efforts, they now seem linear—i.e., as reasonable and predictable lines of evolutionary development. At the

[31] The library director at a doctoral university (Interview 17) described his project in a way that makes clear how little impact on the physical building a design intended to be pace-setting in technology can be: "In a lot of ways, the building is a very traditional library structure. . . . They just put a lot of wire and a lot of technological capability into a structure that is largely a very traditional building."

time (very early 1990s), they looked more revolutionary."

Those affirming traditional purposes in planning were clear about the values they hoped to achieve. The library director at one master's degree institution (Interview 20) said:

> We built a very traditional building. We sought to provide comfort, quiet, light . . . and convenience—and that's what was missing in the old building. A lack of comfort, I think, if I could sum it up in one word. It just wasn't attractive, it didn't feel good to come in; people used to tell us they were doing fine until they got an assignment that made them come into the library. . . . Our design has worked magnificently. And we get compliments constantly about the way the building feels when they come in. [So we] satisfied some basic human need for comfortable space to sit, to focus and concentrate. . . . I also see faculty who actually come . . . [to] hide out over here. Never did that before! So we're meeting a need for things other than the computers and wireless networks and group study and conference rooms.

Another director, at a liberal arts college (Interview 25), made the same point, emphasizing the communal function of the library:

> Libraries are [often] very gloomy; they're not very nice places. They're not attractive. . . . Why shouldn't students have decent light and a comfortable chair and a clean environment and room to spread out their materials so they can work? And also to be able to see their friends when they're there? You know, this is their community now. They've left home; this is their world. And so I think that's what we're providing them: a place where they can develop and grow.

Another director, at a doctoral university (Interview 9), described the effort to design the library as a campus crossroads, open to a variety of activities not managed by the library, as aimed at traditional values. "We're designing to functions that I hope will still be embedded in the library of the future, in terms of intellectual and social commons for students and faculty." One other director, at another master's degree institution serving one of the nation's largest cities, described the result of providing readers with library space that is both comfortable and handsome:

> The building is so unbelievably gorgeous, and so majestic; it's so grand. . . . If you came to our building, I'm sure you would be in awe. It is like what a grand, wonderful library should be. . . . It has an impact on what people do when they're in the building, how they feel. . . . It's a very important statement for the college to make. It's the most democratic building on campus, and if it's grand and awe inspiring and at the same time warm, comfortable, and inviting, it makes a tremendous statement about how the college feels about learning and teaching. Our president has said that for [the institution's name,] the library is an article of faith.

Notably, these champions of the traditional library speak com-

pellingly about reader accommodation. While survey results indicate that accommodating print collections was the single most powerful project motivator in the 1990s (see Figure 2), it is reader accommodation that seems most powerfully to define the traditional library.

Most of the library directors who responded with "Yes, but . . ." comments qualified their affirmation of traditional purposes by describing efforts to provide supportive environments for the use of information technology. Actual changes in library spaces focused on computer clusters, information commons, and decisions about adjacencies between print collections and computers. Two institutions reported diametrically opposite results in bringing print and electronic resources into close proximity, one having to abandon the effort after the original project design proved a failure. The director at a regional campus of a doctoral university commented that while no effort was made to design a radically different library, and while conservative attitudes among some faculty inhibit radical change, it is nonetheless possible to advance significant change: "If we infuse technology into library space, we affect perceptions of people in the environment. We position the library in a way that it can be seen as a leader in the intelligent adoption of technology for use within the community." The effort here is to change perceptions not of library space but of the library as an organization.

A librarian at a liberal arts college (Interview 28) described the first phase of their renovations as aimed at traditional needs, while the current phase pursues a significantly different view of the use of library space:

> We are changing with this renovation from an old fashioned library where the client comes in and consults with the librarian or consults with a computer to get some information and then goes off to do whatever they're going to do. What we are planning for and implementing right now is space that supports a student who comes in and wants to start her research in the reference area. So she sits down at a spacious table with a computer. She spreads herself out and she goes to work. She does her work. She starts her writing. She talks with a reference librarian and so on. So she's there for the duration. . . . Just a few steps away is a very large reading room. And this really defines the change too. Before the renovation it had been stack area. . . . After the renovation, . . . this area is becoming a large reading room which is going to have vending machines with it so that students can go in and relax a little bit, can eat, can do their work, and at the other end of the room they have newspapers and current periodicals. So while the standard resources are still here, the way we allot the space and place our service points has evolved.

The interviews suggested some experimentation in designing space to support readers deeply engaged with electronic information resources. The library director at a doctoral university (Interview 13) described the uncertainty and the importance of such planning, given the amounts being invested in library and other buildings:

> What we're trying to do is to figure out the physical requirements, the space requirements . . . [for] the new role we see the library playing in terms of the creation and management of digital information. The need to educate and train students and faculty on use of the technology and the ways of creating new digital products are all things that we're trying to think through in terms of space requirements in the new library. We don't have the answers there, and we haven't found anyone who has the answers. The architects aren't helpful, because it's not an area where they've had a whole lot of experience. What you describe [i.e., traditional library design] is exactly what we see around us in terms of how other people have gone about thinking about the technology piece of what they're doing. And we're looking for some better support, some better advice. It's part of a larger campus problem that I've identified here everywhere. There's a tremendous amount of construction going on on this campus right now, compensating for 20 years of neglect on academic facilities. And there is such a huge disconnect between the architecture—the design of the space—and the technology piece. Those two pieces have not been brought together.

Vital as the effective accommodation of information technology is, it arguably should not be the dominant concern in planning new library space. The library director at a liberal arts college commented, in a follow-up message after the interview, that

> there is a strange dialectic right now (at least since the mid-1990s) between libraries and technology that we in the profession have not worked through. I['m] thinking here not just of the print/electronic nexus but also the notion of a library as a space for thought, reflection, study, and active learning. . . . In planning new spaces, we should have . . . [this second set of issues] foremost in our minds. But it's hard, because many on our campuses really just want us to solve [i.e., eliminate] the 'space problem' rather than begin the process of rethinking the role of the library in positive, proactive way.

The same library director (Interview 29) commented that technology sometimes drives library design for the worse, producing libraries that are over-designed for technology. "Technology was not the solution to our problem, and we really need to let the teaching mission drive the process. So we listened closely to the faculty, and we tried to listen to students."

Only two library directors reported success in a significant re-conceptualization of the library.[32] In one case, at a doctoral university, this was the result of the chief academic officer's leadership and

[32] The William H. Welch Medical Library at Johns Hopkins University was not in the database of projects developed for this study. But recent planning for this library is notable for its interpolative re-visioning of how library space might be used. Nancy Roderer, director of the Welch Library, wrote in private communication with the author that Welch Library staff "imagined that [in the future] the medical information user's everyday information needs could all be met electronically—and then tried to work backwards to the current time." The summary report on this planning may be read at http://www.welch.jhu.edu/architecturalstudy/summary/summary.pdf.

his insistence on the value of proximity and integration among information resource units. This person—described by the library director as the "godfather" and "guardian angel" of the project (Interview 8)—insisted that the library and other technology units share the building without having their own discrete spaces.

> In the planning process for this building, . . . the library was uncomfortable with basically being in a building that had such a large non-library presence, and probably felt a little threatened by that, and at one point said, 'Well, just give us our space, and we'll take care of designing that; you [other] guys can go do whatever you want to do.' And that clearly was not going to be the way this was approached. It wasn't until the library gave that up—and a lot of preconceptions were dropped by everybody, really—that things became much more integrated.

The result was that "space in the building was designed to be shared," making it imperative that people from different disciplines and different administrative units work "side-by-side." The result is that one often cannot tell what physical space "belongs" to what program. The library director exemplified the benefits of these arrangements by describing the interaction of library staff with another unit's software evaluation staff: "Proximity is, of course, the thing that really does it more than anything else. Proximity to the special things that exist in this building as well as proximity to the other staff." The chief academic officer (Interview 1) described the building as a "creative space, built around creativity and technology" and speculated that "when the building finally came on line . . . my suspicion was that there probably weren't over a dozen people in the university that had the foggiest idea what it was." Significantly, the building has been immensely successful with students but has had uncertain success among faculty:

> Part of the challenge is to get the faculty comfortable with coming in to this non-traditional kind of space. Students have no problem with it; they take to it like ducks take to water. They walk in, and within half an hour have found what they need. . . . They navigate very easily. Faculty are very intimidated, particularly because there are so many students in the building all times of the day and night. So we haven't quite figured out how to get faculty here and engaged in it, and by faculty I also mean faculty bringing in their graduate student research teams. And I'm not quite sure what we need to do with that yet. . . . We may try some experiments.

The other library director who described an intention to counter traditional values in planning her library serves at a general baccalaureate college (Interview 31). She described her planning as follows:

> We didn't start out with what I think is the traditional question, 'How much stuff do we have to get in this building and what kind of stuff is it?' . . . We didn't do that. We started out the planning by saying. 'What do we want to happen in this

> building?' And the answer to that was that we wanted to be much more proactive about promoting learning. . . . And that's what we were trying to do—both information literacy, which we consider our discipline, but also other kinds of learning—and we wanted the architecture to make it be like a think tank atmosphere, where there would be lots of exciting ideas bouncing around, and people could interact with each other and text and whatever technological stuff they might require, so that great minds could do their thing in this space.

This library director described a planning session with an architect, a consultant, the college dean, a faculty member, two regents, and an information technology specialist as

> an amazing experience. And that's when we came up with the whole notion that we have three things coming together in this building: we have learners, experts, and tools. And this is the only place where that particular combination comes [together]. Tools you can get anywhere now, and learners can be anywhere and should be anywhere. But experts are not quite so mobile—both librarian experts and classroom faculty experts. But where we all come together is right here in this library.

It was far from clear how best to design space to exploit what makes the library unique on campus:

> We tried to find literature about the design of educational spaces . . . . I was amazed; I found next to nothing, and I thought surely school designers must think about these things, don't they? But I couldn't find anything. I was trying to find out more things about learning styles. We knew we wanted to accommodate many different kinds of learning styles here. . . . But we didn't have a lot of guidance from anything except our own sense as learners and teachers of what people might need. We hoped if we provided enough different kinds of spaces, people would find ones that were convenient for them, or conducive to their own styles.

The library director described herself and her colleagues not as information "handmaidens," waiting for readers to ask for help, but as educators. The embrace of the educator's stance was "completely obvious" for them, as was the desire "to say with the architecture that this [library] building is not about stuff; it's about people." To foster this view, one needs "librarians who think differently. And I'm afraid I haven't seen a lot of those. I hear a lot of librarians being concerned about our relevance in this age. . . . That's a serious concern, but we're not going to answer it by doing the same old things we've always done." Doing something unusual met with little opposition from college faculty or administrators. Indeed, the library director said she "felt really lucky in the whole process that the administration was actually willing to go out on a limb with this building. And they were not only accepting of some different things to do but really eager to do some different things."

The comments of other library directors suggest how unusual the two planning processes just described are. This librarian, at a liberal arts college (Interview 27), observed that

> Facilities are very expensive. It's hard to figure out how to experiment. . . . We're going to be fairly conservative about that. At least in the college library, what you're going to do will be in response to what you think is happening in the curriculum and the way students are going to use information resources in the next five to ten to fifteen years—whatever your planning horizon is. That's about as far as you're going to go. Those changes in curriculum and so forth are fairly conservative, fairly slow to happen."

The library director at still another liberal arts college (Interview 26) expanded the point, arguing that the general environment of higher education has a conservative influence on library planning: "There doesn't seem to have been a paradigm shift yet [in library space design]. It seems to me that higher education in general does not seem to have paradigm shifts very often. So since other things change so slowly, it may be only natural that libraries do."

This picture of library planning outcomes during the 1990s is mixed, though perhaps less mixed than one would wish. Most of the library directors interviewed for this study, whose experience with projects gave them a well-informed basis for judgment, affirmed largely traditional goals for their libraries. One can hardly quarrel with those goals, especially as they focused on improved accommodations for the readers who had so often been crowded out of the library by growing collections. There was in the 1990s some experimentation in designing library space for the effective use of information technology, but most library directors felt these efforts only qualified but did not fundamentally change the traditional character of library planning and the outcomes of that planning. Efforts to interpolate a quite different vision of the future of libraries into space planning were apparently rare—though successful in the two cases identified in this study.[33]

[33] A few library directors spoke of a flexible use of space purposefully designed into their projects as enabling them to make significant changes in the future. In effect, such flexibility becomes an alternative to interpolative planning as a means for guarding today's large capital investments in space from becoming obsolete. This point was made by a library director at a doctoral university (Interview 12), describing a project completed in 1997: "Ultimately, the thing that has saved us is just the opportunity to be flexible and to change with the needs of time. Probably the most outstanding thing I can say about our project [otherwise described as 'pretty traditional'] is that it has given us the opportunity to be completely flexible and grow with the needs of students."

6. Choice of Architect

This study did not collect data on the way architects themselves might influence the extrapolative or interpolative character of library space planning or the outcomes of such planning. Passing comments made by library directors and academic officers indicated high levels of satisfaction with architects. Survey and interview comments warmly praised architects who were attentive to client wishes, suggesting that few architectural firms attempted to reshape the character of space planning where a client was predisposed toward a given planning stance.

Architects are often, but not always, closely associated with the early stages of planning. Libraries are sometimes part of a campus-wide planning effort typically conducted by specialist architects; libraries may also sometimes benefit from campus-wide surveys of building conditions or from a survey focused on the existing library building. The point at which architects most frequently become involved with the academic and other goals of a particular library project is during the actual programming of the project, the stage at which programmatic and adjacency needs get their first conceptual statement, before any design work is undertaken. Early engagement with the architect in developing a deeply shared understanding of the project is critically important to a good match between goals and design decisions; it is equally important in avoiding costly false starts in design and still more costly change orders after construction begins.

This study identified the lead architects for most of the library projects completed in the 1990s. As Figure 7 indicates, architects were known for 388 of the 438 projects (89%) identified in this study. There were 279 different lead architects or architectural firms associated with these 388 projects; architectural firms collaborated on a number of projects, but lead architects only are tabulated here.

FIGURE 7: DISTRIBUTION OF ARCHITECTS

Source: *CLIR Survey* (Table 5)

	Number	*% of Total*
Projects		
With an architect doing 1 library project only	256	66%
With an architect doing 2 or more library projects	132	34%
Total	*388*	*100%*
Architects		
Doing 1 library project only	256	86%
Doing 2 library projects	28	9%
Doing 3 library projects	8	3%
Doing 4 or more library projects	5	2%
Total	*297*	*100%*

It is striking that 66% of the projects were done by architects who had no other library projects in the study's database, with such architects accounting for 86% of the firms commissioned to build or renovate libraries. Library planning in the 1990s clearly had the benefit of a great variety of professional experience. These figures do not suggest that the selection of architects would itself produce any

monotony of thinking about library planning or design.

Just as striking is the evidence of how narrowly focused among architects is substantial experience with libraries. Only 5 firms, among 297, were the lead architects for four or more projects completed in the 1990s.[34] These 5 firms took the lead with 52 projects (some 13% of all projects in the database). If experience matters in library planning and design, as it does in other professional activities, then relatively few projects in the 1990s had the benefit of lead architects with substantial experience. Such experience is doubtless a competitive advantage from the architects' point of view. From the point of view of the vast majority of institutions that are unlikely to secure this degree of experience in their library architects, it would be important to find ways to learn as much as possible from the example of architects having wide experience with libraries. The responsibility for identifying and acting on opportunities for such learning lies, surely, with the library profession itself.[35]

7. Ownership of the Planning Process

The chief academic officers and other principal administrators interviewed for this study identified an important and distinctive characteristic of library space planning. Unlike other academic buildings, faculty do not assert an owner's right to control library planning. This opens the door for others to own the planning process. The dean at a liberal arts college (Interview 6) explained the matter as follows:

> The library planning is almost more like the campus center planning we had. . . . It's a common space; it's not anyone's

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[34] These were, in alphabetical order, Davis, Brody and Associates (New York); Hillier (Princeton); Perry Dean Rogers (Boston); Shepley Bulfinch Richardson and Abbott (Boston); and Woollen Molzan and Partners (Indianapolis). The vice president at a doctoral university (Interview 3) commented on the way a few architectural firms have come to occupy prominent specialist positions in library design. Speaking of one such company, this officer said he hopes the firm "has it right." His comment did not express skepticism so much as a recognition of the inherent risks involved in so many colleges and universities depending on the expertise of the firm in a fast-changing environment where there are few means for validating the firm's judgments.

[35] Efforts along this line are evident in a number of publications. See, for instance, Karen Commings, "Inside the University of Southern California's 'Cybrary,'" *Computers in Libraries* 14 (November/December 1994), 18–19; see also, Webb 2000, Crosbie and Hickey 2001, and Jones 1999. The Crosbie and Hickey volume includes a useful commentary by Hickey (pp. 8–18) in which he identifies nine factors that powerfully influenced the design of the libraries reviewed in his book: (1) the growing importance of electronics, (2) the shift from exclusively individual learning to individual-and-collective learning, (3) community and institutional pride, (4) the emerging role of libraries as campus centers and information commons, (5) the need for less expensive ways to shelve printed materials, (6) the importance of historical materials and special collections, (7) differing concepts about staff-staff and staff-user relationships, (8) uncertainty about the future, and (9) site, budget, and design considerations. In additional to publications, there is a good deal of attention paid to space planning in librarians' professional meetings and symposia. See, for instance, the Third Annual ARL/OCLC Institute Strategic Issues Forum, "Future Library Architecture: Conception, Design, and Use of Library Space," February 15–17, 2002, at http://www.oclc.org/institute/events/lv/Future_Library_Architecture_Draft_Agenda.pdf. See also the programmatic activities of two groups within the Library Administration and Management Association, the BES Buildings for College and University Libraries, and the BES Libraries Facilities Planning Discussion Group at http://www.ala.org/Content/NavigationMenu/Our_Association/Divisions/LAMA/LAMA.htm.

> space in particular. And so as a result, people such as myself have more of an opportunity to make an impact than in . . . [academic buildings in the sciences and arts], where it [i.e., the new building] is . . . sort of owned by the faculty members in that particular discipline.

Many library directors would say that, on the contrary, virtually everyone asserts owner's rights to influence planning, so that building or renovating a library necessarily involves a complex and normally prolonged process of negotiation.

Of course, academic buildings always require negotiated decisions about priorities, project budgets, sites, and, often, exterior appearances. Decisions on these matters are seen to affect many campus interests and must for that reason be made as institutional decisions. But beyond these matters, the occupants of a building normally claim an owner's right to have their views deferred to on anything that will determine the building's success in meeting its academic goals. What do the interviews conducted for this study indicate about the assertion and management of ownership roles in library space planning?

Chief academic officers not surprisingly focus first on their financial responsibility for library planning projects. Such responsibilities normally include enabling decisions that set the project's priority among competing claims on capital resources and ensure funding for the project.[36] These decisions are sometimes made in the context of larger plans for campus-wide renovation. On occasion, project decisions are part of a disappointing history of false starts. One president (Interview 5) spoke particularly of his responsibility to overcome a long history of being rebuffed by the state for capital funds for the library. Academic officers commonly avoid detailed involvement in a project. The executive vice president of a doctoral university, for instance, described himself as "an enabler of sensible academic plans. I tend not to get involved in the details, but I feel empowered to reject them out of hand if they're silly" (Interview 3). Academic officers rarely asserted other roles in the interviews, even when they played them. Where the library director at a doctoral university described his chief academic officer as the "godfather" and "guardian angel" of the project, that officer himself (Interview 1) confined his role to that of appointing a good planning group. The creativity of the planning was, he said, "very much grass-roots driven. It came from some really creative faculty and some very creative deans, and my particular role at that point was to make sure they had the money and to get out of their way." He did, however, strongly encourage the planning group "to push to the limits, to take some risks." Generally, library directors and academic officers agreed on the vital but limited roles of the latter in library planning. The library directors interviewed for

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[36] The library director at a liberal arts college described the impact of a newly appointed president, who had made facilities and space planning his primary agenda and approved a more aggressive approach to library renovations. Responding to a preliminary planning document, the president sent the library director an e-mail message saying that the project "will probably cost twice as much, and let's go ahead and do it. When I got that, I said, 'Hmm, I don't think I've ever received an e-mail like that before.'"

this study, who had all completed projects, spoke of having invaluable support from institutional officers, but very few described those officers as taking any ownership role beyond that of a broadly defined financial responsibility for the project.

Few library projects are planned without the involvement of both faculty and students as members either of a standing library advisory committee or of a specially appointed space planning committee. In this way, they have opportunities for a detailed involvement in planning—and for project ownership—that academic officers generally disavow. Faculty and students typically do not, however, act on these opportunities.

The faculty roles that emerged most strongly in the interviews were those of vetoing bad ideas and of approving, but not generating, good ones. The dean of the liberal arts college quoted above (Interview 6) made the first of these roles clear in explaining what he meant in describing faculty participation in planning as "strong." He said that faculty worked in a collegial way with the architect, librarians, and administration. The most critical juncture came with a potentially controversial decision to treat one floor as a basement for shelving. Faculty "flexibility" in accepting this decision was critically important to keeping the library project within budget. The power to veto key decisions described here was also explicitly identified by the library director at a doctoral university (Interview 7), where again a key decision involved shelving. Library staff addressed faculty misgivings about using available space for purposes other than shelving through individual conversations and through the conversion to project goals of an influential historian, who became convinced of the value of what the librarians were proposing instead of shelving and appreciated the library's efforts to develop online resources for history. Teaching faculty, this librarian said, "can block [a project] if they want to. . . . I learned about campus politics." Both this librarian and the college dean emphasized the value of avoiding conflicts that would likely find expression in faculty vetoes.

Asked whether faculty members played a more creative role in library space planning, the college dean just quoted (Interview 6) described faculty as reactive rather than proactive. "They were not on our committee what I would characterize as being the generator of ideas." The dean went on to say that

> the question is how much real investment do faculty have? And they're invested in the library, but it's not like where they live. . . . [Unlike the library, other academic buildings are] where these people live and work every day. So their involvement with respect to making suggestions and pushing various things [in these other buildings] is really noticeable. It's a huge difference. . . . With the library, I had the feeling that people don't feel as personally invested. . . . They want to have a good library, they want to make sure that we can continue to develop the collection and that students will have a good place to work, . . . but I don't see the faculty feeling like it's some place they're going to spend most of their working hours. And so I don't see them

> as having that kind or level of involvement with the project. If I look at where most of the ideas came from, they came from the architects, the library staff, or the administrators such as myself and the president. The faculty were involved, and we wanted to make sure that it would work well for the faculty, but I can't say that they were the engines behind the planning.

A responding, non-ownership involvement by faculty in planning was evident in another project, at a liberal arts college, where the faculty library committee served primarily as a sounding board for the project and to build faculty ownership of it. The committee readily signed off on the educational features of the project and spent much of its time deliberating on less critical issues, such as carpet color (Interview 29). Such characterizations of faculty involvement typify much of what was said in the other interviews and in many survey comments. Faculty, it appears, commonly assert more of a judge's role than an owner's role in library planning.

Students, who benefited so dramatically from many of the library projects of the 1990s, had the least ownership-like role in planning. Library directors repeatedly commented on the difficulty of sustaining student engagement in planning. The most obvious difficulty was continuing student membership in planning committee work that might extend over several years. It was, however, often possible to get invaluable feedback from students on quite specific questions, such as the choice of seating and the provision of group study spaces. The experience at one doctoral university was particularly dramatic, with student participation starting strong but then dissipating. Before renovations, the library director reported (Interview 12), students were "overall appalled [with the library]. In general, the student view of things was 'Don't go there; you won't find anything you need.' We were just sort of a place that did not figure in students' lives." This indifference was matched by an indisposition on the part of campus administrators and the state legislature to act on library needs. But a new provost arrived and students organized a sit-in to complain about the library. Student activism caught the attention of the president, who commissioned a consultant's report. As the project gathered support, the student senate authorized a referendum, passed overwhelmingly, which allocated student fee money to the library project. For all this activism and commitment, student desires for the project were, according to the library director, "relatively visceral." They included air conditioning, a study space open 24 hours a day, access to food and drink, and group study space. Even in this unusual case, student involvement in library space planning came to be primarily that of a consumer. The evidence of both the study survey and the interviews indicates that students identify themselves as consumers and are treated—with respect, it should be said—as consumers by others involved in library planning.

Who then owns library space planning? Most often it is library staff and especially the library director, working with the architect and the institution's facilities staff. Such arrangements are entirely consistent with the deference usually paid in higher education to the

judgment of a building's occupants. On operational matters—ranging from reference and circulation services to technical services and to the security and environmental conditions needed to protect collections—the professional judgment of librarians is properly respected and normally prevails within bounds set by the project budget.[37] In considering how library space might best facilitate student learning and faculty teaching, topics not squarely within librarians' professional competence in the way that library operations are, the evidence is clear that librarians rarely undertake systematic assessments or seek substantive guidance from students and faculty themselves. One library director after another described, instead, their reliance on direct observation of the behaviors of readers and the liaison structures often built with individual academic programs. The special project manager at one liberal arts college (Interview 28) described this planning strategy and the library's confidence in it:

> We didn't do formal surveys. Given the size of [the college] . . . there's an awful lot of comfortable interaction—library with students, library with faculty, several librarians are on the faculty council. [There has been] on campus . . . a very comfortable respect by faculty and students for the library. I think we felt the communication routes were in place, that a formal survey wouldn't be the best way to hear what people wanted. All along there's very active involvement with and keeping up with not only what the curriculum is now but where it's going. I think there's a very good sense of where the faculty wants to go as well as how students are doing their work. So it made more sense to us not to be formal but to take advantage of the communication routes that we had.[38]

Staff responsible for the design of an electronic classroom at a master's degree institution reported (Interview 23) no student involvement in planning for the classroom. Planners depended on their own teaching experience for their understanding of how students learn. The library director at a liberal arts college (Interview 26) reported that 80% of the design decisions were made by library and other involved staff, drawing on their own observation of faculty teaching practices. The college is small enough so that these academic support staff members understand campus teaching methods and needs quite well. The library director did not claim an equally strong parallel knowledge of student learning behaviors. The library director at another master's degree institution reported that neither he nor his staff had had any previous experience in building new

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[37] Deference to the good professional judgment of librarians was evident in the actions of the chief academic officer at a master's degree institution, whose chief contribution according to the library director (Interview 22) was to tell people to "leave the library alone" as it planned and built the new facility.

[38] This librarian reported the involvement of students in planning "was primarily [through] those who worked for us. You might say they were biased. And of course they are. But they can also speak with us with some understanding of what we can possibly do for them. And some of the most valuable information I got was from our student employees. And the thing I remember most was what kind of furniture they want. . . ."

libraries and were nervous about the task. Working with an attentive architect was helpful:

> Afterward . . . we felt fairly confident that we had zeroed in on what the campus needed, basically. I did not feel as guilty about not doing formal studies and having the time to come up with a plan that was based on surveys and years of thought. . . . Some of this was instinct and our years in the profession—what we had observed. Trying to tap into that and hoping that was accurate. Not a very good thing to say you relied on, when you're spending a lot of money, especially taxpayers' money. We had a confidence level that sustained us throughout. . . . I think getting a consultant in here helped us shape this thing.

It would be unfair to say that the conceptual ownership of library space planning falls to librarians by default. Their professional expertise in managing service operations and their observation of reader behaviors go far toward justifying the deference in planning decisions that project owners rightly claim. But it can be said that lodging ownership with librarians is likely to ensure that planning will give first priority to the operational needs of libraries. Other needs, especially those of students, tend to get less systematic assessment and less well-considered response. Such needs would be better served by a more imaginative, collaborative fixing of ownership responsibility for planning.

The consequences of the somewhat fractured ownership of planning described here occasionally appeared in study data in the form of plans that missed, or nearly missed, important changes in the culture of learning and teaching or that achieved striking success as much because of good fortune as because of informed planning. The case of one library that failed initially to understand the need of students to work in pairs or larger groups at workstations has already been cited. The library director at another doctoral university (Interview 7) described how her renovation plans originally included only a large room for computing. During construction itself, it became clear that what was needed was the ability to distribute electronic resources. So library plans were changed to emphasize networking. "These changes were almost forced by the teaching side," she said, through changes in instruction that involved an increasing use of electronic resources and the university's course-support software.

The language of chance figured importantly in a few interviews. The library director at a doctoral institution (Interview 12) has already been quoted as saying of an immensely popular group study space that "we somehow stumbled into a really high-use kind of thing here" and that "somehow it just all came together as a very useful space for students." More tellingly, the president at another doctoral university (Interview 5) had made the library his signature project, motivated by "an incredible need . . . to just simply have a place to keep the materials. That drove everything in my mind. Secondly was this notion of an electronic access point." When asked about reader accommodations, this president described how little

students had used the former library. "The academic tenor of the institution was being negatively influenced by just simply the cramped physical conditions." The library director and especially one dean on the advisory committee made it their business to build excellent reader accommodations into the project. "That has worked out brilliantly. You go to the library now, and it is a very active and alive place, and I think that may be the singularly most important outcome of our project." Asked if he intended this going into the project, the president said, "No. My most important outcomes were finding a place to put the books and secondly trying, again, to make sure that the library was the information center of the campus, both in terms of hard materials and access to the external media." This president described the success of reader accommodations as "some form of serendipity, I guess," at least as regards his intentions for a project to which he had committed himself so strongly.

8. Partnerships in Planning Library Space for an Impact on Learning

This essay does not argue that academic libraries were poorly planned in the 1990s or that the outcomes of that planning failed to serve readers well. There is abundant evidence of the success of the library projects studied here, not least the evidence of heavy student use of library space that had been thoughtfully designed for them. This essay does however argue that library planning in the 1990s was not systematically informed about modes of student learning and faculty teaching, precisely the arenas in which academic library space could have its "singularly most important outcome" as regards the fundamental mission of college and universities.

The difference between the information commons, a feature of libraries that became popular in the 1990s, and a hypothetical learning commons suggests how limited was the engagement of planners with self-directed learning behaviors among students. These two terms—*information commons* and *learning commons*—draw upon the long heritage of common rooms in higher education, where all members of the academic community can meet informally around shared interests, especially after meals. There are, however, important differences between the two terms.

Information commons emphasize the interdisciplinary character of information and the power of digital technology to manage apparently disparate information resources as one. In effect, information commons marry the best offerings of information technology staff and of librarians. Such spaces characteristically provide readers with highly capable computers offering a wide variety of information management software and access to the richest possible set of information resources. Information commons also provide to readers staff with expertise in information resources and technology who offer both one-on-one and group instruction on how best to exploit the resources of the information commons. Readers are invited to explore, experiment, and learn information management skills useful to them as students and teachers and, indeed, as lifelong learners. Informa-

tion commons respond imaginatively to the need to help readers master information technology as electronic information resources proliferated and the tasks of judging their value and employing them skillfully became strikingly more complex.[39] If one were looking for analog campus spaces, one would think of language laboratories. Both are designed and managed by specialists to achieve specific pedagogical goals. Both create resource-rich environments with specialist staff helping students learn particular skills essential to a liberal education.

A learning commons, as imagined here, would have quite different goals. It would bring people together not around informally shared interests, as happens in traditional common rooms, but around shared learning tasks, sometimes formalized in class assignments. The core activity of a learning commons would not be the manipulation and mastery of information, as in an information commons, but the collaborative learning by which students turn information into knowledge and sometimes into wisdom. A learning commons would be built around the social dimensions of learning and knowledge and would be managed by students themselves for learning purposes that vary greatly and change frequently. The undergraduate dean at a doctoral university (Interview 2) emphasized the need, in designing library space, to

> change the point of view from, 'Here are the [library] services I want to offer to you, therefore I'm going to array myself this way,' to 'What are the processes and functions that students and faculty engaged in inquiry would be looking to do,' and . . . shift . . . [the] vantage point so that we would organize things that made sense from a functional processing standpoint—have that be a guiding principle. Also recognizing that . . . [the requirements for learning-based design are] very fluid. . . . The rate of change of those [learning functions] is very high. So we have to be able to be adaptive and flexible. And I think we've envisioned that there would be ways to reconfigure space.

The library director (Interview 8) at the doctoral university described in section 5 of this essay as aiming at a fundamentally different kind of library spoke of the difficulty of designing highly adaptive space. On the one hand, it "is quite amazing how, without having any particular prompting, students have always felt comfortable gathering chairs and using white boards and things" in the library. Nonetheless, this librarian reported

> the designers had wanted it to be even much more dramatic than I think it was in reality. There was a lot of talk about just open space—leave furniture so students can rearrange it in ways that suit their needs. Projects could happen in that space and then go away—almost like an academic playground of sorts. . . . They very much had thought of something that would allow students

[39] For a further account of the information commons, see Donald Beagle, "Conceptualizing an Information Commons," *Journal of Academic Librarianship* 25 (1999), 82–89.

> to be very hands-on. I don't think in practice they could figure out how really to make that work though.

The greatest challenge in designing a learning commons is to conceive of it as "owned" by learners, not by teachers, whether faculty or librarians. A learning commons must accommodate frequently changing learning tasks that students define them for themselves, not information-management tasks defined and taught by library or academic computing staff. A learning commons would most likely also provide some kind of food service, maintaining the strong customary association between food and socially shaped activities.

While the dean and library director just quoted both imagined something like a learning commons as a library facility, such space might conceivably be located elsewhere—in, for instance, a student center. The immense advantage of a library location is that only there can the learning commons be surrounded by a rich, comprehensive environment of print, electronic, and human information resources. Because the function of a learning commons is to enable students to manage their own learning, it must for that reason be designed both to prompt and facilitate the use of the full range of library resources that colleges and universities assemble to support learning. In this way, the learning commons, as imagined here, becomes perhaps the single most powerful spatial expression of the educational role of the library. Such library space has value not simply because it accommodates the use of information but more particularly because it embeds that use in the fundamental learning activities, pursued collaboratively, that define the mission of colleges and universities and to which information use is always secondary.

Looking for models of the learning commons, one finds elements of it in dining halls and residential common rooms, in library reading rooms, in the collaborative ethos of scientific laboratories and "think tank" buildings, and in some bookstores. This study found no library project using the term *learning commons*. It found many projects that succeed in providing students with an inviting set of reading and collaborative study spaces, although none of them were designed with the benefit of a well-informed understanding of students' most successful modes of learning.

It is possible to imagine a planning process that does not forgo what was so successful in the projects of the 1990s but that begins to exploit more systematically the educational potential of library space. Achieving this potential will require not only "librarians who think differently," but also a planning process with at least two unusual characteristics:

- First, library design should not be dominated primarily by a concern for information resources and their delivery—by, for instance, such facilities as information commons that emphasize delivery systems and hardware likely to change rapidly and become increasingly less dependent on bricks-and-mortar space. Library design should incorporate a deeper understanding of the independent, active learning behaviors of students and the teaching strategies of faculty meant to support those behaviors. Such design

could create libraries where, in the words quoted at the beginning of this essay, learning "happens" as well as places where learning is "supported."

- Second, our understanding of the library as education space—as, for instance, a learning commons—will be only weakly and inconsistently advanced if librarians engage with students primarily as consumers of library services and with faculty principally as power brokers in campus politics. Students and faculty do indeed play these roles, which must be respected. But meaningful engagement with their substantive activities as learners and teachers should not be conceived primarily as a negotiation that sustains and ultimately ratifies the librarian's ownership of the planning process. Instead, that engagement should aim at a genuine planning partnership with faculty and students shaped around substantive questions and not the management of differences in power and status. This partnership should construct a shared understanding throughout the campus community of key issues in learning and teaching and their implication for library space. One sees relatively few examples of such partnerships between librarians and faculty. But they exist—in, for instance, some bibliographic instruction programs and in some centers for teaching and learning—and they can be nurtured.[40] Such partnerships will necessarily be at the heart of any effort to design library buildings that are primarily about people as learners, rather than about the information "stuff" that supports learning.

This study found much evidence that librarians attentively observe campus teaching and learning behaviors, but very few examples of anything beyond observation that might approximate a genuine planning partnership. The library director at a doctoral university (Interview 10) reported an admirably sustained engagement with students. He has established a standing student advisory board and a student liaison position. The latter is a paid hourly position (now also earning tuition remission) functioning as a kind of ombudsman. Students apply for this position. The liaison position is also involved in arranging programmatic activities attracting a student audience and in strategic planning for the library. The position has "been very, very successful." It has a board and open meetings, with agendas, that students are invited to attend:

> We listen to them [i.e., students] as they tell us what they like and don't like about the library. . . . We get their input on budget issues. When we go to our advisory board, we lay out a whole series of things and talk with them about what they sense the priorities are. And that has really been very helpful. We have learned so much about what the students are thinking that it has helped us tremendously.

[40] For an account of the strong partnership effort among librarians, faculty, and information technology staff in planning the pioneering Leavey Library at the University of Southern California as a teaching library, see Holmes-Wong, Afifi, and Bahavar 1997.

Otherwise, this study found little evidence that library space planning in the 1990s attempted systematically to understand modes of student learning or the possible impact of learning behaviors on library space design. And aside from some nascent involvement with campus centers for teaching and learning, this study found no evidence of library space planning being informed by a systematic understanding of faculty teaching or by assessments of how library space might be designed to advance faculty efforts to shape the campus teaching environment, both inside and outside of the classroom.

Would systematically built and applied knowledge of the modes of student learning and faculty teaching produce appreciably different results in library design? Would such knowledge lead to anything different from the electronic classrooms and group study spaces that over the last decade have become common features of library plans? It is impossible to answer these questions with confidence in the absence of some experience of planning efforts strongly informed by a substantive knowledge of student learning and faculty teaching behaviors. This essay argues, however, that library space planning will not advance much beyond existing practice as long as it engages with students primarily as consumers and with faculty primarily as holders of veto power. The evidence of this study indicates that such planning stances produce, at their worst, little more than agreement on carpet colors. At their best, they get to decisions about furniture. Such decisions can in fact be quite important, as it is possibly the case that given the importance of flexibility in the use of space, "what makes a building a library is a set of medium- to small-scale decisions which principally involve furniture."[41] Extracting the greatest possible educational benefit from furniture decisions is clearly a central concern of electronic classroom design.[42] But otherwise decisions about library furniture—the furniture that does so much to define and shape our experience of libraries—has little to do with learning and much to do with comfort and durability. These traditional concerns are surely important, but they may blinker planners to ways in which furniture could be designed and deployed to enhance the educational impact of investments in library space.

There are numerous people who manage learning spaces from whom library designers might learn regarding both furniture and larger-scale issues in how people shape learning environments. They include, for instance "think tank" managers, laboratory scientists, and student services staff. Such people are, however, rarely consulted. In explaining this failure to explore wider thinking and to gain the benefit of alternative experience, the director at a large branch library serving a doctoral university (Interview 9) commented:

> In some ways it would be nice to think of the library in the larger context at the university level and think what other services would be appropriate for the library [building] and to build those

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[41] See Michael Brawne, "Interiors in Detail," p.216 in *Library Builders,* 1997.

[42] See, for instance, Lisa Janicke Hinchliffe, *Neal-Schuman Electronic Classroom Handbook* (New York: Neal-Schuman, 2001).

> things into the library. Sometimes I think those discussions don't always take place, and I think they should. What happens within the library world is that you worry you're going to lose your space. It becomes 'your space,' and you're giving it up for some other function instead of thinking, well, what are the services and programs we'd like to put in this central campus building, and how do we design them cohesively?

Asked whether she saw any opportunities for significant change in library space planning—for an interpolative approach to such planning that would include thinking that is now largely excluded—this library director replied:

> If I had a blank piece of paper and the promise of some funds to be able to do something different, the first thing I would do is work with the office of student services, the . . . technology folks, and say, 'What are the services we want in this building? And how do we achieve some synergy among our programs to be able to provide that?' That would be my starting point, and I think that is perhaps revolutionary in that libraries haven't shared their space necessarily with other campus entities. Or their thinking.

The value of a wide sharing of thinking is suggested by the library director at another doctoral university (Interview 13), who has invested an extraordinary effort in the preliminary, goal-defining stage of planning. He described the process as beginning with a campus-wide committee of faculty, graduate and undergraduate students, information technology staff, and librarians appointed by the provost and charged to re-vision the library. The committee worked for 18 months, "putting a stake in the ground about what this place should look like." Its report was widely reviewed and commented on throughout the campus. An architect was hired only after this process was completed. One of the things that strongly emerged in the report was the rich set of opportunities the library has for collaboration. These opportunities spring fundamentally from a new undergraduate curriculum the university is putting in place, featuring new requirements for writing and research that have library implications. The College of Arts and Sciences has established a center for teaching, learning, and writing to offer tutorial assistance to students. The center has a satellite operation in the library. That drives the need for group study space, not otherwise adequately provided elsewhere on campus. The new curriculum also includes some information technology competencies. The library needs to create "spaces where that can happen."

The vice president at this institution (Interview 3) commended the library director as "really dedicated to having a campus-wide consultation." In describing the success of this consultative process, the vice president remarked on the length of time it took. When asked whether a process already so lengthy and collaborative would benefit from a substantive exploration of learning modes and teaching methods, he replied in the negative. He felt that at his highly selective institution, good learning happens for reasons intrinsic to

the institution. He suspects that less selective schools might want to pay close attention in space design to successful student learning behaviors, but at his university such inquiries would produce improvements only on the margin. "I don't think we spend a lot of time thinking about marginal improvements in pedagogy, or things like that. We sort of take for granted that smart kids learn things. . . . When you look at the quality of the whole experience, that wouldn't be a place where I would spend a lot of time." The dean of the undergraduate college and the library director at this institution, by contrast, affirmed the importance of modeling the implications for library space planning of what we know about the most successful modes of student learning.[43]

The argument of this study is that at colleges and universities where good learning is not somehow "intrinsic" to the institution, and even at those where it is but where there is some wish to understand why the institution's environment is so successful, systematic attention to students' most successful learning modes and to faculty teaching behaviors should be an explicit part of library space planning. It is true that this study cannot document the value of such attention, given that it discovered no instances of it. We simply do not know what we do not—yet—know. But it is hard to see other means by which academic library space can be brought so strongly into line with an institution's fundamental learning and teaching missions. And surely it makes little sense for the higher education community to continue to invest massively in library space without exploring every possible benefit of that investment.

It is clear that in the 1990s, the single most powerful motivator of library construction and renovation was the traditional need to provide shelving for growing collections. Remarkably, however, few of the library directors and academic officers who guided projects in the 1990s expect future projects to be motivated so strongly by shelving needs. The shift in thinking (if not yet in a large number of project outcomes) documented in this study should be seen as an opportunity for interpolative planning rooted in the educational function of libraries.[44] Such planning will start with an affirmation that library buildings are primarily and inviolably about people, not about "stuff." This affirmation should not be seen as slighting the function of the library to provide access to information; it only recognizes that such provision will increasingly be met in the virtual space

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[43] This library director knows, however, how different his view is from that prevailing on campus. No formal assessment of student learning modes was undertaken as part of the library's re-visioning study. This omission resulted in part from "a level of [faculty] complacency about thinking we know how students learn. . . . We run up against it all the time with the instructional technology piece of what we're doing. The new curriculum forced everyone to rethink what they were doing in the classroom. . . . There were certain kinds of requirements in terms of research and other competencies that we're trying to develop within the curriculum . . . . For some faculty, this was incredibly threatening because it was seen as a challenge to what they were traditionally doing in the classroom."

[44] For the views of one library architect along such lines, see Geoffrey T. Freeman, "The Academic Library in the 21st Century: Partner in Education," pp. 168–175 in Webb 2000.

created by the library's electronic systems, while its building has other primary functions. Projects completed in the 1990s evince some understanding of this fundamental shift in the functions of library buildings, and these projects achieved some success in acting on this new understanding. These accomplishments found memorable expression in the pride and pleasure of the library director, quoted earlier (Interview 12), who described regularly finding his library always full of students:

> literally every chair, . . . and they're all talking at the same time. And the hum that rises above this is just amazing. And they don't care. . . . There's all this din that occurs [from] hundreds of students in this same space, all working together and all talking at the same time. . . . Somehow it just all came together as a very useful space for students. . . . We just beam with pride. Every time I come down the elevator to leave, and I see these hundreds of students out there—that just never happened before.

The responsibility to inform library space planning with a systematically developed knowledge of how students learn and faculty teach lies before the academic community. It is a responsibility for all who care deeply about libraries, who must learn to work in campus-wide partnership to make library buildings fit homes for the social dimension of the learning and teaching process by which knowledge moves between people and its embodiment in printed books and in fleeting electronic digits. Happily, the fresh vision and interpolative planning that will be required to produce such results will be the most fitting, and at the same time the most powerful, way to perpetuate the traditional impulse to make library space celebratory space—to design an *esprit de place* into libraries.[45]

[45] See Demas and Scherer 2002.

PART 2:
DATA TABLES AND CHARTS

This section contains a report of the study data. The intention is to enable readers to appraise these data independently of the interpretative essay in part 1.

The data consist of (1) the quantitative data from the study survey, (2) a summary of the qualitative comments made by survey respondents, (3) summaries and partial transcriptions of telephone interviews with library directors and academic officers, and (4) the quantitative data from an independent survey, conducted in 2001 for the Council of Independent Colleges (CIC), on matters closely related to the concerns of this study.

The quantitative data are presented in tabular and graph forms, along with brief explanations of how to read the tables. See part 3 of this report for an account of the research methodologies used in gathering and analyzing the study data.

Quantitative Data from the Study Survey

Table 1 reports, by year from 1992 through 2001, much of the data available in the list of capital projects at academic libraries published annually in the December issue of *Library Journal* (*LJ*). The data are drawn directly from *LJ* and are self-explanatory. The table also provides (1) a column reporting the real dollar value of projects, (2) statistical measures of the annual variability of several factors, and (3) statistical summaries of most columns for the decade covered by the study.

TABLE 1. *Library Journal* building statistics

Report-ing Year		Total # Projects	*z* score for total projects	Total Current Dollar Project Cost (x $1 million)	GDP Deflator Index (2001 = 1.000)	Total Real Dollar Project Cost in 2001 Dollars (x $1 million)	*z* score for total real dollar costs	Total Gross Square Feet	*z* score for total gross square feet	Total Book Capacity (x 1,000)	*z* score for total book capacity	Total Gross Square Feet of New Buildings only	New GSF as a % of Total GSF	*z* score for % of new GSF	Book Capacity (x 1,000) in New GSF
1992					0.6267										
	New buildings	18		162.776		259.735		1,379,713		5,859		1,379,713	33.4%	-0.71	
	Additions and renovations	21		175.956		280.766		2,252,220		13,573					
	Additions only	4		42.742		68.202		385,175		2,825					
	Renovations only	6		103.949		165.867		119,208		2,191					
	Subtotals	*49*	*1.37*	*485.423*		*774.570*	*2.04*	*4,136,316*	*1.55*	*24,448*	*1.90*				
1993					0.6588										
	New buildings	21		227.169		344.822		1,638,409		6,804		1,638,409	42.2%	0.27	
	Additions and renovations	14		121.496		184.420		1,459,491		6,843					
	Additions only	4		49.313		74.853		296,000		2,175					
	Renovations only	12		41.153		62.467		489,432		2,707					
	Subtotals	*51*	*1.62*	*439.131*		*666.562*	*1.37*	*3,883,332*	*1.24*	*18,529*	*0.77*				
1994					0.6997										
	New buildings	17		191.919		274.288		1,558,133		5,588		1,558,133	53.9%	1.57	
	Additions and renovations	8		83.438		119.248		955,878		6,398					
	Additions only	5		55.719		79.633		197,070		740					
	Renovations only	8		8.817		12.601		180,491		651					
	Subtotals	*38*	*0.01*	*339.893*		*485.770*	*0.23*	*2,891,572*	*0.02*	*13,377*	*-0.22*				
1995					0.7340										
	New buildings	9		69.757		95.037		521,024		2,815		521,024	24.7%	-1.67	
	Additions and renovations	11		89.183		121.503		1,021,351		4,454					
	Additions only	0		0.000		0.000		0		0					
	Renovations only	6		78.954		107.567		571,102		2,406					
	Subtotals	*26*	*-1.47*	*237.894*		*324.106*	*-0.79*	*2,113,477*	*-0.93*	*9,675*	*-0.92*				
1996					0.7749										
	New buildings	18		181.451		234.161		1,477,652		4,346		1,477,652	45.4%	0.63	
	Additions and renovations	13		142.477		183.865		1,624,290		7,359					
	Additions only	0		0.000		0.000		0		0					
	Renovations only	9		17.128		22.103		153,206		1,071					
	Subtotals	*40*	*0.26*	*341.056*		*440.129*	*-0.06*	*3,255,148*	*0.47*	*12,776*	*-0.33*				
1997					0.8251										
	New buildings	14		181.166		219.569		1,055,948		3,331		1,055,948	37.4%	-0.26	
	Additions and renovations	16		112.924		136.861		1,508,271		6,748					
	Additions only	0		0.000		0.000		0		0					
	Renovations only	8		18.748		22.722		258,568		678					
	Subtotals	*38*	*0.01*	*312.838*		*379.152*	*-0.44*	*2,822,787*	*-0.06*	*10,757*	*-0.72*				
1998					0.8710										
	New buildings	17		234.684		269.442		1,255,930		6,651		1,255,930	39.8%	0.01	
	Additions and renovations	13		128.700		147.761		1,623,845		6,316					
	Additions only	0		0.000		0.000		0		0					
	Renovations only	5		5.548		6.370		276,999		3,532					
	Subtotals	*35*	*-0.36*	*368.932*		*423.573*	*-0.16*	*3,156,774*	*0.35*	*16,499*	*0.38*				
1999					0.9199										
	New buildings	11		160.026		173.960		916,098		4,946		916,098	42.8%	0.35	
	Additions and renovations	6		108.391		117.829		995,380		5,355					
	Additions only	2		2.500		2.718		8,500		0					
	Renovations only	11		15.516		16.867		218,349		1,263					
	Subtotals	*30*	*-0.97*	*286.433*		*311.374*	*-0.87*	*2,138,327*	*-0.90*	*11,564*	*-0.56*				
2000					0.9745										
	New buildings	10		180.675		185.403		737,380		4,993		737,380	51.1%	1.26	
	Additions and renovations	6		40.184		41.236		378,043		1,249					
	Additions only	2		25.585		26.254		112,000		135					
	Renovations only	12		17.096		17.543		216,681		1,180					
	Subtotals	*30*	*-0.97*	*263.540*		*270.436*	*-1.13*	*1,444,104*	*-1.75*	*7,557*	*-1.33*				
2001					1.0000										
	New buildings	12		167.167		167.167		768,428		4,145		768,428	26.6%	-1.46	
	Additions and renovations	12		200.108		200.108		1,558,969		13,296					
	Additions only	0		0.000		0.000		0		0					
	Renovations only	18		51.581		51.581		566,354		2,387					
	Subtotals	*42*	*0.51*	*418.856*		*418.856*	*-0.19*	*2,893,751*	*0.02*	*19,828*	*1.02*				
Ten year total		379				4,494.528		28,735,588		145,010		11,308,715			49,478
Mean		37.9				449.453		2,873,559		14,501		1,130,872	39.7%		4,948
Standard deviation		8.1				159.030		816,834		5,227		386,986	9.0%		1,323

TABLE 2. Study survey demographics

	All Institutions		Study Population		Study Sample	
Carnegie Classification category	Frequency	Percent	Frequency	Percent	Frequency	Percent
Doctoral/Research Universities—Extensive	151	3.8%	142	32.1%	77	32.1%
Doctoral/Research Universities—Intensive	110	2.8%	35	7.9%	26	10.8%
Master's Colleges and Universities I	496	12.6%	102	23.0%	55	22.9%
Master's Colleges and Universities II	114	2.9%	13	2.9%	6	2.5%
Baccalaureate Colleges—Liberal Arts	226	5.7%	51	11.5%	29	12.1%
Baccalaureate Colleges—General	324	8.2%	24	5.4%	13	5.4%
Baccalaureate/Associate's Colleges	57	1.4%	5	1.1%	1	0.4%
Associate's Colleges	1,669	42.3%	26	5.9%	13	5.4%
Specialized Institutions	767	19.5%	32	7.2%	17	7.1%
Tribal Colleges and Universities	28	0.7%	1	0.2%	0	0.0%
Unclassified	0	0.0%	12	2.7%	3	1.3%
Total	3,942	100.0%	443	100.0%	240	100.0%

Table 2 shows the number of institutions in the survey's database of capital projects distributed by the institutional classification categories used by the Carnegie Foundation for the Advancement of Education (at http://www.carnegiefoundation.org/Classification/CIHE2000/Tables.htm). The first column lists institution types. The next three pairs of columns report the number of institutions and the percentage of all institutions found in (1) the Carnegie classification scheme, (2) the study database of institutions to which surveys were sent (the study population), and (3) the survey responses (the study sample).

Chart 1 derives from the study sample (i.e., the institutions that responded to the study survey). It reports the distribution by size (i.e., number of gross square feet) of all library projects in the sample.

Chart 2 derives from the study sample (i.e., the institutions that responded to the study survey). It reports the distribution by size (i.e., number of gross square feet) of library projects in the sample that involved 100,000 gross square feet or less.

Table 3a reports the responses to question 1 in the study survey. Question 1 identified several different possible motivators (items a–n in the first column) for library capital projects and asked respondents to indicate on a six-point scale how strongly each factor motivated the respondent's project. The percentage of all responses to a given motivator (e.g., "growth of library staff") that occupied a given point in the response scale (e.g., "not a factor") is recorded, along with confidence interval for that percentage. A third number, called the chi-square factor, is also provided when the response varied in a sta-

CHART 1. Size of project in the study sample (all projects)

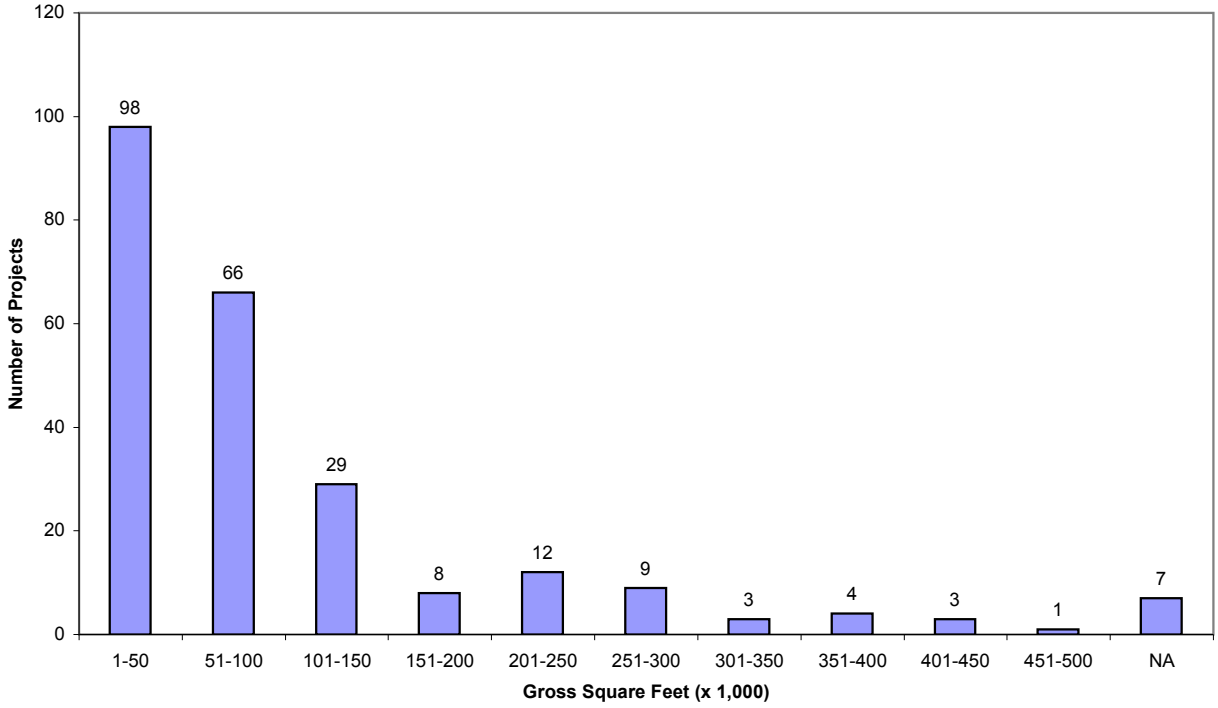

CHART 2. Size of projects in the study sample (projects ≤ 100,000 GSF)

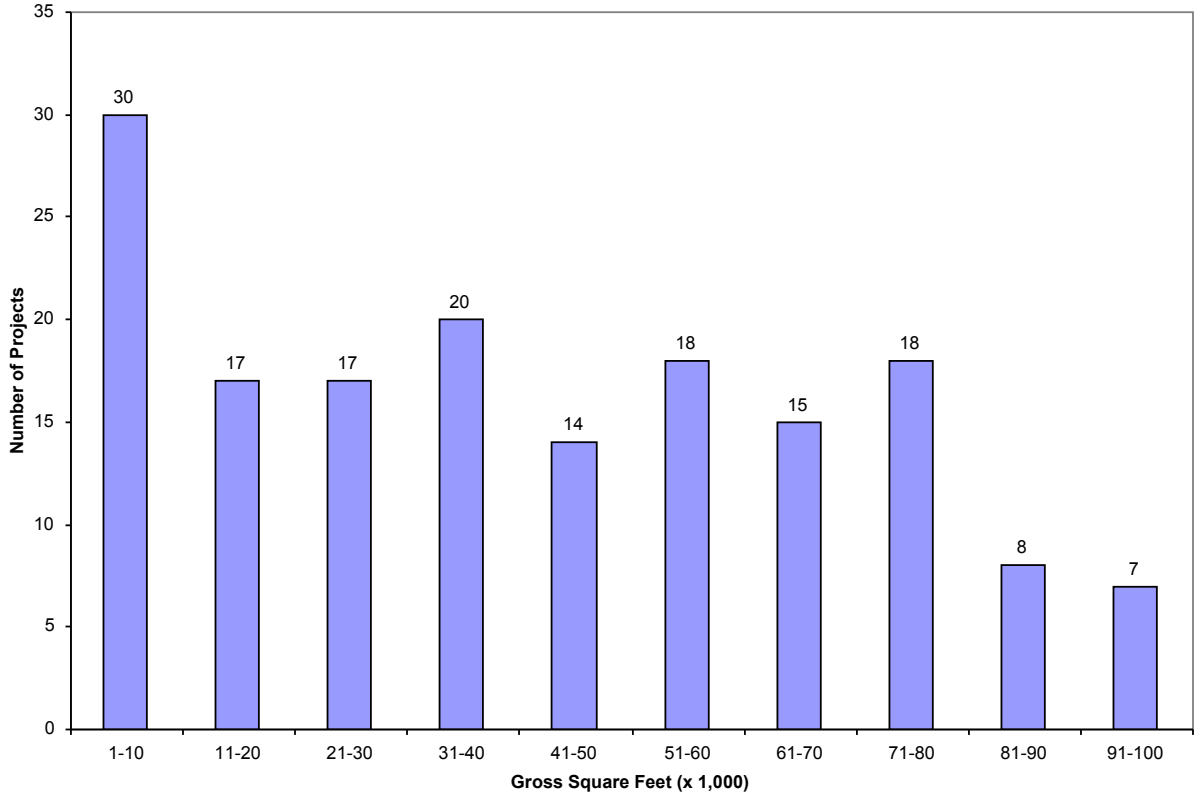

TABLE 3a. Analysis of responses to question 1 of the study survey

	Not a factor 0		Weak Motivation 1		2		Intermediate Motivation 3		4		Strong Motivation 5	
	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval
Q1 Factors motivating new library space												
a Growth of library staff	**38.6%**	6.4%	17.9%	5.0%	**7.2%**	3.4%	16.1%	4.8%	10.3%	4.0%	9.9%	3.9%
chi-square factor (when significant)	*5.8*				*1.1*							
b Increase in the number of service points	**42.4%**	6.5%	12.1%	4.3%	9.4%	3.8%	14.7%	4.6%	11.2%	4.1%	10.3%	4.0%
chi-square factor (when significant)	*8.0*											
c Growth of the collections	8.3%	3.6%	**3.5%**	2.4%	4.4%	2.7%	11.0%	4.1%	16.2%	4.8%	**56.6%**	6.4%
chi-square factor (when significant)			*2.1*		*1.9*						*19.7*	
d Changing character of student study space needs	**6.1%**	3.1%	**4.8%**	2.8%	**3.5%**	2.4%	17.0%	4.9%	32.1%	5.5%	**45.4%**	6.4%
chi-square factor (when significant)	*1.4*		*1.7*		*2.2*						*10.3*	
e Changes in reference services	14.8%	4.7%	9.0%	3.8%	12.1%	4.3%	**26.9%**	5.8%	21.1%	5.4%	16.1%	4.8%
chi-square factor (when significant)							1.3					
f Changes in public services other than reference	13.8%	4.5%	**7.1%**	3.4%	**7.1%**	3.4%	22.2%	5.4%	23.6%	5.5%	**26.2%**	5.7%
chi-square factor (when significant)			*1.1*		*1.1*						*1.1*	
g Changes in or growth of library instruction programs	11.8%	4.2%	11.8%	4.2%	8.8%	3.7%	17.1%	4.9%	17.4%	5.0%	**32.0%**	6.1%
chi-square factor (when significant)											*2.9*	
h Changes in technical services	**27.2%**	5.8%	21.0%	5.3%	11.2%	4.1%	21.9%	5.4%	12.1%	4.3%	**6.7%**	3.3%
chi-square factor (when significant)	*1.4*										*1.2*	
i Preservation of the collections	22.2%	5.4%	12.4%	4.3%	10.7%	4.0%	20.9%	5.3%	13.8%	4.5%	21.0%	5.2%
chi-square factor (when significant)												
j Need to accommodate non-library operations	**26.1%**	5.7%	9.3%	3.8%	8.0%	3.5%	10.2%	3.9%	12.8%	4.4%	**33.6%**	6.2%
chi-square factor (when significant)	*1.1*										*3.5*	
k Building safety issues	**32.3%**	6.1%	15.0%	4.7%	9.7%	3.9%	19.9%	5.2%	8.8%	3.7%	14.2%	4.5%
chi-square factor (when significant)	*3.0*											
l Building mechanical systems obsolescence	**32.8%**	6.5%	9.1%	4.0%	**0.0%**	0.0%	16.2%	5.1%	14.6%	4.9%	**27.3%**	6.2%
chi-square factor (when significant)	*2.8*				*3.0*						*1.2*	
m Building structural problems	**50.0%**	6.5%	14.3%	4.6%	7.1%	3.4%	10.7%	4.1%	8.0%	3.6%	9.8%	3.9%
chi-square factor (when significant)	*13.5*											
n Dysfunctional design of previous space	11.6%	4.2%	8.9%	3.7%	**5.8%**	3.0%	15.6%	4.7%	17.8%	5.0%	**40.4%**	6.4%
chi-square factor (when significant)					*1.4*						*6.9*	

Figures in a dark gray field report responses that occur significantly more frequently than would occur in a random distribution.
Figures in a light gray field report responses that occur significantly less frequently than would occur in a random distribution.

tistically significant way from what one would expect in a random distribution of responses. The higher the chi-square factor, the more significant is the result. So, for example, Table 3a reports that 38.6% of all survey respondents who answered question 1a, about the growth of library staff, said that this was not a factor in their planning. One can be 95% confident that responses to question 1a would fall within the range of 38.6 ±6.4% for the entire population of study projects. The chi-square factor of 5.8 indicates this response differs in a highly significant way from what one would expect in a random, or chance, distribution of responses to this question. In this case, dark shading is used to indicate that the response occurs more frequently than in a random distribution; light shading used elsewhere (e.g., question 1d) indicates a response that occurs less frequently than would be expected in a random distribution.

Table 3b (on p. W-86) reports the responses to question 1 in the study survey but differs from Table 3a in sorting the responses according to the Carnegie classification of institutions.

Caveat about Table 3b: Readers should understand that the relatively small number of institutions representing many of the Carnegie classification types in the study sample, as reported in Table 3b, makes inferences about the larger study population somewhat unreliable. This is indicated in the wide confidence intervals reported in this table.

Table 3c (on p. W-90) reports the responses to question 1 in the study survey but differs from Table 3a in sorting the responses according to the year when projects were completed.

Caveat about Table 3c: The relatively small number of projects completed in most years in the study sample, as reported in Table 3c, makes inferences about the larger study population somewhat unreliable. This is indicated in the wide confidence intervals reported in this table.

Table 4a reports the responses to questions 2–13 in the study survey. It is similar to Table 3a except that all the questions are either explicitly or implicitly yes/no questions (rather than questions that invite responses on a scale). The percentage of all respondents to a given question who answered in the affirmative is recorded, along with a confidence interval for that percentage. A third number, called the chi-square factor, is also provided when the response varies in a statistically significant way from what one would expect in a random distribution of responses. The higher the chi-square factor, the more significant is the result. So, for example, Table 4a reports that 84.8% of all survey respondents who answered question 3a, about the systematic assessment of library operations, said that such an assessment was done. One can be 95% confident that responses to this question would fall within the range of 84.8 ±4.7% for the entire population of study projects. The chi-square factor of 28.3 indicates this response differs in a highly significant way from what one would expect in a random, or chance, distribution of responses to this ques-

TABLE 4a. Analysis of responses to questions 2–13 of the study survey

	Sample % responding affirmatively	± Confidence Interval	*χ-square factor (when significant)*
Q2 Project influenced by overall "vision" statement	65.1%	6.2%	*2.7*
Q3 Systematic assessment performed			
a Of library operations	84.8%	4.7%	*28.3*
b Of reader or user wishes	63.8%	6.3%	*4.5*
c Of modes of student learning	40.6%	6.4%	*2.1*
d Of modes of faculty teaching	31.3%	6.1%	*8.2*
e Of fit with the provision of other academic space	57.6%	6.5%	*1.3*
f Other assessments	15.6%	4.8%	*27.6*
Q4 Constituencies involved in planning			
a Faculty	74.6%	5.7%	*14.1*
b Students	51.3%	6.5%	
c Other constituencies	51.3%	6.5%	
Q5 Changes in concept of library work affected planning	73.3%	5.8%	*6.4*
Q6 Instruction space provided for			
a Instruction by library staff	83.5%	4.9%	*26.2*
b Instruction by non-library faculty	50.4%	6.5%	
c Instruction by computing services staff	33.5%	6.2%	*6.4*
d Teaching and curricular development	34.8%	6.2%	*5.4*
e Other instructional space	15.6%	4.8%	*27.6*
Q7 Student learning space provided that required			
a General computing laboratories	63.8%	6.3%	4.5
b Group study space	84.4%	4.8%	*27.6*
c Conference or other informal meeting space	63.8%	6.3%	*4.5*
d Other student learning space	38.8%	6.4%	*2.9*
Q8 Project provided for print/electronic interface	80.2%	5.2%	*10.8*
Q9 Project provided			
a Vending machine food and beverages	50.0%	9.0%	*1.6*
b Staffed food services	22.9%	7.6%	
c Other food service	27.1%	8.0%	
Q10 Project provided social space for students	46.6%	6.6%	
Q11 Project provided for future changes in space use	72.3%	5.9%	*5.8*
Q12 Conducted a post-occupancy assessment	15.7%	4.8%	*13.7*
Q13 Experience suggests need for further change	61.3%	6.4%	

Figures in a dark gray field report responses that occur significantly more frequently than would occur in a random distribution.

Figures in a light gray field report responses that occur significantly less frequently than would occur in a random distribution.

tion. In this case, dark shading is used to indicate that the response occurs more frequently than in a random distribution; light shading used elsewhere (e.g., question 3c) indicates a response that occurs less frequently than would be expected in a random distribution.

Table 4b (on p. W-93) reports the responses to questions 2–13 in the study survey but differs from Table 4a in sorting the responses according to the Carnegie classification of institutions.

Caveat about Table 4b: The relatively small number of institutions representing many of the Carnegie classification types in the study sample, as reported in Table 4b, makes inferences about the larger study population somewhat unreliable. This is indicated in the wide confidence intervals reported in this table.

Table 4c (on p. W-100) reports the responses to questions 2–13 in the study survey but differs from Table 4a in sorting the responses according to the year when projects were completed.

Caveat about Table 4c: The relatively small number of projects completed in most years in the study sample, as reported in Table 4c, makes inferences about the larger study population somewhat unreliable. This is indicated in the wide confidence intervals reported in this table.

Table 5 describes the distribution of projects by lead architects and of lead architects by projects in the study population.

TABLE 5. Distribution of architects

	Number	*% of Total*
Projects		
With an architect doing 1 library project only	256	66%
With an architect doing 2 or more library projects	132	34%
Total	*388*	*100%*
Architects		
Doing 1 library project only	256	86%
Doing 2 library projects	28	9%
Doing 3 library projects	8	3%
Doing 4 or more library projects	5	2%
Total	*297*	*100%*

Summary of Qualitative Comments Made by Survey Respondents

Comments are recorded under the survey question to which respondents attached them. This summary (on p. W-106) attempts to capture responses that are not well represented in the quantitative data or that express particularly well an idea often expressed in the comments. Where appropriate and possible, a summary analysis is offered of subjects that figure frequently in the comments.

Summary and Partial Transcriptions of the Phone Interviews with Library Directors and Chief Academic Officers

As a part of this study, phone interviews were conducted with 25 library directors from institutions that responded to the study survey. Six presidents or chief academic officers (CAOs) at the institutions involved in the library director interviews were also interviewed. The summaries have been edited to provide anonymity. They are grouped according to the Carnegie classification of the institutions involved, as follows:

Doctoral/Research Universities—Extensive
CAO interviews 1–4
Library director interviews 7–14
Doctoral/Research Universities—Intensive
CAO interview 5
Library director interviews 15–18
Master's Colleges and Universities I
Library director interviews 19–22
Master's Colleges and Universities II
Library director interviews 23–24
Baccalaureate Colleges—Liberal Arts
CAO interview 6
Library director interviews 25–29
Baccalaureate Colleges—General
Library director interviews 30–31

Click here (goes to p. W-116) for summaries of those interviews, with partial transcriptions of what those interviewed said.

Quantitative Findings of a Survey Conducted for the Council of Independent Colleges

Tables 6a and 6b present some of the findings of a November 2001 survey of library directors and chief academic officers (CAOs) at institutions that are members of the Council of Independent Colleges (CIC). The CIC is an association of independent colleges and universities working together to support college leaders, advance institutional excellence, and enhance private higher education's contributions to society. To fulfill its mission, CIC provides ideas, resources, and services that assist institutions in improving leadership expertise, educational programs, administrative and financial performance, and institutional visibility. See http://www.cic.edu/ for more information about the CIC and for the original publication of the data reported here.

Description of the Summary Tables

- Questions 1 and 2 prompted respondents to agree or disagree with statements in a survey statement, using a five-point scale to register their views. Individual statements are listed in each row

of the table followed by a set of columns that report (a) the percentage of all respondents using each of the prompted responses (**bold face**) and (b) the confidence interval for the response (*italics*). This is followed by two other statistics: (c) the median view among all responses, which is a crude measure of central tendency among the responses but the only one available for this kind of data; and (d) the results of a chi-square test for independence between the responses to each statement provided by CAOs and library directors. Where this test indicates that differences in the responses are statistically significant, the test result is reported in **bold face** followed by (e) the percentages of CAO and library director responses, provided to facilitate understanding of how they differ.

Look, for instance, at question 1.04:

(a) Of the 101 respondents, 70% strongly agree with the statement that library staff should provide in-class library instruction; 24% agree with this assertion, while 4% are undecided or have no opinion. Two percent of the respondents disagree with the statement, but none strongly disagrees with it.

(b) Each of these response values is followed by a confidence interval. In the case of the 70% who strongly agree, for instance, one can be confident that 95% of the time between 60% and 80% (i.e., 70% plus or minus 10%) of the larger population of all CAOs and library directors at CIC institutions (represented by the sample who responded to this statement) would strongly agree with this statement.

(c) The median view among all respondents indicates strong agreement that professional library staff should provide in-class library instruction.

(d) While the median view (a relatively crude measure) of both CAOs and library directors is the same, the chi-square test for difference (a more discriminating measure) indicates that CAOs as a group hold this view less strongly than do library directors.

(e) This difference is evident in the large percentage of "agree" responses among CAOs, compared to the small percentage of "agree" responses among library directors.

- Question 3 prompted respondents to assign priority, on a three-point scale, to several activities that might be accommodated in new library space. The rest of the table functions the same way as the table for questions 1 and 2.

  Look, for instance, at question 3.14. Of the 101 respondents, 25% would give high priority to providing new library space to student socializing (without food), while 41% of the respondents would give medium priority to this need and 35% would give it low priority. In the case of the 25% who regard such socializing as a high priority, for instance, one can be confident that 95% of the time between 17% and 33% (i.e., 25% plus or minus 8%) of the larger population of all CAOs and library directors at CIC institutions would strongly agree with this statement. The median view

among all respondents is that providing new library space for student socializing has a medium priority. CAOs and library directors, however, have decidedly different views of this matter, as evident in the comparatively large percentage of library directors assigning high priority to this need and the comparatively low percentage who regard it as a low priority.

TABLE 6a. Survey of library directors and chief academic officers at CIC institutions: questions 1 and 2

		All responses											Selected CAO responses					Selected Lib Dir responses				
		Strongly agree	*Plus/minus confidence*	**Agree**	*Plus/minus confidence*	**No opinion/undecided**	*Plus/minus confidence*	**Disagree**	*Plus/minus confidence*	**Strongly disagree**	*Plus/minus confidence*	Median view among all responses (n=101)	Chi-square test for independence (alpha = 0.05, df = 4)	Strongly agree	Agree	No opinion/undecided	Disagree	Strongly disagree	Strongly agree	Agree	No opinion/undecided	Disagree	Strongly disagree
1.00	**Roles of professional library staff**																					
1.01	Provide reference service	**93%**	*5%*	**7%**	*5%*	**0%**	*na*	**0%**	*na*	**0%**	*na*	Strongly agree	0.00									
1.02	Select material for collections	**78%**	*8%*	**18%**	*8%*	**1%**	*2%*	**3%**	*3%*	**0%**	*na*	Strongly agree	8.57									
1.03	Provide library instruction	**91%**	*6%*	**8%**	*5%*	**1%**	*2%*	**0%**	*na*	**0%**	*na*	Strongly agree	1.01									
1.04	Provide in-class library instruction	**70%**	*9%*	**24%**	*8%*	**4%**	*4%*	**2%**	*3%*	**0%**	*na*	Strongly agree	**10.79**	57%	34%	5%	4%	0%	87%	11%	2%	0%	0%
1.05	Advise faculty on IT and information resources	**51%**	*10%*	**32%**	*9%*	**13%**	*7%*	**4%**	*4%*	**0%**	*na*	Strongly agree	4.20									
1.06	Offer technical support to faculty in the classroom	**13%**	*7%*	**19%**	*8%*	**22%**	*8%*	**40%**	*10%*	**7%**	*5%*	No opinion/undecided	1.44									
1.07	Serve as course instructors	**33%**	*9%*	**37%**	*10%*	**23%**	*8%*	**7%**	*5%*	**0%**	*na*	Agree	4.12									
1.08	Serve on technology planning committees	**64%**	*9%*	**32%**	*9%*	**4%**	*4%*	**0%**	*na*	**0%**	*na*	Strongly agree	**14.33**	48%	46%	5%	0%	0%	84%	13%	2%	0%	0%
1.09	Serve on curriculum committees	**52%**	*10%*	**27%**	*9%*	**11%**	*6%*	**8%**	*5%*	**2%**	*3%*	Strongly agree	**14.12**	38%	32%	18%	9%	4%	71%	20%	2%	7%	0%
1.10	Serve on distance education planning committees	**49%**	*10%*	**28%**	*9%*	**18%**	*8%*	**2%**	*3%*	**3%**	*3%*	Agree	**25.28**	29%	31%	31%	4%	5%	74%	23%	2%	0%	0%
1.11	Serve on college planning and budget committees	**50%**	*10%*	**37%**	*9%*	**10%**	*6%*	**3%**	*3%*	**10%**	*6%*	Agree	**11.10**	36%	45%	13%	5%	2%	67%	27%	7%	0%	0%
1.12	Serve on college governance committees	**45%**	*10%*	**32%**	*9%*	**13%**	*7%*	**9%**	*6%*	**1%**	*2%*	Agree	8.43									
2.00	**Existing library space should support**																					
2.01	Shelving library collections	**93%**	*5%*	**7%**	*5%*	**0%**	*na*	**0%**	*na*	**0%**	*na*	Strongly agree	0.77									
2.02	Reference assistance	**95%**	*4%*	**5%**	*4%*	**0%**	*na*	**0%**	*na*	**0%**	*na*	Strongly agree	4.23									
2.03	Reserved readings for courses	**90%**	*6%*	**10%**	*6%*	**0%**	*na*	**0%**	*na*	**0%**	*na*	Strongly agree	1.02									
2.04	Student study space BEFORE midnight	**87%**	*7%*	**13%**	*7%*	**0%**	*na*	**0%**	*na*	**0%**	*na*	Strongly agree	0.23									
2.05	Student study space AFTER midnight	**18%**	*8%*	**17%**	*7%*	**19%**	*8%*	**33%**	*9%*	**14%**	*7%*	No opinion/undecided	1.78									
2.06	E-mail services for students and faculty	**21%**	*8%*	**27%**	*9%*	**14%**	*7%*	**31%**	*9%*	**8%**	*5%*	No opinion/undecided	**17.17**	13%	20%	21%	41%	5%	31%	36%	4%	18%	11%
2.07	General computing laboratories for students	**15%**	*7%*	**39%**	*10%*	**16%**	*7%*	**26%**	*9%*	**4%**	*4%*	Agree	6.56									
2.08	Faculty consulting with students	**15%**	*7%*	**37%**	*9%*	**28%**	*9%*	**20%**	*8%*	**1%**	*2%*	Agree	**12.40**	13%	25%	38%	25%	0%	18%	51%	16%	13%	2%
2.09	General faculty offices	**2%**	*3%*	**5%**	*4%*	**26%**	*9%*	**50%**	*10%*	**18%**	*8%*	Disagree	5.53									
2.10	Instruction in information literacy	**75%**	*8%*	**24%**	*8%*	**1%**	*2%*	**0%**	*na*	**0%**	*na*	Strongly agree	5.94									
2.11	General classroom instruction	**2%**	*3%*	**18%**	*8%*	**27%**	*9%*	**42%**	*10%*	**12%**	*6%*	Disagree	7.65									
2.12	Collaborative learning among students	**43%**	*10%*	**43%**	*10%*	**11%**	*6%*	**3%**	*3%*	**1%**	*2%*	Agree	**23.89**	23%	54%	18%	5%	0%	67%	29%	2%	0%	2%
2.13	Center for innovation in teaching and learning	**16%**	*7%*	**28%**	*9%*	**35%**	*9%*	**20%**	*8%*	**2%**	*3%*	No opinion/undecided	**10.56**	7%	25%	43%	21%	4%	27%	31%	24%	18%	0%
2.14	Socializing among students (without food service)	**16%**	*7%*	**42%**	*10%*	**16%**	*7%*	**18%**	*8%*	**8%**	*5%*	Agree	**13.03**	7%	36%	20%	25%	11%	28%	51%	12%	9%	0%
2.15	Socializing among students (with food service)	**6%**	*5%*	**25%**	*9%*	**22%**	*8%*	**29%**	*9%*	**18%**	*8%*	No opinion/undecided	**15.00**	2%	15%	22%	40%	22%	11%	38%	22%	16%	13%
2.16	Equipment and staff for AV support of teaching	**27%**	*9%*	**32%**	*9%*	**17%**	*7%*	**21%**	*8%*	**3%**	*3%*	Agree	**10.58**	24%	27%	25%	24%	0%	31%	38%	7%	18%	7%
2.17	Computing staff and equipment	**7%**	*5%*	**22%**	*8%*	**26%**	*9%*	**36%**	*9%*	**10%**	*6%*	No opinion/undecided	8.33									
2.18	Exhibition of museum and other non-library material	**21%**	*8%*	**48%**	*10%*	**16%**	*7%*	**14%**	*7%*	**1%**	*2%*	Agree	9.43									

TABLE 6b. Survey of library directors and chief academic officers at CIC institutions: question 3

		All responses								Selected CAO responses			Selected Lib Dir Responses		
		High priority	*Plus/minus confidence*	**Medium Priority**	*Plus/minus confidence*	**Low priority**	*Plus/minus confidence*	Median view among all responses (n=101)	Chi-square test for independence (alpha = 0.05, df = 2)	High priority	Medium Priority	Low priority	High priority	Medium Priority	Low priority
3.00	**Priority uses of additional library space**														
3.01	Shelving library collections	**67%**	*9%*	**28%**	*9%*	**5%**	*4%*	High priority	0.43						
3.02	Reference assistance	**73%**	*9%*	**22%**	*8%*	**5%**	*4%*	High priority	3.64						
3.03	Reserved readings for courses	**46%**	*10%*	**35%**	*9%*	**20%**	*8%*	Medium priority	3.88						
3.04	Student study space BEFORE midnight	**75%**	*9%*	**17%**	*8%*	**8%**	*6%*	High priority	4.86						
3.05	Student study space AFTER midnight	**24%**	*8%*	**26%**	*9%*	**50%**	*10%*	Low priority	0.80						
3.06	E-mail services for students and faculty	**16%**	*7%*	**30%**	*9%*	**54%**	*10%*	Low priority	**21.93**	2%	29%	70%	34%	32%	34%
3.07	General computing laboratories for students	**25%**	*8%*	**44%**	*10%*	**32%**	*9%*	Medium priority	5.10						
3.08	Faculty consulting with students	**14%**	*7%*	**47%**	*10%*	**40%**	*10%*	Medium priority	**11.63**	5%	43%	52%	24%	51%	24%
3.09	General faculty offices	**0%**	*na*	**14%**	*7%*	**86%**	*7%*	Low priority	0.97						
3.10	Instruction in information literacy	**79%**	*8%*	**21%**	*8%*	**0%**	*na*	High priority	**13.17**	66%	34%	0%	96%	4%	0%
3.11	General classroom instruction	**6%**	*5%*	**30%**	*9%*	**64%**	*9%*	Low priority	0.82						
3.12	Collaborative learning among students	**51%**	*10%*	**39%**	*10%*	**10%**	*6%*	High priority	**6.27**	41%	45%	14%	64%	31%	4%
3.13	Center for innovation in teaching and learning	**30%**	*9%*	**42%**	*10%*	**29%**	*9%*	Medium priority	**10.88**	18%	43%	39%	44%	40%	16%
3.14	Socializing among students (without food service)	**25%**	*8%*	**41%**	*10%*	**35%**	*9%*	Medium priority	**18.25**	9%	45%	46%	44%	36%	20%
3.15	Socializing among students (with food service)	**16%**	*7%*	**34%**	*9%*	**50%**	*10%*	Low priority	**14.70**	4%	36%	61%	31%	31%	38%
3.16	Equipment and staff for AV support of teaching	**36%**	*9%*	**34%**	*9%*	**31%**	*9%*	Medium priority	**6.44**	25%	38%	38%	49%	29%	22%
3.17	Computing staff and equipment	**17%**	*7%*	**31%**	*9%*	**52%**	*10%*	Low priority	**8.72**	7%	32%	61%	29%	29%	42%
3.18	Exhibition of museum and other non-library material	**32%**	*9%*	**47%**	*10%*	**20%**	*8%*	Medium priority	0.71						

PART 3: RESEARCH METHODOLOGY

This part of the report describes the research methodologies used in the study. The intention is to enable readers to judge how reliable the study's findings are and to explore further the implications of the study's data.

Described here are the methodologies used in (1) compiling the investment parameters reported in Figure 1 and Table 1; (2) the survey of academic institutions that undertook renovations and additions to existing libraries or built new libraries between 1992 and 2001; and (3) the phone interviews of library directors and academic officers at a number of institutions that responded to the survey. For information about the methodology used in the Council of Independent Colleges (CIC) survey of library directors and chief academic officers, see section 4 of the report on that survey, which is available at http://www.cic.org/projects_services/index.asp.

Investment Parameters

Information from 1992 through 2001 on several factors—e.g., number of academic library projects, total cost, total gross square feet (GSF)—were extracted and summed from the reports on library capital projects reported annually in the December issue of *Library Journal*. Ten-year means and standard deviations were calculated for each factor, as were the z scores for each annual statistic. These z scores indicate that all the annual statistics fall well within a normal distribution of values. Note that the total current dollar costs, as reported in the *Library Journal*, were converted to total real dollar costs using the index values of the gross domestic product published by the U.S. Bureau of Economic Analysis. This conversion was done to permit comparisons across a ten-year period.

Survey of Academic Institutions Undertaking Library Construction between 1992 and 2001

Scope of the Survey

The survey focused on academic library projects (new buildings, renovations, and additions) undertaken in the United States primarily between 1992 and 2001.

- Academic libraries are of interest to the study's sponsor, the Council on Library and Information Resources. They have a distinctive institutional setting and clientele, and the investigator has some familiarity with academic libraries, having worked most of his professional life in such libraries.
- Projects in the 1990s were completed at a time of significant pedagogical and technological change in higher education. Personal and institutional memories of projects completed earlier than 1992 are likely to have dimmed.
- Imaginative, forward-looking libraries were built in many countries other than the United States in the 1990s. This study nonetheless confined itself to those built in the United States to simplify the identification of projects, to keep the number of projects manageable, to facilitate the interviews (which could be done in one language and in only four time zones), and to avoid contextual issues (e.g., the kind of national planning represented by the Follett report in the United Kingdom) with which the investigator is not familiar.

Database of Projects Undertaken between 1992 and 2001

A list of additions, renovations, and new building projects was compiled from the lists of libraries undertaking such construction published annually in the December issue of *Library Journal*. Other projects identified in a literature search were added, yielding a list of 443 projects. The intention was to identify projects completed between 1992 and 2001, but inaccuracies in reporting dates and other factors resulted in the inclusion of a small number of projects completed or ongoing in 2002.

For each project, the following information was compiled:

- the institution's name and mailing address
- the institution's Carnegie classification
- the name of the library involved
- the name of and contact information for the library director responsible for the project
- the nature of the project (i.e., renovation, addition, or new construction), the size of the project in gross square feet, and its completion date
- the name of the lead architect for the project (this information about architects provides the basis for Figure 7 in part 1 and Table 5 in part 2 of the report)

Survey respondents were asked to review the database information about their project and to correct any mistakes.

To view the letter inviting library directors to participate in the study, click here (goes to p. W-167).

Survey Instrument

Council on Library and Information Resources
Survey of Recent Library Space Planning Practices

Thank you for responding to the following questions regarding your experience in library planning. The Council on Library and Information Resources greatly values your assistance with this project.

If you have any questions about this CLIR survey, please get in touch with Scott Bennett at: 2scottb@prairienet.org or at 217-367-9896.

PROJECT IDENTIFICATION

Please enter in the following box the questionnaire number given at the beginning of the letter you received inviting your participation in this survey. If your letter had more than one number identifying different projects, please fill out a separate response for each different project.

Questionnaire number xxx supplied on Web form

PROJECT DATA

A literature review suggests that the following library has, in the last ten years, been built, added to, or renovated. If the project information supplied below is inaccurate or incomplete, please make the necessary changes.

Institution name: (*supplied on Web form*)

Library name: (*supplied on Web form*)

Date completed: (*supplied on Web form*)

Approximate size of the project (x 1,000 GSF): (*supplied on Web form*)

Principal architect: (*supplied on Web form*)

If *all* of the information supplied above is incorrect, please delete it and submit the questionnaire without answering the remaining questions.

FACTORS MOTIVATING NEW LIBRARY SPACE

1. Which of the following considerations primarily motivated your library renovation/construction project? Please indicate the strength of motivation for as many considerations as apply. Use the last column to indicate the consideration was not a factor.

	Strong Motivation 5	4	Intermediate Motivation 3	2	Weak Motivation 1	Not a Factor 0
• Growth of library staff (either librarians or support staff)	❑	❑	❑	❑	❑	❑
• Increase in the number of library service points	❑	❑	❑	❑	❑	❑
• Growth of the collections	❑	❑	❑	❑	❑	❑
• Changing character of student study space needs	❑	❑	❑	❑	❑	❑
• Changes in reference services	❑	❑	❑	❑	❑	❑
• Changes in public services other than reference (e.g., circulation, ILL, general changes in information technology)	❑	❑	❑	❑	❑	❑
• Changes in or growth of library instruction programs (including the need for electronic classrooms for library instruction)	❑	❑	❑	❑	❑	❑
• Changes in technical services and other library operations with limited interactions with readers	❑	❑	❑	❑	❑	❑
• Preservation of the collections	❑	❑	❑	❑	❑	❑
• Need to accommodate operations not previously housed in the library (e.g., computing centers and other IT operations, audiovisual services, teaching and learning centers, writing centers, general classrooms or offices)	❑	❑	❑	❑	❑	❑
• Building safety issues	❑	❑	❑	❑	❑	❑
• Building mechanical systems Obsolescence	❑	❑	❑	❑	❑	❑
• Building structural problems (including earthquake protection)	❑	❑	❑	❑	❑	❑
• Dysfunctional design of previous space	❑	❑	❑	❑	❑	❑
• Other considerations (please specify):						

_____

_____

_____

PROCESS FOR ARTICULATING YOUR GOALS

2. Was the design of your project meaningfully influenced by an overall "vision" statement, or similar document, regarding your library's mission and services?

Yes ❑ No ❑

3. Did you undertake any of the formal, systematic assessments of your needs in the following list before starting to specify the technical program for your project?

Please check box to indicate "yes" for as many as apply:
❑ Assessment of library operations (e.g., occupancy rates, service counts, collection growth rates, library staff work flows, survey of building conditions)
❑ Assessment of reader or user wishes
❑ Assessment of modes of student learning
❑ Assessment of modes of faculty teaching
❑ Assessment of the library as one element in the larger provision of academic space on campus
❑ Other assessment activities (please specify):

_____
_____
_____

4. Which of the following reader constituencies were significantly involved in planning your project?

Please check box to indicate "yes" for as many as apply:
❑ Faculty
❑ Students
❑ Other (specify): _____

5. Did important changes in the concept of library work, including any expansion of staff functions or responsibilities, affect your library space planning?

Yes ❑ No ❑

If yes, please briefly describe that reconceptualization: _____
_____
_____
_____

6. Did your project provide significant instructional space for:

Please check box to indicate "yes" for as many as apply:
❑ Instructional activities conducted by library staff (either librarians or support staff)
❑ Instructional activities conducted by nonlibrary faculty or graduate students
❑ Instructional activities conducted by computing services staff
❑ Teaching and curricular development, or other faculty development activities
❑ Other instructional space (please specify):

_____
_____
_____

7. Did your project provide significant space for student learning activities requiring:

Please check box to indicate "yes" for as many as apply:
❑ General computing laboratories
❑ Group study space for students
❑ Conference or other informal meeting space for faculty and students
❑ Other student learning space (please specify):

_____
_____
_____

8. Did your project provide space to improve for readers the interface between print and electronic information resources? A possible example would be online catalog workstations placed in the book stacks.

Yes ❑ No ❑

If yes, please specify the way the space is used:

_____
_____
_____

9. Did your project provide for:

Please check box to indicate "yes" for as many as apply:
❑ Vending machine food and beverage services
❑ Staffed food services
❑ Other food service (specify): _____

10. Did your project provide social space for students (other than food service and group study spaces)?

Yes ❑ No ❑

If yes, please describe the space:

_____
_____
_____

11. Did your project self-consciously allow for future changes in the use of library space, even those you could not confidently forecast?

Yes ❑ No ❑

If yes, please briefly describe your strategy of accommodating such change:

_____
_____
_____

POST-OCCUPANCY ACTIVITES

12. Once your project was finished and the space occupied, did you conduct a formal post-occupancy assessment of how well the project meets your needs?

Yes ❑ No ❑

13. Has the experience of working in your new project suggested the need for further significant change in library space?

Yes ❑ No ❑

14. Would you be willing to be interviewed by the CLIR project investigator seeking a more detailed understanding of your project?

Yes ❑ No ❑

If yes, please provide the following information:

Name: _____

Title: _____

E-mail: _____

Phone: _____

You might wish to review your responses before sending them to CLIR. You may change any response by deleting it and providing a new answer.

When you have completed the questionnaire, you may submit it to CLIR by clicking on the following Submit button.

Submit button

THANK YOU VERY MUCH FOR YOUR ASSISTANCE.

Methods of Analyzing Survey Data

The survey posed four kinds of questions:

- Questions 2, 5, 8, and 10–13: These questions invited a single affirmative response. Every affirmative implied a reciprocal negative.
- Questions 3, 4, 6, and 7: These three- to six-element questions invited multiple affirmative responses. An affirmative response to one element in these questions did not exclude an affirmative response to other elements but did, by inference, imply a reciprocal negative for the element in question. The individual elements in these questions could therefore be treated as if they were "yes/no" questions comparable to questions 2, 5, 8, and 10–13.
- Question 9: This three-element question was treated as if an affirmative response to one element excluded an affirmative response to other elements.
- Question 1: This 14-element question invited affirmative responses weighted (on a six-point scale) by intensity. The intensity rating for any given element carried no implication for the rating of other elements.

Excluding the "other" responses, there were a total of 114 question categories to track for each survey returned and reported in Tables 3a and 4a. When the responses were analyzed by ungrouped and grouped Carnegie classification numbers (Tables 3b and 4b), there were 1,596 question categories to track. When the responses were analyzed by project-completion year (Tables 3c and 4c), there were 1,254 question categories to track.

There were 240 usable, nonduplicative responses to the survey, yielding a 54% rate of return. The study considered the 443 libraries identified in its database as the study's population, while it took the 240 survey responses as a study sample representing the study population.

In the ensuing description of statistical methods, the following terms are used:

- "Question" identifies a question as it was presented to readers of the survey—e.g., question 1 about several different factors that motivated projects
- "Question element" identifies a particular factor in the question—e.g., the growth of library staff in question 1 or the "yes" option in several other questions
- "Question category" or "category" identifies the intensity response or the yes/no response used by the respondent for each question element—e.g., the growth of library staff identified as a weak motivator, or a "no" response about post-occupancy assessment.

For all questions, the proportion (P) of affirmative responses to each question element was determined and a corresponding confidence interval for P calculated. This confidence interval indicates the range (reported as plus-or-minus percentage points) within which responses for the study population are likely to vary from the study

sample (i.e., P) in 95 out of 100 cases.

The chi-square test was then applied in the following ways to determine whether differences in P were statistically significant.

- In Tables 3a and 4a, actual P responses were compared to a random (i.e., uniform) set of responses. For question 1 (Table 3a) "random response" was defined as the total number of responses divided by six, the number of question categories (i.e., random response = mean response). To determine the mean or random response rates in the other questions (Table 4a), the total number of responses was divided by 2 for the "yes" and "no" response categories actually provided in questions 2, 5, 8, and 10–13 or implied for each of the elements in questions 3, 4, 6, and 7. For questions 3, 4, 6, and 7, the total number of responses had to be inferred because it could not be observed directly (that is, an affirmative response to one element in these questions did not exclude an affirmative response to other elements). The inferred number of responses was defined as the mean of the actual responses to questions 2, 5, 8, 9, and 10–13 (where an affirmative response to one element did exclude an affirmative response to other elements). This mean was 224, suggesting that 224 out of a possible 240 respondents (93.3%) actually answered the questions at issue here.
- In the analysis of P responses grouped by Carnegie classification type (Tables 3b and 4b) and by projection-completion year (Tables 3c and 4c), the actual responses by institutional type were compared not with random responses but with the actual responses for the sample, considered as a whole (i.e., the Tables 3a and 3b results).
- Where differences in response were statistically significant, that fact was registered in Tables 3a–c and 4a–c by the use of bold type and by a ratio called the chi-square factor. This factor equals the results of the chi-square test divided by the value of the critical region appropriate to the given question element (different elements require the use of different degrees of freedom in determining the critical region). In effect, the chi-square factor indicates how many times the results of the chi-square test exceeded the value of the critical region for that test. This use of the chi-square factor provides a single scale for comparing responses that require somewhat different underlying values in testing for statistical significance. Hence, any chi-square factor value of ≤1 falls outside the critical region and is not statistically significant. Any factor value of ≥1 falls within the critical region and is statistically significant. The higher the chi-square factor value is above 1, the less likely it is that the response could have happened by chance.

Interviews of Library Directors and Chief Academic Officers at Some Institutions that Responded to the Survey

Selection of Library Directors to Participate in Phone Interviews

The identification of persons to interview was a multistep process. No attempt was made to identify a random, stratified sample from the survey respondents, but an attempt was made to include a variety of types of institutions in the interviews that roughly paralleled the variety of institutions in the study sample.

- As a first step, the number of interviews to be sought at various institutional types (using the Carnegie Classification) was determined, based on the proportion of institutional types responding to the survey: Doctoral/Research Universities—Extensive (nine interviews); Doctoral/Research Universities—Intensive (four interviews); Master's Colleges and Universities I (seven interviews); Master's Colleges and Universities II (one interview); Baccalaureate Colleges—Liberal Arts (five interviews); Baccalaureate Colleges—General (two interviews); Associate's Colleges (two interviews). This institutional profile for the interviews approximates that of the study sample, except that Doctoral/Research Universities—Extensive are under-represented by one interview and Baccalaureate Colleges—Liberal Arts are overrepresented by one interview. This slight adjustment was made with the hope of securing more informative interview results.
- All respondents who offered three or more comments in responding to the survey were selected for interviews, on the supposition that they were most strongly engaged with the topics being investigated. In fact, these respondents often had thoughtful, provocative things to say in their survey comments.
- All the respondents who offered two comments in responding to the survey were sorted into institution types (using the Carnegie classification). Most of these respondents could be included in the interviews within the limits set for the various institutional types. No individual with particularly interesting or provocative comments in the survey was omitted.
- A small number of Doctoral/Research Universities—Extensive, Master's Colleges and Universities I, Baccalaureate Colleges—Liberal Arts, and Baccalaureate Colleges—General were selected from the list of survey respondents, sorted by institutional types. In selecting these institutions, at attempt was made to balance public and private institutions and to secure some geographical spread.
- All respondents identified in this way had indicated, in survey question 14, a willingness to participate in a follow-up interview. Not all respondents so identified were in fact willing to be interviewed, so the institutional profile of completed interviews did not match the intended profile. Notably, there were no interviews of library directors from Associate's Colleges.

In the event, the study included 25 interviews with library directors. Some directors asked colleagues to substitute for them in these interviews; others asked colleagues to join them during the interviews.

Questions Posed in the Phone Interviews of Library Directors

Library directors received the following set of interview questions well before their actual interview. They were asked, as part of the scheduling process, to identify which of these questions would be most pertinent to their project. The scripts for each interview included the questions so identified as well as other questions of particular interest to the investigator. Actual interviews often varied somewhat from the prepared scripts.

INTERVIEW QUESTIONS

1. Survey results indicate that meeting the space needs of library instruction, especially that for electronic classrooms, was a major motivator of library capital projects.
   - Was this a major motivator for your project?
   - Aside from electronic classrooms, how if at all did your project strengthen your library instruction program?

2. Survey results indicate that accommodating changing patterns of student study, especially as regards group study, was a major motivator of library capital projects.
   - Was this a major motivator for your project?
   - Aside from group study space, how if at all did your project respond to student needs for study space?

3. Though not explicitly inquired about, respondent comments on the survey indicate that the needs of special collections sometimes were a major motivator of library capital projects.
   - Was that so for your project?
   - If it was, what conception of these often less frequently used and/or relatively narrowly defined collections succeeded in attracting support for your project?

4. Survey results indicate that the need to provide shelving for collections was a major motivator of library capital projects.
   - Was this a major motivator for your project?
   - Do you expect shelving to be a major motivator of capital spending for your library over the next 30 years?
   - Is the long-term preservation of your print collections a major factor in the design of your library's shelving?
   - If preservation and access values were in conflict in the design of shelving space (e.g., lighting and temperature conditions ideal for books but less than ideal for readers), which value would prevail?
   - Have you considered a satellite, high-efficiency shelving facility for your library?
   - Does the availability of electronic journals and books figure ex-

plicitly in your thinking about future shelving needs? Have you quantified the likely impact of electronic materials on your future need for shelving?
- Does the availability of print material through consortial arrangements figure explicitly in your thinking about future shelving needs? Have you quantified the likely impact of consortial access arrangements on your future need for shelving?

5. Survey results indicate that "vision statements" were often critically important in guiding library capital projects.
- Was that so for your project?
- How was the vision statement developed?
- What relationship did the vision statement have to formal, systematic needs assessments?
- Might you share the vision statement with me?

6. Survey results indicate that while changes in technology frequently drive the need to reconfigure library space for specific services and operations, there is relatively little fundamental rethinking of the need for and uses of library space. Aside from the omnipresent computer (often presented in clusters), group study space, and electronic classrooms, library space today has much the same character and basic function as library space built a generation ago.
- Do you agree with this characterization of your project? If not, how would you modify it?
- Should we expect major changes in library space design to evolve in largely incremental and experimental ways, building on what we know has worked well in the past?
- Are there opportunities to break with an evolutionary process of library design and adopt more radical, revolutionary, and possibly risky views of what library space should be?

7. Survey results indicate that the formal, systematic assessment of specific departmental operations sometimes plays a significant role in formulating library capital projects and in justifying them to academic and funding bodies. Otherwise, the formal assessment of readers' wishes, of student and faculty academic needs, and of library space as one element in the campus-wide provision of academic space is rarely done. By contrast, consultation with library users, as distinguished from formal needs assessment, is quite frequent. But respondents often comment that such consultation is largely routine in nature and rarely if ever decisively important in project design.
- Was your project completed without any significant, formal, and systematic assessment of reader needs?
- If so, would your project have been strengthened by such an assessment of (for instance) student learning behaviors, faculty teaching strategies, the campus-wide provision of study space, or the interrelations of social space and study space? Why (or why not) would assessments of this sort have strengthened your project? Why was such assessment not done, if it would have been helpful?

- Was consultation with faculty and students decisively important to specific design decisions made for your project?
- Faculty members are quite frequently consulted about library projects. In your case, was that done for reasons relating to the specific teaching and research functions of faculty, as distinguished from reasons relating to the weight of faculty opinion generally in setting campus goals and priorities?
- Research indicates that faculty visit and use library space much less frequently than do students, yet consultation with students about library design happens much less frequently than with faculty. Was this the case in your project? If so, does this fact reflect the relative weight of faculty and student opinion in setting priorities on your campus? Does it reflect some other consideration?
- In consulting with faculty and students about your project, what did you aim for beyond "buy in" and "political support" among decision makers?

8. Aside from the assessment and consultation activities just discussed, how would you describe the process for coming to agreement on your library project
- as regards its programmatic goals, especially any goals rooted in the identified needs of students and faculty as distinguished from the operational goals of library units?
- as regards your project's relative priority among competing campus projects?
- as regards funding?

9. How long did it take to move your project from (a) its first formulation for members of the campus community beyond librarians to (b) the institutional funding of the project? Did the length of project gestation bear on your decisions regarding formal, systematic needs assessment and consultation with various reader constituencies?

10. Survey results indicate that formal post-occupancy studies are infrequently undertaken to measure the success of library capital projects.
- Was that the case for your project?
- If so, what other methods (if any) did you use to assess the success of your project?
- Has your assessment (whether formal or informal) of the success of your project changed over time?
- If you would now do your project differently in some significant way, did you know at the time that the project design should be changed or did you discover that only afterwards?

11. Was the inclusion in your project of some function not administered by the library (e.g., some function related to information technology services) critical to its conception and success? If so, what was that function? Do you regard the inclusion of that nonlibrary function as a strategically important alliance for the library or as a

"marriage of convenience" useful in moving your project forward?

12. If you had to reduce to just one factor the value your library creates for your campus, would timely and convenient access to information resources be that value?
- If not this, what would be the single most important value your library creates?
- Where would you rank instruction in the identification and effective use of information resources among the values created by your library?

13. What questions, beyond those posed above, would help to understand the planning process for your project, especially as regards the identification of the teaching and learning functions of library space?

Phone Interview Procedures for Library Directors

Click here (goes to p. W-168) for a description of the procedures used in phone interviews.

Selection of Chief Academic Officers to Participate in Study Interviews

Library directors were asked about the participation in their library projects of their chief academic officers and other academic officers. Interviews were sought with all such individuals identified as having a significant, substantive impact on the project beyond the typical responsibilities of setting the priority of the library project amid competing campus projects, establishing project budget parameters, and fund raising. The study included six interviews with chief academic officers and other administrative officers.

Questions Posed in the Phone Interviews of Chief Academic Officers

The e-mail message inviting chief academic officers and other administrative officers to participate in the interviews included the following paragraphs. Actual interviews often varied somewhat from the script.

SCRIPT FOR CHIEF ACADEMIC OFFICER INTERVIEWS

The following questions all ask about the same thing: the role of the chief academic officer in ensuring that library space is as responsive as possible to the institution's teaching and learning missions. Our conversation could begin with any one of these questions, or with some other matter that seems more salient to you.

1. Chief academic officers typically play several managerial roles in library space planning. They are involved in determining the priority of library projects among other campus projects, setting the timetable for projects, establishing project budgets and securing funds, and managing the political process needed to initiate and complete capital projects. What other roles, if any, did you play in planning for

[project name]? Did any part of your involvement in library space planning focus specifically on possibilities for advancing your core concerns with teaching and learning?

2. In setting priorities for the project, how did you balance responding to long-accumulating space problems (e.g., lack of shelving space, obsolescent mechanical systems) with opportunities to enhance teaching and learning (e.g., group study space, electronic classrooms)?

3. Most library planning efforts involve consultation with students and faculty. This consultation seeks to understand the operational needs of these readers (e.g., students' seating preferences); gain buy-in for the project, especially from faculty; and manage the political process of deciding on project priorities. How well does this consultation process identify opportunities for library space to advance strongly the institution's fundamental missions in teaching and learning? Can this consultation process be improved? Are there other steps—such as formal assessments of modes of student teaching and faculty teaching—that might increase the likelihood that library space will advance the institution's teaching and learning missions?

4. Aside from the consultation process, it appears that college and university academic officers depend heavily on the good professional judgment of librarians, especially the library director, to guide library space planning. How well does this dependence advance opportunities for library space to serve the institution's fundamental missions in teaching and learning?

5. Chief academic officers are involved in planning for all sorts of capital projects. Does library space planning offer you distinctive opportunities to advance the teaching and learning missions of your institution? What is distinctive, if anything, about your involvement in library space planning?

The phone interview procedures for chief academic officers and other administrative officers were essentially the same as for library directors.

PART 4:
SELECTED READINGS

A great many excellent publications are available to persons who manage planning for library space and for the numerous consulting, construction, and other activities that yield new or renovated libraries. Most publications address the needs of those who already know "what" they want to do and need help in understanding "how" to achieve their purposes.

The following list, by contrast, provides some initial guidance to those who are primarily concerned with "what" their library project should be, especially in relation to the fundamental learning and teaching missions of the institution their library serves. The list is meant to be suggestive and is by no means exhaustive.

Bazillion, Richard J., and Connie L. Braun. 2001. *Academic Libraries as High-Tech Gateways: A Guide to Design & Space Decisions*. 2nd ed. Chicago: American Library Association.

Bazillion and Braun provide an excellent bibliography and, in chapter 1, a good survey of recent thinking about the forces of change in librarianship. Chapter 6, "The Library as a Teaching and Learning Instrument" (pp. 171-199), focuses primarily on the library as a teaching place and does not address student learning behaviors as a possible driver of library design. The authors concentrate on the library as a home for technology and instruction in the use of technology, including such spaces as electronic classrooms, information arcades, and academic technology centers.

Bechtel, Joan M. 1986. Conversation, A New Paradigm for Librarianship? *College & Research Libraries* 47: 219-224.

See the Bruffee entry, below, for an account of this article.

Brand, Steward. 1994. *How Buildings Learn: What Happens after They're Built*. New York: Viking.

This is a deservedly well-known account of how those who occupy buildings reshape the purposes of those buildings over time and of how architectural design can facilitate or hinder the ineluctable process of change. See also Wiley, below.

Bruffee, Kenneth A. 1999. *Collaborative Learning: Higher Education, Interdependence, and the Authority of Knowledge*. 2nd ed. Baltimore: Johns Hopkins University Press.

Bruffee describes a foundational or cognitive view of knowledge as believing that "knowledge is an entity formalized by the individual mind and verified against reality" (p. 180)—that knowledge in this sense is founded in external reality as engaged by individual intelligence. Foundational views of knowledge underscore the authority of the teacher. By contrast, nonfoundational views hold that knowledge is constructed by people acting within communities.

> Knowledge is a community project. People construct knowledge working together in groups, interdependently. All knowledge is therefore the 'property' not of an individual person but of some community or other, the community that constructed it in the language spoken by the members of that community (pp. 294-295).

> We learned a lot from reading, of course. That was because reading is one way to join new communities, the ones represented by the authors of the texts we read. By reading, we acquire fluency in the language of the text and make it our own. Library stacks, from this perspective, are not a repository; they are a crowd (pp. 8-9).

> Involving local libraries and librarians as part of a "distance learning" system can . . . [turn the enterprise into something like the experience of residential college and university education] only if the program revises the ubiquitous foundational understanding of what learning is and what libraries are. . . . Joan M. Bechtel has argued the position, for example, that the most appropriate "new paradigm for librarianship" is "conversation." The traditional views of a library as a "warehouse for storing books" and as "the heart of the college and university" or "the center of our intellectual life," Bechtel says, are equally archaic. Storing books, she points out, is only one of many services libraries provide these days. The heart of the intellectual life of a college and university is more likely to be, among other places, in "a group of friends who meet regularly for study and discussion." Instead, Bechtel says, what libraries do is "collect people and ideas" and "facilitate conversation among people. . . . The preservation of crucial conversations [as recorded in the published record], the first task of libraries, [serves] not

> only to preserve the record, but more important to ensure the continuation of significant conversations already in progress" (p. 130).

Bruffee observes that libraries are beginning to reflect this purpose in the provision of what he calls "conversation rooms," more commonly called group study spaces. Notably, Bruffee recognizes the importance of learning spaces and includes a brief appendix, Architecture and Classroom Design (pp. 259-261).

***Buildings, Books, and Bytes: Libraries and Communities in the Digital Age. A Report on the Public's Opinion of Library Leaders' Vision for the Future*. 1996. Washington, D.C.: Benton Foundation.**

The report is primarily concerned with public libraries and public support for them. In summarizing an opinion survey, the report says, "Americans value maintaining and building public library buildings. Americans support using library budgets to preserve and erect library buildings, placing this activity third in the poll's rankings of library services they would spend money on. A total of 65 percent felt this was 'very important'; almost identical numbers, 62 percent, though this should be a library priority. . . . Clearly, the American public agrees wholeheartedly with the library leaders that the American public library building is an intrinsic part of the library's identity. It is important to note that support for this function comes only after purchasing new books and computers and computer access, and that all three categories polled extremely well among all groups [surveyed]" (p. 26).

Crosbie, Michael J., and Damon D. Hickey. 2001. *When Change Is Set in Stone: An Analysis of Seven Academic Libraries Designed by Perry Dean Rogers & Partners: Architects*. Chicago: American Library Association.

Crosbie is an architectural critic who has followed the work of Perry Dean Rogers for some years. Hickey is the head librarian at The College of Wooster, where he worked with Perry Dean Rogers on two major projects. The libraries reviewed in this book are the Wyndham Robertson Library, Hollis University; the Health Sciences and Human Services Library, University of Maryland-Baltimore (UMB); the Flo K. Gault Library for Independent Study, The College of Wooster; the Waidner Library, Dickson College; the Morgan Library, Colorado State University; the Timken Science Library, The College of Wooster; and the John Deaver Drinko Library, Marshall University. The Health Sciences Library at UMB and the Drinko Library are reviewed especially favorably, though all seven libraries are praised.

Crosbie and Hickey comment from somewhat different perspectives on each of the seven libraries, identifying what is particularly successful about each building and giving some account of the design choices made by the architects. Except for the account of the Drinko Library, they give almost no attention to any academically driven planning that shaped the conception of these buildings.

Hickey writes a useful section (pp. 8-18) identifying nine factors that powerfully influenced the libraries reviewed in this book. See also Foote, below.

Demas, Sam, and Jeffrey A. Scherer. 2002. Esprit de Place: Maintaining and Designing Library Buildings to Provide Transcendent Spaces. *American Libraries* 33 (April): 65-68.

The authors describe how libraries, both public and academic, are now being designed to respond to the wish that they be community spaces and affirm community values.

Dowler, L., ed. 1997. *Gateways to Knowledge: The Role of Academic Libraries in Teaching, Learning, and Research*. Cambridge, Mass.: MIT Press.

The essays of this book emphasize teaching and research more than learning. Two essays are particularly good. One is by Richard A. Lanham, "A Computer-Based Harvard Red Book: General Education in the Digital Age" (pp. 151-168). This essay takes the form of an imaginary memo from a university president to a faculty committee, charging it with reconceiving general education in the digital age, just as Harvard's President Conant appointed a committee in 1943 to ponder the objectives of a general education in a free society. The essay asks what kind of literacy students will need; considers what happens to the textbook and the classroom and what becomes of the academic major; and argues for the possibility of a central role for libraries in digitally based education. Lanham thinks with insight and writes with wit.

The other essay, entitled "Postscript" (pp. 215-228), is by Dowler. Drawing on the other essays in this volume, Dowler argues that "teaching is the core of the gateway library" (p. 219) and focuses on how students learn. "The challenge for libraries, then, is to respond to these changes in teaching and learning and create an environment for problem solving and student-centered learning" (p. 221).

James Wilkinson, in "Homesteading on the Electronic Frontier: Technology, Libraries, and Learning" (pp. 181-196), argues that "as library functions broaden with the growth of technology, librarians are expanding their own role within colleges and universities and asserting the need and desirability to act as teachers as well as custodians of information. . . . The concept of the 'librarian as teacher' acknowledges that a great deal of learning occurs in libraries (as well as in the classroom) as a result of these student research activities and that libraries are in a position to facilitate that learning. The emerging importance of technology within the library precincts also leads to the need for experts who can initiate library users into the *arcane imperii* of digital software. Just as teaching hospitals are attached to university medical schools, we can establish teaching libraries where students learn about research firsthand. . . . . But there is more. Librarians have sought to engage themselves more actively in teaching at the very time that teaching and learning themselves are being reexamined and redefined within the university as a whole. . . . In

the old model, teachers actively dispensed knowledge and students passively benefited from their wisdom, but the new model increasingly emphasizes partnership, problem solving, and active learning. . . . Librarians themselves now aspire to expand their traditional reference functions to include an active partnership in teaching. And teaching itself, which both libraries and technology attempt to serve, is being reconceived as a complex process of learner-centered teaching and active learning that is guided by a teacher who is no longer a distant authority but a concerned and committed guide" (pp. 182-184). Wilkinson then asks, "Does all this mean that the library as a physical space has become obsolete? I would argue that, on the contrary, its usefulness as a teaching space remains unimpaired and may even increase. A great deal of teaching still requires direct contact to be truly effective. In general, students continue to express a wish for more interaction with faculty and with one another and not less. Just as some of the research formerly done in libraries is now done in faculty offices or student dorm rooms—with a personal computer serving as a study carrel—so can some of the group learning that formerly occurred exclusively in classrooms now take place in libraries. . . . Here it seems to me that libraries could usefully supplement or even take the lead in providing a learning environment where information technology is made available with some thought to how learning really occurs" (pp. 193-194).

Foote, Steven M. 1995. An Architect's Perspective on Contemporary Academic Library Design. *Bulletin of the Medical Library Association* 83: 351-356.

Foote, who is president of Perry Dean Rogers, comments on the effort among library designers to find "the symbolic meaning of technology" and on the drag of traditional thinking in that effort (p. 351). See also Crosbie and Hickey, above.

Hardesty, Larry. 1995. Faculty Culture and Bibliographic Instruction: An Exploratory Essay. *Library Trends* 44: 339-367.

Hardesty notes that academic institutions invest substantially in their libraries, which, however, are significantly underutilized by students. He further notes that most faculty members will confirm the importance of effective use of the library, but few are willing to devote class time to teaching library skills to students. Hardesty explains these apparent contradictions in terms of a pervasive culture among faculty that does not value librarians as teachers and undervalues the teaching of library skills compared to substantive disciplinary knowledge.

Hartman, Craig, John Parman, and Cheryl Paker. 1996. The Architect's Point of View. In *The National Electronic Library: A Guide to the Future for Library Managers*, edited by Gary M. Pitkin. Wesport, Conn.: Greenwood Press.

The authors are architects in the San Francisco office of Skidmore, Owings, & Merrill. They argue for the community functions

of libraries, noting for instance that at a national accounting firm heavily invested in telecommuting, "the library had become the one remaining place where people could meet informally to share their experience and gain a sense of each other as colleagues" (p. 105). They affirm "the electronic revolution only makes human encounter, which is the real basis of community, more valuable and necessary—not less so. As communities that we now take for granted, like the workplace, lose their status as a given in our society, others—the library among them—will grow in importance" (p. 122).

Hawkins, Brian L., and Patricia Battin. 1998. *The Mirage of Continuity. Reconfiguring Academic Information Resources for the 21st Century*. Washington, D.C.: Council on Library and Information Resources and the Association of American Universities.

This highly regarded book argues the case for interpolative change in library planning. It is not particularly concerned with library space.

Heaton, Shelley, and Kenneth E. Marks. 2000. Planning the UNLV Lied Library. *Library Hi Tech* 20: 12-20.

Heaton and Marks provide a case study of a new library building, giving much attention to the intricacies of planning for a publicly financed library but little account of the academic (as distinguished from the service) objectives of the Lied Library. This issue of *Library Hi Tech* is entirely devoted to various aspects of the planning and construction of the Lied Library at the University of Nevada at Las Vegas.

Holmes-Wong, Deborah, Marianne Afifi, and Shahla Bahavar. 1997. If You Build It, They Will Come: Spaces, Values, and Services in the Digital Era. *Library Administration & Management* 11: 74-85.

This is an excellent account of the planning and success with readers of the pioneering Thomas and Dorothy Leavey Library at the University of Southern California. See also the article by Victoria Steele noted in the entry for Sue Taylor, ed., *Building Libraries for the Information Age*.

Huang, Jeffrey. 2001. Future Space: A New Blueprint for Business Architecture. *Harvard Business Review* (April): 149-158.

Huang regards teaching and learning spaces as a species of "business architecture." He reports on the effort at the Harvard Graduate School of Design and the Center for Design Informatics to develop guidelines for architectural design that bring physical and virtual space strongly together. "Although we have been designing buildings for thousands of years and Web spaces for about a decade, we have almost no experience merging the two" (p. 150).

Jones, William G. 1999. *Library Buildings: Renovation and Reconfiguration*. SPEC Kit 244. Washington, D.C.: Association of Research Libraries.

Jones includes reports about renovation projects at Emory, Kansas State, Yale, Columbia, and West Virginia Universities, and from the University of Washington and the University of Chicago, along with short commentaries from the architects Aaron Cohen and Geoffrey Freeman. Tellingly, Jones's checklist for project preparedness assumes that the rationale for construction is clear and compelling; the checklist asks only about community support for the project.

***Library Builders*. 1997. London: Academy Editions.**

This is a coffee-table book, much concerned with library buildings as sculptural attempts to capture the "idea" of libraries in general or of a particular library project. While there are a number of projects from the United States represented in the book, most are European projects.

Michael Brawne asserts in his introduction that "two primary functions occur in libraries: the storage of the information source—books, journals, maps, recorded music, CD-ROMs, and so on—and the opportunity of having access to that information by individuals at a time of their choosing. That this is a matter of a direct and individual relationship is crucial, and of primary design significance. . . . The library—and the museum—allows for individuals to decide when they need access and equally to determine what information they want" (p. 6). "We should perhaps also remember that we are social animals. Although the book or the computer provides us as individuals with information, that search may still at times be a social act. We may want to be where the pursuit of knowledge is celebrated" (p. 9).

In a chapter entitled "Interiors in Detail" (pp. 216-219), Brawne argues that "it would seem that it is difficult to establish a typology of libraries at the level of the plan and section of the whole building. What makes a building a library is a set of medium- to small-scale decisions which principally involve furniture" (p. 216).

***Library Buildings Consultant List 1999*. 1999. Compiled by Jonathan LeBreton for the Library Administration and Management Association. Chicago: American Library Association.**

This biennial compilation includes a bibliography (pp. viii-xi) about library design and the use of consultants.

Consultants are invited to identify the types of service (e.g., "feasibility studies," "space planning") they provide by checking against a list of 25 possible services (p. 96). The list focuses on a set of "how-to" issues and does not include items regarding the identification of problems that might prompt a project or assistance in thinking about the mission of a library and how that mission might be expressed architecturally.

Leighton, Philip D., and David C. Weber. 1999. *Planning Academic and Research Library Buildings*. 3rd ed.; 1st ed. by Keyes D. Metcalf. Chicago: American Library Association.

Leighton and Weber provide the one essential guide to planning academic libraries. See the introduction of this report for a further account of this book.

Light, Richard J. 2001. *Making the Most of College: Students Speak Their Minds*. Cambridge, Mass.: Harvard University Press.

Light investigates how and with whom students learn, but not where they learn. One might argue that the built environment for learning must be carefully considered in the effort to help students make the most of college.

Matier, Michael, and C. Clinton Sidle. 1993. What Size Libraries for 2010? *Planning for Higher Education* 21 (Summer): 9-15.

Matier and Sidle approach library planning as an exercise in housing readers and books and conclude that the outlook for digital information is so uncertain as to make changes in conventional space allocation formulas imprudent.

McCarthy, Richard C. 1999. *Designing Better Libraries: Selecting & Working with Building Professionals*. 2nd ed. Fort Atkinson, Wisc.: Highsmith Press.

This is a typical "how-to," rather than a "what-to," book.

Michaels, David L. 1994. Charette: Design in a Nutshell. *Library Administration & Management* 8: 135-138.

Michaels describes the charette as an intensely collaborative and highly productive method of architectural design.

Rettig, James R. 1998. Designing Scenarios to Design Effective Buildings. In *Recreating the Academic Library: Breaking Virtual Ground*, edited by Cheryl LaGuardia. New York: Neal-Schuman.

Rettig urges that less emphasis be given to housing collections and more to accommodating reader behaviors. "Because the ways in which the members of a university community seek, identify, and use information change with increasing rapidity and because the traditional processes for planning academic library buildings have proved inadequate for incorporating long-term flexibility, the premises and processes of building planning need to be rethought" (p. 88). This article views library users primarily as people who manipulate information, not as learners.

Schneekloth, Lynda H., and Ellen Bruce Keable. 1991. Evaluation of Library Facilities: A Tool for Managing Change. *Occasional Papers*, no. 191 (November). University of Illinois Graduate School of Library and Information Science.

Schneekloth and Keable describe postoccupancy evaluation as a tool used at the Carol M. Newman Library of Virginia Polytechnic

Institute and State University and at an unnamed special library serving a financial company.

Stage, Frances K., Patricia A. Muller, Jillian Kinzie, and Ada Simmons. 1998. *Creating Learning-Centered Classrooms: What Does Learning Theory Have to Say?* ASHE-ERIC Higher Education Report, 26(4). Washington, D.C.: Graduate School of Education and Human Development, George Washington University.

The authors survey six learning theories and their application to higher education teaching and learning. A table (p. 75) indicates the authors' belief that only three of these theories (attribution, self-efficacy, and learning styles) are backed with extensive research to verify or validate the theory. For the most part, there is only moderate or limited research on the application of these theories to college students, the modification of teaching methods, or the effects of the application of such theories to teaching.

Stein, Karen D. 1998. Project Diary: Henry Myerberg's First Building as a Solo Architect, the Rhys Carpenter Library, Provides Bryn Mawr College with a Popular New Campus Center. *Architectural Record* 186 (February): 82-91.

Stein's article serves as a reminder and a good case study of the stop-and-start character of many library projects and of the way project scope, design, technical challenges, and cost can change over the long periods of time normally required to bring projects to completion.

Sutton, Lynn Sorensen. 2000. Imagining Learning Spaces at Wayne State University's New David Adamany Undergraduate Library. *Research Strategies* 17: 139-146.

Sutton describes the Adamany Library as "intentionally not designed to be collection-intensive" (p. 140), but to be "dedicated solely to student success" (p. 139).

Taylor Sue, ed. 1995. *Building Libraries for the Information Age*. Based on the proceedings of a Symposium on the Future of Higher Education Libraries, King's Manor, York, April 11–12, 1994. York: Institute of Advanced Architectural Studies, University of York.

The symposium was prompted by the Follett report on the future of academic libraries in the United Kingdom. The Higher Education Funding Councils Libraries Review Group was charged in 1992 and reported in December 1993. Sir Brian Follett chaired the review group.

In effect, the Follett report constituted a nationwide academic planning effort for libraries, tied to the fiscal responsibilities of the then-new Higher Education funding Councils.

According to Lynne J. Brindley's introduction to the volume (pp. 1-4), the Follett report was written in response to "the mass expansion of student numbers" and the perceived failure of libraries "in their fundamental task of providing enough books and enough seats for students" (p. 1).

The report "endorsed the view that there needs to be what it calls a sea-change in the way institutions plan and provide for the information needs of those working within them. The traditional view of the library as the single repository of the information needed for teaching, learning and research is woefully inadequate. . . . Follett endorsed the move from holdings to access, and called on universities to take a strategic view of information provision, and for information and its management to be fully integrated with academic and institutional planning.

"On support for teaching and learning, on how to make it better for the students, the Report offers no panaceas. Most importantly in this context, a major, funded space initiative was proposed to build, remodel and adapt space for library use, with a particular focus on service delivery and innovation using technology, rather than simply providing more space to accumulate materials. . . .

"On the research side the strategy argued for was one of national and regional collaboration, involving specialisation and cooperation. . . .

"The Information Technology group focused particularly on how developments in IT might be harnessed to underpin change across the whole academic library sector" (pp. 1-2).

This book publishes brief papers given at the symposium, including a few general commentaries and several case studies of new library buildings. The papers include Victoria Steele, "Producing Value: A North American Perspective on the Future of Higher Education Libraries" (pp. 77-80), commenting on the Thomas and Dorothy Leavey Library at the University of Southern California.

Andrew McDonald provides an account of some of the building activity that followed the Follett report in "Planning Academic Library Buildings for a New Age: Some Principles, Trends, and Developments in the United Kingdom," *Advances in Librarianship* 24 (2000), 51-79.

Van Slyck, Abigail A. 2000. Libraries: A New Chapter. *Architectural Record* 188 (October): 151-153.

Writing in the "Building Types Study 790," on academic and public libraries, Van Slyck observes that "the return of the monumental reading room is part of the growing acknowledgement that the library is as much about social interaction and intellectual exchange as the storage of books and the delivery of discrete packages of information into the hands of an individual reader." She notes there is nothing new in this idea, as libraries built in the nineteenth-century and earlier often affirmed quite strongly the social character of knowledge.

Webb, T. D., ed. 2000. *Building Libraries for the 21st Century: The Shape of Information*. Jefferson, N.C.: McFarland.

Webb collects a set of essays mostly about individual new library buildings—national, academic, and public. The following are notable among these essays:

Charlene Hurt, "The Johnson Center Library at George Mason University" (pp. 83-104) presents a model case study, giving ample attention to what motivated the new library and placing it strongly in campus-wide thinking about space for learning. In a separate article, "Building Libraries in the Virtual Age," published in 1997 (*College & Research Libraries News* 58 [February]: 75-76, 91), Hurt observes that "experiential learning takes place anywhere, any time, in a variety of environments, often social. . . . The popularity of bookstores that serve drinks and food demonstrates a preference for a more casual, social environment [in libraries], as does our students' preference for seating in highly visible areas" (pp. 75-76).

John Ober's essay, Library Services at California State University, Monterey Bay (pp. 122-127), is an interesting case study of an entire institution created at the former Fort Ord in less than two years. Ober reports that all planning, including that for the library, was strongly influenced by the mission statement of the new Monterey Bay campus, which is reproduced in this article. Most interestingly, California State University, Monterey Bay (CSUMB) Chancellor Barry Munitz felt the new campus did not require a traditional library. Dr. James May was appointed dean of Science, Technology and Information Resources and "he spent much of his energy convincing administrators, including Chancellor Munitz, that a physical library with a collection of print materials was necessary at CSUMB; the appropriate use of technology to provide access to undergraduate level resources could and should be a cornerstone of library services but would not be sufficient in and of itself" (p. 126). Ober describes the wide press coverage that the ensuing debate about the library received, and its outcome in the decision to build a library with a relatively small core collection of print materials.

Another interesting essay is "The Academic Library in the 21st Century: Partner in Education," by Geoffrey T. Freeman, (pp. 168-175). Written by an architect, the essay argues ably for the educational function of libraries.

Wiley, Peter Booth. 1997. Beyond the Blueprint. *Library Journal*, 122 (Feb. 15): 110-113.

Wiley describes several kinds of postoccupancy adjustments made in large city public libraries as a result of experience with the buildings after they were open.

PART 5:
WEB-ONLY TABLES AND DOCUMENTS

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NOTE: The tables and documents in Part 5 are available only in the Web version of this report.

Table 3b reports the responses to question 1 in the study survey but differs from Table 3a in sorting the responses according to the Carnegie Classification of institutions. The left-most column lists eleven different types of institutions, with subtotals provided for three groups of institution types where there are enough responses to make such subgroupings informative. Overall response data for each question, taken from Table 3a, are reported in bold face type. Data for each institution type follow, with the data for institutional groupings reported in italic type. The chi-square factor is reported only where the responses for a given institutional type, or a given institutional grouping, vary in a statistically significant way from the overall (i.e., Table 3a) responses to the individual question. The last two columns describe the nature of the shift of responses in individual institutions, or institutional groups, compared to the overall responses. These columns also report the relative amplitude of the shift in responses. So, for instance, in question 1a regarding the growth of library staff, there was a shift in responses among doctoral/research universities—intensive (both public and private) away from "not a factor" (0 on the scale) toward the middle of the scale (positions 3 and 4). Among all baccalaureate colleges taken as a group, there was a shift away from "not a factor" toward "weak motivator." The amplitude of the shift for baccalaureate colleges (2.5) was almost twice that of the shift for doctoral/research universities—intensive (private).

Table 3c reports the responses to question 1 in the study survey but differs from Table 3a in sorting the responses according to the year when projects were completed. The left-most column lists eleven different years. Overall response data for each question, taken from Table 3a, are reported in bold face type; data for each year follow. The chi-square factor is reported only where the responses for a given year vary in a statistically significant way from the overall (i.e., Table 3a) responses for the individual question. The last pair of columns describes the direction and relative magnitude of the shift in responses for a given year, compared to the overall responses. So, for instance, in question 1a regarding the growth of library staff, there was a shift in responses among projects completed in 1993 away from the overall "not a factor" (0 on the response scale) toward "intermediate motivation" (3 on the scale); this shift was a relatively large 1.9 in magnitude.

Table 4b reports the responses to questions 2–13 in the study survey but differs from Table 4a in sorting the responses according to the Carnegie Classification of institutions. The left-most column lists eleven different types of institutions, with subtotals provided for three groups of institution types where there are enough responses to make such subgroupings informative. Overall response data for each question, taken from Table 3a, are reported in bold face type. Data for each institution type follow, with the data for institutional groupings reported in italic type. The chi-square factor is reported only where the responses for a given institutional type vary in a statistically significant way from the overall (i.e., Table 3a) responses to the individual question. The last two columns describe the shift of responses in individual institutions compared to the overall responses. These columns also report the relative amplitude of the shift in responses. So, for instance, in question 2 regarding the influence of "vision" statements on project planning, there was an increase in affirmative responses among Master's Colleges and Universities II (both public and private) compared to the overall data.

Table 4c reports the responses to questions 2–13 in the study survey but differs from Table 4a in sorting the responses according to the year when projects were completed. The left-most column lists eleven different years. Overall response data for each question, taken from Table 3a, are reported in bold face type; data for each year follow. The chi-square factor is reported only where the responses for a given year vary in a statistically significant way from the overall (i.e., Table 3a) responses for the individual question. The last pair of columns describes the direction and relative magnitude of the shift in responses for a given year, compared to the overall responses. So, for instance, in question 2 regarding the influence of "vision" statements on project planning, there was an increase in affirmative responses for projects completed in 1996 and a decrease in affirmative responses in 1999, compared to the overall data.

TABLE 3b.
Analysis by institutional type of responses to question 1 of the study survey

	Number of institutions	Not a factor 0: Sample % responding affirmatively	Not a factor 0: ± Confidence Interval	Weak Motivation 1: Sample % responding affirmatively	Weak Motivation 1: ± Confidence Interval	2: Sample % responding affirmatively	2: ± Confidence Interval	Intermediate Motivation 3: Sample % responding affirmatively	Intermediate Motivation 3: ± Confidence Interval	4: Sample % responding affirmatively	4: ± Confidence Interval	Strong Motivation 5: Sample % responding affirmatively	Strong Motivation 5: ± Confidence Interval	χ-square factor (when significant)	Variability Ungrouped data: Character	Variability Ungrouped data: Relative magnitude	Variability Grouped data: Character	Variability Grouped data: Relative magnitude
Q1 Factors motivating new library space																		
a Growth of library staff		***38.6%***	***6.4%***	***17.9%***	***5.0%***	***7.2%***	***3.4%***	***16.1%***	***4.8%***	***10.3%***	***4.0%***	***9.9%***	***3.9%***					
Doctoral/Research Universities--Extensive (Public)	49	50.0%	14.4%	10.9%	9.0%	6.5%	7.1%	15.2%	10.4%	8.7%	8.1%	8.7%	8.1%					
Doctoral/Research Universities--Extensive (Private)	28	53.8%	19.2%	11.5%	12.3%	0.0%	0.0%	11.5%	12.3%	7.7%	10.2%	15.4%	13.9%	1.85	shift toward 0, 5	0.6		
Doctoral/Research Universities--Intensive (Public)	18	26.7%	22.4%	13.3%	17.2%	0.0%	0.0%	**40.0%**	24.8%	20.0%	20.2%	**0.0%**	0.0%	6.01	shift toward 3	1.6		
Doctoral/Research Universities--Intensive (Private)	8	25.0%	30.0%	**0.0%**	0.0%	12.5%	22.9%	**25.0%**	30.0%	**25.0%**	30.0%	12.5%	22.9%	4.80	shift toward 3, 4	1.3		
All Doctoral/Research Universities		*45.3%*	*10.0%*	*10.5%*	*6.2%*	*4.2%*	*4.0%*	*18.9%*	*7.9%*	*11.6%*	*6.4%*	*9.5%*	*5.9%*					
Master's Colleges and Universities I (Public)	36	48.5%	17.1%	12.1%	11.1%	9.1%	9.8%	15.2%	12.2%	6.1%	8.1%	9.1%	9.8%					
Master's Colleges and Universities I (Private)	19	**5.6%**	10.6%	**38.9%**	22.5%	11.1%	14.5%	22.2%	19.2%	5.6%	10.6%	16.7%	17.2%	5.79	shift toward 1	2.6		
Master's Colleges and Universities II (Public & Private)	6	40.0%	52.9%	**40.0%**	42.9%	**0.0%**	0.0%	**0.0%**	0.0%	0.0%	35.1%	20.0%	0.0%	6.44	shift toward 1	1.5		
All Master's Colleges and Universities		*33.9%*	*12.4%*	*23.2%*	*11.1%*	*8.9%*	*7.5%*	*16.1%*	*9.6%*	*5.4%*	*5.9%*	*12.5%*	*8.7%*					
Baccalaureate Colleges--Liberal Arts (Public & Public)	29	25.0%	16.0%	**35.7%**	17.7%	7.1%	9.5%	14.3%	13.0%	17.9%	14.2%	**0.0%**	0.0%	3.45	shift toward 1	1.3		
Baccalaureate Colleges--General (Public & Private)	13	46.2%	27.1%	15.4%	19.6%	7.7%	14.5%	15.4%	19.6%	15.4%	19.6%	0.0%	0.0%	1.30	decrease at 5	0.9		
All Baccalaureate Colleges		*31.0%*	*14.0%*	*31.0%*	*14.0%*	*7.1%*	*7.8%*	*14.3%*	*10.6%*	*16.7%*	*11.3%*	*0.0%*	*0.0%*	*2.27*			*shift toward 1*	*2.5*
Associate's Colleges (Public & Private)	13	38.5%	26.4%	15.4%	19.6%	7.7%	14.5%	15.4%	19.6%	7.7%	14.5%	15.4%	19.6%					
Specialized Institutions (Public & Private)	17	35.7%	25.1%	14.3%	18.3%	14.3%	18.3%	7.1%	13.5%	7.1%	13.5%	**21.4%**	21.5%	2.47	increase at 5	1.1		
b Increase in the number of service points		***42.4%***	***6.5%***	***12.1%***	***4.3%***	***9.4%***	***3.8%***	***14.7%***	***4.6%***	***11.2%***	***4.1%***	***10.3%***	***4.0%***					
Doctoral/Research Universities--Extensive (Public)	49	**52.2%**	14.4%	10.9%	9.0%	13.0%	9.7%	13.0%	9.7%	**2.2%**	4.2%	8.7%	8.1%	1.02	shift toward 0	0.7		
Doctoral/Research Universities--Extensive (Private)	28	46.2%	19.2%	11.5%	12.3%	7.7%	10.2%	**7.7%**	10.2%	7.7%	10.2%	**19.2%**	15.1%	1.12	shift toward 5	0.6		
Doctoral/Research Universities--Intensive (Public)	18	31.3%	22.7%	6.3%	11.9%	**18.8%**	19.1%	**25.0%**	21.2%	**18.8%**	19.1%	**0.0%**	0.0%	3.52	shift toward 2, 3, 4	0.7		
Doctoral/Research Universities--Intensive (Private)	8	25.0%	30.0%	**37.5%**	33.5%	0.0%	0.0%	12.5%	22.9%	**0.0%**	0.0%	**25.0%**	30.0%	9.23	shift toward 1, 5	1.3		
All Doctoral/Research Universities		*44.8%*	*9.9%*	*12.5%*	*6.6%*	*11.5%*	*6.4%*	*13.5%*	*6.8%*	*6.3%*	*4.8%*	*11.5%*	*6.4%*					
Master's Colleges and Universities I (Public)	36	39.4%	16.7%	9.1%	9.8%	12.1%	11.1%	21.2%	13.9%	15.2%	12.2%	**30.0%**	5.8%	4.01	increase at 5	1.5		
Master's Colleges and Universities I (Private)	19	**5.6%**	10.6%	16.7%	17.2%	11.1%	14.5%	22.2%	19.2%	**22.2%**	19.2%	**22.2%**	19.2%	5.71	shift toward 4, 5	1.6		
Master's Colleges and Universities II (Public & Private)	6	60.0%	42.9%	20.0%	35.1%	**0.0%**	0.0%	**0.0%**	0.0%	**0.0%**	0.0%	**20.0%**	35.1%	5.09	shift toward 5	0.9		
All Master's Colleges and Universities		*30.4%*	*12.0%*	*12.5%*	*8.7%*	*10.7%*	*8.1%*	*19.6%*	*10.4%*	*16.1%*	*9.6%*	*10.7%*	*8.1%*					
Baccalaureate Colleges--Liberal Arts (Public & Public)	29	39.3%	18.1%	10.7%	11.5%	**3.6%**	6.9%	**25.0%**	16.0%	10.7%	11.5%	10.7%	11.5%	1.12	shift toward 3	0.7		
Baccalaureate Colleges--General (Public & Private)	13	**61.5%**	26.4%	7.7%	14.5%	**0.0%**	0.0%	7.7%	14.5%	**23.1%**	22.9%	**0.0%**	0.0%	4.11	shift toward 4	1.0		
All Baccalaureate Colleges		*42.5%*	*15.1%*	*9.5%*	*8.9%*	*2.4%*	*4.6%*	*19.0%*	*11.9%*	*16.7%*	*11.3%*	*7.1%*	*7.8%*	*1.03*			*shift toward 4*	*0.9*
Associate's Colleges (Public & Private)	13	**53.8%**	27.1%	**0.0%**	0.0%	7.7%	14.5%	**7.7%**	14.5%	15.4%	19.6%	15.4%	19.6%	2.03	shift toward 0	0.8		
Specialized Institutions (Public & Private)	17	42.9%	25.9%	**28.6%**	23.7%	14.3%	18.3%	**0.0%**	0.0%	7.1%	13.5%	7.1%	13.5%	3.76	shift toward 1	1.2		
c Growth of the collections		***8.3%***	***3.6%***	***3.5%***	***2.4%***	***4.4%***	***2.7%***	***11.0%***	***4.1%***	***16.2%***	***4.9%***	***56.6%***	***6.4%***					
Doctoral/Research Universities--Extensive (Public)	49	**17.4%**	11.0%	4.3%	5.9%	6.5%	7.1%	8.7%	8.1%	10.9%	9.0%	52.2%	14.4%	5.12	increase at 0	0.5		
Doctoral/Research Universities--Extensive (Private)	28	**23.1%**	16.2%	7.7%	10.2%	11.5%	12.3%	15.4%	8.1%	3.8%	7.4%	38.5%	18.7%	12.57	increase at 0	1.4		
Doctoral/Research Universities--Intensive (Public)	18	**0.0%**	0.0%	0.0%	0.0%	5.9%	11.2%	5.9%	11.2%	**5.9%**	11.2%	**82.4%**	18.1%	2.56	shift toward 5	1.0		
Doctoral/Research Universities--Intensive (Private)	8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	**50.0%**	34.6%	50.0%	34.6%	8.47	increase at 4	2.4		
All Doctoral/Research Universities	*103*	*14.4%*	*7.0%*	*4.1%*	*4.0%*	*7.2%*	*5.1%*	*9.3%*	*5.8%*	*11.3%*	*6.3%*	*53.6%*	*9.9%*	*3.27*			*shift toward 0*	*1.6*
		4.5%		*0.1%*		*1.8%*		*0.3%*		*1.5%*		*0.2%*			*8.3%*			
Master's Colleges and Universities I (Public)	36	2.9%	5.7%	2.9%	5.7%	5.9%	7.9%	5.9%	7.9%	20.6%	13.6%	61.8%	16.3%					
Master's Colleges and Universities I (Private)	19	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	11.1%	14.5%	**38.9%**	22.5%	50.0%	23.1%	3.98	shift toward 4	1.0		
Master's Colleges and Universities II (Public & Private)	6	**16.7%**	29.8%	0.0%	0.0%	0.0%	0.0%	**33.3%**	37.7%	16.7%	29.8%	33.3%	37.7%	9.97	increase at 0, 3	1.3		
All Master's Colleges and Universities	*61*	3.4%	4.7%	*1.7%*	*3.4%*	*3.4%*	*4.7%*	*10.3%*	*7.8%*	*25.9%*	*11.3%*	*55.2%*	*12.8%*					
		2.9%		*0.9%*		*0.2%*		*0.0%*		*5.8%*		*0.0%*			*9.9%*			
Baccalaureate Colleges--Liberal Arts (Public & Public)	29	3.6%	6.9%	3.6%	6.9%	0.0%	0.0%	10.7%	11.5%	10.7%	11.5%	71.4%	16.7%					
Baccalaureate Colleges--General (Public & Private)	13	**0.0%**	0.0%	**7.7%**	14.5%	**7.7%**	14.5%	7.7%	14.5%	15.4%	19.6%	61.5%	26.4%	1.14	shift toward 1, 2	0.3		
All Baccalaureate Colleges	*42*	2.4%	4.6%	*4.8%*	*6.4%*	*2.4%*	*4.6%*	*9.5%*	*8.9%*	*11.9%*	*9.8%*	*69.0%*	*14.0%*					
		4.2%		*0.5%*		*0.9%*		*0.2%*		*1.1%*		*2.7%*			*9.6%*			
Associate's Colleges (Public & Private)	13	0.0%	0.0%	0.0%	14.5%	0.0%	0.0%	0.0%	25.1%	**50.0%**	19.6%	50.0%	27.1%	8.47	increase at 4	2.4		
Specialized Institutions (Public & Private)	17	**13.3%**	17.2%	0.0%	0.0%	0.0%	0.0%	13.3%	17.2%	**26.7%**	22.4%	46.7%	25.2%	3.89	increase at 0, 4	0.7		
d Changing character of student study space needs		***6.1%***	***3.1%***	***4.8%***	***2.8%***	***3.5%***	***2.4%***	***17.0%***	***4.9%***	***32.1%***	***5.5%***	***45.4%***	***6.4%***					
Doctoral/Research Universities--Extensive (Public)	49	**10.4%**	8.6%	8.3%	7.8%	4.2%	5.7%	14.6%	10.0%	**18.8%**	11.0%	43.8%	14.0%	1.05	shift toward 0	0.9		
Doctoral/Research Universities--Extensive (Private)	28	7.7%	10.2%	0.0%	0.0%	0.0%	0.0%	**34.6%**	18.3%	**11.5%**	12.3%	46.2%	19.2%	3.63	shift toward 3	1.9		
Doctoral/Research Universities--Intensive (Public)	18	0.0%	0.0%	5.9%	11.0%	**11.8%**	15.3%	**5.9%**	11.2%	35.3%	22.7%	41.2%	23.4%	3.07	shift toward 2	0.9		
Doctoral/Research Universities--Intensive (Private)	8	**12.5%**	22.9%	**0.0%**	0.0%	**0.0%**	0.0%	**25.0%**	30.0%	25.0%	30.0%	37.5%	33.5%	1.96	shift toward 0, 3	0.6		
All Doctoral/Research Universities		*8.1%*	*5.4%*	*5.1%*	*4.3%*	*4.0%*	*3.9%*	*19.2%*	*7.8%*	*20.2%*	*7.9%*	*43.4%*	*9.8%*					
Master's Colleges and Universities I (Public)	36	2.9%	5.7%	2.9%	5.7%	5.9%	7.9%	17.6%	12.8%	23.5%	14.3%	47.1%	16.8%					

TABLE 3b (continued)
Analysis by institutional type of responses to question 1 of the study survey

		Not a factor 0		Weak Motivation 1		2		Intermediate Motivation 3		4		Strong Motivation 5			Variability Ungrouped data		Variability Grouped data	
	Number of institutions	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	*X-square* factor (when significant)	Character	Relative magnitude	Character	Relative magnitude
Master's Colleges and Universities I (Private)	19	**0.0%**	0.0%	5.6%	10.6%	5.6%	10.6%	11.1%	14.5%	**16.7%**	17.2%	**61.1%**	22.5%	2.02	shift toward 5	1.5		
Master's Colleges and Universities II (Public & Private)	6	**20.0%**	35.1%	**20.0%**	35.1%	0.0%	0.0%	20.0%	35.1%	20.0%	35.1%	20.0%	35.1%	9.27	increase at 0, 1	1.4		
All Master's Colleges and Universities		*3.5%*	*4.8%*	*5.3%*	*5.8%*	*5.3%*	*5.8%*	*15.8%*	*9.8%*	*21.1%*	*10.6%*	*4.9%*	*13.0%*					
Baccalaureate Colleges--Liberal Arts (Public & Public)	29	**3.6%**	6.9%	3.6%	6.9%	0.0%	0.0%	21.4%	14.2%	**39.3%**	18.1%	**32.1%**	17.3%	1.36	decrease at 0, 4, 5	1.0		
Baccalaureate Colleges--General (Public & Private)	13	**0.0%**	0.0%	**0.0%**	0.0%	**7.7%**	14.5%	15.4%	19.6%	23.1%	22.9%	53.8%	27.1%	1.82	shift toward 2	0.5		
All Baccalaureate Colleges		*2.4%*	*4.6%*	*2.4%*	*4.6%*	*2.4%*	*4.6%*	*19.0%*	*11.9%*	*33.3%*	*14.3%*	*40.5%*	*14.8%*					
Associate's Colleges (Public & Private)	13	7.7%	14.5%	7.7%	14.5%	0.0%	0.0%	7.7%	14.5%	**7.7%**	14.5%	**69.2%**	25.1%	3.77	shift toward 5	2.4		
Specialized Institutions (Public & Private)	17	6.7%	12.6%	6.7%	12.6%	0.0%	0.0%	13.3%	17.2%	40.0%	24.8%	33.3%	23.9%					
e Changes in reference services		***14.8%***	***4.7%***	***9.0%***	***3.8%***	***12.1%***	***4.3%***	***26.9%***	***5.8%***	***21.1%***	***5.4%***	***16.1%***	***4.8%***					
Doctoral/Research Universities--Extensive (Public)	49	21.3%	11.7%	14.9%	10.2%	**6.4%**	7.0%	25.5%	12.5%	17.0%	10.7%	14.9%	10.2%					
Doctoral/Research Universities--Extensive (Private)	28	7.7%	10.2%	**0.0%**	0.0%	**30.8%**	17.7%	**34.6%**	18.3%	11.5%	12.3%	15.4%	13.9%	4.64	shift toward 2	1.2		
Doctoral/Research Universities--Intensive (Public)	18	**0.0%**	0.0%	**18.8%**	18.1%	6.3%	11.9%	25.0%	21.2%	31.3%	22.7%	18.8%	19.1%	3.05	shift toward 1	1.1		
Doctoral/Research Universities--Intensive (Private)	8	**0.0%**	0.0%	12.5%	22.9%	**0.0%**	0.0%	**50.0%**	34.6%	25.0%	30.0%	12.5%	22.9%	4.48	shift toward 3	1.5		
All Doctoral/Research Universities		*12.4%*	*6.6%*	*11.3%*	*6.3%*	*12.4%*	*6.6%*	*29.9%*	*9.1%*	*18.6%*	*7.7%*	*15.5%*	*7.2%*					
Master's Colleges and Universities I (Public)	36	12.1%	11.1%	**3.0%**	5.8%	12.1%	11.1%	18.2%	13.2%	**33.3%**	16.1%	21.2%	13.9%	1.44	shift toward 4	0.8		
Master's Colleges and Universities I (Private)	19	**5.9%**	11.2%	11.8%	15.3%	**5.9%**	11.2%	29.4%	21.7%	23.5%	20.2%	**23.5%**	20.2%	1.20	shift toward 5	0.7		
Master's Colleges and Universities II (Public & Private)	6	**0.0%**	0.0%	**20.0%**	35.1%	0.0%	0.0%	**60.0%**	42.9%	**0.0%**	0.0%	20.0%	35.1%	9.32	shift toward 1, 3	1.8		
All Master's Colleges and Universities		*9.1%*	*7.6%*	*7.3%*	*6.9%*	*9.1%*	*7.6%*	*25.5%*	*11.5%*	*27.3%*	*11.8%*	*21.8%*	*10.9%*					
Baccalaureate Colleges--Liberal Arts (Public & Public)	29	14.8%	13.4%	3.7%	7.1%	18.5%	14.7%	29.6%	17.2%	18.5%	14.7%	14.8%	13.4%					
Baccalaureate Colleges--General (Public & Private)	13	**30.8%**	25.1%	7.7%	14.5%	7.7%	14.5%	**7.7%**	14.5%	30.8%	25.1%	15.4%	19.6%	3.37	shift toward 0	1.6		
All Baccalaureate Colleges		*19.5%*	*12.1%*	*4.9%*	*6.6%*	*14.6%*	*10.8%*	*22.0%*	*12.7%*	*24.4%*	*13.1%*	*14.6%*	*10.8%*					
Associate's Colleges (Public & Private)	13	15.4%	19.6%	7.7%	14.5%	7.7%	14.5%	**38.5%**	26.4%	**7.7%**	14.5%	**23.1%**	22.9%	1.66	shift toward 3	1.1		
Specialized Institutions (Public & Private)	17	**28.6%**	23.7%	7.1%	13.5%	21.4%	21.5%	21.4%	21.5%	21.4%	21.5%	**0.0%**	0.0%	3.40	shift toward 0	1.3		
f Changes in public services other than reference		***13.8%***	***4.5%***	***7.1%***	***3.4%***	***7.1%***	***3.4%***	***22.2%***	***5.4%***	***23.6%***	***5.5%***	***26.2%***	***5.7%***					
Doctoral/Research Universities--Extensive (Public)	49	**23.4%**	12.1%	6.4%	7.0%	**2.1%**	4.1%	**29.8%**	13.1%	19.1%	11.2%	19.1%	11.2%	1.41	shift toward 0, 3	0.7		
Doctoral/Research Universities--Extensive (Private)	28	11.5%	12.3%	0.0%	0.0%	**23.1%**	16.2%	19.2%	15.1%	15.4%	13.9%	30.8%	17.7%	4.30	increase at 2	1.5		
Doctoral/Research Universities--Intensive (Public)	18	**0.0%**	0.0%	**18.8%**	19.1%	0.0%	0.0%	31.3%	22.7%	18.8%	19.1%	31.3%	22.7%	4.14	shift toward 1	1.2		
Doctoral/Research Universities--Intensive (Private)	8	**37.5%**	33.5%	12.5%	22.9%	**0.0%**	0.0%	12.5%	22.9%	12.5%	22.9%	25.0%	30.0%	5.55	shift toward 0	1.5		
All Doctoral/Research Universities		*17.5%*	*7.6%*	*7.2%*	*5.1%*	*7.2%*	*5.1%*	*25.8%*	*8.7%*	*17.5%*	*7.6%*	*24.7%*	*8.6%*					
Master's Colleges and Universities I (Public)	36	**6.1%**	8.1%	6.1%	8.1%	**12.1%**	11.1%	15.2%	12.2%	24.2%	14.6%	**36.4%**	16.4%	1.28	shift toward 2, 5	0.7		
Master's Colleges and Universities I (Private)	19	**0.0%**	0.0%	11.1%	14.5%	**0.0%**	0.0%	27.8%	20.7%	33.3%	21.8%	27.8%	20.7%	2.59	decrease at 0, 2	1.0		
Master's Colleges and Universities II (Public & Private)	6	0.0%	0.0%	20.0%	35.1%	**0.0%**	0.0%	20.0%	25.1%	**0.0%**	0.0%	**60.0%**	42.9%	10.10	shift toward 1, 5	2.2		
All Master's Colleges and Universities		*3.6%*	*4.9%*	*8.9%*	*7.5%*	*7.1%*	*6.7%*	*19.6%*	*10.4%*	*25.0%*	*11.3%*	*35.7%*	*12.5%*	*1.07*			*shift toward 5*	*2.7*
Baccalaureate Colleges--Liberal Arts (Public & Public)	29	10.7%	11.5%	3.6%	6.9%	10.7%	11.5%	28.6%	16.7%	25.0%	16.0%	21.4%	15.2%					
Baccalaureate Colleges--General (Public & Private)	13	15.4%	19.6%	0.0%	0.0%	7.7%	14.5%	**7.7%**	14.5%	**53.8%**	27.1%	15.4%	19.6%	5.41	shift toward 4	2.1		
All Baccalaureate Colleges		*11.9%*	*9.8%*	*2.4%*	*4.6%*	*9.5%*	*8.9%*	*21.4%*	*12.4%*	*35.7%*	*14.5%*	*19.0%*	*11.9%*	*1.12*			*shift toward 4*	*2.3*
Associate's Colleges (Public & Private)	13	15.4%	19.6%	7.7%	14.5%	0.0%	0.0%	23.1%	22.9%	23.1%	22.9%	30.8%	25.1%					
Specialized Institutions (Public & Private)	17	21.4%	21.5%	7.1%	13.5%	7.1%	13.5%	14.3%	18.3%	28.6%	23.7%	21.4%	21.5%					
g Changes in or growth of library instruction programs		***11.8%***	***4.2%***	***11.8%***	***4.2%***	***8.8%***	***3.7%***	***17.1%***	***4.9%***	***17.4%***	***5.0%***	***32.0%***	***6.1%***					
Doctoral/Research Universities--Extensive (Public)	49	**16.7%**	10.5%	**6.3%**	6.8%	**16.7%**	10.5%	18.8%	11.0%	18.8%	11.0%	**22.9%**	11.9%	1.32	shift toward 0, 2	0.7		
Doctoral/Research Universities--Extensive (Private)	28	3.8%	7.4%	**34.6%**	18.3%	3.8%	7.4%	11.5%	12.3%	19.2%	15.1%	26.9%	17.0%	4.98	increase at 1	2.4		
Doctoral/Research Universities--Intensive (Public)	18	5.9%	11.2%	11.8%	15.3%	5.9%	11.2%	**5.9%**	11.2%	**35.3%**	22.7%	35.3%	22.7%	2.71	shift toward 4	1.5		
Doctoral/Research Universities--Intensive (Private)	8	12.5%	22.9%	**0.0%**	0.0%	**25.0%**	30.0%	25.0%	30.0%	12.5%	22.9%	25.0%	30.0%	4.36	shift toward 2	1.5		
All Doctoral/Research Universities		*11.1%*	*6.2%*	*14.1%*	*6.9%*	*12.1%*	*6.4%*	*15.2%*	*7.1%*	*21.2%*	*8.1%*	*26.3%*	*8.7%*					
Master's Colleges and Universities I (Public)	36	8.8%	9.5%	8.8%	9.5%	5.9%	7.9%	23.5%	14.3%	20.6%	13.6%	32.4%	15.7%					
Master's Colleges and Universities I (Private)	19	**5.6%**	10.6%	11.1%	14.5%	5.6%	10.6%	**11.1%**	14.5%	22.2%	19.2%	**44.4%**	23.0%	1.15	shift toward 5	0.9		
Master's Colleges and Universities II (Public & Private)	6	20.0%	35.1%	0.0%	0.0%	0.0%	0.0%	40.0%	42.9%	0.0%	0.0%	40.0%	42.9%					
All Master's Colleges and Universities		*8.8%*	*7.3%*	*8.8%*	*7.3%*	*5.3%*	*5.8%*	*21.1%*	*10.6%*	*19.3%*	*10.2%*	*36.8%*	*12.5%*					
Baccalaureate Colleges--Liberal Arts (Public & Public)	29	10.7%	11.5%	10.7%	11.5%	7.1%	9.5%	10.7%	11.5%	21.4%	15.2%	39.3%	18.1%					
Baccalaureate Colleges--General (Public & Private)	13	15.4%	19.6%	**0.0%**	0.0%	**0.0%**	0.0%	**38.5%**	26.4%	7.7%	14.5%	38.5%	26.4%	4.99	shift toward 3	1.5		
All Baccalaureate Colleges		*11.9%*	*9.8%*	*7.1%*	*7.8%*	*7.1%*	*7.8%*	*19.0%*	*11.9%*	*16.7%*	*11.3%*	*38.1%*	*14.7%*					
Associate's Colleges (Public & Private)	13	15.4%	19.6%	7.7%	14.5%	**0.0%**	0.0%	7.7%	14.5%	15.4%	19.6%	**53.8%**	27.1%	2.85	shift toward 5	1.6		
Specialized Institutions (Public & Private)	17	**21.4%**	21.5%	**21.4%**	21.5%	7.1%	13.5%	21.4%	21.5%	**7.1%**	13.5%	21.4%	21.5%	2.41	shift toward 0, 1	1.0		
h Changes in technical services		***27.2%***	***5.8%***	***21.0%***	***5.3%***	***11.2%***	***4.1%***	***21.9%***	***5.4%***	***12.1%***	***4.3%***	***6.7%***	***3.3%***					
Doctoral/Research Universities--Extensive (Public)	49	32.6%	13.5%	19.6%	11.5%	6.5%	7.1%	19.6%	11.5%	15.2%	10.4%	6.5%	7.1%					
Doctoral/Research Universities--Extensive (Private)	28	30.8%	17.7%	19.2%	15.1%	15.4%	13.9%	15.4%	13.9%	11.5%	12.3%	7.7%	10.2%					

TABLE 3b (continued)
Analysis by institutional type of responses to question 1 of the study survey

		Not a factor 0		Weak Motivation 1		2		Intermediate Motivation 3		4		Strong Motivation 5			Variability Ungrouped data		Variability Grouped data	
	Number of institutions	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	χ-square factor (when significant)	Character	Relative magnitude	Character	Relative magnitude
Doctoral/Research Universities--Intensive (Public)	18	25.0%	21.2%	**6.3%**	11.9%	**18.8%**	19.1%	31.3%	22.7%	12.5%	16.2%	6.3%	11.9%	1.78	shift toward 2	1.2		
Doctoral/Research Universities--Intensive (Private)	8	25.0%	30.0%	25.0%	30.0%	**25.0%**	30.0%	25.0%	30.0%	**0.0%**	0.0%	0.0%	0.0%	3.36	shift toward 2	1.4		
All Doctoral/Research Universities		*30.2%*	*9.2%*	*17.7%*	*7.6%*	*12.5%*	*6.6%*	*20.8%*	*8.1%*	*12.5%*	*6.6%*	*6.3%*	*4.8%*					
Master's Colleges and Universities I (Public)	36	**18.2%**	13.2%	**33.3%**	16.1%	9.1%	9.8%	18.2%	13.2%	15.2%	12.2%	6.1%	8.1%	1.09	shift toward 1	1.2		
Master's Colleges and Universities I (Private)	19	16.7%	17.2%	16.7%	17.2%	5.6%	10.6%	**50.0%**	23.1%	5.6%	10.6%	5.6%	10.6%	4.29	increase at 3	3.0		
Master's Colleges and Universities II (Public & Private)	6	20.0%	35.1%	20.0%	35.1%	20.0%	35.1%	20.0%	25.1%	**0.0%**	0.0%	**20.0%**	35.1%	4.29	shift toward 5	1.4		
All Master's Colleges and Universities		*17.9%*	*10.0%*	*26.8%*	*11.6%*	*8.9%*	*7.5%*	*28.6%*	*11.8%*	*10.7%*	*8.1%*	*7.1%*	*6.7%*					
Baccalaureate Colleges--Liberal Arts (Public & Public)	29	21.4%	15.2%	25.0%	16.0%	14.3%	13.0%	17.9%	14.2%	14.3%	13.0%	7.1%	9.5%					
Baccalaureate Colleges--General (Public & Private)	13	**46.2%**	27.1%	**7.7%**	14.5%	7.7%	14.5%	23.1%	22.9%	15.4%	19.6%	0.0%	0.0%	2.75	shift toward 0	1.7		
All Baccalaureate Colleges		*28.6%*	*13.7%*	*19.0%*	*11.9%*	*14.3%*	*10.6%*	*19.0%*	*11.9%*	*14.3%*	*10.6%*	*4.8%*	*6.4%*					
Associate's Colleges (Public & Private)	13	23.1%	22.9%	30.8%	25.1%	**0.0%**	0.0%	23.1%	22.9%	7.7%	14.5%	**15.4%**	19.6%	2.43	shift toward 5	1.1		
Specialized Institutions (Public & Private)	17	35.7%	25.1%	14.3%	18.3%	14.3%	18.3%	14.3%	18.3%	14.3%	18.3%	7.1%	13.5%					
i Preservation of the collections		***22.2%***	***5.4%***	***12.4%***	***4.3%***	***10.7%***	***4.0%***	***20.9%***	***5.3%***	***13.8%***	***4.5%***	***21.0%***	***5.2%***					
Doctoral/Research Universities--Extensive (Public)	49	19.6%	11.5%	15.2%	10.4%	13.0%	9.7%	19.6%	11.5%	13.0%	9.7%	19.6%	11.5%					
Doctoral/Research Universities--Extensive (Private)	28	**34.6%**	18.3%	11.5%	12.3%	7.7%	10.2%	**3.8%**	7.4%	7.7%	10.2%	**34.6%**	18.3%	3.01	shift toward 0, 5	1.2		
Doctoral/Research Universities--Intensive (Public)	18	**6.3%**	11.9%	12.5%	16.2%	**18.8%**	19.1%	**37.5%**	23.7%	6.3%	11.9%	18.8%	19.1%	3.16	shift toward 2, 3	1.1		
Doctoral/Research Universities--Intensive (Private)	8	**0.0%**	0.0%	**0.0%**	0.0%	**37.5%**	33.5%	37.5%	33.5%	0.0%	0.0%	25.0%	30.0%	11.70	shift toward 2	1.7		
All Doctoral/Research Universities		*19.8%*	*8.0%*	*12.5%*	*6.6%*	*14.6%*	*7.1%*	*19.8%*	*8.0%*	*9.4%*	*5.8%*	*24.0%*	*8.5%*					
Master's Colleges and Universities I (Public)	36	**9.1%**	9.8%	**21.2%**	13.9%	6.1%	8.1%	**33.3%**	16.1%	18.2%	13.2%	12.1%	11.1%	2.57	shift toward 1, 3	0.9		
Master's Colleges and Universities I (Private)	19	17.6%	18.1%	11.8%	15.3%	11.8%	15.3%	17.6%	18.1%	23.5%	20.2%	17.6%	18.1%					
Master's Colleges and Universities II (Public & Private)	6	**50.0%**	40.0%	**0.0%**	0.0%	0.0%	0.0%	16.7%	29.8%	**0.0%**	0.0%	33.3%	37.7%	7.21	shift toward 0	1.5		
All Master's Colleges and Universities		*16.1%*	*9.6%*	*16.1%*	*9.6%*	*7.1%*	*6.7%*	*26.8%*	*11.6%*	*17.9%*	*10.0%*	*16.1%*	*9.6%*					
Baccalaureate Colleges--Liberal Arts (Public & Public)	29	21.4%	15.2%	**3.6%**	6.9%	10.7%	11.5%	14.3%	13.0%	17.9%	14.2%	**32.1%**	17.3%	1.40	shift toward 5	0.8		
Baccalaureate Colleges--General (Public & Private)	13	30.8%	25.1%	15.4%	19.6%	7.7%	14.5%	**30.8%**	25.1%	15.4%	19.6%	**0.0%**	0.0%	2.78	shift toward 3	1.3		
All Baccalaureate Colleges		23.8%	12.9%	7.1%	7.8%	11.9%	9.8%	19.0%	11.9%	16.7%	11.3%	21.4%	12.4%					
Associate's Colleges (Public & Private)	13	**69.2%**	25.1%	**0.0%**	0.0%	0.0%	0.0%	7.7%	14.5%	15.4%	19.6%	7.7%	14.5%	12.61	shift toward 0	2.5		
Specialized Institutions (Public & Private)	17	20.0%	20.2%	13.3%	17.2%	6.7%	12.6%	26.7%	22.4%	20.0%	20.2%	13.3%	17.2%					
j Need to accommodate non-library operations		***26.1%***	***5.7%***	***9.3%***	***3.8%***	***8.0%***	***3.5%***	***10.2%***	***3.9%***	***12.8%***	***4.4%***	***33.6%***	***6.2%***					
Doctoral/Research Universities--Extensive (Public)	49	33.3%	13.3%	6.3%	6.8%	12.5%	9.4%	10.4%	8.6%	10.4%	8.6%	27.1%	12.6%					
Doctoral/Research Universities--Extensive (Private)	28	15.4%	13.9%	**19.2%**	15.1%	**0.0%**	0.0%	3.8%	7.4%	7.7%	10.2%	**53.8%**	19.2%	3.71	shift toward 1, 5	1.4		
Doctoral/Research Universities--Intensive (Public)	18	29.4%	21.7%	5.9%	11.2%	5.9%	11.2%	11.8%	15.3%	11.8%	15.3%	35.3%	22.7%					
Doctoral/Research Universities--Intensive (Private)	8	25.0%	30.0%	**0.0%**	0.0%	12.5%	22.9%	**0.0%**	0.0%	12.5%	22.9%	**50.0%**	34.6%	2.72	shift toward 5	1.3		
All Doctoral/Research Universities		*27.3%*	*8.8%*	*9.1%*	*5.7%*	*8.1%*	*5.4%*	*8.1%*	*5.4%*	*10.1%*	*5.9%*	*37.4%*	*9.5%*					
Master's Colleges and Universities I (Public)	36	26.5%	14.8%	5.9%	7.9%	8.8%	9.5%	14.7%	11.9%	14.7%	11.9%	29.4%	15.3%					
Master's Colleges and Universities I (Private)	19	**16.7%**	17.2%	11.1%	14.5%	11.1%	14.5%	11.1%	14.5%	**5.6%**	10.6%	**44.4%**	23.0%	1.13	shift toward 5	1.0		
Master's Colleges and Universities II (Public & Private)	6	20.0%	35.1%	**20.0%**	35.1%	0.0%	0.0%	**20.0%**	35.1%	**0.0%**	0.0%	40.0%	42.9%	3.75	shift toward 1, 3	1.2		
All Master's Colleges and Universities		*22.8%*	*10.9%*	*8.8%*	*7.3%*	*8.8%*	*7.3%*	*14.0%*	*9.0%*	*10.5%*	*8.0%*	*35.1%*	*12.4%*	*1.92*			*shift toward 4*	*1.7*
Baccalaureate Colleges--Liberal Arts (Public & Public)	29	26.9%	17.0%	7.7%	10.2%	7.7%	10.2%	11.5%	12.3%	**26.9%**	17.0%	**19.2%**	15.1%	2.00	shift toward 4	1.6		
Baccalaureate Colleges--General (Public & Private)	13	33.3%	26.7%	8.3%	15.6%	**0.0%**	0.0%	16.7%	21.1%	**25.0%**	24.5%	**16.7%**	21.1%	3.10	shift toward 4	1.4		
All Baccalaureate Colleges		*28.2%*	*14.1%*	*7.7%*	*8.4%*	*7.7%*	*8.4%*	*12.8%*	*10.5%*	*25.6%*	*13.7%*	*17.9%*	*12.0%*					
Associate's Colleges (Public & Private)	13	**46.2%**	27.1%	7.7%	14.5%	**0.0%**	0.0%	**0.0%**	0.0%	7.7%	14.5%	38.5%	26.4%	3.32	shift toward 0	1.4		
Specialized Institutions (Public & Private)	17	**6.9%**	12.6%	**20.0%**	20.2%	6.7%	12.6%	13.3%	17.2%	13.3%	17.2%	40.0%	24.8%	2.60	shift toward 1	1.7		
k Building safety issues		***32.3%***	***6.1%***	***15.0%***	***4.7%***	***9.7%***	***3.9%***	***19.9%***	***5.2%***	***8.8%***	***3.7%***	***14.2%***	***4.5%***					
Doctoral/Research Universities--Extensive (Public)	49	34.0%	13.5%	10.6%	8.8%	10.6%	8.8%	21.3%	11.7%	8.5%	8.0%	14.9%	10.2%					
Doctoral/Research Universities--Extensive (Private)	28	**50.0%**	19.2%	11.5%	12.3%	7.7%	10.2%	**7.7%**	10.2%	3.8%	7.4%	19.2%	15.1%	2.08	shift toward 0	1.8		
Doctoral/Research Universities--Intensive (Public)	18	**18.8%**	19.1%	**31.3%**	22.7%	12.5%	16.2%	12.5%	16.2%	12.5%	16.2%	12.5%	16.2%	2.59	shift toward 1	1.8		
Doctoral/Research Universities--Intensive (Private)	8	25.0%	30.0%	12.5%	22.9%	12.5%	22.9%	25.0%	30.0%	12.5%	22.9%	12.5%	22.9%					
All Doctoral/Research Universities		*35.1%*	*9.5%*	*14.4%*	*7.0%*	*10.3%*	*6.1%*	*16.5%*	*7.4%*	*8.2%*	*5.5%*	*15.5%*	*7.2%*					
Master's Colleges and Universities I (Public)	36	20.6%	13.6%	14.7%	11.9%	8.8%	9.5%	29.4%	15.3%	8.8%	9.5%	17.6%	12.8%					
Master's Colleges and Universities I (Private)	19	**16.7%**	17.2%	22.2%	19.2%	11.1%	14.5%	22.2%	19.2%	**16.7%**	17.2%	11.1%	14.5%	1.74	shift toward 4	1.4		
Master's Colleges and Universities II (Public & Private)	6	20.0%	35.1%	20.0%	35.1%	**40.0%**	42.9%	**0.0%**	0.0%	0.0%	0.0%	20.0%	35.1%	11.93	shift toward 2	3.0		
All Master's Colleges and Universities		*19.3%*	*10.2%*	*17.5%*	*9.9%*	*12.3%*	*8.5%*	*24.6%*	*11.2%*	*10.5%*	*8.0%*	*15.8%*	*9.5%*					
Baccalaureate Colleges--Liberal Arts (Public & Public)	29	35.7%	17.7%	14.3%	13.0%	10.7%	11.5%	21.4%	15.2%	3.6%	6.9%	14.3%	13.0%					
Baccalaureate Colleges--General (Public & Private)	13	30.8%	25.1%	7.7%	14.5%	7.7%	14.5%	23.1%	22.9%	15.4%	19.6%	15.4%	19.6%					
All Baccalaureate Colleges		*33.3%*	*14.3%*	*14.3%*	*10.6%*	*9.5%*	*8.9%*	*21.4%*	*12.4%*	*7.1%*	*7.8%*	*14.3%*	*10.6%*					
Associate's Colleges (Public & Private)	13	**53.8%**	27.1%	7.7%	14.5%	**0.0%**	0.0%	23.1%	22.9%	7.7%	14.5%	7.7%	14.5%	2.82	shift toward 0	1.8		

TABLE 3b (continued)
Analysis by institutional type of responses to question 1 of the study survey

		Not a factor 0		Weak Motivation 1		2		Intermediate Motivation 3		4		Strong Motivation 5			Variability Ungrouped data		Variability Grouped data	
	Number of institutions	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	χ-square factor (when significant)	Character	Relative magnitude	Character	Relative magnitude
Specialized Institutions (Public & Private)	17	**42.9%**	25.9%	21.4%	21.5%	7.1%	13.5%	**7.1%**	13.5%	**14.3%**	18.3%	**7.1%**	13.5%	2.00	shift toward 0, 4	1.3		
l **Building mechanical systems obsolescence**		***32.8%***	***6.5%***	***9.1%***	***4.0%***	***0.0%***	***0.0%***	***16.2%***	***5.1%***	***14.6%***	***4.9%***	***27.3%***	***6.2%***					
Doctoral/Research Universities--Extensive (Public)	49	34.1%	14.5%	14.6%	10.8%	0.0%	0.0%	12.2%	10.0%	7.3%	8.0%	31.7%	14.2%					
Doctoral/Research Universities--Extensive (Private)	28	**44.0%**	19.5%	12.0%	12.7%	0.0%	0.0%	**8.0%**	10.6%	**4.0%**	7.7%	32.0%	18.3%	1.57	shift toward 0	0.9		
Doctoral/Research Universities--Intensive (Public)	18	36.4%	28.4%	9.1%	17.0%	0.0%	0.0%	9.1%	17.0%	18.2%	22.8%	27.3%	26.3%					
Doctoral/Research Universities--Intensive (Private)	8	25.0%	30.0%	0.0%	0.0%	0.0%	0.0%	**50.0%**	34.6%	12.5%	22.9%	12.5%	22.9%	8.11	increase at 3	1.5		
All Doctoral/Research Universities		*36.5%*	*10.2%*	*11.8%*	*6.8%*	*0.0%*	*0.0%*	*14.1%*	*7.4%*	*8.2%*	*5.8%*	*29.4%*	*9.7%*					
Master's Colleges and Universities I (Public)	36	**18.8%**	13.5%	6.3%	8.4%	0.0%	0.0%	18.8%	13.5%	**28.1%**	15.6%	28.1%	15.6%	1.79	shift toward 4	1.2		
Master's Colleges and Universities I (Private)	19	25.0%	21.2%	6.3%	11.9%	0.0%	0.0%	25.0%	21.2%	**31.3%**	22.7%	**12.5%**	16.2%	3.13	shift toward 4	1.5		
Master's Colleges and Universities II (Public & Private)	6	33.3%	53.3%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	**33.3%**	53.3%	33.3%	53.3%	4.57	shift toward 4	1.5		
All Master's Colleges and Universities		*21.6%*	*11.3%*	*5.9%*	*6.5%*	*0.0%*	*0.0%*	*19.6%*	*10.9%*	*29.4%*	*12.5%*	*23.5%*	*11.6%*	*1.91*			*increase at 4*	*1.5*
Baccalaureate Colleges--Liberal Arts (Public & Public)	29	27.3%	18.6%	9.1%	12.0%	0.0%	0.0%	18.2%	16.1%	22.7%	17.5%	22.7%	17.5%					
Baccalaureate Colleges--General (Public & Private)	13	36.4%	28.4%	9.1%	17.0%	0.0%	0.0%	**0.0%**	0.0%	18.2%	22.8%	36.4%	28.4%	1.85	increase at 3	1.4		
All Baccalaureate Colleges		*32.4%*	*15.7%*	*8.8%*	*9.5%*	*0.0%*	*0.0%*	*11.8%*	*10.8%*	*20.6%*	*13.6%*	*26.5%*	*14.8%*					
Associate's Colleges (Public & Private)	13	**58.3%**	27.9%	0.0%	0.0%	0.0%	0.0%	16.7%	21.1%	**0.0%**	0.0%	25.0%	24.5%	3.95	shift toward 0	1.8		
Specialized Institutions (Public & Private)	17	30.8%	25.1%	15.4%	19.6%	0.0%	0.0%	15.4%	19.6%	**0.0%**	0.0%	**38.5%**	26.4%	2.14	shift toward 5	1.1		
m **Building structural problems**		***50.0%***	***6.5%***	***14.3%***	***4.6%***	***7.1%***	***3.4%***	***10.7%***	***4.1%***	***8.0%***	***3.6%***	***9.8%***	***3.9%***					
Doctoral/Research Universities--Extensive (Public)	49	43.5%	14.3%	13.0%	9.7%	**2.2%**	4.2%	13.0%	9.7%	8.7%	8.1%	**19.6%**	11.5%	1.33	shift toward 5	0.6		
Doctoral/Research Universities--Extensive (Private)	28	**69.2%**	17.7%	19.2%	15.1%	7.7%	10.2%	**0.0%**	0.0%	**0.0%**	0.0%	3.8%	7.4%	2.84	shift toward 0	1.1		
Doctoral/Research Universities--Intensive (Public)	18	43.8%	24.3%	**25.0%**	21.2%	12.5%	16.2%	**0.0%**	0.0%	6.3%	11.9%	12.5%	16.2%	2.23	shift toward 1	0.9		
Doctoral/Research Universities--Intensive (Private)	8	37.5%	33.5%	**37.5%**	33.5%	12.5%	22.9%	12.5%	22.9%	0.0%	0.0%	**0.0%**	0.0%	5.69	shift toward 1	1.4		
All Doctoral/Research Universities		*50.0%*	*10.0%*	*18.8%*	*7.8%*	*6.3%*	*4.8%*	*7.3%*	*5.2%*	*5.2%*	*4.4%*	*12.5%*	*6.6%*					
Master's Colleges and Universities I (Public)	36	50.0%	26.8%	11.8%	10.8%	5.9%	7.9%	17.6%	12.8%	5.9%	7.9%	8.8%	9.5%					
Master's Colleges and Universities I (Private)	19	**27.8%**	20.7%	11.1%	14.5%	11.1%	14.5%	16.7%	17.2%	11.1%	14.5%	**22.2%**	19.2%	2.99	shift toward 0	1.5		
Master's Colleges and Universities II (Public & Private)	6	40.0%	42.9%	0.0%	0.0%	**20.0%**	35.1%	0.0%	0.0%	**40.0%**	42.9%	0.0%	0.0%	17.00	increase at 2, 4	2.0		
All Master's Colleges and Universities		*42.1%*	*12.8%*	*10.5%*	*8.0%*	*8.8%*	*7.3%*	*15.8%*	*9.5%*	*10.5%*	*8.0%*	*12.3%*	*8.5%*					
Baccalaureate Colleges--Liberal Arts (Public & Public)	29	46.4%	18.5%	17.9%	14.2%	10.7%	11.5%	**0.0%**	0.0%	**14.3%**	13.0%	10.7%	11.5%	1.69	shift toward 4	0.7		
Baccalaureate Colleges--General (Public & Private)	13	53.8%	27.1%	7.7%	14.5%	**15.4%**	19.6%	23.1%	22.9%	**0.0%**	0.0%	**0.0%**	0.0%	4.08	shift toward 2, 3	0.9		
All Baccalaureate Colleges		*50.0%*	*27.2%*	*14.3%*	*19.0%*	*11.9%*	*17.6%*	*7.1%*	*14.0%*	*9.5%*	*16.0%*	*7.1%*	*14.0%*					
Associate's Colleges (Public & Private)	13	69.2%	25.1%	**0.0%**	0.0%	0.0%	0.0%	**23.1%**	22.9%	7.7%	14.5%	**0.0%**	0.0%	4.78	shift toward 3	1.1		
Specialized Institutions (Public & Private)	17	61.5%	26.4%	15.4%	19.6%	**0.0%**	0.0%	7.7%	14.5%	**15.4%**	19.6%	**0.0%**	0.0%	2.47	shift toward 4	0.7		
n **Dysfunctional design of previous space**		***11.6%***	***4.2%***	***8.9%***	***3.7%***	***5.8%***	***3.0%***	***15.6%***	***4.7%***	***17.8%***	***5.0%***	***40.4%***	***6.4%***					
Doctoral/Research Universities--Extensive (Public)	49	13.3%	9.9%	8.9%	8.3%	4.4%	6.0%	15.6%	10.6%	17.8%	11.2%	40.0%	14.3%					
Doctoral/Research Universities--Extensive (Private)	28	7.7%	10.2%	7.7%	10.2%	**11.5%**	12.3%	15.4%	13.9%	**26.9%**	17.0%	30.8%	17.7%	1.27	increase at 2, 4	0.8		
Doctoral/Research Universities--Intensive (Public)	18	6.3%	11.9%	**31.3%**	22.7%	**12.5%**	16.2%	12.5%	16.2%	6.3%	11.9%	31.3%	22.7%	6.92	increase at 1, 2	1.7		
Doctoral/Research Universities--Intensive (Private)	8	12.5%	22.9%	**0.0%**	0.0%	**12.5%**	22.9%	12.5%	22.9%	**37.5%**	33.5%	25.0%	30.0%	4.06	shift toward 2, 4	1.3		
All Doctoral/Research Universities		*10.5%*	*6.2%*	*11.6%*	*6.4%*	*8.4%*	*5.6%*	*14.7%*	*7.1%*	*20.0%*	*8.0%*	*34.7%*	*9.6%*					
Master's Colleges and Universities I (Public)	36	11.8%	10.8%	8.8%	9.5%	5.9%	7.9%	23.5%	14.3%	14.7%	11.9%	35.3%	16.1%					
Master's Colleges and Universities I (Private)	19	**0.0%**	0.0%	11.1%	14.5%	**0.0%**	0.0%	16.7%	17.2%	11.1%	14.5%	**61.1%**	22.5%	2.81	shift toward 5	1.4		
Master's Colleges and Universities II (Public & Private)	6	20.0%	35.1%	**0.0%**	0.0%	0.0%	0.0%	**0.0%**	0.0%	20.0%	35.1%	**60.0%**	42.9%	4.17	shift toward 5	1.7		
All Master's Colleges and Universities		*8.8%*	*7.3%*	*8.8%*	*7.3%*	*3.5%*	*4.8%*	*19.3%*	*10.2%*	*14.0%*	*9.0%*	*45.6%*	*12.9%*					
Baccalaureate Colleges--Liberal Arts (Public & Public)	29	10.7%	11.5%	7.1%	9.5%	3.6%	6.9%	7.1%	9.5%	25.0%	16.0%	46.4%	18.5%					
Baccalaureate Colleges--General (Public & Private)	13	15.4%	19.6%	7.7%	14.5%	**15.4%**	19.6%	**7.7%**	14.5%	15.4%	19.6%	38.5%	26.4%	1.96	shift toward 2	1.0		
All Baccalaureate Colleges		*11.9%*	*9.8%*	*7.1%*	*7.8%*	*7.1%*	*7.8%*	*7.1%*	*7.8%*	*21.4%*	*12.4%*	*45.2%*	*15.1%*					
Associate's Colleges (Public & Private)	13	15.4%	19.6%	7.7%	14.5%	**0.0%**	0.0%	**0.0%**	0.0%	23.1%	22.9%	53.8%	27.1%	2.60	decrease at 2, 3	1.2		
Specialized Institutions (Public & Private)	17	**26.7%**	22.4%	**0.0%**	0.0%	0.0%	0.0%	**40.0%**	24.8%	6.7%	12.6%	26.7%	22.4%	7.60	shift toward 0, 3	1.8		

TABLE 3c.
Analysis by date of project completion of responses to question 1 of the study survey

		Number of institutions in sample	Not a factor 0		Weak Motivation 1		2		Intermediate Motivation 3		4		Strong Motivation 5		Variability		
			Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	*χ-square* factor (when significant)	Character	Relative magnitude
Q1 Factors motivating new library space																	
a Growth of library staff			***38.6%***	***6.4%***	***17.9%***	***5.0%***	***7.2%***	***3.4%***	***16.1%***	***4.8%***	***10.3%***	***4.0%***	***9.9%***	***3.9%***			
	1992	21	33.3%	21.8%	16.7%	17.2%	16.7%	17.2%	5.6%	10.6%	27.8%	20.7%	0.0%	0.0%	5.40	increase in 2, 4	1.2
	1993	22	20.0%	17.5%	15.0%	15.6%	0.0%	0.0%	40.0%	21.5%	10.0%	13.1%	15.0%	15.6%	4.95	shift toward 3	1.9
	1994	13	25.0%	24.5%	16.7%	21.1%	25.0%	24.5%	16.7%	21.1%	0.0%	0.0%	16.7%	21.1%	5.77	shift toward 2	1.3
	1995	14	46.2%	27.1%	15.4%	19.6%	7.7%	14.5%	23.1%	22.9%	7.7%	14.5%	0.0%	0.0%	1.40	shift toward 3	0.8
	1996	28	37.0%	18.2%	18.5%	14.7%	3.7%	7.1%	14.8%	13.4%	18.5%	14.7%	7.4%	9.9%			
	1997	20	36.8%	21.7%	15.8%	16.4%	15.8%	16.4%	10.5%	13.8%	10.5%	13.8%	10.5%	13.8%	1.14	decrease in 2	1.2
	1998	23	31.8%	19.5%	9.1%	12.0%	4.5%	8.7%	27.3%	18.6%	9.1%	12.0%	18.2%	16.1%	1.94	shift toward 3, 5	0.8
	1999	23	45.5%	20.8%	31.8%	19.5%	0.0%	0.0%	9.1%	12.0%	4.5%	8.7%	9.1%	12.0%	2.31	shift toward 1	0.9
	2000	27	65.4%	18.3%	7.7%	10.2%	7.7%	10.2%	3.8%	7.4%	3.8%	7.4%	11.5%	12.3%	3.45	shift toward 0	1.7
	2001	31	40.7%	18.5%	22.2%	15.7%	7.4%	9.9%	18.5%	14.7%	7.4%	9.9%	3.7%	7.1%			
	2002	9	33.3%	30.8%	33.3%	30.8%	0.0%	0.0%	11.1%	20.5%	0.0%	0.0%	22.2%	27.2%	4.36	shift toward 1, 5	1.1
b Increase in the number of service points			***42.4%***	***6.5%***	***12.1%***	***4.3%***	***9.4%***	***3.8%***	***14.7%***	***4.6%***	***11.2%***	***4.1%***	***10.3%***	***4.0%***			
	1992	21	50.0%	23.1%	5.6%	10.6%	5.6%	10.6%	22.2%	19.2%	5.6%	10.6%	11.1%	14.5%	1.26	shift toward 3	0.6
	1993	22	30.0%	20.1%	10.0%	13.1%	10.0%	13.1%	40.0%	21.5%	0.0%	0.0%	10.0%	13.1%	5.67	increase at 3	2.4
	1994	13	41.7%	27.9%	25.0%	24.5%	0.0%	0.0%	8.3%	15.6%	8.3%	15.6%	16.7%	21.1%	2.74	shift toward 1	1.0
	1995	14	53.8%	27.1%	15.4%	19.6%	7.7%	14.5%	0.0%	0.0%	23.1%	22.9%	0.0%	0.0%	3.73	shift toward 4	1.1
	1996	28	33.3%	17.8%	14.8%	13.4%	11.1%	11.9%	11.1%	11.9%	22.2%	15.7%	7.4%	9.9%	1.37	shift toward 4	0.9
	1997	20	31.6%	20.9%	5.3%	10.0%	21.1%	18.3%	15.8%	16.4%	21.1%	18.3%	5.3%	10.0%	2.94	shift toward 2	0.9
	1998	23	31.8%	19.5%	9.1%	12.0%	9.1%	12.0%	4.5%	8.7%	18.2%	16.1%	27.3%	18.6%	3.83	shift toward 5	1.2
	1999	23	43.5%	20.3%	26.1%	17.9%	4.3%	8.3%	17.4%	15.5%	4.3%	8.3%	4.3%	8.3%	2.49	shift toward 1	1.0
	2000	27	53.8%	19.2%	7.7%	10.2%	7.7%	10.2%	15.4%	13.9%	11.5%	12.3%	3.8%	7.4%			
	2001	31	59.3%	18.5%	7.4%	9.9%	7.4%	9.9%	7.4%	9.9%	3.7%	7.1%	14.8%	13.4%	1.74	shift toward 0, 5	0.8
	2002	9	33.3%	30.8%	11.1%	20.5%	22.2%	27.2%	22.2%	20.5%	11.1%	20.5%	0.0%	0.0%	3.11	shift toward 2	1.1
c Growth of the collections			***8.3%***	***3.6%***	***3.5%***	***2.4%***	***4.4%***	***2.7%***	***11.0%***	***4.1%***	***16.2%***	***4.8%***	***56.6%***	***6.4%***			
	1992	21	5.3%	10.0%	0.0%	0.0%	0.0%	0.0%	10.5%	13.8%	15.8%	16.4%	68.4%	20.9%	1.01	shift toward 5	0.8
	1993	22	5.0%	9.6%	0.0%	0.0%	5.0%	9.6%	10.0%	13.1%	10.0%	13.1%	70.0%	20.1%			
	1994	13	8.3%	15.6%	8.3%	15.6%	0.0%	0.0%	8.3%	15.6%	8.3%	15.6%	66.7%	26.7%	2.12	shift toward 1, 2	0.6
	1995	14	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	23.1%	22.9%	30.8%	25.1%	46.2%	27.1%	3.60	shift toward 3, 4	1.3
	1996	28	3.7%	7.1%	0.0%	0.0%	3.7%	7.1%	14.8%	13.4%	3.7%	7.1%	74.1%	16.5%	1.81	shift toward 5	1.8
	1997	20	10.5%	13.8%	5.3%	10.0%	5.3%	10.0%	5.3%	10.0%	31.6%	20.9%	42.1%	22.2%	3.22	shift toward 4	1.6
	1998	23	9.1%	12.0%	9.1%	12.0%	4.5%	8.7%	9.1%	12.0%	9.1%	12.0%	59.1%	20.5%	1.89	increase at 1, 2	0.7
	1999	23	13.0%	13.8%	8.7%	11.5%	8.7%	11.5%	4.3%	8.3%	21.7%	16.9%	43.5%	20.3%	4.11	increase at 1-3	0.8
	2000	27	11.1%	11.9%	0.0%	0.0%	11.1%	11.9%	14.8%	13.4%	22.2%	15.7%	40.7%	18.5%	3.37	increase at 0, 2	1.3
	2001	31	13.8%	12.6%	6.9%	9.2%	0.0%	0.0%	10.3%	11.1%	20.7%	14.7%	48.3%	18.2%	3.53	shift toward 0	0.9
	2002	9	11.1%	20.5%	0.0%	0.0%	11.1%	20.5%	0.0%	0.0%	11.1%	20.5%	66.7%	30.8%	3.95	shift toward 0, 2	1.1
d Changing character of student study space needs			***6.1%***	***3.1%***	***4.8%***	***2.8%***	***3.5%***	***2.4%***	***17.0%***	***4.9%***	***32.1%***	***5.5%***	***45.4%***	***6.4%***			
	1992	21	5.3%	10.0%	5.3%	10.0%	5.3%	10.0%	21.1%	18.3%	21.1%	18.3%	42.1%	22.2%			
	1993	22	5.0%	9.6%	5.0%	9.6%	0.0%	0.0%	35.0%	20.9%	40.0%	21.5%	15.0%	15.6%	4.07	shift toward 3	2.2
	1994	13	7.7%	14.5%	7.7%	14.5%	0.0%	0.0%	0.0%	0.0%	30.8%	25.1%	53.8%	27.1%	2.19	decrease at 2, 3	0.9
	1995	14	15.4%	19.6%	0.0%	0.0%	7.7%	14.5%	38.5%	26.4%	0.0%	0.0%	38.5%	26.4%	7.62	shift toward 4	1.9
	1996	28	0.0%	0.0%	7.4%	9.9%	3.7%	7.1%	14.8%	13.4%	33.3%	17.8%	40.7%	18.5%			
	1997	20	0.0%	0.0%	5.0%	9.6%	0.0%	0.0%	15.0%	15.6%	25.0%	19.0%	55.0%	21.8%	1.21	shift toward 5	0.6
	1998	23	9.1%	12.0%	0.0%	0.0%	9.1%	12.0%	18.2%	16.1%	4.5%	8.7%	59.1%	20.5%	3.90	shift toward 2	1.5
	1999	23	0.0%	0.0%	8.7%	11.5%	4.3%	8.3%	13.0%	13.8%	39.1%	19.9%	34.8%	19.5%	1.30	shift toward 1	0.6
	2000	27	18.5%	14.7%	3.7%	7.1%	0.0%	0.0%	11.1%	11.9%	25.9%	16.5%	40.7%	18.5%	2.95	increase at 0	1.1
	2001	31	7.1%	9.5%	3.6%	6.9%	7.1%	9.5%	7.1%	9.5%	10.7%	11.5%	64.3%	17.7%	2.90	shift toward 5	1.5
	2002	9	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	22.2%	27.2%	22.2%	27.2%	55.6%	32.5%	1.93	decrease at 0-2, 4	0.6
e Changes in reference services			***14.8%***	***4.7%***	***9.0%***	***3.8%***	***12.1%***	***4.3%***	***26.9%***	***5.8%***	***21.1%***	***5.4%***	***16.1%***	***4.8%***			
	1992	21	22.2%	19.2%	16.7%	17.2%	0.0%	0.0%	33.3%	21.8%	22.2%	19.2%	5.6%	10.6%	2.78	shift toward 2, 4	0.7
	1993	22	5.0%	9.6%	10.0%	13.1%	5.0%	9.6%	45.0%	21.8%	15.0%	15.6%	20.0%	17.5%	2.32	shift toward 3	0.9
	1994	13	25.0%	24.5%	8.3%	15.6%	16.7%	21.1%	8.3%	15.6%	25.0%	24.5%	16.7%	21.1%	2.03	shift toward 0	1.0
	1995	14	23.1%	22.9%	0.0%	0.0%	23.1%	22.9%	23.1%	22.9%	30.8%	25.1%	0.0%	0.0%	4.04	shift toward 2	0.8
	1996	28	7.4%	9.9%	0.0%	0.0%	18.5%	14.7%	40.7%	18.5%	14.8%	13.4%	18.5%	14.7%	2.29	shift toward 3	0.7
	1997	20	5.3%	10.0%	15.8%	16.4%	5.3%	10.0%	26.3%	19.8%	31.6%	20.9%	15.8%	16.4%			
	1998	23	9.1%	12.0%	9.1%	12.0%	13.6%	14.3%	13.6%	14.3%	18.2%	16.1%	36.4%	20.1%	3.16	shift toward 5	1.1
	1999	23	13.6%	14.3%	27.3%	18.6%	9.1%	12.0%	13.6%	14.3%	27.3%	18.6%	9.1%	12.0%	4.47	increase at 1	1.2
	2000	27	24.0%	16.7%	0.0%	0.0%	12.0%	12.7%	40.0%	19.2%	12.0%	12.7%	12.0%	12.7%	2.35	shift toward 3	0.7
	2001	31	14.3%	13.0%	10.7%	11.5%	14.3%	13.0%	17.9%	14.2%	35.7%	17.7%	7.1%	9.5%	1.71	shift toward 4	0.8
	2002	9	22.2%	27.2%	0.0%	0.0%	22.2%	27.2%	22.2%	27.2%	0.0%	0.0%	33.3%	30.8%	5.55	shift toward 5	3.1
f Changes in public services other than reference			***13.8%***	***4.5%***	***7.1%***	***3.4%***	***7.1%***	***3.4%***	***22.2%***	***5.4%***	***23.6%***	***5.5%***	***26.2%***	***5.7%***			
	1992	21	16.7%	17.3%	0.0%	0.0%	0.0%	0.0%	38.9%	38.9%	16.7%	16.7%	27.8%	27.8%	2.66	shift toward 3	0.6
	1993	22	5.0%	9.6%	10.0%	13.1%	5.0%	9.6%	45.0%	21.8%	10.0%	13.1%	25.0%	19.0%	3.50	shift toward 3	1.1

TABLE 3c (continued)
Analysis by date of project completion of responses to question 1 of the study survey

			Not a factor 0		Weak Motivation 1		2		Intermediate Motivation 3		4		Strong Motivation 5			Variability	
		Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	χ-square factor (when significant)	Character	Relative magnitude
	1994	13	23.1%	22.9%	7.7%	14.5%	0.0%	0.0%	23.1%	22.9%	46.2%	27.1%	0.0%	0.0%	5.54	shift toward 4	1.5
	1995	14	23.1%	22.9%	7.7%	14.5%	15.4%	19.6%	15.4%	19.6%	23.1%	22.9%	15.4%	19.6%	2.04	increase at 0, 2	0.5
	1996	28	11.1%	11.9%	7.4%	9.9%	7.4%	9.9%	33.3%	17.8%	14.8%	13.4%	25.9%	16.5%			
	1997	20	5.3%	10.0%	15.8%	16.4%	5.3%	10.0%	15.8%	16.4%	31.6%	20.9%	26.3%	19.8%	1.89	shift toward 2	0.5
	1998	23	9.1%	12.0%	4.5%	8.7%	13.6%	14.3%	9.1%	12.0%	31.8%	19.5%	31.8%	19.5%	1.83	shift toward 2, 4	0.6
	1999	23	13.6%	14.3%	18.2%	16.1%	9.1%	12.0%	18.2%	16.1%	18.2%	16.1%	22.7%	17.5%	1.84	increase at 1	0.7
	2000	27	19.2%	15.1%	3.8%	7.4%	0.0%	0.0%	23.1%	16.2%	30.8%	17.7%	23.1%	16.2%	1.21	shift toward 0 & 4	0.4
	2001	31	17.9%	14.2%	3.6%	6.9%	14.3%	13.0%	0.0%	0.0%	28.6%	16.7%	35.7%	17.7%	3.34	shift toward 2	0.9
	2002	9	11.1%	20.5%	0.0%	0.0%	11.1%	20.5%	11.1%	20.5%	0.0%	0.0%	66.7%	30.8%	9.18	shift toward 5	0.4
g Changes in or growth of library instruction programs			***11.8%***	***4.2%***	***11.8%***	***4.2%***	***8.8%***	***3.7%***	***17.1%***	***4.9%***	***17.4%***	***5.0%***	***32.0%***	***6.1%***			
	1992	21	16.7%	17.2%	5.6%	10.6%	16.7%	17.2%	27.8%	20.7%	22.2%	19.2%	11.1%	14.5%	3.08	shift toward 2, 3	1.5
	1993	22	5.0%	9.6%	20.0%	20.0%	10.0%	10.0%	20.0%	20.0%	15.0%	15.0%	30.0%	30.0%			
	1994	13	7.7%	14.5%	15.4%	19.6%	7.7%	14.5%	15.4%	19.6%	30.8%	25.1%	23.1%	22.9%	1.41	shift toward 4	1.3
	1995	14	23.1%	22.9%	7.7%	14.5%	7.7%	14.5%	7.7%	14.5%	23.1%	22.9%	30.8%	25.1%	1.76	shift toward 1	1.2
	1996	28	7.4%	9.9%	7.4%	9.9%	22.2%	15.7%	22.2%	15.7%	11.1%	11.9%	29.6%	17.2%	2.50	increase at 2	1.6
	1997	20	10.0%	13.1%	15.0%	15.6%	5.0%	9.6%	10.0%	13.1%	35.0%	20.9%	25.0%	19.0%	2.26	shift toward 4	1.5
	1998	23	9.1%	12.0%	9.1%	12.0%	0.0%	0.0%	13.6%	14.3%	18.2%	16.1%	50.0%	20.9%			
	1999	23	4.3%	8.3%	21.7%	16.9%	4.3%	8.3%	21.7%	16.9%	13.0%	13.8%	34.8%	19.5%	1.62	shift toward 1	1.0
	2000	27	18.5%	14.7%	14.8%	13.4%	7.4%	9.9%	14.8%	13.4%	11.1%	11.9%	33.3%	17.8%			
	2001	31	17.9%	14.2%	7.1%	9.5%	7.1%	9.5%	7.1%	9.5%	21.4%	15.2%	39.3%	18.1%	1.25	shift toward 0	1.2
	2002	9	11.1%	20.5%	11.1%	20.5%	0.0%	0.0%	33.3%	30.8%	0.0%	0.0%	44.4%	32.5%	4.19	shift toward 3	1.7
h Changes in technical services			***27.2%***	***5.8%***	***21.0%***	***5.3%***	***11.2%***	***4.1%***	***21.9%***	***5.4%***	***12.1%***	***4.3%***	***6.7%***	***3.3%***			
	1992	21	33.3%	21.8%	16.7%	17.2%	11.1%	14.5%	22.2%	19.2%	11.1%	14.5%	5.6%	10.6%			
	1993	22	5.0%	9.6%	25.0%	19.0%	10.0%	13.1%	35.0%	20.9%	15.0%	15.6%	10.0%	13.1%	2.63	shift toward 0	1.8
	1994	13	25.0%	24.5%	50.0%	28.3%	0.0%	0.0%	0.0%	0.0%	25.0%	24.5%	0.0%	0.0%	8.47	shift toward 1, 4	2.1
	1995	14	23.1%	22.9%	30.8%	25.1%	7.7%	14.5%	7.7%	14.5%	15.4%	19.6%	15.4%	19.6%	2.50	shift toward 5	1.2
	1996	28	22.2%	15.7%	14.8%	13.4%	22.2%	15.7%	18.5%	14.7%	11.1%	11.9%	11.1%	11.9%	1.54	increase at 2, 5	0.8
	1997	20	26.3%	19.8%	21.1%	18.3%	5.3%	10.0%	21.1%	18.3%	21.1%	18.3%	5.3%	10.0%			
	1998	23	22.7%	17.5%	22.7%	17.5%	0.0%	0.0%	31.8%	19.5%	13.6%	14.3%	9.1%	12.0%	1.59	shift toward 3	1.1
	1999	23	36.4%	20.1%	27.3%	18.6%	9.1%	12.0%	18.2%	16.1%	4.5%	8.7%	4.5%	8.7%	1.04	shift toward 0, 1	0.8
	2000	27	38.5%	18.7%	11.5%	12.3%	15.4%	13.9%	26.9%	17.0%	7.7%	10.2%	0.0%	0.0%	1.81	shift toward 0	0.9
	2001	31	32.1%	17.3%	21.4%	15.2%	17.9%	14.2%	21.4%	15.2%	3.6%	6.9%	3.6%	6.9%	1.11	shift toward 2	0.8
	2002	9	33.3%	30.8%	0.0%	0.0%	0.0%	0.0%	22.2%	27.2%	22.2%	27.2%	22.2%	27.2%	7.03	shift toward 5	1.6
i Preservation of the collections			***22.2%***	***5.4%***	***12.4%***	***4.3%***	***10.7%***	***4.0%***	***20.9%***	***5.3%***	***13.8%***	***4.5%***	***21.0%***	***5.2%***			
	1992	21	26.3%	19.8%	10.5%	13.8%	10.5%	13.8%	21.1%	18.3%	21.1%	18.3%	10.5%	18.3%			
	1993	22	5.3%	10.0%	21.1%	18.3%	21.1%	18.3%	21.1%	18.3%	10.5%	13.8%	21.1%	18.3%	2.70	shift toward 2	1.7
	1994	13	25.0%	24.5%	25.0%	24.5%	0.0%	0.0%	16.7%	21.1%	25.0%	24.5%	8.3%	15.6%	3.75	shift toward 1, 4	1.4
	1995	14	15.4%	19.6%	15.4%	19.6%	7.7%	14.5%	30.8%	25.1%	7.7%	14.5%	23.1%	22.9%	1.02	shift toward 3	0.9
	1996	28	25.9%	16.5%	7.4%	9.9%	22.2%	15.7%	18.5%	14.7%	14.8%	13.4%	11.1%	11.9%	1.81	shift toward 2	1.3
	1997	20	31.6%	20.9%	15.8%	16.4%	15.8%	16.4%	10.5%	13.8%	5.3%	10.0%	21.1%	18.3%	1.60	shift toward 0	1.1
	1998	23	18.2%	16.1%	4.5%	8.7%	18.2%	16.1%	27.3%	18.6%	13.6%	14.3%	18.2%	16.1%	1.39	shift toward 2, 5	0.9
	1999	23	27.3%	18.6%	18.2%	16.1%	9.1%	12.0%	27.3%	18.6%	9.1%	12.0%	9.1%	12.0%	1.30	shift toward 1, 3	1.0
	2000	27	26.9%	17.0%	11.5%	12.3%	3.8%	7.4%	23.1%	16.2%	7.7%	10.2%	26.9%	17.0%			
	2001	31	20.7%	14.7%	6.9%	9.2%	3.4%	6.6%	24.1%	15.6%	17.2%	13.7%	27.6%	16.3%			
	2002	9	11.1%	20.5%	0.0%	0.0%	0.0%	0.0%	11.1%	20.5%	33.3%	30.8%	44.4%	32.5%	7.86	shift toward 4, 5	2.7
j Need to accommodate non-library operations			***26.1%***	***5.7%***	***9.3%***	***3.8%***	***8.0%***	***3.5%***	***10.2%***	***3.9%***	***12.8%***	***4.4%***	***33.6%***	***6.2%***			
	1992	21	21.1%	18.3%	0.0%	0.0%	15.8%	16.4%	5.3%	10.0%	10.5%	13.8%	47.4%	22.5%	2.23	shift toward 2, 5	1.0
	1993	22	21.1%	18.3%	15.8%	16.4%	10.5%	13.8%	5.3%	10.0%	15.8%	16.4%	31.6%	20.9%			
	1994	13	16.7%	21.1%	16.7%	21.1%	16.7%	21.1%	8.3%	15.6%	8.3%	15.6%	33.3%	26.7%	1.87	shift toward 1, 2	0.8
	1995	14	61.5%	26.4%	7.7%	14.5%	0.0%	0.0%	0.0%	0.0%	7.7%	14.5%	23.1%	22.9%	6.49	shift toward 0	2.2
	1996	28	18.5%	14.7%	14.8%	13.4%	14.8%	13.4%	7.4%	9.9%	18.5%	14.7%	25.9%	16.5%	1.47	shift toward 1-2, 4	0.6
	1997	20	25.0%	19.0%	10.0%	13.1%	10.0%	13.1%	5.0%	9.6%	5.0%	9.6%	45.0%	21.8%	1.07	shift toward 5	0.9
	1998	23	18.2%	16.1%	13.6%	14.3%	9.1%	12.0%	18.2%	16.1%	4.5%	8.7%	36.4%	20.1%	1.48	shift toward 3	0.8
	1999	23	39.1%	19.9%	12.0%	13.8%	4.3%	8.3%	8.7%	11.5%	13.0%	13.8%	21.7%	16.9%	1.21	shift toward 0	1.2
	2000	27	37.0%	18.2%	3.7%	7.1%	3.7%	7.1%	22.2%	15.7%	18.5%	14.7%	14.8%	13.4%	3.38	shift toward 0, 2	0.9
	2001	31	22.2%	15.7%	3.7%	7.1%	3.7%	7.1%	7.4%	9.9%	18.5%	14.7%	44.4%	18.7%	1.18	shift toward 4, 5	0.7
	2002	9	0.0%	0.0%	11.1%	20.5%	0.0%	0.0%	11.1%	20.5%	22.2%	27.2%	55.6%	32.5%	5.04	shift toward 5	1.8
k Building safety issues			***32.3%***	***6.1%***	***15.0%***	***4.7%***	***9.7%***	***3.9%***	***19.9%***	***5.2%***	***8.8%***	***3.7%***	***14.2%***	***4.5%***			
	1992	21	33.3%	21.8%	11.1%	14.5%	5.6%	10.6%	33.3%	21.8%	11.1%	14.5%	5.6%	10.6%	1.59	shift toward 3	1.4
	1993	22	25.0%	19.0%	10.0%	13.1%	20.0%	17.5%	25.0%	19.0%	5.0%	9.6%	15.0%	15.6%	1.56	shift toward 2	1.0
	1994	13	41.7%	27.9%	8.3%	15.6%	8.3%	15.6%	16.7%	21.1%	8.3%	15.6%	16.7%	21.1%			
	1995	14	15.4%	19.6%	15.4%	19.6%	15.4%	19.6%	30.8%	25.1%	15.4%	19.6%	7.7%	14.5%	2.36	shift toward 3, 4	1.5
	1996	28	29.6%	17.2%	18.5%	14.7%	11.1%	11.9%	14.8%	13.4%	7.4%	9.9%	18.5%	14.7%			
	1997	20	25.0%	19.0%	20.0%	17.5%	5.0%	9.6%	20.0%	17.5%	15.0%	15.8%	15.0%	15.6%			

TABLE 3c (continued)
Analysis by date of project completion of responses to question 1 of the study survey

			Not a factor 0		Weak Motivation 1		2		Intermediate Motivation 3		4		Strong Motivation 5		Variability		
		Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	Sample % responding affirmatively	± Confidence Interval	*X-square* factor (when significant)	Character	Relative magnitude
	1998	23	40.9%	20.5%	18.2%	16.1%	9.1%	12.0%	22.7%	17.5%	9.1%	12.0%	0.0%	0.0%	1.59	shift toward 5	1.8
	1999	23	54.5%	20.8%	4.5%	8.7%	9.1%	12.0%	18.2%	16.1%	0.0%	0.0%	13.6%	14.3%	2.86	shift toward 0	2.0
	2000	27	29.6%	17.2%	25.9%	16.5%	11.1%	11.9%	11.1%	11.9%	7.4%	9.9%	14.8%	13.4%	1.13	shift toward 1	1.3
	2001	31	25.0%	16.0%	14.3%	13.0%	7.1%	9.5%	21.4%	15.2%	14.3%	13.0%	17.9%	14.2%			
	2002	9	33.3%	30.8%	0.0%	0.0%	11.1%	20.5%	22.2%	27.2%	11.1%	20.5%	22.2%	27.2%	1.86	decrease at 1	1.9
l	**Building mechanical systems obsolescence**		***32.8%***	***6.5%***	***9.1%***	***4.0%***	***0.0%***	***0.0%***	***16.2%***	***5.1%***	***14.6%***	***4.9%***	***27.3%***	***6.2%***			
	1992	21	42.9%	25.9%	7.1%	13.5%	0.0%	0.0%	14.3%	18.3%	28.6%	23.7%	7.1%	13.5%	2.90	shift toward 4	1.6
	1993	22	29.4%	21.7%	0.0%	0.0%	0.0%	0.0%	29.4%	21.7%	17.6%	18.1%	23.5%	20.2%	1.93	shift toward 3	1.1
	1994	13	27.3%	26.3%	9.1%	17.0%	0.0%	0.0%	27.3%	26.3%	9.1%	17.0%	27.3%	26.3%			
	1995	14	27.3%	26.3%	9.1%	17.0%	0.0%	0.0%	18.2%	22.8%	36.4%	28.4%	9.1%	17.0%	4.14	shift toward 4	1.9
	1996	28	26.1%	17.9%	4.3%	8.3%	0.0%	0.0%	26.1%	17.9%	8.7%	11.5%	34.8%	19.5%	1.30	shift toward 3, 5	0.7
	1997	20	37.5%	23.7%	6.3%	11.9%	0.0%	0.0%	12.5%	16.2%	18.8%	19.1%	25.0%	21.2%			
	1998	23	38.9%	22.5%	11.1%	14.5%	0.0%	0.0%	11.1%	14.5%	16.7%	17.2%	22.2%	19.2%			
	1999	23	45.0%	21.8%	5.0%	9.6%	0.0%	0.0%	10.0%	13.1%	5.0%	9.6%	35.0%	20.9%	1.56	shift toward 0	0.9
	2000	27	32.0%	18.3%	20.0%	15.7%	0.0%	0.0%	16.0%	14.4%	8.0%	10.6%	24.0%	16.7%	1.49	increase at 1	1.0
	2001	31	19.2%	15.1%	19.2%	15.1%	0.0%	0.0%	15.4%	13.9%	19.2%	15.1%	26.9%	17.0%	1.66	shift toward 1	1.1
	2002	9	33.3%	30.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	66.7%	30.8%	8.74	shift toward 5	2.6
m	**Building structural problems**		***50.0%***	***6.5%***	***14.3%***	***4.6%***	***7.1%***	***3.4%***	***10.7%***	***4.1%***	***8.0%***	***3.6%***	***9.8%***	***3.9%***			
	1992	21	55.6%	23.0%	16.7%	17.2%	5.6%	10.6%	0.0%	0.0%	11.1%	14.5%	11.1%	14.5%	1.21	shift toward 3	1.0
	1993	22	55.0%	21.8%	10.0%	13.1%	0.0%	0.0%	25.0%	19.0%	5.0%	9.6%	5.0%	9.6%	2.84	shift toward 3	1.0
	1994	13	50.0%	28.3%	9.3%	15.6%	0.0%	0.0%	8.3%	15.6%	25.0%	24.5%	8.3%	15.6%	4.13	increase at 4	1.6
	1995	14	38.5%	26.4%	38.5%	26.4%	15.4%	19.6%	0.0%	0.0%	7.7%	14.5%	0.0%	0.0%	6.67	shift toward 1	1.4
	1996	28	26.9%	17.0%	15.4%	13.9%	11.5%	12.3%	30.8%	17.7%	11.5%	12.3%	3.8%	7.4%	5.10	shift toward 3	2.0
	1997	20	47.4%	22.5%	10.5%	13.8%	5.3%	10.0%	15.8%	16.4%	10.5%	13.8%	10.5%	13.8%			
	1998	23	63.6%	20.1%	22.7%	17.5%	0.0%	0.0%	4.5%	8.7%	9.1%	12.0%	0.0%	0.0%	2.64	shift toward 1	0.8
	1999	23	50.0%	20.9%	18.2%	16.1%	0.0%	0.0%	9.1%	12.0%	4.5%	8.7%	18.2%	16.1%	1.55	shift toward 5	0.7
	2000	27	48.1%	18.8%	7.4%	9.9%	14.8%	13.4%	11.1%	11.9%	11.1%	11.9%	7.4%	9.9%	1.22	shift toward 2	0.7
	2001	31	57.1%	18.3%	7.1%	9.5%	10.7%	11.5%	3.6%	6.9%	0.0%	0.0%	21.4%	15.2%	2.97	shift toward 5	0.8
	2002	9	66.7%	30.8%	0.0%	0.0%	11.1%	20.5%	0.0%	0.0%	0.0%	0.0%	22.2%	27.2%	5.11	shift toward 5	1.1
n	**Dysfunctional design of previous space**		***11.6%***	***4.2%***	***8.9%***	***3.7%***	***5.8%***	***3.0%***	***15.6%***	***4.7%***	***17.8%***	***5.0%***	***40.4%***	***6.4%***			
	1992	21	22.2%	19.2%	11.1%	14.5%	0.0%	0.0%	16.7%	17.2%	11.1%	14.5%	38.9%	22.5%	1.69	shift toward 0	1.1
	1993	22	10.0%	13.1%	5.0%	9.6%	15.0%	15.6%	10.0%	13.1%	25.0%	19.0%	35.0%	20.9%	2.00	increase at 2, 4	1.1
	1994	13	8.3%	15.6%	0.0%	0.0%	8.3%	15.6%	25.0%	24.5%	25.0%	24.5%	33.3%	26.7%	1.87	shift toward 3, 4	1.1
	1995	14	15.4%	19.6%	7.7%	14.5%	7.7%	14.5%	15.4%	19.6%	7.7%	14.5%	46.2%	27.1%			
	1996	28	3.7%	7.1%	11.1%	11.9%	7.4%	9.9%	14.8%	13.4%	29.6%	17.2%	33.3%	17.8%	1.40	shift toward 4	1.3
	1997	20	10.5%	13.8%	0.0%	0.0%	5.3%	10.0%	21.1%	18.3%	15.8%	16.4%	47.4%	22.5%	1.12	shift toward 5	1.1
	1998	23	13.6%	14.3%	27.3%	18.6%	0.0%	0.0%	18.2%	16.1%	9.1%	12.0%	31.8%	19.5%	4.58	increase at 1	2.4
	1999	23	13.6%	14.3%	4.5%	8.7%	4.5%	8.7%	13.6%	14.3%	13.6%	14.3%	50.0%	20.9%			
	2000	27	7.4%	9.9%	7.4%	9.9%	7.4%	9.9%	11.1%	11.9%	22.2%	15.7%	44.4%	18.7%			
	2001	31	7.1%	9.5%	7.1%	9.5%	7.1%	9.5%	14.3%	13.0%	14.3%	13.0%	50.0%	18.5%			
	2002	9	33.3%	30.8%	11.1%	20.5%	0.0%	0.0%	11.1%	20.5%	11.1%	20.5%	33.3%	30.8%	4.70	increase at 1	2.9

TABLE 4b.
Analysis by institutional type of responses to questions 2-13 of the study survey

		Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	*χ-square factor (when significant)*	Variability Ungrouped data: Character	Variability Ungrouped data: Relative magnitude
Q2	**Project influenced by overall "vision" statement**		***65.1%***	***6.2%***	1.49		*na*
	Doctoral/Research Universities--Extensive (Public)	49	59.6%	14.0%			
	Doctoral/Research Universities--Extensive (Private)	28	59.3%	18.5%			
	Doctoral/Research Universities--Intensive (Public)	18	70.6%	21.7%			
	Doctoral/Research Universities--Intensive (Private)	8	75.0%	30.0%			
	All Doctoral/Research Universities		*62.6%*	*9.5%*			
	Master's Colleges and Universities I (Public)	36	71.4%	15.0%			
	Master's Colleges and Universities I (Private)	19	66.7%	21.8%			
	Master's Colleges and Universities II (Public & Private)	6	**100.0%**	0.0%		increase	
	All Master's Colleges and Universities		*72.9%*	*11.3%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	63.0%	18.2%			
	Baccalaureate Colleges--General (Public & Private)	13	**58.3%**	27.9%		increase	
	All Baccalaureate Colleges		*60.0%*	*15.2%*			
	Associate's Colleges (Public & Private)	13	**76.9%**	22.9%		increase	
	Specialized Institutions (Public & Private)	17	53.3%	25.2%			
Q3	**Systematic assessment performed**						
	a Of library operations		***84.8%***	***4.7%***			
	Doctoral/Research Universities--Extensive (Public)	49	83.0%	11.0%			
	Doctoral/Research Universities--Extensive (Private)	28	81.9%	14.6%			
	Doctoral/Research Universities--Intensive (Public)	18	83.1%	17.9%			
	Doctoral/Research Universities--Intensive (Private)	8	87.5%	22.9%			
	All Doctoral/Research Universities		*83.1%*	*7.5%*			
	Master's Colleges and Universities I (Public)	36	92.3%	9.0%			
	Master's Colleges and Universities I (Private)	19	91.8%	12.9%			
	Master's Colleges and Universities II (Public & Private)	6	66.7%	37.3%			
	All Master's Colleges and Universities		89.5%	8.0%			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	77.8%	15.7%			
	Baccalaureate Colleges--General (Public & Private)	13	86.5%	18.8%			
	All Baccalaureate Colleges		*81.1%*	*12.0%*			
	Associate's Colleges (Public & Private)	13	77.8%	22.7%			
	Specialized Institutions (Public & Private)	17	89.2%	15.9%			
	b Of reader or user wishes		***63.8%***	***6.3%***			
	Doctoral/Research Universities--Extensive (Public)	49	67.3%	13.8%			
	Doctoral/Research Universities--Extensive (Private)	28	74.5%	16.5%			
	Doctoral/Research Universities--Intensive (Public)	18	47.5%	23.8%			
	Doctoral/Research Universities--Intensive (Private)	8	62.5%	33.5%			
	All Doctoral/Research Universities		*65.4%*	*9.5%*			
	Master's Colleges and Universities I (Public)	36	59.6%	16.6%			
	Master's Colleges and Universities I (Private)	19	86.1%	16.3%			
	Master's Colleges and Universities II (Public & Private)	6	66.7%	37.7%			
	All Master's Colleges and Universities		*68.4%*	*12.1%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	59.3%	18.5%			
	Baccalaureate Colleges--General (Public & Private)	13	55.1%	27.3%			
	All Baccalaureate Colleges		*58.9%*	*15.1%*			
	Associate's Colleges (Public & Private)	13	54.4%	27.2%			
	Specialized Institutions (Public & Private)	17	61.8%	25.0%			
	c Of modes of student learning		***40.6%***	***6.4%***	1.35		0.5
	Doctoral/Research Universities--Extensive (Public)	49	35.9%	14.1%			
	Doctoral/Research Universities--Extensive (Private)	28	**29.8%**	17.3%		decrease	
	Doctoral/Research Universities--Intensive (Public)	18	**59.6%**	23.5%		increase	

TABLE 4b (continued)
Analysis by institutional type of responses to questions 2-13 of the study survey

		Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	*χ-square factor (when significant)*	Variability Ungrouped data: Character	Variability Ungrouped data: Relative magnitude
	Doctoral/Research Universities--Intensive (Private)	8	37.5%	33.5%			
	All Doctoral/Research Universities		*38.4%*	*9.7%*			
	Master's Colleges and Universities I (Public)	36	**50.6%**	16.9%		increase	
	Master's Colleges and Universities I (Private)	19	40.2%	23.0%			
	Master's Colleges and Universities II (Public & Private)	6	50.0%	40.0%			
	All Master's Colleges and Universities		*47.4%*	*13.0%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	33.3%	17.8%			
	Baccalaureate Colleges--General (Public & Private)	13	47.2%	27.4%			
	All Baccalaureate Colleges		*36.8%*	*14.8%*			
	Associate's Colleges (Public & Private)	13	46.7%	27.3%			
	Specialized Institutions (Public & Private)	17	**27.5%**	22.9%		decrease	
d	**Of modes of faculty teaching**		***31.3%***	***6.1%***	3.58		0.9
	Doctoral/Research Universities--Extensive (Public)	49	22.4%	12.2%			
	Doctoral/Research Universities--Extensive (Private)	28	33.5%	17.9%			
	Doctoral/Research Universities--Intensive (Public)	18	29.7%	21.8%			
	Doctoral/Research Universities--Intensive (Private)	8	25.0%	30.0%			
	All Doctoral/Research Universities		*27.0%*	*8.9%*			
	Master's Colleges and Universities I (Public)	36	**47.7%**	16.9%		increase	
	Master's Colleges and Universities I (Private)	19	28.7%	21.2%			
	Master's Colleges and Universities II (Public & Private)	6	**66.7%**	37.7%		increase	
	All Master's Colleges and Universities		*42.1%*	*12.8%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	25.9%	16.5%			
	Baccalaureate Colleges--General (Public & Private)	13	**47.2%**	27.4%		increase	
	All Baccalaureate Colleges		*31.9%*	*14.3%*			
	Associate's Colleges (Public & Private)	13	31.1%	25.3%			
	Specialized Institutions (Public & Private)	17	20.6%	20.8%			
e	**Of fit with the provision of other academic space**		***57.6%***	***6.5%***	3.50		1.5
	Doctoral/Research Universities--Extensive (Public)	49	53.8%	14.6%			
	Doctoral/Research Universities--Extensive (Private)	28	44.7%	18.8%			
	Doctoral/Research Universities--Intensive (Public)	18	47.5%	23.8%			
	Doctoral/Research Universities--Intensive (Private)	8	**22.7%**	17.5%		decrease	
	All Doctoral/Research Universities		*50.9%*	*10.0%*			
	Master's Colleges and Universities I (Public)	36	59.6%	16.6%			
	Master's Colleges and Universities I (Private)	19	63.1%	22.7%			
	Master's Colleges and Universities II (Public & Private)	6	**16.7%**	29.8%		decrease	
	All Master's Colleges and Universities		*61.4%*	*12.6%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	55.6%	18.7%			
	Baccalaureate Colleges--General (Public & Private)	13	55.1%	27.3%			
	All Baccalaureate Colleges		*56.5%*	*15.2%*			
	Associate's Colleges (Public & Private)	13	70.0%	25.0%			
	Specialized Institutions (Public & Private)	17	75.5%	22.1%			
Q4	**Constituencies involved in planning**						
a	**Faculty**		***74.6%***	***5.7%***			
	Doctoral/Research Universities--Extensive (Public)	49	71.8%	13.2%			
	Doctoral/Research Universities--Extensive (Private)	28	78.2%	15.6%			
	Doctoral/Research Universities--Intensive (Public)	18	77.1%	20.1%			
	Doctoral/Research Universities--Intensive (Private)	8	62.5%	33.5%			
	All Doctoral/Research Universities		*73.7%*	*8.8%*			
	Master's Colleges and Universities I (Public)	36	68.5%	15.7%			
	Master's Colleges and Universities I (Private)	19	86.1%	16.3%			

TABLE 4b (continued)
Analysis by institutional type of responses to questions 2-13 of the study survey

		Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	*χ-square factor (when significant)*	Variability Ungrouped data: Character	Variability Ungrouped data: Relative magnitude
	Master's Colleges and Universities II (Public & Private)	6	66.7%	37.7%			
	All Master's Colleges and Universities		*73.7%*	*11.4%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	74.1%	16.5%			
	Baccalaureate Colleges--General (Public & Private)	13	70.8%	25.0%			
	All Baccalaureate Colleges		*73.7%*	*13.5%*			
	Associate's Colleges (Public & Private)	13	85.5%	19.2%			
	Specialized Institutions (Public & Private)	17	75.5%	22.1%			
b	**Students**		***51.3%***	***6.5%***			
	Doctoral/Research Universities--Extensive (Public)	49	44.9%	14.6%			
	Doctoral/Research Universities--Extensive (Private)	28	59.6%	18.6%			
	Doctoral/Research Universities--Intensive (Public)	18	47.4%	23.8%			
	Doctoral/Research Universities--Intensive (Private)	8	50.0%	34.6%			
	All Doctoral/Research Universities		*49.9%*	*10.0%*			
	Master's Colleges and Universities I (Public)	36	41.7%	16.7%			
	Master's Colleges and Universities I (Private)	19	68.8%	21.7%			
	Master's Colleges and Universities II (Public & Private)	6	66.7%	37.7%			
	All Master's Colleges and Universities		*52.6%*	*13.0%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	55.6%	18.7%			
	Baccalaureate Colleges--General (Public & Private)	13	55.1%	27.3%			
	All Baccalaureate Colleges		*56.5%*	*15.2%*			
	Associate's Colleges (Public & Private)	13	54.4%	27.2%			
	Specialized Institutions (Public & Private)	17	48.0%	25.7%			
Q5	**Changes in concept of library work affected planning**		***73.3%***	***5.8%***			*na*
	Doctoral/Research Universities--Extensive (Public)	49	77.8%	12.1%			
	Doctoral/Research Universities--Extensive (Private)	28	74.1%	16.5%			
	Doctoral/Research Universities--Intensive (Public)	18	70.6%	21.7%			
	Doctoral/Research Universities--Intensive (Private)	8	75.0%	30.0%			
	All Doctoral/Research Universities		*75.3%*	*8.6%*			
	Master's Colleges and Universities I (Public)	36	78.1%	14.3%			
	Master's Colleges and Universities I (Private)	19	83.3%	17.2%			
	Master's Colleges and Universities II (Public & Private)	6	83.3%	29.8%			
	All Master's Colleges and Universities		*80.4%*	*10.4%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	63.0%	28.2%			
	Baccalaureate Colleges--General (Public & Private)	13	53.8%	27.1%			
	All Baccalaureate Colleges		*61.0%*	*14.9%*			
	Associate's Colleges (Public & Private)	13	76.9%	22.9%			
	Specialized Institutions (Public & Private)	17	60.0%	24.8%			
Q6	**Instruction space provided for**						
a	**Instruction by library staff**		***83.5%***	***4.9%***	1.21		1.2
	Doctoral/Research Universities--Extensive (Public)	49	83.0%	11.0%			
	Doctoral/Research Universities--Extensive (Private)	28	**52.1%**	18.9%		decrease	
	Doctoral/Research Universities--Intensive (Public)	18	94.9%	10.5%			
	Doctoral/Research Universities--Intensive (Private)	8	**100.0%**	0.0%		increase	
	All Doctoral/Research Universities		*77.9%*	*8.3%*			
	Master's Colleges and Universities I (Public)	36	**98.3%**	4.4%		increase	
	Master's Colleges and Universities I (Private)	19	91.8%	12.9%			
	Master's Colleges and Universities II (Public & Private)	6	83.3%	29.8%			
	All Master's Colleges and Universities		*94.7%*	*5.8%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	85.2%	13.4%			
	Baccalaureate Colleges--General (Public & Private)	13	86.5%	18.8%			

TABLE 4b (continued)
Analysis by institutional type of responses to questions 2-13 of the study survey

		Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	χ-square factor (when significant)	Variability Ungrouped data: Character	Variability Ungrouped data: Relative magnitude
	All Baccalaureate Colleges		*83.5%*	*11.4%*			
	Associate's Colleges (Public & Private)	13	93.3%	13.7%			
	Specialized Institutions (Public & Private)	17	75.5%	22.1%			
b	**Instruction by non-library staff**		**50.4%**	**6.5%**	1.38		0.9
	Doctoral/Research Universities--Extensive (Public)	49	44.9%	14.6%			
	Doctoral/Research Universities--Extensive (Private)	28	52.1%	18.9%			
	Doctoral/Research Universities--Intensive (Public)	18	**35.6%**	22.9%		decrease	
	Doctoral/Research Universities--Intensive (Private)	8	50.0%	34.6%			
	All Doctoral/Research Universities		*41.5%*	*9.8%*			
	Master's Colleges and Universities I (Public)	36	56.6%	16.8%			
	Master's Colleges and Universities I (Private)	19	**68.8%**	21.7%		increase	
	Master's Colleges and Universities II (Public & Private)	6	**66.7%**	37.7%		increase	
	All Master's Colleges and Universities		*61.4%*	*12.6%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	59.3%	18.5%			
	Baccalaureate Colleges--General (Public & Private)	13	62.9%	26.6%			
	All Baccalaureate Colleges		*61.4%*	*15.0%*			
	Associate's Colleges (Public & Private)	13	38.9%	26.6%			
	Specialized Institutions (Public & Private)	17	48.0%	25.7%			
c	**Instruction by computing services staff**		***33.5%***	***6.2%***			
	Doctoral/Research Universities--Extensive (Public)	49	26.9%	13.0%			
	Doctoral/Research Universities--Extensive (Private)	28	22.3%	15.8%			
	Doctoral/Research Universities--Intensive (Public)	18	41.5%	23.5%			
	Doctoral/Research Universities--Intensive (Private)	8	37.5%	33.5%			
	All Doctoral/Research Universities		*29.1%*	*9.1%*			
	Master's Colleges and Universities I (Public)	36	41.7%	16.7%			
	Master's Colleges and Universities I (Private)	19	34.4%	22.3%			
	Master's Colleges and Universities II (Public & Private)	6	33.3%	37.7%			
	All Master's Colleges and Universities		*38.6%*	*12.6%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	29.6%	17.2%			
	Baccalaureate Colleges--General (Public & Private)	13	47.2%	27.4%			
	All Baccalaureate Colleges		*36.8%*	*14.8%*			
	Associate's Colleges (Public & Private)	13	38.9%	26.6%			
	Specialized Institutions (Public & Private)	17	34.3%	24.4%			
d	**Teaching and curricular development**		***34.8%***	***6.2%***	1.27		0.9
	Doctoral/Research Universities--Extensive (Public)	49	26.9%	13.3%			
	Doctoral/Research Universities--Extensive (Private)	28	**26.1%**	16.6%		decrease	
	Doctoral/Research Universities--Intensive (Public)	18	41.5%	23.5%			
	Doctoral/Research Universities--Intensive (Private)	8	37.5%	33.5%			
	All Doctoral/Research Universities		*31.2%*	*9.3%*			
	Master's Colleges and Universities I (Public)	36	38.7%	16.5%			
	Master's Colleges and Universities I (Private)	19	**57.4%**	23.2%		increase	
	Master's Colleges and Universities II (Public & Private)	6	33.3%	37.7%			
	All Master's Colleges and Universities		*43.9%*	*12.9%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	33.3%	17.8%			
	Baccalaureate Colleges--General (Public & Private)	13	39.3%	26.9%			
	All Baccalaureate Colleges		*34.4%*	*14.6%*			
	Associate's Colleges (Public & Private)	13	31.1%	25.3%			
	Specialized Institutions (Public & Private)	17	27.5%	22.9%			
Q7	**Student learning space provided that required**						
a	**General computing laboratories**		***63.8%***	***6.3%***	1.03		0.8

TABLE 4b (continued)
Analysis by institutional type of responses to questions 2-13 of the study survey

		Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	χ-square factor (when significant)	Variability Ungrouped data: Character	Variability Ungrouped data: Relative magnitude
	Doctoral/Research Universities--Extensive (Public)	49	60.6%	14.3%			
	Doctoral/Research Universities--Extensive (Private)	28	**48.4%**	18.9%		decrease	
	Doctoral/Research Universities--Intensive (Public)	18	71.2%	21.6%			
	Doctoral/Research Universities--Intensive (Private)	8	62.5%	33.5%			
	All Doctoral/Research Universities		*59.2%*	*9.8%*			
	Master's Colleges and Universities I (Public)	36	74.5%	14.7%			
	Master's Colleges and Universities I (Private)	19	**74.6%**	20.4%		increase	
	Master's Colleges and Universities II (Public & Private)	6	**50.0%**	40.0%		decrease	
	All Master's Colleges and Universities		*71.9%*	*11.7%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	59.3%	18.5%			
	Baccalaureate Colleges--General (Public & Private)	13	55.1%	27.3%			
	All Baccalaureate Colleges		*59.0%*	*15.1%*			
	Associate's Colleges (Public & Private)	13	70.0%	25.1%			
	Specialized Institutions (Public & Private)	17	**82.4%**	19.6%		increase	
b	**Group study space**		**84.4%**	**4.8%**			
	Doctoral/Research Universities--Extensive (Public)	49	78.5%	12.1%			
	Doctoral/Research Universities--Extensive (Private)	28	70.7%	17.2%			
	Doctoral/Research Universities--Intensive (Public)	18	94.9%	10.5%			
	Doctoral/Research Universities--Intensive (Private)	8	75.0%	30.0%			
	All Doctoral/Research Universities		*78.9%*	*8.1%*			
	Master's Colleges and Universities I (Public)	36	95.3%	7.1%			
	Master's Colleges and Universities I (Private)	19	91.8%	12.9%			
	Master's Colleges and Universities II (Public & Private)	6	66.7%	37.7%			
	All Master's Colleges and Universities		*91.2%*	*7.3%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	88.9%	11.9%			
	Baccalaureate Colleges--General (Public & Private)	13	86.5%	18.8%			
	All Baccalaureate Colleges		88.4%	9.8%			
	Associate's Colleges (Public & Private)	13	93.3%	13.7%			
	Specialized Institutions (Public & Private)	17	82.4%	19.6%			
c	**Conference or other informal meeting space**		***63.8%***	***6.3%***	1.99		1.2
	Doctoral/Research Universities--Extensive (Public)	49	60.6%	14.3%			
	Doctoral/Research Universities--Extensive (Private)	28	48.4%	18.9%			
	Doctoral/Research Universities--Intensive (Public)	18	71.2%	21.6%			
	Doctoral/Research Universities--Intensive (Private)	8	75.0%	30.0%			
	All Doctoral/Research Universities		*60.2%*	*9.8%*			
	Master's Colleges and Universities I (Public)	36	74.5%	14.7%			
	Master's Colleges and Universities I (Private)	19	**86.1%**	16.3%		increase	
	Master's Colleges and Universities II (Public & Private)	6	66.7%	37.7%			
	All Master's Colleges and Universities		*77.2%*	*10.9%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	59.3%	18.5%			
	Baccalaureate Colleges--General (Public & Private)	13	**47.2%**	27.4%		decrease	
	All Baccalaureate Colleges		*56.5%*	*15.2%*			
	Associate's Colleges (Public & Private)	13	**85.5%**	19.2%		increase	
	Specialized Institutions (Public & Private)	17	**41.2%**	25.3%		decrease	
Q8	**Project provided for print/electronic interface**		***80.2%***	***5.2%***			*na*
	Doctoral/Research Universities--Extensive (Public)	49	77.8%	12.1%			
	Doctoral/Research Universities--Extensive (Private)	28	78.6%	15.2%			
	Doctoral/Research Universities--Intensive (Public)	18	88.2%	15.3%			
	Doctoral/Research Universities--Intensive (Private)	8	75.0%	30.0%			
	All Doctoral/Research Universities		*79.6%*	*8.0%*			

TABLE 4b (continued)
Analysis by institutional type of responses to questions 2-13 of the study survey

		Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	*χ-square factor (when significant)*	Variability Ungrouped data: Character	Variability Ungrouped data: Relative magnitude
	Master's Colleges and Universities I (Public)	36	81.8%	13.2%			
	Master's Colleges and Universities I (Private)	19	88.9%	14.5%			
	Master's Colleges and Universities II (Public & Private)	6	83.3%	29.8%			
	All Master's Colleges and Universities		*84.2%*	*9.5%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	88.9%	11.9%			
	Baccalaureate Colleges--General (Public & Private)	13	69.2%	25.1%			
	All Baccalaureate Colleges		*82.9%*	*11.5%*			
	Associate's Colleges (Public & Private)	13	76.9%	22.9%			
	Specialized Institutions (Public & Private)	17	66.7%	23.9%			
Q9	**Project provided**						
a	**Vending machine food and beverages**		***50.0%***	***9.0%***	6.74		1.2
	Doctoral/Research Universities--Extensive (Public)	49	45.8%	19.9%			
	Doctoral/Research Universities--Extensive (Private)	28	**21.4%**	21.5%		decrease	
	Doctoral/Research Universities--Intensive (Public)	18	56.3%	24.3%			
	Doctoral/Research Universities--Intensive (Private)	8	66.7%	53.3%			
	All Doctoral/Research Universities		*43.9%*	*12.9%*			
	Master's Colleges and Universities I (Public)	36	54.5%	20.8%			
	Master's Colleges and Universities I (Private)	19	72.7%	26.3%			
	Master's Colleges and Universities II (Public & Private)	6	**0.0%**	0.0%		decrease	
	All Master's Colleges and Universities		*60.6%*	*16.7%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	70.0%	28.4%			
	Baccalaureate Colleges--General (Public & Private)	13	**75.0%**	42.4%		increase	
	All Baccalaureate Colleges		*66.7%*	*23.9%*			
	Associate's Colleges (Public & Private)	13	42.9%	36.7%			
	Specialized Institutions (Public & Private)	17	**20.0%**	35.1%		decrease	
b	**Staffed food services**		***22.9%***	***7.6%***	4.61		0.8
	Doctoral/Research Universities--Extensive (Public)	49	33.3%	18.9%			
	Doctoral/Research Universities--Extensive (Private)	28	**42.9%**	25.9%		increase	
	Doctoral/Research Universities--Intensive (Public)	18	25.0%	21.2%			
	Doctoral/Research Universities--Intensive (Private)	8	**0.0%**	0.0%		decrease	
	All Doctoral/Research Universities		*31.6%*	*12.1%*			
	Master's Colleges and Universities I (Public)	36	13.6%	14.3%			
	Master's Colleges and Universities I (Private)	19	9.1%	17.0%			
	Master's Colleges and Universities II (Public & Private)	6	**0.0%**	0.0%		decrease	
	All Master's Colleges and Universities		*12.1%*	*11.1%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	20.0%	24.8%			
	Baccalaureate Colleges--General (Public & Private)	13	25.0%	42.4%			
	All Baccalaureate Colleges		*20.0%*	*20.2%*			
	Associate's Colleges (Public & Private)	13	14.3%	25.9%			
	Specialized Institutions (Public & Private)	17	20.0%	35.1%			
Q10	**Project provided social space for students**		***46.6%***	***6.6%***			*na*
	Doctoral/Research Universities--Extensive (Public)	49	43.9%	15.2%			
	Doctoral/Research Universities--Extensive (Private)	28	42.3%	19.0%			
	Doctoral/Research Universities--Intensive (Public)	18	52.9%	23.7%			
	Doctoral/Research Universities--Intensive (Private)	8	37.5%	33.5%			
	All Doctoral/Research Universities		*44.6%*	*10.2%*			
	Master's Colleges and Universities I (Public)	36	50.0%	16.8%			
	Master's Colleges and Universities I (Private)	19	55.6%	23.0%			
	Master's Colleges and Universities II (Public & Private)	6	50.0%	40.0%			
	All Master's Colleges and Universities		51.7%	12.9%			

TABLE 4b (continued)
Analysis by institutional type of responses to questions 2-13 of the study survey

		Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	χ-square factor (when significant)	Variability Ungrouped data: Character	Variability Ungrouped data: Relative magnitude
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	46.4%	18.5%			
	Baccalaureate Colleges--General (Public & Private)	13	30.8%	25.1%			
	All Baccalaureate Colleges		*42.9%*	*15.0%*			
	Associate's Colleges (Public & Private)	13	58.3%	27.9%			
	Specialized Institutions (Public & Private)	17	35.7%	25.1%			
Q11	**Project provided for future changes in space use**		***72.3%***	***5.9%***	1.27		*na*
	Doctoral/Research Universities--Extensive (Public)	49	72.1%	13.4%			
	Doctoral/Research Universities--Extensive (Private)	28	81.5%	14.7%			
	Doctoral/Research Universities--Intensive (Public)	18	64.7%	22.7%			
	Doctoral/Research Universities--Intensive (Private)	8	**50.0%**	15.4%		decrease	
	All Doctoral/Research Universities		*71.6%*	*9.1%*			
	Master's Colleges and Universities I (Public)	36	71.4%	15.0%			
	Master's Colleges and Universities I (Private)	19	82.4%	18.1%			
	Master's Colleges and Universities II (Public & Private)	6	**100.0%**	0.0%		increase	
	All Master's Colleges and Universities		*77.6%*	*10.7%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	73.1%	17.0%			
	Baccalaureate Colleges--General (Public & Private)	13	76.9%	22.9%			
	All Baccalaureate Colleges		*72.5%*	*13.8%*			
	Associate's Colleges (Public & Private)	13	61.5%	26.4%			
	Specialized Institutions (Public & Private)	17	66.7%	23.9%			
Q12	**Conducted a post-occupancy assessment**		***15.7%***	***4.8%***	1.06		na
	Doctoral/Research Universities--Extensive (Public)	49	17.8%	11.2%			
	Doctoral/Research Universities--Extensive (Private)	28	11.5%	12.3%			
	Doctoral/Research Universities--Intensive (Public)	18	**23.5%**	20.2%		increase	
	Doctoral/Research Universities--Intensive (Private)	8	**25.0%**	30.0%		increase	
	All Doctoral/Research Universities		*17.7%*	*7.6%*			
	Master's Colleges and Universities I (Public)	36	12.1%	11.1%			
	Master's Colleges and Universities I (Private)	19	12.5%	16.2%			
	Master's Colleges and Universities II (Public & Private)	6	16.7%	29.8%			
	All Master's Colleges and Universities		*12.7%*	*8.8%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	10.7%	11.5%			
	Baccalaureate Colleges--General (Public & Private)	13	15.4%	19.6%			
	All Baccalaureate Colleges		*11.9%*	*9.8%*			
	Associate's Colleges (Public & Private)	13	**23.1%**	22.9%		increase	
	Specialized Institutions (Public & Private)	17	**21.4%**	21.5%		increase	
Q13	**Experience suggests need for further change**		***61.3%***	***6.4%***	1.14		na
	Doctoral/Research Universities--Extensive (Public)	49	65.2%	13.8%			
	Doctoral/Research Universities--Extensive (Private)	28	70.4%	17.2%			
	Doctoral/Research Universities--Intensive (Public)	18	56.3%	24.3%			
	Doctoral/Research Universities--Intensive (Private)	8	**87.5%**	22.9%		increase	
	All Doctoral/Research Universities		*67.0%*	*9.4%*			
	Master's Colleges and Universities I (Public)	36	63.6%	16.4%			
	Master's Colleges and Universities I (Private)	19	58.8%	23.4%			
	Master's Colleges and Universities II (Public & Private)	6	66.7%	37.7%			
	All Master's Colleges and Universities		*62.5%*	*12.7%*			
	Baccalaureate Colleges--Liberal Arts (Public & Public)	29	**46.2%**	19.2%		decrease	
	Baccalaureate Colleges--General (Public & Private)	13	**50.0%**	28.3%		decrease	
	All Baccalaureate Colleges		*48.7%*	*15.7%*			
	Associate's Colleges (Public & Private)	13	53.8%	27.1%			
	Specialized Institutions (Public & Private)	17	57.1%	25.9%			

TABLE 4c.
Analysis by date of project completion of responses to questions 2-13 of the study survey

		Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	Variability: χ-square factor (when significant)	Variability: Character	Variability: Relative magnitude
Q2 Project influenced by overall "vision" statement			***65.1%***	***6.2%***	*1.26*		*na*
	1992	21	63.2%	21.7%			
	1993	22	55.0%	21.8%			
	1994	13	53.8%	27.1%			
	1995	14	85.7%	18.3%			
	1996	28	66.7%	17.8%		positive	
	1997	20	75.0%	19.0%			
	1998	23	68.2%	19.5%			
	1999	23	39.1%	19.9%		negative	
	2000	27	70.4%	17.2%			
	2001	31	70.4%	17.2%			
	2002	9	66.7%	30.8%			
Q3 Systematic assessment performed							
a Of library operations			***84.8%***	***4.7%***			
	1992	21	90.2%	13.4%			
	1993	22	78.4%	18.4%			
	1994	13	98.8%	6.1%			
	1995	14	85.7%	18.3%			
	1996	28	91.3%	10.8%			
	1997	20	71.0%	20.0%			
	1998	23	79.7%	16.6%			
	1999	23	79.2%	16.7%			
	2000	27	91.3%	10.8%			
	2001	31	77.8%	15.7%			
	2002	9	100.0%	0.0%			
b Of reader or user wishes			***63.8%***	***6.3%***	*1.54*		*0.7*
	1992	21	58.3%	22.3%			
	1993	22	52.2%	22.4%		negative	
	1994	13	49.4%	28.1%		negative	
	1995	14	71.4%	23.7%		positive	
	1996	28	79.9%	15.3%		positive	
	1997	20	81.2%	17.3%			
	1998	23	75.3%	17.8%		negative	
	1999	23	44.0%	20.4%		negative	
	2000	27	57.1%	18.9%			
	2001	31	63.0%	18.2%			
	2002	9	58.3%	33.0%			
c Of modes of student learning			***40.6%***	***6.4%***	*1.64*		*0.9*
	1992	21	21.2%	18.5%		negative	
	1993	22	26.1%	19.7%		negative	
	1994	13	32.9%	26.4%			
	1995	14	50.0%	26.2%		positive	
	1996	28	53.3%	19.1%		positive	
	1997	20	50.7%	22.1%		positive	
	1998	23	48.7%	20.6%			
	1999	23	35.2%	19.6%			
	2000	27	34.2%	18.1%			
	2001	31	48.1%	18.8%			
	2002	9	35.0%	31.9%			
d Of modes of faculty teaching			***31.3%***	***6.1%***	*3.39*		*1.1*

TABLE 4c (continued)
Analysis by date of project completion of responses to questions 2-13 of the study survey

						Variability	
		Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	*χ-square* factor (when significant)	Character	Relative magnitude
	1992	21	21.2%	18.5%			
	1993	22	15.7%	16.3%		negative	
	1994	13	8.2%	15.5%		negative	
	1995	14	21.4%	21.5%			
	1996	28	38.0%	18.6%			
	1997	20	40.6%	21.7%			
	1998	23	44.3%	20.5%		positive	
	1999	23	44.0%	20.4%		positive	
	2000	27	15.2%	13.7%		negative	
	2001	31	33.3%	17.8%			
	2002	9	46.7%	33.4%			
e Of fit with the provision of other academic space			***57.6%***	***6.5%***	*1.33*		*1.3*
	1992	21	53.0%	22.5%			
	1993	22	62.7%	21.7%			
	1994	13	32.9%	26.4%		negative	
	1995	14	42.9%	25.9%			
	1996	28	76.1%	16.3%		positive	
	1997	20	50.7%	22.1%			
	1998	23	48.7%	20.6%			
	1999	23	57.2%	20.3%			
	2000	27	53.3%	19.1%			
	2001	31	66.7%	17.8%			
	2002	9	70.0%	30.7%		positive	
Q4 Constituencies involved in planning							
a Faculty			***74.6%***	***5.7%***			
	1992	21	68.9%	20.9%			
	1993	22	73.1%	19.9%			
	1994	13	57.7%	27.8%			
	1995	14	57.1%	25.9%			
	1996	28	68.5%	17.8%			
	1997	20	86.3%	15.2%			
	1998	23	88.6%	13.3%			
	1999	23	74.9%	17.8%			
	2000	27	76.1%	16.3%			
	2001	31	74.1%	16.5%			
	2002	9	81.7%	25.9%			
b Students			***51.3%***	***6.5%***			
	1992	21	47.7%	22.5%			
	1993	22	47.0%	22.4%			
	1994	13	32.9%	26.4%			
	1995	14	42.9%	25.9%			
	1996	28	49.4%	19.1%			
	1997	20	55.8%	21.9%			
	1998	23	57.6%	20.4%			
	1999	23	44.0%	20.4%			
	2000	27	49.4%	19.1%			
	2001	31	66.7%	17.8%			
	2002	9	46.7%	33.4%			
Q5 Changes in concept of library work affected planning			***73.3%***	***5.8%***			
	1992	21	78.9%	18.3%			

TABLE 4c (continued)
Analysis by date of project completion of responses to questions 2-13 of the study survey

		Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	χ-*square* factor (when significant)	Variability: Character	Variability: Relative magnitude
	1993	22	73.7%	19.8%			
	1994	13	75.0%	24.5%			
	1995	14	57.1%	25.9%			
	1996	28	76.9%	16.2%			
	1997	20	94.7%	10.0%			
	1998	23	69.6%	18.8%			
	1999	23	56.5%	20.3%			
	2000	27	70.4%	17.2%			
	2001	31	74.1%	16.5%			
	2002	9	88.9%	20.5%			
Q6 Instruction space provided for							
a Instruction by library staff			***83.5%***	***4.9%***			
	1992	21	95.4%	9.4%			
	1993	22	67.9%	20.9%			
	1994	13	90.6%	16.4%			
	1995	14	78.6%	21.5%			
	1996	28	76.1%	16.3%			
	1997	20	86.3%	15.2%			
	1998	23	88.6%	13.1%			
	1999	23	79.3%	16.7%			
	2000	27	83.7%	14.1%			
	2001	31	85.2%	13.4%			
	2002	9	93.3%	16.7%			
b Instruction by non-library staff			**50.4%**	**6.5%**	*2.31*		*0.9*
	1992	21	42.4%	22.3%			
	1993	22	36.6%	21.6%			
	1994	13	41.2%	27.7%			
	1995	14	35.7%	25.1%		negative	
	1996	28	45.6%	19.0%			
	1997	20	30.4%	20.3%		negative	
	1998	23	70.9%	18.7%		positive	
	1999	23	57.2%	20.3%			
	2000	27	57.1%	18.9%			
	2001	31	70.4%	17.2%		positive	
	2002	9	35.0%	31.9%		negative	
c Instruction by computing services staff			***33.5%***	***6.2%***	*2.80*		*1.7*
	1992	21	26.5%	19.9%			
	1993	22	26.1%	19.7%			
	1994	13	24.7%	24.3%			
	1995	14	28.6%	23.7%			
	1996	28	34.2%	18.1%			
	1997	20	35.5%	21.1%			
	1998	23	44.3%	20.5%			
	1999	23	30.8%	19.0%			
	2000	27	26.6%	16.9%			
	2001	31	33.3%	17.8%			
	2002	9	70.0%	30.7%		positive	
d Teaching and curricular development			***34.8%***	***6.2%***	*6.62*		*0.4*
	1992	21	21.2%	18.4%			
	1993	22	31.3%	20.8%			

TABLE 4c (continued)
Analysis by date of project completion of responses to questions 2-13 of the study survey

		Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	*χ-square* factor (when significant)	Variability: Character	Variability: Relative magnitude
	1994	13	16.5%	20.9%			
	1995	14	14.3%	18.3%		negative	
	1996	28	38.0%	18.6%			
	1997	20	35.5%	21.1%			
	1998	23	31.0%	19.1%			
	1999	23	30.8%	19.0%			
	2000	27	22.8%	16.0%			
	2001	31	63.0%	18.2%		positive	
	2002	9	81.7%	25.9%		positive	
Q7 Student learning space provided that required							
a General computing laboratories			***63.8%***	***6.3%***			
	1992	21	63.6%	21.7%			
	1993	22	67.9%	20.9%			
	1994	13	41.2%	27.7%			
	1995	14	64.3%	25.1%			
	1996	28	76.1%	16.3%			
	1997	20	55.8%	21.9%			
	1998	23	66.5%	19.5%			
	1999	23	74.9%	17.8%			
	2000	27	53.3%	19.1%			
	2001	31	59.3%	18.5%			
	2002	9	70.0%	30.7%			
b Group study space			**84.4%**	**4.8%**			
	1992	21	90.1%	13.5%			
	1993	22	78.4%	18.4%			
	1994	13	82.4%	21.4%			
	1995	14	85.7%	18.3%			
	1996	28	95.1%	8.3%			
	1997	20	81.2%	17.3%			
	1998	23	75.3%	17.8%			
	1999	23	83.7%	15.2%			
	2000	27	72.3%	17.1%			
	2001	31	88.9%	11.9%			
	2002	9	81.7%	25.9%			
c Conference or other informal meeting space			***63.8%***	***6.3%***	*1.23*		*1.0*
	1992	21	68.9%	20.9%			
	1993	22	57.5%	22.1%			
	1994	13	49.4%	28.1%		negative	
	1995	14	64.3%	25.1%			
	1996	28	60.9%	18.7%			
	1997	20	71.0%	20.0%			
	1998	23	62.0%	20.0%			
	1999	23	66.1%	19.5%			
	2000	27	38.0%	18.6%		negative	
	2001	31	74.1%	16.5%			
	2002	9	81.7%	25.9%		positive	
Q8 Project provided for print/electronic interface			***80.2%***	***5.2%***			
	1992	21	94.7%	10.0%			
	1993	22	78.9%	18.3%			
	1994	13	83.3%	21.1%			

TABLE 4c (continued)
Analysis by date of project completion of responses to questions 2-13 of the study survey

		Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	*χ-square* factor (when significant)	Variability: Character	Variability: Relative magnitude
	1995	14	71.4%	23.7%			
	1996	28	85.2%	13.4%			
	1997	20	80.0%	17.5%			
	1998	23	82.6%	15.5%			
	1999	23	73.9%	17.9%			
	2000	27	76.9%	16.2%			
	2001	31	77.8%	15.7%			
	2002	9	88.9%	20.5%			
Q9 Project provided							
a Vending machine food and beverages			***50.0%***	***9.0%***	*3.25*		*1.1*
	1992	21	66.7%	26.7%			
	1993	22	65.2%	33..5%			
	1994	13	66.7%	53.3%		positive	
	1995	14	30.0%	28.4%		negative	
	1996	28	42.6%	27.1%			
	1997	20	53.3%	25.2%			
	1998	23	33.3%	30.8%		negative	
	1999	23	27.3%	26.3%		negative	
	2000	27	69.2%	25.1%		positive	
	2001	31	66.7%	30.8%		positive	
	2002	9	33.3%	37.7%		negative	
b Staffed food services			***22.9%***	***7.6%***	*3.49*		*0.9*
	1992	21	8.3%	15.6%		negative	
	1993	22	25.0%	30.0%			
	1994	13	0.0%	0.0%		negative	
	1995	14	20.0%	24.8%			
	1996	28	23.1%	22.9%			
	1997	20	26.7%	22.4%		positive	
	1998	23	22.2%	27.2%			
	1999	23	36.4%	28.4%			
	2000	27	7.7%	14.5%		negative	
	2001	31	22.2%	27.2%			
	2002	9	33.3%	37.7%			
Q10 Project provided social space for students			***46.6%***	***6.6%***	*4.91*		*na*
	1992	21	27.8%	20.7%			
	1993	22	35.3%	22.7%			
	1994	13	50.0%	28.3%			
	1995	14	14.3%	18.3%		negative	
	1996	28	55.6%	18.7%			
	1997	20	63.2%	21.7%			
	1998	23	40.9%	20.5%			
	1999	23	45.5%	20.8%			
	2000	27	26.9%	17.0%		negative	
	2001	31	55.6%	18.7%			
	2002	9	88.9%	20.5%		positive	
Q11 Project provided for future changes in space use			***72.3%***	***5.9%***	*1.71*		*na*
	1992	21	68.4%	20.9%			
	1993	22	47.4%	22.5%		negative	
	1994	13	66.7%	26.7%			
	1995	14	57.1%	25.9%			

TABLE 4c (continued)
Analysis by date of project completion of responses to questions 2-13 of the study survey

			Number of institutions in sample	Sample % responding affirmatively	± Confidence Interval	χ-*square* factor (when significant)	Variability: Character	Variability: Relative magnitude
		1996	28	61.5%	18.7%			
		1997	20	75.0%	19.0%			
		1998	23	77.3%	17.5%			
		1999	23	68.2%	19.5%			
		2000	27	92.3%	10.2%		positive	
		2001	31	77.8%	15.7%			
		2002	9	100.0%	0.0%		positive	
Q12	**Conducted a post-occupancy assessment**			***15.7%***	***4.8%***	*2.34*		*na*
		1992	21	10.5%	13.8%			
		1993	22	25.0%	19.0%		positive	
		1994	13	33.3%	26.7%		positive	
		1995	14	14.3%	18.3%			
		1996	28	11.5%	12.3%			
		1997	20	20.0%	17.5%			
		1998	23	21.7%	16.9%			
		1999	23	17.4%	15.5%			
		2000	27	3.8%	7.4%		negative	
		2001	31	11.1%	11.9%			
		2002	9	12.5%	22.9%			
Q13	**Experience suggests need for further change**			***61.3%***	***6.4%***	*2.92*		*na*
		1992	21	57.9%	22.2%			
		1993	22	80.0%	17.5%			
		1994	13	83.3%	21.1%		positive	
		1995	14	57.1%	25.9%			
		1996	28	52.0%	19.6%			
		1997	20	85.0%	15.6%		positive	
		1998	23	82.6%	15.5%		positive	
		1999	23	69.6%	18.8%			
		2000	27	38.5%	18.7%		negative	
		2001	31	37.0%	18.2%		negative	
		2002	9	50.0%	34.6%			

Summary of Qualitative Comments Made by Survey Respondents

Comments are recorded under the survey question to which respondents attached them. This summary attempts to capture responses that are not well represented in the quantitative data or that express particularly well an idea often expressed in the comments. Where appropriate and possible, a summary analysis is offered of subjects that figure frequently in the comments.

QUESTION 1o: **Factors motivating new and renovated library space**

- Several respondents identified the wish to provide better space and services for special collections and archives as a strong motivator. 11 institutions made this comment, of which 4 were doctoral/research universities, 3 were master's colleges and universities, 3 were baccalaureate colleges, and 1 was a special institution.
- Several respondents indicated that accreditation requirements were a strong motivator of renovation and construction projects. 11 institutions made this comment, of which 5 were doctoral/research universities, 2 were master's college and universities, 1 was a baccalaureate college, 1 was an associate's college, and 2 were special institutions.
- Master's College and University I comment: Create impressive new library as centerpiece of campus master plan.
- Master's College and University I comment: A tremendous need to transform a 1960/70's facility into a 21st century academic library. The library renovation and expansion project was as much about preparing for new technologies as it was about our need for additional space. This gets a #5!
- Baccalaureate College—Liberal Arts comment: Also an intermediate motivator was the general age and shabbiness of furnishings and finishes; desire to make the library a "showcase" for prospective students.

QUESTION 3f: **Systematic assessments performed**. Not itemized among these comments are numerous responses that indicated (1) consultation, usually with faculty, and (2) the employment of consultants except where a specific assessment activity is mentioned.

- Doctoral/Research University—Extensive comment: Assessment of growth patterns for collections and academic departments.
- Doctoral/Research University—Extensive comment: Included needs of other [state name] System libraries for storage space with some political gain (and prospective funding successes) a major influence. Also, information sharing on a systemwide basis has been a factor that we have been considering from several points of view.
- Doctoral/Research University—Extensive comment: The assessment activities went on for many years while we struggled to get permission to build—they were not "formal" but they were thorough.
- Doctoral/Research University—Extensive comment: Environmental assessment for preservation of the collections. An outside consultant was commissioned to do a report addressing the safety and environment for the collections.
- Doctoral/Research University—Extensive comment: Needs assessment was an examination of interconnections between: condition of library collections . . . ; effect of damaged/deteriorated library resources on user access to information; collection growth rate; and increasing library usage. Long-term growth, use, and maintenance of the print collection even in a period of increased acquisition and utilization of nonprint and electronic resources was a central planning assumption.
- Doctoral/Research University—Extensive comment: The idea of an undergraduate library originated with the president. To the best of my knowledge, no assessments were undertaken to support the determination to undertake this project.
- Doctoral/Research University—Extensive comment: Assessment of the entire library system was done and this was one outcome.

- Doctoral/Research University—Extensive comment: We began with a master space plan done by [name].
- Doctoral/Research University—Extensive comment: We surveyed faculty and students through our survey research center; results were building was too small for collections, had lost any integrity in terms of where to expect to find services.
- Doctoral/Research University—Extensive comment: An academic plan was prepared for the space in consultation with administration and faculty committees of the School of [name] and with Libraries Administration.
- Doctoral/Research University—Extensive comment: Campus-specific students' needs were assessed and the findings were taken into consideration for the overall plan, e.g., no dormitories on [name] campus had a study space. Student Center did not allocate late evening study space, either.
- Doctoral/Research University—Extensive comment: User survey and space utilization study conducted by [name].
- Doctoral/Research University—Extensive comment: Formal building study (1986).
- Doctoral/Research University—Extensive comment: Assessments of student and faculty needs for computing, media production, distance education, etc.
- Doctoral/Research University—Intensive comment: Several studies were done before the library was designed. The primary focus was to create a facility that would most effectively use technology to further library services. The campus made a conscious decision to use technology based library services as a path to excellence. The studies, one by [name] and one managed by [name], framed the ways in which technology could be used to further the use of library resources in support of the campus mission. The . . . [second] study also designed prototypes of the library information system, which at the time (the pre-Web era of the early 1990s) was truly unique in libraries. The studies did involve faculty input, but were really focused on pushing the envelope.
- Doctoral/Research University—Intensive comment: All of the above were assessed by some means, with varying degrees of formal treatment.
- Doctoral/Research University—Intensive comment: While we could not claim to having done "formal" assessments, we certainly spent time analyzing not only the present but the future trends in student learning, teaching, and interacting learning spaces and learning technologies—our goal was to be ahead of the curve and proactive—not just a responder.
- Doctoral/Research University—Intensive comment: Comparisons with peer institutions in terms of amount of space available.
- Doctoral/Research University—Intensive comment: The assessments carried out were not strictly formal, but they went beyond the casual. We thoroughly reviewed our operations, student and faculty needs, space considerations, and even a little of our own thinking about the future (e.g., wireless networking).
- Doctoral/Research University—Intensive comment: Very little time given to assessment, due to the press of work and the small number of staff members.
- Master's College and University I comment: Space needs of every library unit [assessed], and desired adjacencies for these units.
- Master's College and University I comment: Comparison with ACRL standards.
- Master's College and University I comment: We are just about to launch into the design process. We have conducted or been a part of various faculty surveys and student surveys in the past few years with questions related to their 'use' of the library building/services. We have several faculty 'brainstorming/listening' sessions scheduled . . . and plan to do sessions for university staff and students. Assessing modes of student learning and faculty teaching has been less formal, based primarily on direct observation, comments by students and faculty via surveys and written and verbal opportunities for their input (meetings, suggestion box, etc.).
- Master's College and University I comment: Growth of book collection and providing enough computers for online information.

- Master's College and University I comment: Comparisons of existing library facility with libraries in peer institutions.
- Master's College and University I comment: Librarians, faculty, students, and staff participated in site visits of other similar libraries and constructed a checklist of ideas for the project.
- Baccalaureate College—Liberal Arts comment: We made these changes because I had worked in the building for ten years, and very few people came to the Reference Desk for assistance. The students loved the new atmosphere, and use of the Reference services went up dramatically. Basically, I assessed how students did not use our services, and requested the architectural changes that were made.
- Baccalaureate College—Liberal Arts comment: Some attempts were made to predict collection growth, student and faculty population growths, needs for specialized space and purposes (i.e., growth of electronic and information technology needs).
- Baccalaureate College—Liberal Arts comment: There was an owner's committee that did some planning, but I don't think they did a very good job. But then I was just a lowly department head at the time, so I don't know what went on behind the scenes.
- Baccalaureate College—Liberal Arts comment: These other areas were considered, but I would not say they were assessed in any "formal and systematic" way. We did engage a consultant who assisted with both needs assessment and program development; he also researched and wrote a brief history of the existing library building (constructed in 1936).
- Baccalaureate College—General comment: 'No formal assessment taken . . . conversation regarding space and needs with the architect but overall architect vision dominated final plans . . . also space limitations determined actual use of space.
- Baccalaureate College—General comment: Demographic and geographic considerations, of the main campus community and remote campuses . . . and broader regional community.
- Baccalaureate College—General comment: We had done the above activities as a matter of course.
- Associate's College comment: Environmental scan of external service community, library uses, and perceived research needs.
- Associate's College comment: What could be built was based on . . . state guidelines, so that the size of the building was specified by those guidelines. We then determined what we could include.
- Associate's College comment: Assessment of emerging technologies. Assessment of best practices.
- Specialized Institution comment: Assessment of the growth patterns of other law library collections and buildings

QUESTION 4c: **Constituencies involved in planning**
Several respondents not extracted below commented that members of the institution's governing board were involved in library planning. Several respondents also commented that institutional administrators and the facilities staff at their institutions were involved in library planning. Comments on this question suggest that faculty and student consultation was often done through established library committee and institutional governance structures, though sometimes consulting structures were created specifically for library planning or the specific library project. Some comments indicate that faculty and student views had little impact on the planning process; no comments identified faculty or students as having a major impact.

Responses indicating that architects, engineers, and library consultants were consulted are not tabulated here.

- Doctoral/Research University—Extensive comment: Staff in Computing Services and in Facilities Planning
- Doctoral/Research University—Extensive comment: Involvement for students included some survey work, work with students on some class projects, and some meetings with student groups.
- Doctoral/Research University—Extensive comment: Donor

- Doctoral/Research University—Extensive comment: Alumni
- Doctoral/Research University—Extensive comment: Donor
- Doctoral/Research University—Extensive comment: Donor
- Doctoral/Research University—Extensive comment: Donors and library 'friends'
- Doctoral/Research University—Extensive comment: Donors
- Doctoral/Research University—Extensive comment: IT and research staff
- Doctoral/Research University—Intensive comment: Academic Support Services; University Services including food service, etc.
- Doctoral/Research University—Intensive comment: Alumni
- Master's College and University I comment: Librarians from other institutions
- Master's College and University I comment: Members of the library visiting committee
- Master's College and University I comment: Community
- Master's College and University I comment: Office of Instructional and Information Technologies (i.e., Computer Center and Audiovisual Services) . . . University Office of Telecommunications
- Master's College and University I comment: A few interested area residents
- Master's College and University II comment: Division of Information Technology
- Master's College and University II comment: Alumni and Friends of the Library
- Master's College and University II comment: Two community members
- Baccalaureate College—Liberal Arts comment: Other: includes certain prominent alumnae . . . . (We consider alumnae a reader constituency.)
- Baccalaureate College—Liberal Arts comment: Community borrowers, alumni
- Baccalaureate College—Liberal Arts comment: Special Collections librarians and staff at neighboring institutions
- Baccalaureate College—Liberal Arts comment: Development office
- Baccalaureate College—Liberal Arts comment: IT staff
- Baccalaureate College—Liberal Arts comment: Computer staff
- Baccalaureate College—Liberal Arts comment: Faculty emeriti/emeritae
- Associate's College comment: Community representatives
- Associate's College comment: Community users
- Specialized Institution comment: Alumni
- Specialized Institution comment: Alumni
- Specialized Institution comment: Local library professionals

QUESTION 5: **Changes in the concept of library work affecting planning**
Respondents described the reconception of scores of public service activities, technical services workflows, and other matters operative at the unit level (e.g., reference, circulation, interlibrary loan, cataloging, special collections, shelving access) as having major impact on planning activities. Automation of library functions was often mentioned as having prompted these reconceptions.

More generally, but with equal frequency, respondents described their intention to strengthen instructional programs, support information technology, and provide learning space for students as major planning concerns.

Other, less frequently mentioned concerns included the need to collaborate with other academic support units and provide adequate work and office space for library staff (whose duties have been changing).

The following selections give some flavor of respondents' comments on question 5:
- Doctoral/Research University—Extensive comment: Desire to consolidate access services functions to reduce service points and to better utilize both space and staff. For example, we felt that reserve processing and ILL services should be adjacent to one another to maximize the use of equipment and

staff. We envisioned using reserve staff to assist ILL staff in ILL during the summer and during other slow times in course reserve processing. We also envisioned using ILL staff for copying and scanning course reserve materials during Reserves' peak times. We have been able to make these staffing changes work because of the reconfigured spaces.

- Doctoral/Research University—Extensive comment: The library spent a great deal of effort and time trying to reconceive itself as a teaching library in the broadest sense. One of the outcomes of this process was trying to make the design of space and services have a teaching function.
- Doctoral/Research University—Intensive comment: On a day-to-day basis technical services operations did not change significantly, but public services did. Importantly the library went from being a small under funded library at a second tier university to one of the most technologically sophisticated academic libraries in the country. Over several years the library's conception of itself changed to view itself as a leader. The new building and the technology that came with it in many ways transformed the whole library's view of itself.
- Master's College and University I comment: We wanted to have a library that would be very easy to use from the students' and faculty's point of view. This meant to us as few service points as possible (we only have two); an environment that would encourage collaboration at all levels; a flexible, open environment that could be reconfigured as needs change. We wanted a building that would encompass non-library but related functions (for example, we have a literacy research center in the library building). We wanted to be able to integrate library, information, and instructional technology within the building as seamlessly as possible.
- Baccalaureate College—Liberal Arts comment: Nothing too radical, but we were clearly influenced by the growing importance of instructional activities (previously we had no teaching space); the rapid movement toward electronic resources; the desire for easier private consultation in librarians' offices, and the need for greater collaboration between the library and other instructional support areas like the Center for Writing and Speaking, Media Services, and Instructional Technology. (None of those functions reports to the Library, but they are now all housed in our building.)

QUESTION 6e. **Other instructional space provided**

Respondents commented primarily on the number, size, technical capabilities, and use policies for the kinds of instructional space identified in question 6a–d. Beyond electronic classrooms, only a few other kinds of instructional space were identified: multimedia and teleconferencing facilities, large lecture halls, exhibit space.

- Doctoral/Research University—Extensive comment: Lecture/performance hall exhibit space
- Doctoral/Research University—Extensive comment: Much of the space in the building, including instructional space, is shared. The [name of facility] is a shared use academic building—library, computing center and production facility.
- Doctoral/Research University—Extensive comment: Several display areas for exhibits of library collections as well as collections from other campus entities.
- Doctoral/Research University—Intensive comment: Teleconferencing centers for off-campus learners and administrative functions.
- Master's College and University I comment: A training room for faculty and staff in new technologies. A Center for Instructional Technology for faculty to learn, develop, and test online instructional materials using multimedia technologies and WebCT.
- Master's College and University I comment: We have a center for academic support services (tutoring of all kinds, including writing instruction and math instruction; career planning; one-on-one student technology support; library research assistance). We are in the process of constructing a classroom for music, video, and graphics applications using Macintosh computers.
- Master's College and University II comment: Staff training; vendor demonstrations of new digital products.
- Baccalaureate College—Liberal Arts comment: Seminar rooms, group studies, 3 computer classrooms,

a very nice writing center with a computer lab. We had over 500 class sessions in the main library last academic year including over 120 library instruction sessions. Faculty love to use the new seminar room and other campus programs try to get in here as well.
- Baccalaureate College—General comment: Media viewing room that can also be used for instruction.
- Associate's College comment: Academic services to students with handicaps and tutoring services.
- Specialized Institution comment: Online testing center for students.
- Comment from institution with no Carnegie Classification: Television studio also used for instruction.

QUESTION 7d. **Student learning space provided**
Respondents identified few kinds of student learning spaces not covered in question 7a–c. Several described special accommodations provided for students with disabilities. Study carrels and general purpose or specialized reading rooms (e.g., music listening and media viewing areas) occurred frequently in question 7d responses but are not registered in the following excerpts.
- Doctoral/Research University—Extensive comment: Video production studio and theater, audio production studio, two electronic music studios, virtual reality lab, gallery, computer classrooms, visualization lab, teleconferencing suites.
- Doctoral/Research University—Extensive comment: Space for elementary school students and those working with them.
- Doctoral/Research University—Extensive comment: Disabled students have special high tech. area.
- Doctoral/Research University—Intensive comment: A "special room" was designed for the visually impaired complete with a personal computer with a 21-inch monitor, close captioned TV, Aladdin Genie Pro with foot pedal and stand, Power Braille 40, versapoint duo with speech, the Duxberry Braille translator version 10. Software includes JAWS 3.7, magic version 6 and open book version 5.
- Doctoral/Research University—Intensive comment: Space and facilities for students with disabilities.
- Doctoral/Research University—Intensive comment: Distance education classrooms.
- Master's College and University I comment: Scholar rooms for doctoral students working on dissertations.
- Master's College and University I comment: We pride ourselves on creating as many different study environments as there are "study styles." Large and open, small and intimate, lots of sunlight, low light, etc.
- Master's College and University I comment: Language laboratory.
- Master's College and University I comment: This library operates a very large academic assistance service impacting over 50% of the student body every year. In addition to one-on-one peer tutoring in math and writing, content studies and supplemental instruction programs target all high-risk 1–200 level courses.
- Baccalaureate College—Liberal Arts comment: Study space for students with disabilities: one of the main floor group studies is being designated for this purpose, where students with disabilities will have priority, for use with their own personal assistants or for specialized software and hardware.
- Baccalaureate College—Liberal Arts comment: Provided 28 individual study carrels for science students engaged in senior independent study.
- Associate's College comment: Student learning was the primary driver for the design of most of the space—reference, study areas, classroom, computer area, etc.
- Associate's College comment: Room for the disabilities resource center to provide tutoring for the students they serve.

QUESTION 8. **Project provided for print/electronic interface**
Many responses describe pervasive networking capabilities, network connections in reading rooms and at carrels, and the presence of workstations (variously configured and often with printers) in book stack and reference areas.

- Doctoral/Research University—Extensive comment: Reference consultation carrels for extended exploration of print and electronic sources with librarian.
- Doctoral/Research University—Extensive comment: Rethinking of periodicals room to incorporate print and electronic resources.
- Doctoral/Research University—Extensive comment: Computers added to space for journals, so both paper and online titles could be consulted in same place.
- Doctoral/Research University—Extensive comment: In the follow up project, we completed a new section called Scholarly Communication Center consisting of teleconference lecture hall with 100 seating capacity, lobby for a sizable function, data center, project rooms, and two information handling labs. The center provides service to link resources in multi-formats, helping students to find target items in a hybrid environment.
- Doctoral/Research University—Extensive comment: Just beginning to develop an information commons.
- Doctoral/Research University—Intensive comment: As noted above there were computer clusters located in ten stack areas. There were also OPACs in stack areas and in other locations in the building. The idea was that users would want to use books and computers together. I would not do this if we were to design the building now. It makes consulting and printing hard to manage and most students do not use materials in the way we imagined they would.
- Master's College and University I comment: Our library information network center was designed to provide a 21st century integrated work environment. Students had network access from 132 public computers and over 100 applications, including desktop productivity software, library databases, and Internet access. At the time, most libraries were employing standalone workstations.
- Baccalaureate College—Liberal Arts comment: The print reference collection is now in closer proximity to a main cluster of computers used heavily for reference activities. All of our classroom spaces include document cameras, so instructors can include examples of (gasp!) books and printed documents.
- Associate's College comment: Information concourse; a reference bridge between traditional and technological library.
- Associate's College comment: (My answer is no, but I wanted you to read this.) We have found no interface between print and electronic resources. Humans must make the connection. The formats are as incompatible as an ink pen and movable type.

QUESTION 9c. **Other food services provided for in the project**
Responses mentioning library kitchens or pantries for public events and food service in staff lounges, etc. are not registered here. Respondents expressed the usual range of views about food in the library (i.e., it should be banned or welcomed; use can or cannot be monitored successfully; damage can or cannot be managed). Several respondents described food service as being available in space or buildings immediately adjacent to the library.

- Doctoral/Research University—Extensive comment: [Library name] café will return with the completion of the renovation and will include full "sandwich & coffee" service in a dedicated space which will also provide Internet connections.
- Doctoral/Research University—Extensive comment: Three years ago in [Name] Library (connected to the Main Stacks), the Library built a donor-funded café serving beverages, espresso, sandwiches, pastries, and grilled sandwiches. The café is open 90 hrs./week and 24 hrs. during finals. An outside vendor is operating the Café [Name]. The café is proving to be the most successful on-campus food operation.
- Master's College and University I comment: We provide coffee service during exams and have tea for students, complete with a string quartet, on the last class day of each semester. We also allow coffee in the library in approved cups.

QUESTION 10. **Project provided social space for students**

Respondents frequently described entrance lobbies and atria, group study rooms and other study areas, computer laboratories, and lounges as social space. Other responses indicate that a wide variety of spaces (from elevator lobbies to rooftop "gardens") are used as social space. Several respondents mentioned spaces immediately outside the library and associated with it as having been built and landscaped explicitly as social spaces. It is clear that students will create social spaces for themselves whether or not they are designed for this purpose and in spite of the intentions of librarians.

- Doctoral/Research University—Extensive comment: The original [Name] Library included a multipurpose lobby space used for informal social activities and other student activities including student group fund raisers such as flower sales and bake sales. This space will return to this multifunctional use following the completion of the renovation.
- Doctoral/Research University—Extensive comment: Pavilion will be new student social space—enclosed garden space between two existing buildings.
- Doctoral/Research University—Extensive comment: Large entry atrium soundproofed from the rest of the building.
- Doctoral/Research University—Extensive comment: Enclosed elevator vestibule for students to gather in small groups, socialize, use telephones, etc.
- Doctoral/Research University—Extensive comment: The library is located in the basement of a 1970s building. Portions of the wall were removed to construct two light wells. These are too small for stacks, but provide cozy reading and relaxation spaces, not to mention natural light. Both patrons and staff love these light wells.
- Doctoral/Research University—Extensive comment: Fortunately or un[fortunately], the entire library has become a huge social space. Our usage is soaring, it is hard to find a seat at many times, and we are a most popular destination for our students.
- Doctoral/Research University—Extensive comment: Outside courtyard with fountain and umbrella tables.
- Doctoral/Research University—Intensive comment: In fact in the old library social groups making noise were disruptive so this activity was designed out of the new building. The students of course found their own way to socialize and noise is an issue.
- Doctoral/Research University—Intensive comment: Design included generous space for exhibits, informal social-study sites, and hospitality events, such as receptions and luncheons.
- Master's College and University I comment: Reading areas with lounge furniture; large south-facing porch for outdoor social interaction.
- Master's College and University I comment: Landscape around the library provides a reflective pool with fountain, grass areas, and patio areas with seating. Also, rotunda provides large meeting area and Information Commons provides 150 seats for social interaction and study.
- Master's College and University I comment: The plaza area will include a variety of seating and garden spaces.
- Master's College and University I comment: The project includes landscaping that incorporates a gathering space for students in front of the building. It is at the center of the academic 'horseshoe' on our hillside. We see this as the campus 'living room' . . . with the food service physically separated from the library proper, but spilling outside into a special area for tables and chairs. (Clearly we live in a temperate climate.)
- Master's College and University I comment: Benches inside the atrium for socializing, and benches outside the library and on the library plaza for sunning, leisurely reading, conversation, etc.
- Master's College and University I comment: There's a popular common area in front of the building, which is now the focus of student activity on the college quad.
- Master's College and University I comment: Our library provides a lot of "cubby hole" spaces that student groups tend to claim. We allow coffee in approved cups in the library and on the first floor allow appropriate noise ("active learning area"), so the library is very much a social center. The

building is physically at the center of campus and is between the student center and the residence halls and the classroom buildings. Three microcomputer labs are open on a 24-hour basis. The entire library stays open 24 hours during exams.

- Master's College and University I comment: Glass-enclosed porches which encourage group work are not really group study spaces
- Master's College and University I comment: I consider the entire facility a social space for students.
- Master's College and University II comment: Our facade portico and landscaping provided spaces for students to visit, rest, and study out of doors.
- Baccalaureate College—Liberal Arts comment: Well, yes and no. We did not explicitly designate a social space, but there is an outdoor reading terrace in the center of the building that sometimes serves that function. The most social area in the building, though, is probably the reference computer cluster on the main floor. I'm not sure you can preordain where social activity will or will not occur. In the campus center next door, they built a very attractive "cyber café," but it's not used much as a social space.
- Baccalaureate College—Liberal Arts comment: The tree room on the upper level has some very informal study spaces in an area where trees grow.
- Baccalaureate College—Liberal Arts comment: Library is a social space on this campus. This is an important part of learning and was taken into account when designing the spaces.
- Associate's College comment: There are tiered steps outside the library that provide a natural amphitheatre or teaching area.
- Associate's College comment: A semicircular 'living room' forms the southern end of the building. This is a space that has comfortable lounge furniture as well as a curving 50-foot cushioned window seat. The space is also used for a monthly speaker series in which all furniture is rearranged into a small theatre. A floor-standing dictionary stand doubles as a lectern. An open lobby has a curving wall covered in fabric. This was designed as and is used for rotating art exhibits.
- Specialized Institution comment: Student lounge in the library.

QUESTION 11. **Project provided for future changes in space use**

As strategies for meeting future changes, respondents frequently mentioned open, modular floor plans, floor loading capability for both conventional and moveable shelving, pervasive conduit for electrical power and telecommunications, and flexibility in providing networking technology. Several respondents described the benefits already realized of having planned for flexibility.

- Doctoral/Research University—Extensive comment: By providing a more open floor plan: 1. The studio is developing as a public digital and video lab for student and faculty usage. 2. We are designing a center for teaching and learning. 3. We have added an additional teaching computer lab. 4. We have moved from the departmental reference design to a centralized reference service point. 5. We have added information stations. 6. We have a collaborative AV study area staffed by mentors and tutors from 3 to midnight daily. 7. We have merged serials into the cataloging and acquisitions departments. 8. We have tripled the systems department space. 9. We have added over 100 additional computers.
- Doctoral/Research University—Extensive comment: Flexibility was a big issue, thus, big open floors not filled with stacks have been a big boon. We have moved services, technology, and collections multiple times since completion.
- Doctoral/Research University—Extensive comment: Having a depository for less-used materials allows space in the new . . . campus library to be more flexible. The depository also was a good experience with electronic document delivery for many faculty, giving them confidence in a mixed print and electronic library world.
- Doctoral/Research University—Intensive comment: Adjacencies that will allow future reorganization and merging of similar functions.
- Master's College and University I comment: Design flexibility in HVAC system to allow for movement of walls.

- Master's College and University I comment: To the south side of the library, a plot of land is left open, without anything underneath (e.g., water lines, power lines, sewer, etc.), and the structure of the library was planned so that once another library building is needed, a 50,000 to 70,000 sq. feet building can be constructed, and then the south side of the existing building can be opened to connect to the new building with a multilevel tramway without any structural worries.
- Master's College and University I comment: We tried to keep new areas as multifunctional as possible, e.g., all stack areas have lighting on the diagonal to allow for reorientation (or removal) of stacks.
- Master's College and University I comment: Most of our collections will be housed in an automated retrieval system with 400,000+ volumes in open stacks—this will provide more flexibility in designing and changing use of floor space.
- Master's College and University I comment: Budget realities forced us cut back somewhat on flexibility.
- Associate's College comment: We demanded a robust infrastructure that provided the potential conduit and service connections for five times the current electrical service, made sure the building was properly grounded from all areas, and made provisions in the wiring closets and conduit to supply three times the planned capacity of local area network (including voice, data, and multimedia) wiring. Other than that, we did not have a clue.

Phone Interview Summaries

Phone interview summaries are structured around the questions proposed to the persons interviewed in a script they received before the phone interview itself. To view the script for questions posed to CAO's, click here (goes to p. 71). To view the script for questions posed to library directors, click here (goes to p. 68).

The interviews did not adhere closely to these scripts, either in content or the sequence of questions. The interviews can be read as continuous texts; the questions guiding the discussion at a given point are indicated in capital letters at the beginning of many paragraphs (e.g., question 5 from the interview script for academic officers or, in the case of library directors, question 6 from the interview script, or question F from the interview call procedures).

CHIEF ACADEMIC OFFICER INTERVIEWS

Doctoral/Research Universities—Extensive

INTERVIEW 1: CHIEF ACADEMIC OFFICER
(for the comments of the library director at this university, see interview 8)

QUESTION 1: The interviewee emphasized fundraising as the key role he played in planning the library. He did not expect to have state funds for the facility and was convinced that endeavoring to build the "library of the future" was the only way to attract private funds. Moreover, the interviewee's involvement with the library occurred in a larger context. He was convinced

- that the rapidly escalating costs of libraries made it impossible to continue building libraries based on past models
- that at the same time the challenge of meeting faculty needs for research resources was growing more and more difficult.

Once funding was secured, the interviewee appointed "a bunch of really creative people," including some deans, to plan the facility. He said that his close involvement with the project ended at this point. The creativity of the planning was "very much grass-roots driven. It came from some really creative faculty and some very creative deans, and my particular role at that point was to make sure they had the money and to get out of their way." He did, however, strongly encourage the planning group "to push to the limits, to take some risks. You know, when the building finally came on line . . . , my suspicion was that there probably weren't over a dozen people in the university that had the foggiest idea what it was. . . ."

Asked about the risks taken in planning the library, the interviewee commented on his role in denying control of specific spaces to individual operating units in the new building. This has been important to fostering collaboration, but "it is a battle that you continually have to fight. Whether it's librarians or faculty that have particular projects going on there, or whatever, everyone kind of wants to have their space pinned down and then have it expanded as much as possible. . . . We always felt that this [space] should be something that was organic and would continue to evolve, just as the technology and the uses of it would evolve."

"We wanted to have hundreds and hundreds, and in reality we have thousands of students in this place at all times of the day and night." Mixed in with this are "really interesting spaces," including a sound stage, gallery space for artists, and the capability of producing opera. . . . "But what is missing is we still don't have the level of intellectual creativity—I guess I'd call it research—that I'd like to see. I always

envisioned one part of this being like the MIT Media Lab, where there'd just be lots of weird things going on. . . . We've never been able to stimulate that to the degree I really wanted to. We're right now in the process of rethinking, you know, where this place is going, and what I've strongly urged them to do is to try and get more in the way of research and active knowledge creation going on. Just to build the energy level. . . . Part of the challenge is to get the faculty comfortable with coming in to this non-traditional kind of space. Students have no problem with it; they take to it like ducks take to water. They walk in, and within half an hour have found what they need. . . . They navigate very easily. Faculty are very intimidated, particularly because there are so many students in the building all times of the day and night. So we haven't quite figured out how to get faculty here and engaged in it, and by faculty I also mean faculty bringing in their graduate student research teams. And I'm not quite sure what we need to do with that yet, but it's a conversation I'm having . . . right now. We may try some experiments."

QUESTION 4: The distinctive opportunity that the interviewee sees in library projects lies in funding. He believes there is a lot of "new money" looking for good projects. The money is in the hands of people who made or are making fortunes in technology and who deeply believe in the possibilities that forward looking libraries can present.

QUESTION 3: The interviewee could not comment much on the quality of the planning group's consultation with faculty and students. He emphasized that the planning group consulted very widely with performance companies (e.g., in Hollywood) and technology companies.

The project was informed by a "deep conviction . . . that students would drive the evolution of this facility. It was our belief that with respect to the technology, the students would also be somewhat ahead of the faculty. And for many years, we'd had the philosophy in other parts of the university that you build a very powerful and flexible environment, and then you let the students shape it. So for example, when we first built the place, we kind of built it in the traditional way in which each student would have their own workstation and so forth. And then we began to realize that's not the way students work these days. They work in teams, you know, where three or four students will kind of gather round, and they have three or four workstations. So we kind of reconfigured all of that, to let the students kind of define how they learned and how they approached their activities. And we'd always had a philosophy of not constraining them. That is, there were very few rules. I notice that the very last rule that I thought would almost be a necessity—that we don't allow food or beverages . . . —even that has gone by the wayside. . . . We felt that if we built the space, and did it in a flexible way, the students would define their own learning environment. I think that's what's been happening."

Describing the mechanisms for understanding student learning preferences, the interviewee said that the planning group let the students choose the chairs. It is possible to monitor how various pieces of equipment are used. "I think we're much more comfortable that we're watching students and monitoring what they need and how they're evolving, and we understand that better than we understand faculty. As I say, we're still frustrated that we haven't had more faculty involvement."

The interviewee spoke of the spaces that students can occupy and modify for their projects. "What we found is that a lot of that [i.e., building resources] the students can access quite easily, and they kind of pass the lore of how to access space, get the equipment you need, and use it, in a very natural way. Where we run into trouble is with some of the more sophisticated spaces; for example, the electronic recording studios or the sound stages, where you really need a permanent professional staff. And there we don't have the right financial model. From time to time, we'll have a major production come in and have the resources really to do it, but we need more in the way of seed resources so students can access those areas as well. They can do it on a small scale, but when it comes to much larger projects, we haven't quite figured that out yet."

"Another reason the students have adapted so well to the place is that the absence of visible faculty activity has ironically convinced the students that this is their space. And they take very good care of it. Of course they might feel insulted if they saw faculty beginning to take over certain areas of it, and that's something we'll have to figure out. Right now it's a very popular space because the students say, 'That's mine.'"

INTERVIEW 2: UNDERGRADUATE DEAN (for the comments of the vice president and library director of this university, see interviews 3 and 13, respectively)

QUESTION 1. "The fun part of the process" for the interviewee was "thinking through how to reposition, re-envision the library on campus, engaging in a process of thinking programmatically and functionally, and then taking that information and interacting with an architectural group who is skilled in and experienced in this area."

The interviewee was trying to do two things in helping to plan for library space. First, he wanted to help develop a general vision of teaching, learning, and research at the university and their integration as the fundamental work of the university. "The way we do our work has changed fundamentally, and that change then needed to be translated into a vision of a central resource [i.e., the library] for the university. . . .The second role was then to translate that more directly into what we were trying to do with undergraduate education, to make the linkage highly specific to a whole renewal process that we have been engaged in for the last eight or nine years."

The interviewee defined the institutional roles of the library as those involved in information management and in being "a place to provide the social context for discovery and learning and what I like to call the essential process of bringing meaning to information." "If we believe that the information itself doesn't contain the meaning, that one needs to bring meaning to this information, then the process of multiple perspectives and the interaction of those perspectives becomes as important there [i.e., the library] as it does on the whole campus, as it does in our classrooms. So you know we're committed to a diversity of perspectives. How does one bring that to bear? And I think it is the social context that provides us the opportunity for that exchange. I think also that as we understand learning more and more, and if we use the knowledge base about learning to drive what it is that we're doing, particularly in our teaching functions, we become impressed with the importance of not only the social context but of the relationship as a crucible for nurturing learning. And relationships happen in multiple levels, not just between faculty and students but between students themselves, students and staff, faculty and staff. . . . The social and relational context provides the opportunity really to push the envelope as to what the meaning is of any particular discovery or set of pieces of information, to exchange, and in that exchange process, to sharpen [understanding]. So if we believe that we're all involved in this process of inquiry and investigation and discovery and synthesis, and that that's the common core, what we need then are places for those processes to play out. And I think the library is certainly one of those places—needs to be more so than it has been in the past."

Asked what library space that embodies these ideas would look like, the interviewee said it should be welcoming and have the power to inspire and to "reflect the university at its best." The library would accommodate both solitary study and social interchange. The library should be "conceptualized as a lab, because identifying information and accessing it is just one element. Once you get it, you then have to do something with it, and increasingly that doing something with it is going to be in a collaborative way."

The library should be the place where learning processes are integrated: everything from initial discoveries, evaluation of evidence, to shaping the presentation of the student's work. The library would

give students the opportunity to talk with experts in databases, subject matters, analysis and synthesis, and presentations.

Asked about the value of bringing formal knowledge about student learning to bear on library space planning, the interviewee said his university has been focusing on pedagogical change. "And what's common across that [change] is the recognition of the power of active student learning, and of active agency on the part of the students, which then translates into a whole spectrum of experiential, problem-based pedagogies. . . . [This is] certainly a major change that moved through universities in general and I think research universities in particular, trying to pay attention to how one captures the student's interest and passion, with the recognition that if you get that, then you get the type of self-motivated, self-regulated learning that is what we all [aim] to achieve."

"One of the most underutilized and under-appreciated resources in undergraduate education is the expertise of the library staff in doing guided inquiry." The interviewee then described bibliographic instruction activities.

Asked about how one fosters the ability of students to mold their own learning environment, the interviewee said that the effort in the planning process was to "change the point of view from, 'here are the services I want to offer to you, therefore I'm going to array myself this way,' to 'what are the processes and functions that students and faculty engaged in inquiry would be looking to do,' and I think that was a shift of vantage point so that we would organize things that made sense from a functional processing standpoint—have that be a guiding principle. Also recognizing that it's very fluid. . . . The rate of change of those [learning functions] is very high. So we have to be able to be adaptive and flexible. And I think we've envisioned that there would be ways to reconfigure space. . . ."

QUESTION 3. The interviewee said it would be fair to characterize student involvement in planning as consumer oriented. He emphasized that students were particularly responsive to the incorporation of presentation capabilities into thinking about library space.

QUESTION 4. The interviewee said the library is unique in campus space planning in that everyone has a stake in it. The library brings all divisions of the university together.

He said that a few faculty participated in the "generative part" of planning, while others primarily made claims on planning outcomes. This latter behavior was seen as interesting but not constructive. Off-site shelving was a particular red flag for some faculty.

OTHER MATTERS: The interviewee praised the expertise of the architects. They deferred specific design activities until the programmatic and conceptual parts of the plan were formulated.

INTERVIEW 3: VICE PRESIDENT (for the comments of the undergraduate dean and library director of this university, see interviews 2 and 13, respectively)

QUESTION 1: Asked to define his role in library space planning, the interviewee said he is "an enabler of sensible academic plans. I tend not to get involved in the details, but I feel empowered to reject them out of hand if they're silly." His role focuses on campus planning, site selection, exterior design, and financial issues.

Asked if there have been any silly issues in the library project, interviewee said no, that "we came very early to understand that there is a finite number of books you could store in the center of campus, and

one had to make some choices about what was important to keep here and what could go elsewhere—and then where that elsewhere might be. So really, the first phase of the renovations was actually the building of the compact storage facility, so we could then get a fair number [of books] out of here during construction."

QUESTION 2: "We're tending to emphasize the sort of gathering use space over the simple storage space. Especially given the fact that 800 undergraduates live . . . [near the library], we really want it to be a place where kids go and hang out. So we're probably spending more money in that direction that I would guess most people do."

"One of the balances which has been difficult for us is this architectural issue [of hiding the original building], because it is very expensive to solve. And to what extent do you try to cram that solution into the price of the budget, or to what extent do you let the budget grow, and if you let the budget grow, who pays for it? We have a couple of projects like that, where trying to correct historical mistakes, we've imposed a price on a building that goes beyond what it would normally pay. And then trying to figure out how we broker that cost. I don't want it to come out of social or shelving space, but it does increase the price pretty substantially."

QUESTION 3: The consultation process on this project "worked better than most. The librarian was really dedicated to having a campus-wide consultation."

The interviewee commented that at his university, good learning happens for reasons intrinsic to the institution. He suspects that community colleges, by contrast, would want to pay close attention in space design to successful student learning behaviors, but at his institution such inquiries would produce improvements only on the margin. "I don't think we spend a lot of time thinking about marginal improvements in pedagogy, or things like that. We sort of take for granted that smart kids learn things . . . . When you look at the quality of the whole experience, that wouldn't be a place where I would spend a lot of time." That is to say, given the relatively low impact of such marginal improvements, there are better ways to spend people's planning time and energy.

QUESTION 4: Library planning is distinctive because it takes a long time. That is partly because of the constituency issue, partly because libraries are relatively expensive and require prolonged fundraising efforts. "It's also because, you know, librarians don't own libraries in the same ways that deans own schools. It's much more of a consensus conversation."

In the past, institutions expected to do a major library project once every twenty-five years. Now, with depositories to manage collection growth, we can expect to see library projects on shorter cycles (like scientific laboratories). "We're sort of deliberately trying to push that up, so I would hope the next one is not thirty years from now." Responding to a question about the expenses implied in this view, the interviewee said "we're in the business of losing lots of money elegantly. Some of them [i.e., board members] get it."

OTHER QUESTIONS: The interviewee is interested in the way that architects have come to occupy niches in their practice.

The interviewee defended the traditional view of library space planning. "Libraries are pretty traditional kinds of organizations, and probably ought to be because they are conservatories." He expressed some surprise that we continue to build monumental reading rooms, but acknowledged that people do in fact like impressive gathering spaces. "We're actually looking at being fairly aggressive about social spaces. Food and beverages have always been banned from libraries, and [we're going] to encourage it in certain parts of it."

INTERVIEW 4: CHIEF ACADEMIC OFFICER
(for the comments of the library director of this university, see interview 10)

QUESTION 1: The interviewee described himself as the person who makes the final decision, yea or nay, on the library's capital budget. When asked, he said he also has final responsibility for approving the library's strategic goals, which among other things includes the goal of securing the entire library building for library purposes. The recent project involved freeing two floors for library purposes; there is another floor and a half in the building still not devoted to library purposes. The interviewee focused exclusively on these fiscal and political functions and said nothing about himself fostering library designs that would enhance education.

Asked about the goals for the recent project, the interviewee emphasized student needs—for space that supports their use of information technology and for study space. In the evenings and on weekends, the library is now "close to full."

"I think at some level the library has also become a social place for students these days, in the sense that there certainly is a social interaction that's taking place, a lot of it of course related to the academic work they're doing. [Describing a room with perhaps 100 PCs, the interviewee said] you'd think . . . one student would be working on each PC, but that isn't the way it works these days. Students work jointly around the PC, so it's not unusual to see two, three students sitting in front of a PC working on a project or collaborating on a project together. And these kids aren't playing around. I've many times gone over there to see what's been going on in the library, and they're working. They're using the capability, but they're not doing it as single people; they're doing it as groups. And so that puts a whole new demand on the library. Now if you go on the other floors, where we don't have banks of PCs or something like that, we have study rooms and so forth, around the periphery, clearly collaborative study is a major thing. You walk by in the evenings, you'll see groups in there working on problem solving or whatever it may be that they're working on together. It's not unusual in the study rooms to see four, five, six students all working together in a circle, and rarely do I find them goofing around. They're usually very serious. It's a very interesting thing. . . . Our library is noisy, compared to what I'm accustomed to."

The interviewee said the library will need more shelving space in the future and more reading areas, especially for the sciences. There is not enough space in the building to meet all of these needs.

QUESTION 3: The interviewee believes consultation with faculty and students was successful, based on the absence of objections to the decisions that were made. He does not believe students and faculty regularly understood the rationale for those decisions and doubted that securing such understanding is important. The renovations produced high-quality space and generated much satisfaction with the project. This outcome validates the process that produced it.

QUESTION 4: The only thing unique or special to library planning that the interviewee identified is the provision of electronic capabilities. Otherwise library planning is like other planning, where it is important to take a strategic view of the future and provide for future changes. The interviewee wasn't sure how this latter was done in the recent project.

OTHER QUESTION: The interviewee commented on the difficulty of moving academic units out of library space, saying that success depended on providing them with space of equal or better quality than what they had in the library.

Doctoral/Research Universities—Intensive

INTERVIEW 5: UNIVERSITY PRESIDENT
(for the comments of the library director of this university, see interview 15)

QUESTION 1. Asked to describe his role in library planning, the interviewee said "I have never forgotten that I'm a faculty member and probably in my world view of myself I see myself first and foremost as a member of the faculty. And I just had the notion that the education we were providing our students was not going to be as worthwhile as it might be if we didn't have the resources available to them for study and research. It was during this time, of course, that the evolution of the electronic age was progressing quite nicely. And it also became clear to me that we needed a place on campus that could serve as not a library in the traditional sense but more as an information center that would be able to tap the resources literally of the world. So it was my vision that we would indeed create such a center that would be a repository for written materials but also an access point for our reach into the electronic media."
The interviewee spoke of a particular responsibility he felt to avoid failure in this project. Specifically, this meant

- overcoming a long history of being rebuffed by the state for capital funds for the library
- managing opinion in the local community, which takes a proprietary view of the university and favored a conference center and other projects over the library.

On the evening when the state bond referendum funding the library and other projects throughout the state passed, the interviewee publicly declared victory on the eleven o'clock news. From that point forward, he was somewhat less directly involved in the project. He worked with an advisory committee consisting of the architect and library director (both of whom he praised highly) and a group of faculty, deans, and library staff. The interviewee characterized his involvement as "supportive review" rather than as "critical analysis that would require change" in the project.

QUESTION 2. The interviewee described balancing attention to traditional and emerging needs as difficult, given the imperative need to provide additional shelving for the collections. He was conscious that major library projects occur infrequently, so that "if we were going to have a facility that was in any sense equipped to deal with future academic aspirations of the institution, we were going to have to incorporate that [electronic] access notion into the project." The interviewee spoke of having the "incredible benefit" of an excellent library director, on whose sense of program balance he could depend.

When asked about reader accommodations, the interviewee described how little students had used the former library. "The academic tenor of the institution was being negatively influenced by just simply the cramped physical conditions." The library director and especially one dean on the advisory committee made it their business to build excellent reader accommodations into the project. "That has worked out brilliantly. You go to the library now, and it is a very active and alive place, and I think that may be the singularly most important outcome of our project." Asked if he intended this going into the project, the interviewee said, "No. My most important outcomes were finding a place to put the books and secondly trying, again, to make sure that the library was the information center of the campus, both in terms of hard materials and access to the external media." The interviewee described the success with readers as "some form of serendipity, I guess." Asked if others were more focused on this outcome than he was, the interviewee responded, "yes, possibly." He referred to the library director, a couple of committee members, and the architect, who did a splendid job of eliciting campus needs as regards the library.

The interviewee re-emphasized that the building responded to "an incredible need, as I said earlier, to just simply having a place to keep the materials. That drove everything in my mind. Secondly was this notion of an electronic access point."

QUESTION 4. The interviewee said that what is distinctive about library planning is the extent to which "virtually every faculty member on this campus was actively interested in what the library would be." Generally, faculty interest is limited primarily to those who will occupy the building.

Baccalaureate College—Liberal Arts

INTERVIEW 6: CHIEF ACADEMIC OFFICER
(for the comments of the library director of this college, see interview 25)

QUESTION 1: Asked why he stayed so closely involved with the library project, the interviewee responded: "Well you know the library is a central part of the academic program; it is absolutely vital to the functioning of all of our academic departments. So I feel a strong need to be a part of the deliberations simply because of its centrality to the academic program. And also, I want to make sure—you know, in all projects like this there is a balance between academic priorities and ambitions and fiscal realities—and I thought that my participation would do something toward making sure that the academic priorities were not totally sacrificed at the alter of fiscal realities."

The interviewee wanted particularly to protect the library project against the view that library buildings are becoming obsolete with the emergence of information technology. He wanted to protect the idea of a traditional library as a vital component in the life of the college. "There are voices out there that would tend to feel that the library is something of an albatross around an institution's neck, and that's not the case at all."

The interviewee said it was "just interesting" to be part of the library deliberations. He found managing competing values to be especially interesting, especially given the relatively modest project budget.

The interviewee said his chief contribution to planning was at the high concept level.

- This was perhaps most evident in the decision to place the library entrance on the second floor, in effect making the ground floor a basement devoted primarily to shelving functions (given the ability of the ground floor slab to support high-density, movable shelving). This decision enabled the college to avoid off-site shelving and to keep the collection browsable.
- The interviewee described the new part of the library, which overlooks the main campus green. He described two reading spaces: one a series of large windows overlooking the green, and the other a large high-ceilinged reading room. The reading room was the brainchild of the president; the interviewee was responsible for the spaces overlooking the green. "They do give a connection between the academic program going on inside the library and the general life of campus going on outside the library."

QUESTION 2: Compromises in planning were driven by the limited funds available. The college did not, for instance, build a new library altogether, as was considered at one time. The interviewee's primary concern was that what they built would not give the college the three decades of collection growth space that was wanted; it may in fact give less than 20 years of growth space.

When asked whether he thought the collections might once more drive readers out of the library, as had happened before at the college, the interviewee answered: "It certainly could. It's probably ten years down the line . . . but I could see that happening. . . . It's just the realities of working within a fairly tight budget. . . . I will say that our reading room is likely to remain sort of sacred space. . . . One of the things that happened when we got done with the renovation and expansion is that the space got so much more attractive that the number of visitors simply doubled or tripled. It went way, way up. And so the question

is, can the library if it gets significantly more full [with print material] still accommodate that number of students? And it will be difficult."

QUESTION 3: The interviewee described faculty participation in planning as strong, while student participation was much weaker. Faculty worked in a collegial way with the architect, librarians, and administration; there was not much conflict. The most critical junction came with the decision to treat the first floor as a basement for shelving. Faculty "flexibility" in accepting this decision was critically important to keeping the library project within budget.

I observed that this describes the ability of faculty to be obstacles in planning and asked whether faculty played a more proactive role. The interviewee said the project was not faculty driven; faculty were reactive rather than proactive. "They were not on our committee what I would characterize as being the generator of ideas."

"The question is how much real investment do faculty have. And they're invested in the library, but it's not like where they live. . . . [The interviewee drew comparisons with planning for a science building.] And this is a building, you know, this is where these people live and work every day. So their involvement with respect to making suggestions and pushing various things is really noticeable. It's a huge difference. . . . With the library, I had the feeling that people don't feel as personally invested. . . . They want to have a good library; they want to make sure that we can continue to develop the collection and that students will have a good place to work . . . , but I don't see the faculty feeling like it's some place they're going to spend, you know, most of their working hours. And so I don't see them as having that kind of level of involvement with the project. If I look at where most of the ideas came from, they came from either the architects, the library staff, or the administrators such as myself and the president. The faculty were involved, and we wanted to make sure that it would work well for the faculty, but I can't say that they were the engines behind the planning."

The interviewee commented on the center for teaching and learning in the library, but faculty do not think of the library as a place where they "do teaching. I think they think of it as a place where they send students to work, but I don't think they think of it as a place where they do teaching." This response suggests the interviewee thinks of teaching space solely as a space for formal, faculty-led instruction.

The interviewee believes the library is "certainly a place for learning. There's no doubt about that. It is probably the most important place for learning on campus. . . . The entire building is created with the idea that learning will take place inside. . . . The entire thing is created so it can produce an environment for students to learn. . . . In a way, that sort of idea that it is a quiet space, a reflective space, almost is pulling in a different direction than making it a teaching space. Also, the fact that we don't have that big a library, so it would be difficult to make it serve both functions and have them not conflict. . . . But as we use it here at [college name], it is predominantly sort of a traditional place where students go and study and do research, as do faculty members."

To create a building to accommodate both the traditional uses of the library and teaching would have required a larger building than the college could have afforded.

QUESTION 4: "The library planning is almost more like the campus center planning we had. . . . It's a common space; it's not anyone's space in particular. And so as a result, people such as myself have more of an opportunity to make an impact than in a science building or in a . . . wing [of another named academic building], where it is really sort of owned by the faculty members in that particular discipline. And because of the common space, I think that I probably had a more substantial impact on the planning than I've had in any of these other projects. . . . Athletics is sort of like the library as well, because it's a

common space. And in a way, that's what differentiates the library or the student union or the athletics facilities from a science building or . . . [another named academic] building, which is really felt to be the sort of possession of the faculty members in that particular field."

OTHER QUESTIONS: The planning work was very successful. "I don't think the library is particularly visionary, but it's very, very functional. It's aesthetically very pleasing."

LIBRARY DIRECTOR INTERVIEWS

Doctoral/Research Universities--Extensive

INTERVIEW 7: DIRECTOR OF A PRINCIPAL LIBRARY UNIT

QUESTION F: The . . . renovation of the library [in the early 1990s] was the turning point for its engagement with electronic resources. This happened not as the result of foresight but because of coincident changes in librarianship and higher education while renovations were being done.

The project had two objectives:
1. Expanded stack space for the collections
2. Improved work space for library staff

QUESTION 6: As a case in point, the original planning for the renovations included only a large room for computing. During construction itself, it became clear that what was needed was the ability to distribute electronic resources. So an emphasis on networking emerged strongly. "These changes were almost forced by the teaching side" through changes in modes of teaching, illustrated by an increasing use of electronic resources in class assignments and the university-wide adoption of Blackboard.

The transformed character of the project came about because the bids came in 10% below estimates and because of the willingness of the university to use project funds to build an additional floor of shell space. The library was responsible for raising the money needed to fit out the floor for use.

Many faculty originally wanted the shell space used for additional shelving. A five-member exploratory committee was appointed to consider alternatives; the group included four newly appointed, younger librarians and was charged with "enterprise thinking" about the future of the library. Their recommendations (see below) won support in a vote of the other librarians. The library director at the time was initially ambivalent but was eventually convinced.

The new floor was designed as a scholarly communication center, which allowed the library "to move forward." It includes a large, technically well-equipped auditorium, information and data laboratories, and a research and development center that helps students use electronic resources effectively. The center depends on a fee structure to pay its operating costs, including the replacement of hardware and software.

QUESTION 7: Library staff addressed faculty misgivings about this design through individual conversations and through the conversion to the project of an influential American historian, who became convinced of the value of the auditorium and appreciated what the library was doing in developing online resources for state history, oral history, and . . . [another topic].

Teaching faculty "can block [a project] if they want to. And they have the power to convince students. . . . I learned about campus politics. You have to work with them [i.e., faculty] and through them, and you cannot lecture them. . . . [In a publication about the project], there are lots of articles we wrote in advance, but we always timed the time of publication. We didn't want to give the impression that we were the leading edge. . . . It just doesn't work in that way. . . . So even though we had a good idea, we kept it internally until . . . the leg work was done."

Other key elements in the political management of the project were excellent relations with the university's facility design office, the Trustee subcommittee concerned with facilities, and the university Senate.

The interviewee said that what students wanted from the project was good study space, more open hours, and—a more recently articulated need—group study space. Recently, the availability of electronic reserves has relieved the need for extended hours. Student members of the planning groups rarely attended. The interviewee regards students as transients with relatively easily satisfied needs who otherwise tend to reflect faculty viewpoints

QUESTION 4: The new stack space brought home to the librarians how poorly they were caring for the print collections. Renewed attention to weeding, to preservation, and to stacks cleaning date from the renovation project.

The growing use of electronic journals and of JSTOR has slowed the expansion of the print collections. Library renovations were expected to provide five years of collection growth, but current estimates are that in 2003 the stacks can still accommodate two years of growth.

Looking forward, the . . . project will probably be the last major addition of on-campus shelving. The university will either expand its own annex facility or foster a statewide or multi-state consortium for the construction of a shelving facility. Good retrieval services of material from the annex have quieted faculty concerns about off-site shelving.

QUESTION K: The interviewee emphasized that librarians should avoid short-term thinking in facilities design. She illustrated this point by saying her library had ordered some furniture tailored to large computing equipment. That furniture is now proving to be less useful. At present she would focus on traditional furnishings, especially chairs, that are comfortable.

The interviewee commented on decisions driven by the architect. One involved carpeting that has not worked well because of the difficulty of keeping it clean and because it has not worn well. The other involved architectural statements in the renovation. These include a slanting wall in one area and a spiral stairway. "I remember saying, . . . this isn't a concert hall. . . . Now I think it is one of the most beautiful things. And the students, at the end of the year, when the alumni get together, they actually use the stairwell as a stage for choirs [and other things]. And I am sure the architects did not think of the multiple uses. But they did it for the sake of beauty. . . . So some things will be much better in the next world."

INTERVIEW 8: DIRECTOR OF A PRINCIPAL LIBRARY UNIT
(for the comments of the chief academic officer of this university, see interview 1)

QUESTIONS F & G: The chief academic officer was determined not to build another "regular old library."

The key design idea for the new library was that its administratively independent units should work

"side-by-side;" the key measure of success is how "neighborly" these units are. The groups work in a federated approach without formal administrative ties. "But informally we have two or three groups that meet on a fairly regular basis. . . . [One group meets monthly with the chief academic officer,] and basically he's taken on the role of guardian angel. . . . And so we have these regular meetings and talk through . . . where are we evolving to. . . . It's amazing how casual conversations in that context wind up to being ongoing programs very quickly."

The "building doesn't belong to any academic school or college, and therefore it's open to anyone in the university to use."

QUESTION 6: The interviewee said that the question 6 hypothesis may well be true for most library projects, but it does not describe his library. "Space in the building was designed to be shared." Most fundamentally, what "side-by-side" means is that one often cannot tell what physical space "belongs" to what program. Typically in a branch library, for instance, the library occupies its own discrete, contained space within a building; it is a library enclave and manages its own space. This enclave idea is emphatically not operative in the new library, where the possibilities that proximity create are always being explored.

The interviewee exemplified this by talking about library staff interaction with the software evaluation staff of an independent group: "Proximity of is course the thing that really does it more than anything else. Proximity to the special things that exist in this building, as well as proximity to the other staff. For instance, we're just starting to redesign our Website for the library, so what I've got my staff doing is talking to the software assessment team. . . . So that's the kind of resource that typically isn't just down the hall in a library building. And therefore we can take advantage of that, and we can learn from their expertise. We improve ourselves, our knowledge base, while improving our Website. Now we also do things for them. And it goes back and forth. When we first brought all the public computing online in the building, the library was the one that made the argument that it would probably help students a whole lot—since we have lots of different kinds of computers . . . —if when the students sit down, regardless of brand, they find the same grouping of software available for them. In other words, a first pass at simplifying navigation, because we have lots and lots of software available for students."

"As staff group and faculty, we're constantly trying to explain all this [technical] stuff to each other, and justify it and stuff. And students just walk in and think, 'Yah, this is the way it's supposed to be. What's the big deal?' It's like, 'Why isn't every other place doing that?'"

Speaking further about the difference between his library and a branch library, the interviewee said that "in the planning process for this building, . . . the library was uncomfortable with basically being in a building that had such a large non-library presence, and probably felt a little threatened by that, and at one point said, 'Well, just give us our space, and we'll take care of designing that; you guys can go do whatever you want to do.' And that clearly was not going to be the way this was approached. It wasn't until really the library gave that up—and a lot of preconceptions were dropped by everybody, really—that things became much more integrated."

QUESTION 2: The library has a large atrium, lots of open study space, and some gathering space was self-consciously designed as social space for students. The full potential of this space has been realized only over time, as the originally sterile design has been softened and warmed.

Speaking of space with easy chairs and whiteboards, the interviewee said it "is quite amazing how, without having any particular prompting, students have always felt comfortable gathering chairs and using whiteboards and things. . . . The designers had wanted it to be even much more dramatic than

I think it was in reality. There was a lot of talk about just open space—leave furniture so students can rearrange it in ways that suit their needs. Projects could happen in that space and then go away—almost like an academic playground of sorts. . . . They very much had thought of something that would allow students to be very hands on. I don't think in practice they could figure out how really to make that work though."

QUESTION 11 (and 6): Staff talked about doing a formal post-occupancy assessment of the library after it opened, but nobody wanted to take the initiative to do it. Such an assessment might be done now, however, to help nurture the "constant evolution" of the facility.

As more and more resources are made available electronically, there will be less need for library shelving. Print collections can be moved out of the building, creating the question: how will the vacated space be used? Library staff want to preserve the greatest possible flexibility in the use of space, so as to build effective learning spaces. "Even if there's pervasive computing, so everybody's now got a computer on their belt, they're still going to want places to go. And the library is one of the few places on campus where you can be productive and social at the same time. And we can start to think about what kinds of environments are conducive then for study groups and study teams, and what would bring faculty into our building to interact more with students. . . . Here I don't know if we do know . . . [how to do this.] There are certain things that do bring at least certain faculty in—like again our production studios that double as theatre spaces. Clearly, [some faculty] . . . are in the building working side by side with students. That is great, really great! Now how do we spin that out, how do we work that for . . . [other] faculty?"

The interviewee described a pair of design labs on the main floor available for "programmatic leases" of from six to twelve months. Individual projects would gain space in this way; they were required only to find some way of sharing their program with others in the community.

QUESTION 7: The interviewee said that at least twenty different committees were involved in planning the new library, but very possibly (he was not at the university at the time) there was no systematic assessment of student needs. Such an assessment might have helped, but the emphasis was on introducing technology.

INTERVIEW 9: DIRECTOR OF A PRINICPAL LIBRARY UNIT

QUESTION F: The book stacks had become a year-round oven for the collections, and the building had no networking capability. In the 1980s, the library's first computers regularly blew the library's fuses.

The primary goals of the addition were to provide good HVAC in the book stacks, to accommodate collection growth, to create a robust technical infrastructure, and to provide flexibility for future changes. There is no reason to believe there will ever be another addition to the library building. The project has made the library a "high-tech tree house in the woods."

QUESTION G: The interviewee emphasized the complexity of getting state projects funded. Projects are subject to shifting political priorities and many delays. The interviewee hopes to bring the addition and renovation project, started in 1986, to completion within 18 years.

QUESTION 9: Responding to a question about how the conception of the library project changed over its long gestation, the interviewee said the premium from the first was on flexibility. Planners knew (correctly as events have shown) that spaces would be used differently from the plan, even though there

was no way to predict the nature of the needed changes.

Asked if the 1986 argument for the project needed to change in 1996, or today, the interviewee responded: "Sometimes buildings are planned in a vacuum . . . because of funding streams and long gestation periods and things like that . . . and because we're a complex organization. In some ways it would be nice to think of the library in the larger context at the university level. And [to] think what other services would be appropriate for the library and to build those things into the library. Sometimes I think those discussions don't always take place, and I think they should. What happens within the library world is that you worry you're going to lose your space. It becomes 'your space,' and you're giving it up for some other function instead of thinking, well, what are the services and programs we'd like to put in this central campus building, and how do we design them cohesively."

In the past, the library had some features not common in libraries of its time: a café and a computing center. "What we were limited by was the building's structure. . . . [The new addition is an open building and few things have been put "in concrete."] Walls are really your limiting factor, I think. . . . By putting in walls, you make things definite when you live in a very indefinite world."

QUESTION 6: Explaining the conservative, evolutionary character of library space design, the interviewee said: "I like to think of the library as an intellectual and social commons on the campus. You know we have a big campus at [university name. At this end of the quadrangle] there is no student center or gathering spot. So the library becomes a place where a lot of different activities take place. . . . [The library was] a place where you have . . . [a] club selling flowers and activists signing petitions and bake sales for a sorority. You have a sense of it being a community commons, and then on another floor you have it being a place where people could get help with whatever they needed help with, and in another place it could be a place where they learned how to do something. So if you think about those things in the most generic ways, we are still trying to capture that sense of social commons and intellectual commons in our buildings. . . . We're never going to get another building. We're never going to get another addition, and I don't see our collections growing at the same rate as they have. . . . There are going to be major changes in the way we store printed materials. So you have that thought. On the other hand, you have to make a compelling case to a funding provider as to why you need a new building. And there still is a need to preserve and make accessible your print collections. You still see, at least until I retire, the need for some printed materials on campus. We're designing to functions that I hope will still be imbedded in the library of the future, in terms of intellectual and social commons for students and faculty."

Information technology itself evolves, and we are still dependent on a lot of printed volumes. "I think of us as living in a hybrid world right now."

The interviewee said she thinks library management systems should in concept be revolutionary, not evolutionary (i.e., they should present the information world in a much less fragmentary way). Asked if she sees any opportunities for revolutionary change in library space design, comparable to the need for revolutionary change in library management systems, she said: "If I had a blank piece of paper and the promise of some funds to be able to do something different, the first thing I would do is work with the office of student services, the [university] technology folks, and say, what are the services we want in this building? And how do we achieve some synergy among our programs to be able to provide that? That would be my starting point, and I think that is perhaps revolutionary in that libraries haven't shared their space necessarily with other campus entities. Or their thinking."

QUESTION K: The interviewee emphasized the importance (and pleasure) of working with an architect who listened to the library and respected its views, so that the architectural design and the artistic gestures of the project developed as a part of the library's vision of what it needed.

INTERVIEW 10: LIBRARY DIRECTOR.
(for the comments of the chief academic officer of this university, see interview 4)

QUESTION F: The project had two objectives: the provision of more seating and more shelving capacity. The project involved the conversion to library use of two floors in the building that had previously been assigned to non-library functions.

QUESTION G. More than anything else, the interviewee wanted to create an atmosphere that would attract students to the library. He wanted students to be eager to come to the library. He turned to furniture and lighting to achieve this effect.

QUESTION 7: The interviewee surveyed both the faculty's and students' interests as part of planning library renovations. Faculty did not show much interest, even in the focus groups he convened, beyond expressing the need for faculty carrels. They also showed little interest in student needs, though after the fact faculty have been impressed with the improvements secured for students.

The survey of students confirmed the library staff's sense of what was needed. The provision of small group study space was "one of the key developments that we picked up as to how the students teach each other and learn from each other." Students have valued these spaces highly. They are self-policing in their use of these spaces, in that groups can always readily evict individuals who are using the rooms.

QUESTION 8: The interviewee maintains very strong working relations with the university's chief academic officer, president, and treasurer. These relationships have been critically important in winning support and approval for library renovation. These officers look to the library director to guide renovation (and other library activities) in ways that support the institution's academic mission.

The interviewee also cultivates good relations with student association officers. The willingness of these officers to support library renovation and its goals was important.

QUESTION 4: The interviewee expects to cap the collections in the library building at 750–800,000 volumes. In the future, student study space needs, instructional space, and a facility for training faculty in the use of electronic resources will be strongly favored. The library will depend on an off-campus shelving facility to meet future shelving needs.

QUESTION 10: The library did a post-occupancy assessment of the renovation by surveying students as they entered the library. The survey identified one or two things that had been done wrong, but otherwise the library was encouraged by the survey responses to believe the direction taken in the renovations was the right one.

More generally, the renovation project has been much praised and is widely regarded as a "tremendous success."

QUESTION 2 (focusing on social spaces): Socialization "is really one of the reasons students come here . . . whether we like it or not."

The library tries to direct social activities to the lobby areas on each floor and to its café. Beyond that, the interviewee encourages the use of the building for other purposes, notably the exhibit of student art and a series of library-sponsored lectures and programs. "We have two . . . [events] a year, where . . . [in] our twenty-four hour room [we] completely take out the furniture and convert it to a huge coffee house with

free coffee and pastries and with walk-up entertainment, like an old-fashioned coffee house: reading poetry and singing songs, and stuff like that. And it's really very popular. And this is run in conjunction with the student program board."

The interviewee established a student advisory board and a student liaison position. The latter is a paid hourly position (now also earning tuition remission) functioning as a kind of ombudsman. Students apply for this position. The liaison position is also involved in arranging activities and in strategic planning for the library. The position has "been very, very successful." The position has a board and open meetings, with agendas, that students are invited to attend. "We listen to them [i.e., students] as they tell us what they like and don't like about the library. . . . We get their input on budget issues. When we go to our advisory board, we lay out a whole series of things and talk with them about what they sense the priorities are. And that has really been very helpful. We have learned so much about what the students are thinking that it has helped us tremendously." The campus-wide value of this position was evident, for instance, in the decision to charge for printing services across the campus. Given the use of course management software, the decision to start charging for printing in the library and elsewhere would mean that students would have to pay for large amounts of material that they had previously received free as it was distributed in their classes. This would be a significant cost for many students. "We learned about this from one of our student advisory boards, and as soon as we heard about that, I sounded the alarm with the labs and the administration here on campus. And we postponed everything and took a year to figure out how we were going to do this. And I got all the libraries to work together on this. And fortunately, by the time we came up with the implementation, the impact was just a whimper. We got practically no negative impact because we worked with the students; we were able to work with the student association and everybody else to try to come to some accommodation and get our message across and hear what their reaction was. And if I had not learned that [i.e., the negative impact of charging for printing] from my student advisory board, we would have been up the river and gotten into this thing and had a tremendous political problem here."

QUESTION 6: The interviewee agreed with the hypothesis about evolutionary change in library space design. "What I've struggled with here is the challenge of trying to be responsive in a faster way to what clearly everyone of us here realizes is happening." Much of library design reflects the campus environment and the traditions of libraries. The interviewee is trying to position the library so that it represents central academic values and commands ready support. Interestingly, "the library is much more aware of what is coming down the pike in terms of changes in instruction and technique than the administration or even our information technology people outside the library. And so we do have influence in terms of identifying that, but what we don't have is that kind of power, that kind of influence that would result in having support to make those kinds of changes. There are so many kinds of things that the university needs to change, they tend to have shorter-term goals than having the longer-term perspective."

INTERVIEW 11: LIBRARY FACILITIES MANAGER

QUESTION F: Library renovations were driven by two factors:

1. The imperative need to add shelving for the growing collections. This was done by constructing compact shelving in the basement, thereby increasing the shelving capacity by 30%.
2. The wish to consolidate and enhance specific services, such ILL, reserves processing, circulation, and the privileges office. These changes themselves have underscored the need to rethink the reading rooms, the focus of current space planning.

QUESTION G: The recent project was to be the first in a number of phased renovation projects. Those next phases have been delayed because of staff exhaustion after the first project and by changing campus priorities for capital spending. The library agreed to focus for the present on working with an architect to understand options for renovating the reading rooms.

QUESTION 4: At one time, library staff thought the new compact shelving would give them 10 years of collection growth. After the collection was shifted using the new shelving, it became apparent the library would not have that much capacity for growth. At the same time, readers have been very pleased with the improved, rationalized access to the collections made possible by the new shelving.

It is apparent that the need for more shelving must be a major concern for the library. The library has financial support from the campus administration for studying options for meeting future shelving needs. These options include adding a shelving wing to the existing library and building an off-site shelving facility. The library did *not* want just to assume that an offsite facility was the appropriate response to future shelving needs at the university.

Whatever is built will have environment conditions designed for the preservation of library material, rather than the comfort of readers.

Library staff and the advisory committee are considering the likely impact of electronic journals on shelving needs, but no policy decisions have been made. The library will remain a library of record with a large print collection. It has not thought about enhancing ILL and document delivery services as a means of controlling rates of collection growth.

QUESTION 6: The library has worked closely with the teaching technology group, a unit of academic computing, which could be located in the library as a result of the renovations. This brought library systems staff and the teaching technology group together in very productive ways, especially as regards planning for the reading rooms.

The library is likely to create a technology-enhanced reading room in the library, modeled on the very successful computer cluster in another campus library that features lots of space for students to work collaboratively with one another, scanning and multimedia equipment, and places for TA's to work with their students.

The interviewee agreed that at his university, library design has changed incrementally, through the observation of what works well, and by talking with users about their needs. The library has observed, for instance, that students like to have large work surfaces with technology capabilities very prominent at them.

QUESTION 11: In the past, people at all levels in the library and in computing services worked together easily and successfully. Nonetheless, bringing the teaching technology group into the library demonstrated how many opportunities for fruitful collaboration were being missed or under-realized. The fact that the two groups are working in the same space has made for much stronger collaboration, as for instance in the campus implementation of Blackboard and in the digitization activities of special collections.

QUESTION 2: As a part of planning for library renovations, the library hired consultants to do surveys and conduct focus groups with faculty, graduate students, and undergraduates. There is no culture of formal assessment at the university, but library staff learned a great many specific things about the manner and extent of library use from the survey results. They learned, for instance, that people liked the

way the library facilitated their work and that the actual occupancy rates of the library were lower than the staff's visual impressions suggested.

The library has good data (from automated operations) about who enters the library and about the use of the print collections.

With the renovations, the library has become a very attractive, a very pleasant place to work. "A lot of these students can do their work elsewhere, but they appreciate being with others like themselves who are doing serious work."

INTERVIEW 12: LIBRARY DIRECTOR

QUESTION F: The library had space for about 600 students in 1992, down from space for 1,600 in 1982. Collection growth was dominating the use of library space, even with the provision of some off-campus shelving.

QUESTION G: The library consisted of three different buildings, constructed over a 65-year period, that were not well integrated and that were all underfunded when they were built. The library was "among the worst in the United States."

QUESTION 8: A 1982 consultant's report found little need for additional space or improved accommodations. There was little disposition to act on the part of campus administrators or the state legislature. A new provost arrived in [date] and students organized a sit-in to complain about the library in 1988. The students called themselves [organization name]. Student activism caught the attention of the president, who authorized another consultant's report.

The library project was quite lucky in that overall the state fiscal condition was good at the time. The governor resolved to use some one-time money for buildings, and the library project became one of them because the university was ready with a program statement and cost estimates.

Students were centrally important to getting the project going. Student leadership was involved in all planning for the project. Students wanted places to study and air conditioning. Before the project, students were "overall appalled. In general, the student view of things was 'Don't go there; you won't find anything you need.' We were just sort of a place that did not figure in students' lives." As the project gathered support, the student senate authorized a referendum, which passed with a 97% affirmative vote; it called for a $5 million allocation of student fee money to the library project.

Student desires for the project were "relatively visceral." They included a study space open 24 hours a day, access to food and drink, and group study space.

QUESTION 6: The interviewee agreed that the library project, guided by a program statement written in 1992, was quite traditional in its basic concept. Librarians were not confident they could predict library space needs between 1990 and 2020, their planning horizon, and they built "pretty traditional space." They particularly wanted to create a flexible, open space, which in fact has lent itself to many subsequent alterations; they were equally concerned to provide a variety of spaces available for students.

"Ultimately the thing that has saved us is just the opportunity to be flexible and to change with the needs of time. Probably the most outstanding thing I can say about our project is that it has given us the opportunity to be completely flexible and grow with the needs of students."

The interviewee would not today plan for library space differently from the way he did it earlier. The library is not in a space bind on any issue, partly because change is relatively easy. The library has, for instance, recently collaborated with campus information technology staff to create in the library a media center, where classroom presentations and other education and teaching materials can be developed.

QUESTION 10: The interviewee said that a formal post-occupancy study would likely be useful, but the clearest measure of success is students voting with their feet. Students now come to the building twice as often as in the past, and they stay perhaps four times as long. A more recently developed information commons has contributed significantly to this result.

"Just the most notable thing about usage is . . . the extreme growth in group study. . . . [The interviewee described a large open area with a capacity for 250 filled with tables that seat 4–6 persons each.] We're seeing that virtually all of [the tables] are filled with students working together, and . . . the thing that makes us happiest is that we somehow stumbled into a really high-use kind of thing here that reflects how people function within their classes and work with their fellow students. . . . [This space] will be filled, literally every chair, . . . and they're all talking at the same time. And the hum that rises above this is just amazing. And they don't care. . . . There's all this din that occurs [from] hundreds of students in this same space, all working together and all talking at the same time. While immediately adjacent to a typical space like this is a space with like 60 computers, and they're all clustered around the computers as well, working together in some cases. Somehow it just all came together as a very useful space for students. . . . We just beam with pride. Every time I come down the elevator to leave, and I see these hundreds of students out there—that just never happened before."

QUESTION 4: The library has a satellite shelving facility that is being upgraded to accommodate about 425,000 volumes. Compact shelving was extensively used in the renovated library, and further compact shelving can be installed in some parts of the building. The interviewee believes the library has perhaps thirty years of collection growth capacity.

Preservation conditions for the collections were poor in the old buildings. High-quality HVAC was installed as part of the project; there have been no reader complaints about HVAC.

QUESTION K: The interviewee emphasized the following items:
- The project provided a 24-hour study space for 200 students, which has proved too small. This space offers vended food service.
- Students wanted increased library hours. The library remains open until 2:00 a.m.
- Students want computing facilities wherever they go on campus. The library offers the biggest single computing facility, including one open for public access.
- The chief problem with the project related to the security of external doors.
- "Integration" is the library's watchword guiding the balance between print and electronic resources. Everyone seems happy with what has been achieved.

INTERVIEW 13: LIBRARY DIRECTOR (for the comments of the vice president and undergraduate college dean of this university, see interviews 3 and 2, respectively)

QUESTION F: Library renovations will be done in three phases over the next several years. Project objectives are to:
- Restore collection and user spaces that over the years have been taken over by other functions
- Improve the aesthetic quality of library space, to match that of other campus buildings
- Institute more intelligent planning for technology, especially by designing the technical infrastructure

so that it can adapt quickly to change
- Consolidate and rationalize library services, now offered in seven different locations on four floors
- Configure the three buildings that constitute the library so as to make a rational sequencing of the collections possible.

QUESTION 7: Planning began with a campus-wide committee of faculty, graduate and undergraduate students, information technology staff, and librarians appointed by the provost and charged to re-vision the library. The committee worked for eighteen months, "putting a stake in the ground about what this place should look like." Its report was very widely reviewed and commented on throughout the campus. An architect was hired only after this process was completed.

One of the things that strongly emerged in the report was the rich set of opportunities the library has for collaboration. These opportunities spring fundamentally from the new curriculum the university recently put in place starting with the freshman class, featuring new requirements for writing and research that had library implications. The undergraduate college has established a center for teaching, learning, and writing to offer tutorial assistance to students. The center has a satellite operation in the library. This drives the need for group study space, not adequately provided elsewhere on campus. The new curriculum also includes some information technology competencies. The library needs to create "spaces where that can happen."

The provost's new strategic plan for the campus also created opportunities for the library to tailor its plan to mesh with the campus plan. This had implications for space planning with regard to the ubiquitous presence of technology and the mandate that faculty use technology in the classroom.

The interviewee said that no formal assessment of student learning modes was undertaken as part of the re-visioning study. This omission results from "a level of [faculty] complacency about thinking we know how students learn. . . . We run up against it all the time with the instructional technology piece of what we're doing. The new curriculum forced everyone to rethink what they were doing in the classroom. . . . There were certain kinds of requirements in terms of research and other competencies that we're trying to develop within the curriculum . . . . For some faculty, this was incredibly threatening because it was seen as a challenge to what they were traditionally doing in the classroom."

QUESTION 11: The library aims to build a strategic partnership with the center for teaching, learning, and writing. The center has so far focused primarily on the writing program. Library staff are team teaching with a group of post-doc fellows who implement the center's activities, helping to integrate writing and research skills.

The center has a studio in its home building, not convenient to the center of campus. The library provides parallel studio space in its building. The studio is a small consultation room that is (or will be) technically equipped like an electronic classroom.

The center's next thrust will be to provide technical and pedagogical expertise for faculty who are introducing technology into their teaching. The interviewee wants library staff to benefit from these learning opportunities for their own instructional activities.

The library will need to provide technically equipped consultation and seminar rooms for these center activities.

QUESTION 8: "One of the most refreshing things for me, having spent my entire [professional] life at [university name], is how easy it is be here at [university name]. It's not a constant battle of trying to

insinuate myself and the library into the academic enterprise. We are at every table; if we're not, someone asks the question, 'where's the library?'. . . Every major planning activity, the library has been part of. And it's not because of me; it's because the library has always been a central part of what goes on here at [university name]. And the fact that we have something we can contribute and can deliver in each of these situations makes it an easy sell to the senior administration."

Donors have been remarkably responsive to the academic goals of the library's renovation planning.

QUESTION 2: The existing coffee shop in a library corridor is "probably the most abysmal space you've ever seen in your life, but it is the most vibrant space in the building. . . . What we want to do is capture that same spirit and function in grander space."

QUESTION 6: The interviewee commented that most library projects he sees are traditional in fundamental concept, but he is working hard to make his renovations otherwise. He is trying to be especially thoughtful about technology planning. Technology planning is now a separate effort carried forward in a series of events, with some outside experts, helping them to envision what technology will look like over the next ten years. "What we're trying to do is to figure out the physical requirements, the space requirements that the new role we see the library playing [will produce] in terms of the creation and management of digital information. The need to educate and train students and faculty on use of the technology and the ways of creating new digital products are all things that we're trying to think through in terms of space requirements in the new library. We don't have the answers there, and we haven't found anyone who has the answers. The architects aren't helpful, because it's not an area where they've had a whole lot of experience. What you describe [i.e., the question 6 argument] is exactly what we see around us in terms of how other people have gone about thinking about the technology piece of what they're doing. And we're looking for some better support, some better advice. It's part of a larger campus problem that I've identified here everywhere. There's a tremendous amount of construction going on on this campus right now, compensating for twenty years of neglect on academic facilities. And there is such a huge disconnect between the architecture—the design of the space—and the technology piece. Those two pieces have not been brought together."

QUESTION 4: The university has just built an off-campus shelving facility that it might share with other universities. The library is now planning on having on-campus collections of two million volumes, with all growth above that accommodated in the shelving facility. Preservation was an important issue in the design of that facility. The library is just now creating its preservation program and plans to have a conservation laboratory in the new facility.

QUESTION K: The interviewee wondered about where technical services figures in current library space planning—are they included in the main library or moved elsewhere.

INTERVIEW 14: LIBRARY FACILITIES MANAGER

QUESTION F: The objectives of the project were to:

- Return one library unit to the main library building
- Improve reader accommodations
- Make the building a more self-explanatory and more efficient work environment for readers
- Upgrade the network infrastructure (this was essential)
- Rehabilitate the HVAC system (essential)
- Consolidate special collections and give it more prominence.

Significant funding limitations meant that, except for the network infrastructure and HVAC, renovations were largely confined to only some parts of the building.

Adequate shelving was not a significant issue because of a recent installation of high-density shelving and the commitment to build an off-site shelving facility.

Renovations resulted in a net loss of seating capacity (to date, perhaps a 25–30% loss) but a significant gain in seating quality. Reading accommodations were made more spacious, more functional, and (as regards the carrels) more private.

Some services were reorganized to make them more rational and self-explanatory for readers.

QUESTION 7: The library director and associate director were responsible for shaping the case for library renovation, an effort that took about four years. The availability of some state funds instigated the effort.

Although plans were put before the faculty advisory committee, the primary audience for the library's planning efforts was the administration and the university's facilities management unit. The effort here was to get the project costs to align with the project budget. Because planning aimed conceptually at making the library a teaching library, library staff were also a significant audience for planning documents. Staff were not enthusiastic about the teaching library idea and were glad to see this emphasis die with the departure of the library director who advocated it, before actual renovation work began.

The library contracted with a prominent library consultant to survey faculty and staff on their use of and views about the library. Low response rates and faulty statistical procedures employed by the consultant made for unreliable data. The report was delayed and finally an associate director took responsibility for writing it. These data underscored the importance of the library to science and engineering departments and to the university's continuing education program. But it had little impact on library space planning.

There was no other consultation with students. In the event, however, the single greatest impact of the renovations lay in improved reader accommodations. The library's gate count increased by 50% in the first few years after renovations were complete.

QUESTION 8: Changes of library director had little impact on renovation plans. An interim director was largely concerned with the off-site shelving facility and the implementation of a new library management system. The new permanent director emphasized the information technology aspects of the renovation plans.

QUESTION 6: The interviewee responded with a "yes and no" to the proposition that the renovations were evolutionary and conservative in outlook.

The director who left argued (unsuccessfully) that the library should reconceive itself as a "teaching library."

A younger librarian had been hired to lead a bibliographic instruction program. Among library staff, he had perhaps the most acute sense of the potential impact of information technology on teaching and learning. This librarian and a couple of graduate students were instrumental in broadening the information technology agenda of the renovations, from infrastructure to other things—to (as it turned out) an electronic text and information center as a principal new space in the renovated library. A few faculty came to see the potential of information technology for teaching.

Looking back on these efforts, they now seem linear—i.e., as reasonable and predictable lines of evolutionary development. At the time (very early 1990s), they looked more revolutionary. Many library staff regarded the younger librarian as a kind of Wizard of Oz, all smoke and curtains. That view applied particularly to some of the library's research and development efforts.

QUESTION 2: Some (much?) of the increased gate count might be attributed to a new food service, which certainly has brought more people into the library. It gives many new opportunities for social interaction between and among students, faculty, and library staff. One sees such interaction "all the time" now.

After renovation was complete, the library continued to upgrade the quality of reader accommodations in unrenovated parts of the building, continuing to sacrifice the quantity of seats. This trade favoring quality over quantity has been "worth it all."

Subsequent space planning has not benefited from systematic consultation with students, even for a particular reader space where that might seem most appropriate. There have been some meetings with student government, but the library has depended more significantly on an actively used suggestion box to understand reader views.

The library mixed large tables and individual seating on one of its floors, a combination that has made it impossible to manage noise there. A culture clash between undergraduates seeking group study space and graduate students seeking individual study space has developed. Ongoing efforts to solve this problem have not been successful.

QUESTION K: The interviewee feels that the library accomplished a great deal with the money it had for renovation. The positive impact on readers has been remarkable. The project was a "big success for the community."

He emphasized that one of the most successful aspects of the renovation was the reorientation of the science library on one level of the building. One now has a true sense of arriving somewhere, and a clear view of the services and accommodations that are available, so that the science library is now truly a library within a library, as it was not before.

The library's electronic classroom has been a "big help," but the idea that the library should be a teaching library has evaporated. For long periods, the library operated without a bibliographic instruction librarian, and there is no formal or systematic bibliographic instruction program. Instead of attempting to reach as many people as possible, bibliographic instruction is now focused on individual courses and programs.

Doctoral/Research Universities—Intensive

INTERVIEW 15: LIBRARY DIRECTOR.
(for comments of the president of this university, see interview 5)

QUESTION F: The library project was driven by the need to provide library seating for a rapidly growing student population and shelving for the collections. The project was driven not by a vision statement but by a consultant's report of 1985, which was based on systematic measures of each area of the library and discussions "pretty exclusively" with library staff. The consultants did not confer with reader constituencies.

QUESTION 7: Toward the end of construction, the library director and library staff conducted a series of focus group interviews with undergraduate and graduate students, with staff, and with faculty. The objective was to plan for a reorganization of the library staff. These focus group discussions had two major conclusions: the library should significantly enhance bibliographic instruction, and it should develop explicit policies to undergird its collection-development activities.

A number of consultants were employed to help guide the staffing changes identified in the focus group discussions.

QUESTION 8: Planning and decision making for the project were in the hands of the president, the library director, and the planning architect. The library was the only academic building project on campus in the 1990s. It competed chiefly with a new recreation center, but in the end both were funded by a special bond issue. The library was the centerpiece, but both projects helped one another to gain support. The president was very actively involved with the project, which was the "real hallmark" building of his tenure.

QUESTION 6: The interviewee agreed in general that there has been little fundamental change in the use and design of library space over the last generation. There were two significant exceptions to that judgment as regards his own library.

(a) The project included a television-broadcasting studio in support of a state project, which in the mid-1980s predicted that distance education would be conducted with interactive television technology using fiberoptic cable. The growth of Internet-based distance learning left the studio underutilized, and the interviewee quickly turned the studio over to systems staff, who had been inadequately provided for in the original planning.

    Commenting on rapid technology changes, the interviewee said that "putting telecommunications closets in was one of the smarter things they did."

    "Any time you add space for a purpose, you can always find a different purpose for the space, but you're glad you have the space. Our television studio, for instance, had a rather large storage room off [of] it . . . , and it's been a godsend to us for other purposes. . . . Anytime you add space, you're going to find a use for it. The use just may change."

    The university has long been concerned with distance education. As its Internet-based courses develop, some specialized needs for visualization emerged (e.g., in nursing courses). Educational television is beginning to get some use.

(b) The project included significant space for student group study and for faculty carrels.

The interviewee thinks that library space planning will continue to evolve and honor traditional activities, though with increased emphasis on student study space and less emphasis on stacks space. The experience with the television studio suggests the dangers of radical, vision-driven changes in space design rather than evolutionary change.

QUESTION 4: In the future, library space planning will be less strongly driven by shelving needs, but those needs will only diminish, not disappear. The library is buying twice the number of books, and the interviewee sees no electronic substitute for the book.

The expansion of electronic journal subscriptions (creating no bound volumes) and JSTOR-like projects

(which make it possible to remove serial back files) are the major factors supporting a reduced need for shelving. Moving JSTOR back files to storage (or discarding them) will give the library five years of growth. The interviewee anticipates building a shelving facility for his campus, rather than participating in a consortial venture.

The availability of interlibrary loan material is a factor in the likely future need for shelving, but not a significant factor. The university's consortial memberships do not affect the library's book buying.

QUESTION 2: Aside from group study space, the library project did not particularly accommodate changing patterns of student study. There have been a number of policy changes.

QUESTION 5: The library project was not informed by a vision statement other than the 1985 consultant's report and the specific vision statement for educational television.

INTERVIEW 16: LIBRARY DIRECTOR

QUESTION 4: Over the thirty years since the last major library construction, collection growth had crowded readers out by requiring that seating be reduced almost by half.

State guidelines called for a twenty-year planning horizon as regards collection growth. Understanding what will happen to the ratio between paper and electronic resources over the next twenty years and projecting university financial support for the collections is very difficult—"more art than science." In the end, the library estimated the collections would grow by a factor of 1.3 over the next twenty years, an estimate the library believes is conservative as regards the impact of electronic resources.

The library, under some site constraints to contain the building footprint, invested heavily in compact shelving. The interviewee thinks it unlikely the library will turn to off-site shelving in the future. Electronic resources are likely to expand faster than the planning assumptions; also, some expansion of compact shelving is possible.

QUESTION 11: The university has its roots in teacher education. For this reason, the audiovisual function has long been a library function. The library employed Ph.D.-level instructional development staff to work with faculty; it had a graphics production lab with photographer, videographer, and graphic designer; it provided audio functions campus-wide.

Recently, the university decided to develop a centralized information technology unit that included these operations administratively, though they remained physically in the library. "The concept of the building was not simply a library in the traditional sense, but we used—for [the state capitol] and the people down there, the legislators and the executive branch, the people we had to go to get support for funding—we used the rather awkward title of library and information services center. And the notion . . . was that whatever we do with the new library ought to really be thought of as another mechanism, another facility for helping transform the campus learning culture. And so what I did, and what we did, was build right into our program materials and so forth, right from the start, the notion that what we would be doing was providing a better locus of resources, locus of services, locus of support that would be an allied set of services that would be librarians, IT professionals, and faculty working together to support student learning and support research on campus."

The library did no systematic assessment of student learning modes as it pursued this goal. But "we certainly attached the project to various threads and streams of conversations about student learning and student learning styles and active learning interests and things like that."

The project has a center for academic excellence, a joint venture of the provost and academic senate. The center fosters faculty development activities and classroom support. This center was a recent development on campus and a "late comer" to planning for the library. It had to be designed into the building as it was being built. The interviewee was a strong advocate for incorporating the center into the library. "The project gained a certain type of momentum that is hard to quantify or express—or maybe it's more enthusiasm than momentum—because of the fact that the people who are leading the media-oriented, instructional technology change on campus . . . really took heart and developed a real sense of buoyancy and support for the idea of a library that would have new facilities that would provide better services and better spaces for these kinds of people. And they kind of just pitched in and we all sort of worked it together."

INTERVIEW 17: LIBRARY DIRECTOR

The interviewee was not at the library in the 1980s, when it was designed. He arrived just as it opened and was responsible for implementing what had been planned.

QUESTION F: There were two major goals for the new library building:

1. The library was meant to be an architecturally interesting centerpiece for a campus that was at the time otherwise rather drab.
2. The decision to make information technology the path to excellence reflected the fact that the institution was relatively young and had relatively weak print collections.

QUESTION 7: Campus administrators invested substantial sums in two major planning efforts for the library. Consultants conducted the first of these, done in the mid 1980s. The objective was to understand the future of information technology and what it would enable in a 15 to 20 year time frame. Integrating information technology into library information resources and services was identified as critically important. "That report from an outside group made it possible for the library to have influence that they would not otherwise have had. The campus had made the decision to focus on technology. This provided somewhat of a blueprint. And I think frankly it allowed the library to present a picture that was not entirely dependent on the campus computing center's perspectives, which were probably not as ambitious as were [those] involved in this report."

A second large study, conducted by a technology company in conjunction with the construction of the library, designed the scholar's workstation and the entire infrastructure behind it. "The story I like to tell has to do with our wiring." We spent $2 million on wiring infrastructure, which included both twisted pair and fiber optic wires. "The copper that was run was Category 3. Just before they were going to pull the wire, Category 5 became available. And it would have cost $30,000 to upgrade. And they chose not to because they believed that the fiberoptic would provide all of the growth path that they needed. And of course as it has turned out, we've almost never used the fiber and we'd kill to have Category 5 in the building. So the moral that I draw from that is sometimes you just can't pick right, and you just have to live with it."

The first consultant's study "really changed the nature of the conversation rather than making any specific recommendations. It really positioned the library to be a different thing than it would have been, in the way the whole campus thought about it, rather than the specific projections on the technology. The second . . . project developed technology, and over the ten years since the building opened, that technology has changed a great deal. But because the campus said the library's technology is important, we have a staff and an expectation around our technology expenditures which has allowed us to adapt. . . ."

The library had one-time funds to pay for workstations, server infrastructure, etc. "We invested, again with money that I wish I had back, probably $1 million in a video distribution system, which was really cool and which we developed ourselves and which we've now disbanded."

Responding to a question about the library's ability to continue pushing the technology envelope, the interviewee said "we're not in a position to be as aggressive in terms of things that cost money to do." We have base budget support for equipment and staff, but don't have the one-time funds. "Primarily because we have the technologists in place, we're able to probably not to be at the cutting edge but closely behind it. . . . So we're not cutting edge in the sense that we're doing things that no one else is doing, but on balance we do more than almost anybody else. So in that sense, I think we're still at the forefront."

QUESTION 2: Responding to a question about the impact on student learning of the library's technology emphasis, the interviewee said "the library is the largest [computer] cluster on campus, and our gate counts have held [where others have not]. . . . We have a lot of students in our building. . . . [The student body is largely a commuter one, and] the fact that a student who lives 45 minutes away in one of the . . . [city's] suburbs doesn't have to come to the library to do reserves is a really important service. And they tend to appreciate that. It's a little hard to know how the academic resources that we've put in place have affected teaching and learning, since the Web has exploded in such a way that it's hard to sort that piece out these days. Although, if we were to go back five years, . . . we were assertive in buying electronic content and we were able to deliver it to a large number of desktops in the library. I think that clearly made a difference at that time. It's a little harder to sort out now."

The interviewee described the impact on teaching as fundamentally the fact that "we have people who can work on that issue. . . . It's really the staffing infrastructure at this point that matters more than the physical hardware and network stuff. . . . The campus understands that the fact we have 90 staff and a dozen of those are computer technology people is not an issue. . . . [It's] that broader 'changing what the library ought to be' piece. . . . So we have a lot of technologists to work on things like how do we integrate library resources with the course management system. And it's expected that that's what we do. And the building in a funny sort of way has set that expectation."

QUESTION 7 (again): The technology company project conducted many focus groups with faculty, but they were concerned primarily with systems configuration. There was little impact on the physical design of the building. "In a lot of ways, the building is a very traditional library structure. . . . They just put a lot of wire and a lot of technological capability into a structure that is largely a very traditional building."

QUESTION 6: The interviewee affirmed the importance and utility of evolution in library design practices. "The judgment that was made about the placement of our technology was based on an underlying assumption that students would need to use both the machines and the books together. . . . And of course that's not what ended up happening. . . . The books don't really need to be next to the computers. This model makes service very hard because the geography is so spread out. It's hard to have a quiet place in the building because the sound from these [computers] dissipates throughout the entire floor. . . . We very early identified this as a flaw in what we had done. . . . But we gave that advice to lots of people. . . . The notion of the information commons was developing as we were doing our building. We chose really not to do that. We distributed the technology, but I think that very quickly we came to the conclusion that the information commons was a better idea, based on our negative experience with the distribution of machines all over the building."

The building was built to be very flexible, but even so the cost of changing HVAC and stack configurations is high enough to discourage changes.

QUESTION 2: The library design provided about 40 group study spaces. But as it turns out, much of the collaborative work among students is done at the computer clusters. This generates a fair amount of noise. The group study spaces have become the place for quite study. "The way in which we conceptualized them and the way they turned out to be used is almost opposite."

The idea that students would use books and technology together also turned out to be wrong.

The library avoided having large tables, because in the old library they served a social purpose. The tables attracted groups of students that were loud and disruptive. "One of the lessons I tell people about our building is that you need to be aware of not trying to find the best solution and deploying it across your whole facility, but looking at creating diversity in the environment. People seem to want to find the right answer and apply it. . . . We would have been better to have a room that would have been the noisy place with a bunch of tables."

QUESTION 5: The primary impact of the library's vision statement was that of convincing the campus to adopt technology as the path to excellence for the library.

QUESTION 11: A teaching and learning center was placed in the library as a strategically important partnership. "When they designed the building, the notion was that it would be a place for librarians, technologists, and the media people to collaborate and provide support for faculty. And again, it didn't really ever play out that way. . . . The librarians and the computer people tried to run something for a while, but it never really worked. . . . " The center started to take off only when it was aligned administratively with the campus-wide faculty development service. "The design and conceptual things that went into the [library] design really didn't work. But the space was available . . . and so . . . the fact that it's in the library turns out to be very important. But the particulars of what the vision was turned out not to work at all. We [now] have a couple of librarians who live in that space, so the relationship is just very tight. And the proximity makes it very easy for us to be involved in course development, especially where the university is supporting . . . initiatives in distance education. [Where the university] makes some strategic investment in certain kinds of teaching, its very easy for us to make sure the library component is involved because of our proximity with the people who are making it happen."

INTERVIEW 18: DIRECTOR OF A PRINCIPAL LIBRARY UNIT

QUESTION F: The library was built because in two ABA sabbatical inspections [i.e., accreditation visits made every seven years], the law library was strongly criticized. The old library also fell notably short of the still more exacting standards of the Association of American Law Schools.

QUESTION G: [Architect's name] designed the library with no input from the library. The university wanted a beautiful space, and got it. But the entrance location is dysfunction, it has a noisy rotunda, and staff offices are badly located. No one at the university "wrestled with the architect" over issues of functionality.

The interviewee came to university nine years after the library opened. She had extensive involvement in law library design at another university where, she observed, concerns for functionality prevailed over the interest in "beauty."

QUESTION 7: A committee guided the design of the library. An associate dean of the law school was responsible for library planning. Library staff had some involvement in writing the building program.

In addition to physical beauty, the library plan provided space for expanding the building (since built on for other purposes), a flexible floor plan, natural light on all floors, and an abundance of study spaces and carrels—a critical need for law students. Plans also provided for extensive reading rooms and abundant table space for readers. Shelving for collection growth was provided, though in the event the shelving was not adequate for even ten years of growth.

QUESTION 4: Today the library is short of shelving space. The library owns, but does not yet use, off-site shelving, and it is possible to install more compact shelving in the library. The library has weeded a substantial number of volumes that had little value other than helping to meet the former volume-count requirements of ABA accreditation. The migration to electronic resources continues with varied success with the resources themselves, with their ease of use, and with their affordability. Reliance on electronic resources for primary materials (statutes, court cases, etc.) is now almost total, making a "huge difference" in reader behaviors and the need for shelving.

Still, the problems of shelving a growing collection persist. The move to electronic resources has not "solved" the problem. That said, future space planning will be much more concerned with space for people. It is most unlikely that the law school will have additional space for the collections. "If they're going to spend building money, we need classrooms and we need [library] faculty offices and we need group study space much more than we need collection space."

QUESTION 6. The interviewee agrees emphatically that the new library is basically traditional in its concept. Even the concern with group study space is traditional in law libraries, though curiously relatively little such space was provided in the new library.

Asked if there are opportunities for radical change in library design that are being missed, the interviewee mentioned the need to integrate better the public and technical services staff of the library; the need for space where students can talk with one another without disturbing others; food service; and wireless technology. She observed that faculty almost never come to the library anymore, depending instead on electronic resources and excellent faculty liaison services. "We don't need to accommodate them in a way that we needed to in the past." Law students "jump on the electronics in a heartbeat long before they ever go out to touch the book. But they still operate with each other, whether they're studying together, working on a project, just visiting in the course of the day, because most of them do come here first thing in the morning and do not leave until they go to dinner, and then many of them come back to study for the rest of the evening. And we have to kick people out, always, at midnight. The way students interact with each other, which is what is most critical to us in the library space, isn't radically different. So I'm not sure—other than more variety of space for quiet study and talking out loud—at least at this point I can't think of something that would be especially useful to them."

QUESTION 10: The interviewee said she was told that a formal post-occupancy study of the library was done after it opened. But she has never seen it or heard what its findings were.

QUESTION K: "The library has to have the vision as it goes into the planning process, and it really has to, I would say the term is, fight hard to keep to what you need the end result to be. . . . It's really easy to get run over and let the beauty of the space outweigh the functionality of the space. And I'm here to tell you that you can absolutely have both, but you really have to work at it."

Master's Colleges and Universities I

INTERVIEW 19: LIBRARY DIRECTOR

QUESTION F: The interviewee distinguishes between institutional and library goals. The former grew out of recognition of the total inadequacy of the old library and the need for more space and more comfortable space. The institution wanted the library to become an academic centerpiece on a campus located on an old military base, where the prevailing ambience was thoroughly military.

Library goals included the introduction of information technology and the strengthening of library instruction programs as well as institutional goals. The library very much wanted to provide electronic information resources in close association with expert library assistance.

QUESTION G. The college has two campuses. One enrolls primarily upper-division undergraduate students (55%) and graduate students (45%)—mostly MA candidates. Most of the students (80%) commute to campus; most classes are taught at night.

QUESTION 1: Electronic classrooms were critically important to the library, if not to the institution, during the planning phase. The institution looked to the library for leadership on this matter.

QUESTION 6: There was no intention to design a library of radically different appearance; rather, the design aimed at significant differences in the delivery of library services. Major changes included:

- Network connections at 92% of the seats. These are heavily used. When first measured, 22% of the students were using laptops in the library, and that figure has steadily risen each semester. The interviewee has been particularly struck by group use of laptops.
- A variety of seating options: Windsor chairs, two-position seating, lounge seating, carrels.
- A cyber café.

The interviewee believes that significant, conservative attitudes among some faculty work against radical program innovation and radical changes in library space design. But "if we infuse technology into library space, we affect perceptions of people in the environment. We position the library in a way that it can be seen as a leader in the intelligent adoption of technology for use within the community."

There are an exhibit gallery, classrooms, and a cybercafé in the new building, not administered by the library. The interviewee refers to this in saying that librarians should not think solely in terms of stand-alone library buildings. Creative partnerships offer the opportunity to welcome students in new ways.

QUESTION 11: The interviewee actively sought the inclusion of a state information center in the library part of the building. Partly this was an effort to create a niche identity for the building project and make it more attractive for state funding. Other non-library operations in the building are two seminar rooms, two electronic classrooms (administered by information technology), a slide library (only recently incorporated into the library), as well as the gallery and reception space and the cyber café.

The state information center gets more use than the library's special collections and is a powerful draw for students. The library welcomes it as an information function (rather than as a technology function). There is, however, relatively little interaction between the center and library staffs.

QUESTION 12: "In terms of academic benefits, timely and convenient access and the quality of the access—the enabling that is done with the technology, with the comfortable environment, with the

comfortable furniture—has an impact here that also creates a greater sense of academic purpose. This has been quite fascinating. The students appear to be more serious when they're in there [i.e., the library]. There is maybe a sense that they have a first rate facility and they want to take advantage of it. There's also been a kind of psychological uplift for the academic community as a result of this [project]. . . . As a result of having the old . . . [military] buildings, there has been a military ambience to the campus. Since that time [i.e., the takeover of the base by the college] there have been efforts to soften it a little bit. . . . The library has just really been the lynchpin to upgrading the physical character of the campus. And I think it gives people a greater sense of pride and also a greater sense that they work in an academic institution. There really has been a pretty significant psychological impact."

QUESTION 13: Access to information technology was central to the design intention of the new library.

QUESTION 7: The library staff did an environmental scan as part of its planning, but no formal needs assessments or assessments of modes of student learning and faculty teaching. The interviewee was aware of the importance of group study.

Much of the early planning effort focused on the political process of securing state funding for the new library. When funding was secured, the interviewee had very little time to develop a program statement and could not get his library committee to engage with space design. A specially charged subcommittee did review his program and endorse it.

It was only when formal architectural planning was under way that the interviewee had a "real team" of campus physical plant officers, information technology and library staff, and faculty and students with which to confer. The student representatives were largely inactive; both faculty members were actively involved. The planning process included two open forums for faculty and students that were not notably productive. "It was not the process as you would ideally map it out, but the end result works. It's very well regarded by the community. It's kind of the centerpiece of the college. . . . The library was really the first major improvement that got us away from the old military ambience of the place and made us look more like a college campus. . . . That is the way in which we . . . helped the campus, give it a feeling of accomplishment, less a feeling of inferiority, and really help it move ahead academically. It does create a sense of serious academic purpose if you have a real library, and we do! . . . The satisfaction with the new library has been extremely high. . . . Having the facility is much more than icing on the cake; I think it's several layers of the cake."

INTERVIEW 20: LIBRARY DIRECTOR

QUESTION F: The library had been deemed inadequate by accreditation teams visiting the university at two different times. The institution was under the gun and had to act quickly. Some efforts dating from the first accreditation review had failed to produce results. A new president was appointed, and she made the construction of a new library a high priority.

QUESTION G: The old library was much underutilized. Students went elsewhere to study; it had one inadequate classroom. The new building was meant to accommodate significant enrollment growth and the growth of the library collections. It was meant to be quiet, spatially less confusing, and to provide adequate space for staff.

QUESTION 4: The new building was designed to allow a doubling of the collection, and further expansion of the building is possible at one of its ends. The use of electronic resources will slow the need for additional shelving. There is no existing need for more shelving, and shelving is a problem that the

interviewee is not thinking about. Given the demand for new space elsewhere on campus, it is hard to imagine that any library space needs will be heeded for the next 50 years. The interviewee believes the library will have to live within its existing space for the foreseeable future, even as it takes on new responsibilities (as, for instance, the absorption of campus audiovisual operations).

QUESTION 7: Planning for the new library was distinctive in that it was done in very little time. The president secured a gift of $1 million as seed money and went to the legislature for the rest of the project. When state funds were approved, the interviewee had two months—in the summer—to plan the new facility.

He would have like to do the planning in the "right way" (i.e., with needs assessments, consultation with readers, focus groups, etc.), but had to depend instead on some earlier surveys of student opinion (about library services, resources, and the building) conducted at the library and student center. The library had also, for some time, tracked opinions expressed in its suggestion box. The library staff was observant about library use and well informed about the campus community.

The interviewee and his staff did the planning, with assistance from an outside consultant.

The interviewee had led the campus-wide accreditation self-study. "I had a lot of information about teaching practices on campus—there was a lot of assessment going on in general for the campus—so the timing was pretty good, actually. And my experience with that process helped as well. Another librarian . . . was responsible for the library part of the report, so she was heavily involved in this too. The two of us being involved in the development of that report helped inform the planning process for the library. . . . But then we got a lot out of it, as I said. I think that helped me feel more confident that we were tying our planning objectives to campus objectives. . . . One of the things was teaching practices—assessments of the various disciplines on campus, what they were saying about themselves, how they were developing degree programs, changes in the way they designed the curriculum and the requirements for students' assignments. That's kind of where we got some of the ammunition for providing more group study rooms, was our sense that faculty were giving more assignments that required that students work together."

The interviewee specified conference and meeting rooms as another response to what he learned from the accreditation self-study. "We rarely got any faculty coming into the old facility. . . . So when we were designing this building, we were also trying to meet a definite, expressed campus need for better meeting facilities."

Use of the building, as measured by gate counts, has tripled.

QUESTION 8: There were no significant disagreements about planning objectives. The need was so great that people were glad to get any of them addressed. There were few complaints about the short planning period and the few opportunities for consultation. The project benefited from a great deal of good will on campus.

QUESTION 10: In the planning, neither the library nor academic computing thought of the other as a strategic partner. Then the library focused on audiovisual services as such a partner, but the building finally did not have enough room to bring them into the library. The accreditation study suggested the need for closer cooperation between the library and academic computing, and the library now regards academic computing as a strategic partner. The library and academic computing expect to "behave like one team" in the reorganization of audiovisual functions on campus.

After the new building opened, the campus began a modest center for teaching and learning. The library regards this center as a strategically important partner and houses the director in its building. The library would like to see center activities expand within the library, but space constraints will make that difficult.

As regards student social space, the new building provides a student lounge with TVs and snack machines. It is open around the clock.

Students were much concerned with unmanaged noise in the library and are very glad to have study rooms with doors they can close.

QUESTION 6: The interviewee agreed emphatically that this new building was designed to deliver traditional library values. "We built a very traditional building. We sought to provide comfort, quiet, light . . . and convenience—and that's what was missing in the old building. A lack of comfort, I think, if I could sum it up in one word. It just wasn't attractive, it didn't feel good to come in; people used to tell us they were doing fine until they got an assignment that made them come into the library. . . . Our design has worked magnificently. And we get compliments constantly about the way the building feels when they come in. [So we] satisfied some basic human need for comfortable space to sit, to focus and concentrate. . . . So I think in that regard we've hit upon a combination of things that does indeed meet the needs of students and faculty. I also see faculty who actually come . . . [to] hide out over here. Never did that before! So we're meeting a need for things other than the computers and wireless networks and group study and conference rooms."

Asked whether there are any opportunities for radical change in library design, the interviewee pointed to wireless networking as a technology they missed in the late 90s but have since installed. The interviewee champions the traditional library. "Libraries need to be destinations, actual physical spaces. Our experience seems to show us that. If it's comfortable and convenient, feels good to be in there and meets their needs, they will come. They still need a space like that . . . to get away from noise. . . . There seems like there is some sort of basic human need, still, for the library as a space to go to, as a destination."

QUESTION K: The interviewee thinks his previous employment has made him especially attentive to client needs and was important in building his confidence for planning the new building. Neither he nor his staff had had any experience in building new libraries and were nervous about the task. Working with an attentive architect was helpful. "Afterwards . . . we felt fairly confident that we had zeroed in on what the campus needed, basically. I did not feel as guilty about not doing formal studies and having the time to come up with a plan that was based on surveys and years of thought."

"Some of this was instinct and our years in the profession—what we had observed. Trying to tap into that and hoping that was accurate. Not a very good thing to say you're relied on, when you're spending a lot of money, especially taxpayers' money. We had a confidence level that sustained us throughout this thing. I think getting a consultant in here helped us shape this thing. We did write a lengthy program statement, and I felt the underpinning of that program statement made up for some of the lack of some other processes, perhaps."

INTERVIEW 21: LIBRARY DIRECTOR

QUESTION F: The project had three primary goals:

- More space. Shelving was 98% full and additional shelving was displacing students.
- Better-quality space. The old buildings had grown to be in very bad condition.
- Space friendly to technology.

QUESTION G: A master plan was done for the entire campus. Each building was assessed for its overall physical condition and for its ability to play its assigned educational role. The library ranked at the bottom of this master plan assessment and was made the first major project in campus renovations by the president. That decision was followed by a long political process within the state system and in the legislature and governor's office.

The interviewee reported no significant shift in project priorities over the nine-year period during which she was working on the building. She is deeply satisfied with the success of the project.

QUESTION 2: "Students should be treated as whole people. And they shouldn't be relegated to one particular type of seating. They're grown ups. They have different learning and study styles, just as we as faculty have different approaches to our study and research. So I was determined that we were going to build in a variety of different seating and studying environments—that we would have small intimate reading rooms, large double-height reading rooms, reading rooms with brilliant views of the campus, reading rooms with nothing to distract one while he or she was studying, single carrels for people who wanted real privacy, larger tables for people who wanted to work together, group study rooms for people who needed quiet, casual lounge seating, but lounge seating that it would be almost impossible to sleep in, just everything so that depending on what a student's mood was, he or she could find the right kind of study space."

The interviewee said she depended on long observation of student study behaviors (including her observations as a teacher) to guide decisions about the variety of spaces to be provided. As regards the mix of such spaces, she was guided by advice from the architect that programmed the building and the experience of other librarians across the country.

QUESTION 7: The project had an advisory panel of faculty, students, and administrators. Faculty and students were "so thrilled" that a new library was being built that they were not as demanding on specific matters as they might have been in other circumstances. Students identified the need for two people to work together at a computer. Faculty were instrumental in advising on the fit out of multimedia classrooms.

The interviewee conducted no formal assessments as part of the project planning. She was looking more for "experiential" guidance.

After the initial deliberations of the advisory panel, a project manager that the library hired, the architects, and library staff managed the project. The architects reported that they had rarely seen a situation where librarians had so much input on a project. The then president had great confidence in the library's ability to get good results.

QUESTION 4: The interviewee thinks it unlikely that shelving needs will again be the primary catalyst for library projects at her college. Thanks to system-wide space standards, the recent project provides abundant space for students. Increasing dependence on electronic journals and the weeding of back files of journals will leave plenty of growth space for monographs.

QUESTION 6: "The building is so unbelievably gorgeous, and so majestic; it's so grand. . . . If you came to our building, I'm sure you would be in awe. It is like what a grand, wonderful library should be. . . . It has an impact on what people do when they're in the building, how they feel . . . . It's a very important statement for the college to make. It's the most democratic building on campus, and if it's grand and awe-inspiring and at the same time warm, comfortable, and inviting, it makes a tremendous statement about how the college feels about learning and teaching. Our president has said that, for [the college], the library is an article of faith."

The interviewee agreed with the question 6 hypothesis. She said her library is both the physical and intellectual crossroads of the campus, serving as a kind of cultural center for the campus by hosting lectures, entertainment, etc. The library project was not radical in its planning, but it meets campus needs beautifully.

The interviewee emphasized that designing for a flexible use of space makes her confident the library will be able to respond to changing operational needs over the next 50 years. By implication, flexibility is a reasonable substitute for radical vision in library space planning.

QUESTION K. The interviewee mentioned the shakedown period required by sophisticated HVAC controls. She said she has been surprised at how often people want to use the library for sometimes quite large social and academic gatherings. Planners should not underestimate how hungry people often are for meeting space on campus.

The interviewee described a café immediately adjacent to the library that provides 24-hour food service, casual study space, computers, and group study facilities. "It and the new library together really serve the campus very, very well."

"One faculty member said to me . . . this is the best thing to happen to students on our campus in 30 years. And I think that's absolutely true."

INTERVIEW 22: LIBRARY DIRECTOR

QUESTION F: The interviewee reports that library staff and university administrators alike wanted a new library building that would be closely integrated into both the academic and social life of the campus. The university is a largely residential institution of 5,000 students and focuses heavily on the liberal arts.

QUESTION G: The interviewee described a successful "open" and "bottom up" planning process for the library, in which the views of students, faculty, and community members about what they wanted in the new library were sought and attended to closely. These views covered a wide spectrum of issues, from the building site to baby changing facilities in the men's rest rooms.

QUESTION 7: The library wanted to take a proactive role in the life of the community. Doing this involved, for instance, building a conference room (for poetry readings, musical performances, art demonstrations) and space for food and drinks. Community organizations are actively involved in programming for the conference room, which sometimes hosts teleconferences; all events are open to the public. The library even participates in the town's Fourth of July parade.

Students asked for "research study rooms" designed for two-person occupancy, seminar rooms, group study rooms for 6 to 7 persons, and research carrels.

Faculty observed that while students had labs to advance their learning, they themselves had no such place for learning. As a result, the library included a center for introducing technology into teaching, a demonstration classroom, and a center for teaching excellence.

Visits to other libraries, with the architect and facilities staff, were also important to the planning process, especially as regards library operations and workflows.

QUESTION 6: The interviewee felt that what marks her project as innovative was the concern with

faculty development. She also reported significant leadership and success in working information literacy into the core competencies taught and learned at the university. A three-credit hour freshman seminar focuses on these competencies, and the library is responsible for delivering one of the three credit hours of instruction. It was not clear what expression in library space this emphasis on information literacy has.

QUESTION 10: The interviewee said that while the library did not conduct a formal post-occupancy assessment of the building, it did identify a number of things it wanted to learn regarding student use of the library's computers. They found that the upperclassmen used the library's technology in ways consonant with the library's intentions more often than freshmen did.

The library's gate count, circulation, and other statistics have risen significantly, counter to the national trend.

QUESTION 4: Additional shelving was urgently needed in the new building. In the future, the library expects collection growth to moderate as e-books take hold. The library also looks to a remote shelving facility, to be developed collaboratively by state institutions, as a means of dealing with collection growth.

The library self-consciously reserved a plot of land immediately adjacent to the new library for expansion.

Master's Colleges and Universities II

INTERVIEW 23: LIBRARY DIRECTOR AND TWO ASSOCIATES

QUESTION F: The library staff has recently been reorganized to support an increasing emphasis on library instruction, including collaborative work with faculty on integrating information literacy competency into academic courses. The library wants to become a center for teaching and learning, and toward that end freed some space previously used to shelve bound journals for the creation of an electronic classroom.

Long term, the library wants to be both the physical and intellectual hub of the campus.

QUESTION 7: A committee of librarians, faculty, information technology staff, and staff from the center for teaching, learning, and technology designed the classroom. There was a great deal of committee discussion about effective teaching and learning styles. The room has had "tremendous usage" and there have been no complaints about its design failing to support good pedagogy. Library staff cannot speak for the teaching practices of academic faculty, but librarians have turned away from lectures and increasingly relied on collaborative, active, and hands-on learning styles. The classroom works well for such activities.

There was no student involvement in planning for the classroom. Planners depended on their own teaching experience for their understanding of how students learn.

Library staff visited the electronic classrooms at other institutions.

QUESTION 8: The president has an incentive money program, and the library competed with three other academic units to build an electronic classroom. The library prevailed because it could promise greater access due to its long hours of operation and because no academic program would claim exclusive "ownership" of the space.

The electronic classroom is a first effort to create learning and teaching space in the library. More

classrooms are needed, and the library wants to develop an information commons and a space for collaborative reference work as well. This development will be done incrementally. The library can free some additional space (by removing duplicate bound serials and by using off-campus shelving), but eventually new space will have to be added to the library.

The library believes its instructional activities have a positive impact on student recruitment and retention, but it has not yet developed this argument with the university administration.

QUESTION 11: Some library reading space was given up when the center for teaching, learning, and technology was moved into the building. Now, the library sees the center as a strategic partner and is very glad to have it in the library. The center for academic excellence (student advising and tutoring) is also in the building, but the library has not yet regarded it as a strategic partner.

QUESTION K: The interviewee emphasized competition with other units scheduling library sessions in the electronic classroom. More such classrooms are needed, and the library should have priority claim on one of them.

The interviewee mentioned his success in shifting "back room" staff to new duties on the "front line" of library services. He believes, however, that additional staff will be needed to meet student and faculty needs for personalized assistance and technical support.

INTERVIEW 24: LIBRARY DIRECTOR

QUESTION F: The objectives for the project were to provide more space for collection growth, readers (including a greater variety of reader spaces), new technologies, and staff.

QUESTION 7: The formal planning process began with the appointment of a 40-person task force charged to describe "the academic future of the library." Most task force members were faculty; library staff and students also served on it. The focus was on collection matters, traditional library services, and library technology as it stood at the time (online catalog, etc.). The interviewee described the task force as a highly collaborative, widely involving one. The project developed directly from the work of this task force; most of the things sought by the task force were included in the building project.

The university next hired a library consultant to write a building program. A second group was appointed to respond to and monitor the work of the consultant. The last planning step was to hire an architect.

There was no formal assessment of modes of student learning. Librarians had observed the heavy use of the old group study rooms and were conscious of increased reliance on collaborative learning (e.g., the curricular emphasis on team work in the business school). Late in the process, focus groups of students were convened to comment on details of the plans and to indicate what they wanted and didn't want. There were many "show and tell" sessions at this stage in the planning.

The assessment of faculty needs was somewhat more systematic. Faculty were surveyed to learn what they were actually doing with multimedia instruction. The library got good feedback from this survey, and then asked two faculty to work very closely with the architect in brainstorming sessions to design the electronic classrooms. The classrooms were well designed and are heavily used; they have become a model for other electronic classrooms on campus.

The library's own instructional classroom was designed to encourage group work. The interviewee had an opportunity, after having feedback on the effectiveness of the classroom, to redesign it in different space. "The second time round we were able to do much better in terms of developing a room that was much more supportive of student learning objectives and faculty use of technology."

Asked if she would pursue a more formal assessment of student learning behaviors now, the interviewee answered: "Oh absolutely. I think that's very, very important. Now we certainly tend to look much more carefully at those kinds of things and to think in terms of strategic goals of the university and our [i.e., the library's] strategic goals and what's going on in the classroom and how faculty teach and students learn."

"Our planning process for its time was very open and broad-based and was really effective. But we would certainly do some things differently if we were doing it now."

- The interviewee would try to make the later phases of the planning as richly collaborative as the first phase and the design of the electronic classrooms were. In the later phases, we "were developing plans and sort of putting them out there and letting people react to them as opposed to bringing people into the planning process from just the ground up."
- "Libraries are encompassing so many more things than they used to—like multimedia classrooms and cafés and just all kinds of things that no one expected to see in a library 10 or 15 or 20 years ago—and so taking a broad look at campus needs. I would want to do that" not least because deficiencies of the student center make the library de facto an important social center on campus. "What should that mean for a library? What is the appropriate role for a library in that kind of scenario, not to take the place of the student center, but to become something different from what libraries have been in the past? Obviously we're all in a different place now. What should that mean, what could that mean?"
- "There are just so many different ways that people can meet needs, and it really calls for thinking outside the box." The interviewee exemplified this by describing the evolving food and beverage service at the library and the evolving relationship with information technology staff.

QUESTION 8: The project initially came in over budget. This required the elimination of about 20,000 square feet in the plans, which the library took as an opportunity to rethink its organization and operations. The library was recreating "the strengths but also the weaknesses and the inefficiencies of our old library." The library entirely rethought both its public and technical services and developed a team-based organization. "Planning a library takes a lot of sensitivity to everyone's needs on campus. But it also takes a lot of courage, because sometimes you just really have to say, 'we can't do things; this is an opportunity to develop a new vision and do things in a way that's different from the way we've always done them. . . .' We really took a step back . . . and really consolidated and came up with a much better plan. And at the same time we began to recreate our organization. As long as you're changing things, I mean heck why not change everything? . . . We just turned everything upside down. It was challenging, exciting, and sometimes rough, but in the long run we've been a lot better for it. . . . A building planning process can really be a catalyst for so much more than just the building."

QUESTION 2. The interviewee described the variety of student spaces as follows: group study spaces, two multimedia classrooms, four seminar rooms (used in a variety of ways), three 24-hour microcomputer labs, a library instruction classroom, carrels (some oversized to permit students to spread out their material and to have more than one student at the carrel), lounge chairs, and lots of nooks and crannies everywhere. Students move the furniture around a lot.

Responding to what she would do now to make the building more attractive to students, the interviewee said she would be more thoughtful about the presentation of food service, have more (and better) lounge chairs, and soften the sterile quality of the many white walls by bringing in more artwork—especially that by students and faculty.

QUESTION 11: The library always thought of the presence of academic computing personnel in the library as a strategically important partnership. The computing staff have been less clearly focused on partnership issues, and in fact the relationship has had its ups and downs, mostly dependent on the personality of the leadership of information technology services. Administrators elsewhere on campus originally did not understand the value of the partnership, or even thought the presence of information technology staff in the library could be a distraction from library services.

QUESTION 4: The interviewee expects the library will need to add shelving eventually, but given uneven collection budgets and the impact of electronic materials, it is hard to predict when that will be. The building can structurally accommodate two additional floors. A long-term goal is to bring the music library into the main library building.

Baccalaureate Colleges—Liberal Arts

INTERVIEW 25: LIBRARY DIRECTOR
(for the comments of the dean of this college, see interview 6)

QUESTION F. Three things were paramount in the renovation of the library

1. Providing shelving for the collections.
2. Providing reader accommodations, given a dramatic reduction in seating occasioned by the need to accommodate a growing collection. A major effort was made to improve both the quality and the quantity of student study spaces.
3. Providing an HVAC system adequate to ensure the preservation of the library collections, especially during hot summers. The interviewee had to fight hard to achieve this goal.

The library occupies a prime, pivotal site on campus. It was important to the college that the library be renovated and expanded without moving from its existing location.

QUESTION 7: Planning for renovations began when the interviewee toured a number of college libraries. Two different consultants had advised that the library could be successfully renovated. The college appointed a new president, and he set up task forces to consider key directions for the institution. When the task force concerned with facilities asked whether colleges would need libraries in the future, given the emerging power of digital information resources, they answered the question by saying that at their institution, a residential college with a traditional curriculum, students "needed to have a good place to study as well as good information resources. The library as a place is very basic to this college. But we didn't have good places to study. . . ."

There was no other place on campus for students to study, except the dormitories, which did not work well. Students were sitting on hallway floors and in vacant classrooms. They "wanted to come together in some other place, and in fact they do come together now. This is both a very social and a very studious library. . . . And it's been that way since we opened up." There was substantial demand for 24-hour operation, even of the unrenovated library, at an institution where the curriculum strongly emphasizes reading and textual study.

While the need for study space was very clear, there was no formal assessment of student learning behaviors to guide the design of study space. The interviewee had a sample carrel built and invited students to comment on it. Otherwise, a committee charged with library renovation visited nine libraries and returned convinced of the importance of compact shelving and of a variety of study spaces for students. The interviewee visited other libraries with a new dean and treasurer. "When people ask me

about building, I say 'Go look at some libraries, because you're going to see bad things—which is very useful—and you're going to see good things. It's important and it gets the juices flowing about the idea of building and changing space to see what's positive.'"

QUESTION 2: Renovations provided the following student study spaces:

- A large reading room, with fixed tables and a fireplace, which is heavily used by students.
- Individual carrels.
- Reading tables next to a curtain wall on two floors that overlooks the quadrangle. "So there's some sense of community that you have inside or outside the building."
- Lots of soft seating throughout the library.
- Group study spaces. These are always in use and more such spaces would be welcome.

QUESTION 8: Early on, the interviewee spent a relatively modest sum on the redesign of the reference desk area. The redesigned space and its services were an immediate success and students loved it. That convinced the administration of the value of a comprehensive library renovation. "The treasurer said to me, 'that's the best $250,000 we ever spent.' They could see that if we did something serious to the building, we were going to have a wonderful, wonderful opportunity to enhance the college's physical facilities and in a place that's important to students."

The interviewee believes that the only concern the accreditation team had about the library related to renovations. When team members were told renovation would be done, their report had only commendations and no recommendations regarding the library. The interviewee believes this helped build commitment to the project. This is one of the things that "pushed it over."

QUESTION 6: The interviewee agrees with the question 6 hypothesis. Stressing the traditional uses of the library, he affirms that "people enjoy coming to the library. . . . They like the atmosphere. I think there's a certain expectation, at least at liberal arts colleges, that coming to the library to find information, to study that information, compare that information, is a normal and right thing to do. . . . I have a lot of art in the building, much of it student art. But it humanizes the space and makes it a place that people want to come [to]. And I'm doing that for a reason: to help teach them that . . . you come and consult."

"Libraries are [often] very gloomy; they're not very nice places. They're not attractive. . . . Why shouldn't students have decent light and a comfortable chair and a clean environment and room to spread out their materials so they can work? And also to be able to see their friends when they're there? You know, this is their community now. They've left home; this is their world. And so I think that's what we're providing them: a place where they can develop and grow."

QUESTION 4: The college belongs to a consortium that maintains a large online catalog and offers rapid document delivery services. As a result, the interviewee says his library has several off-site shelving units. The consortium also plans to build an off-site shelving facility for collaborative use. This and the emergence of e-journals leave the interviewee feeling there will be little reason in the future for collections to crowd readers out of the library.

QUESTION 10: The interviewee has done no formal post-occupancy evaluation of the renovation. He is keeping careful gate counts and has observed substantial increases in use. "Students crowd in."

QUESTION K: The interviewee emphasized the importance of the food service offered at the library.

"If we keep the building clean . . ., the students treat the building much more respectfully. . . . If you give them a nice place and clearly show that it is important and take care of it, they will return that to you. They're quick; they're quick to perceive that they're being treated as a reasonable individual."

INTERVIEW 26: LIBRARY DIRECTOR

QUESTION F: The project was driven by a set of pragmatic needs (shelving for the collections, roof repair, technology retrofits) and a vision that the library should be more responsive to student learning needs. The college wanted the library to be a vital center to the campus. The original library building is quite handsome and a campus landmark. The project was meant to enhance the symbolic position of the library on campus and to have a positive impact on prospective students.

The college wanted to include the center for writing and teaching and the instructional technology and media center in the same building. These units do not report to the library and occupy quite discrete spaces in the building.

QUESTION G: A former dean had been actively lobbying for the library project for some years. Bringing the two centers into the project helped to sell it to the trustees.

The project was an early, major element in a larger plan of campus capital improvements. The library and campus center are adjacent buildings, and they were renovated at the same time and in ways explicitly meant to complement one another.

QUESTION 7: A survey launched the planning process. The survey form asked students and faculty about their interest in potential features of the new library space. Results were disappointing. Respondents focused on the need for more copying machines and library materials rather than on potential architectural features of the building.

The interviewee, the former dean, and some trustees visited a few renovated libraries at equivalent institutions.

The interviewee, the consultant, the former dean, information technology staff, and the centers' staff wrote the building program. Faculty and student representatives were provided for in this process, but neither showed any significant interest in detailed planning. They came only when the architect made presentations.

With so many projects going forward, the college employed a real estate development company to help manage the capital plan. Each individual project had its own project manager assigned from this company. The interviewee was chair of a "shepherding committee" and was not in charge of the project. Eighty percent of the design decisions were made by library and other involved staff, drawing on their own observation of faculty teaching practices. The college is small enough so that these academic support staff understand campus teaching methods and needs quite well.

The interviewee did not claim an equally strong parallel knowledge of student learning behaviors.

The principal design mistake made was in providing too many carrels in the mix of carrels, lounge seating, and tables. The carrels are underutilized. There is probably too little group study space.

QUESTION 4: The interviewee expressed uncertainty about any future need for shelving. The building now has space for perhaps 20 years of collection growth. The print periodical collection may "shrink away," given the use of electronic journals. There is space for the installation of compact shelving.

QUESTION 11: The center for writing and speaking and the educational technology center are included

in the building but not in the library's security perimeter. The centers were primarily interested in having new and better spaces. The interviewee was glad to have them in the building and trusted that good things would result from physical proximity. But neither she nor others at the time regarded the centers and the library as strategic partners. "We didn't plan for real ways in which we would develop partnerships, and that [i.e., partnership] has been slower to develop than I might have hoped, when I was being optimistic about it. . . . We're all very strapped here."

One entrance to the library was to be staffed by media center personnel, but it soon became clear the center could not tie down to a service desk staff that it needed to have out and about on campus.

QUESTION 6: The interviewee said her project fits the question 6 hypothesis. The two centers are the only things that make for a non-traditional design for the library, "but we were not melded together into a unified service point or any of those things that some people are experimenting with. Of course we were working with an existing building, too, which probably keeps your mind in the box to some degree."

"There doesn't seem to have been a paradigm shift yet [in library space design]. It seems to me that higher education in general does not seem to have paradigm shifts very often. So since other things change so slowly, it may be only natural that libraries do."

The interviewee described an interesting project at another university. A single building will offer a host of facilities and services exclusively for freshman, including some information services. The idea is to create an environment particularly to support first-year students.

QUESTION 2: The interviewee had a wide variety of student accommodations as an explicit goal in the project planning. The project provided:
- Secluded carrels and lounge furniture
- A grand reading room with large tables (the most popular study space in the library)
- An outdoor reading terrace
- A readers' gallery in space between a garden and the campus center
- Six group study spaces of various sizes
- Three additional group study spaces equipped for media presentations
- Different kinds of carrels

Students have traditionally wanted the library to be open more hours; their call for more hours is more "heartfelt" as regards the renovated library.

There are no designated "social" spaces in the library, but the computer cluster on the main floor and the writing center are in fact much used as social spaces.

QUESTION K: The desire to have the library and the campus center work together as buildings resulted in there being three entrances to the library. A trustee was particularly insistent about one of these, and is reported to have said: "Oh those librarians and their fortress mentality. They just have to get over it."

INTERVIEW 27: LIBRARY DIRECTOR

The library project had three principal goals:
- Provide more space for the college archives and special collections
- Rearrange space so that media and computing services could operate more effectively
- Correct deficiencies in the work space of individual units (e.g., interlibrary loan and circulation)

The interviewee was not at the college when the library was renovated, but existing documentation makes him confident about his answers.

QUESTION 4: "The quality of the [archives and special collections] space and the quality of the services has only generated more collections. And now it [i.e., this space] is one of the points that is most crowded."

"In a small college we get caught up in the question of centralization versus decentralization of HVAC. . . . The judgment was made in the 1980s that we would be more efficient if we were a centralized system. But we have lost control, and we have significant problems with the humidity control in the summer and [in] both summer and winter with temperature evenness when the outside temperature is fluctuating."

Shelving will continue to be an issue. "There is no sign in our projection that the number of books acquired will significantly drop. It may decline slightly. In terms of periodicals, yes there will probably be changes there. There are changes there. We are trying to control the growth of the collections by the purchase of JSTOR and the disposal of the print volumes that that represents. There are plans in . . . [the state] for a remote storage facility that would be collaboratively used, and we would depend on that for little-used materials. And we will install more compact shelving. Between those three things and maybe some judicious weeding, we will try to keep our periodical collection within the bounds of the current space. But that is going to be kind of hard."

In response to a question about what will motivate the next major investment in library space, the interviewee said: "What would prompt an expenditure is more likely to be providing appropriate spaces for technology. The staff in computing services has grown. We have nice group study rooms in the library, but they are not designed to bring technology into the center of that group study . . . or allow the students to practice multimedia presentations. . . . And probably one other thing that may drive it [i.e., future investment] will be to incorporate the campus's academic support service within the building."

QUESTION 6: The interviewee agreed with the premise advanced in question 6, except for the last two or three years, where he sees significant change. What he sees in recent years is a shift to allocate proportionately less space to collections and more space to diverse study spaces, social spaces, and technologically capable spaces. These changes are driven by (a) information technology (b) changes in the delivery of reference service—more reference service is now being offered, it is more personalized, and it is electronically distributed—and (c) the incorporation into the library of functions not previously included in libraries.

Library space planning is properly evolutionary, not subject to radical redirection. "Facilities are very expensive. It's hard to figure out how to experiment. In the [unintelligible word] sense, we're going to be fairly conservative about that. At least in the college library, what you're going to do will be in response to what you think is happening in the curriculum and the way students are going to use information resources in the next five to ten to fifteen years—whatever your planning horizon is. That's about as far as you're going to go. Those changes in curriculum and so forth are fairly conservative, fairly slow to happen."

QUESTION 7: The interviewee agreed there was little formal needs assessment or consultation with constituencies in the renovation project. He affirmed that library staff stay in close contact with faculty and students and depend on the daily accumulation of experience to guide thinking about space planning.

The interviewee agreed we have not done systematic studies of learning and teaching behaviors. How

might that be connected to library space design, especially as regards teaching behaviors? He emphasized the importance of group study areas and the diversity of individual study spaces responding to individual differences in learning styles.

QUESTION 11: Renovation planning responded pragmatically to earlier decisions about the location of media and computing services and was not driven by a sense of a strategically important alliance of these services with the library. That changed as the library director became administratively responsible for these units.

INTERVIEW 28: LIBRARY DIRECTOR AND TWO ASSOCIATES

The project being reported on was the third phase of what may be a five-phase renovation of the library. The driving objective for all of the renovations has been to keep what is good and to improve on it rather than to effect radical change. The renovations achieve a "shifting and burnishing" of library services. The library, while a handsome building, had grown shabby over time and was not an attractive place to come to. The renovations aim to change the affective character of library space.

Sometime in the 1990s, the library and computing services were merged under the interviewee's leadership. "In some ways, the phased approach has really allowed us to mature as an organization, and I think a lot of the decisions that we have made are better decisions because we have had more time together as a merged organization. And some of the changes we have put in place probably couldn't have occurred five years ago. . . . It is very gratifying to see how the organizational vision is captured within the space, and really allowing [library and computer] people to come together through the work and now through living side by side."

QUESTION F: The project had some specific objectives:

- To provide the archives with a reading room.
- To provide special collections a seminar room, which has become heavily used for teaching.
- To create a conservation facility to accommodate expanded treatments aimed at keeping the circulating collection in good condition for readers. The need for such treatments became evident in a condition survey the library did, revealing that a high percentage of the collection was deteriorating. The library has an active program in the book arts, which offers experience with typesetting and hand printing. The conservation facility is an integral part of this program.
- To provide upgraded HVAC and fire protection for the floor.
- To provide six small study (and technically capable) rooms that accommodate up to two persons.

QUESTION 7: "We didn't do formal surveys. Given the size of [the college], . . . there's an awful lot of comfortable interaction—library with students, library with faculty, several librarians are on the faculty council. [There has been] on campus . . . a very comfortable respect by faculty and students for the library. I think we felt the communication routes were in place, that a formal survey wouldn't be the best way to hear what people wanted. All along there's very active involvement with and keeping up with not only what the curriculum is now but where it's going. I think there's a very good sense of where the faculty wants to go as well as how students are doing their work. So it made more sense to us not to be formal but to take advantage of the communication routes that we had. And also to make sure that we didn't hear just what we wanted to hear. We didn't want just to talk with our friends, who would try to make us feel good."

"In the case of students, it was primarily those who worked for us. You might say they were biased. And of course they are. But they can also speak with us with some understanding of what we can possibly

do for them. And some of the most valuable information I got was from our student employees. And the thing I remember most was what kind of furniture they want. . . ."

The need to move parts of the collection to off-site shelving was a significant factor in space planning and required a substantial consultative effort with faculty. Staff started with faculty who were "friends" who "would be open with us and not working solely on their own agendas," but then moved to broader discussion groups and consultation with individual departments and faculty members. "We heard it all. And of course we heard it a lot from some who were most anxious about that particular decision."

Emeritus faculty asserted a wish for carrel space in the library as a way of keeping in touch with the life of the college and their academic interests. Such carrels were provided but have in fact not been used by emeritus faculty.

QUESTION 8: Lead gifts for the library project went a long way toward establishing the priority for the project among other college projects.

Coincident with the renovations, the library undertook significant staff reorganization. This activity expressed itself in a vision statement for library services, through which library staff took responsibility for making the new organization work well. The new mission/vision statement was "just a perfect staff preparation for renovation."

QUESTION 6: The recently completed renovations aimed at enhancing largely traditional library operations, confirming the hypothesis about library space design posed in question 6. But the renovation work now under way, focusing especially on the library's reference service, is much more radical in its view of the changes needed in library operations.

"We are changing with this renovation from an old fashioned library where the client comes in and consults with the librarian or consults with a computer to get some information and then goes off to do whatever they're going to do. What we are planning for and implementing right now is space that supports a student who comes in and wants to start her research in the reference area. So she sits down at a spacious table with a computer. She spreads herself out and she goes to work. She does her work. She starts her writing. She talks with a reference librarian and so on. So she's there for the duration. . . . We will have many large tables with regular computers that we provide. . . . These tables are all in sight line of the reference desk, so if reference staff see that someone needs help they become assertive. If the student or faculty member needs help, they can see that help is right there. Also in this view is the computing help desk and something else that is actually radical for us. Just a few steps away is a very large reading room. And this really defines the change too. Before the renovation it had been stack area. . . . After the renovation, . . . this area is becoming a large reading room which is going to have vending machines with it so that students can go in and relax a little bit, can eat, can do their work, and at the other end of the room they have newspapers and current periodicals. So while the standard resources are still here, the way we allot the space and place our service points has evolved."

"We had a new service model. We're not combining desks, but we really wanted adjacencies strengthened. . . . [There is a lot more] interaction between what is going on at our reference desk, what is going on at access services . . . . We talk about it as our kitchen design with our refrigerator and stove and sink . . . all within a few paces of each other. . . . That is changing the way folks are seeing this service floor. And I think the . . . technology and media center . . . helps to kind of reinvent what we were doing here in the library. It is a very high-end media facility, but combined with our course reserves operations. We have a number of project rooms that allow for production of new instructional applications and for students engaged in multimedia projects. . . . [The library and information services are a merged organization.] It was a way to capture within our facility design the nature of our organizational design."

There are statements in the vision statement that reflect choices made in space design. "For instance, we welcome the opportunities presented by technology but know that technology is not a substitute for personal service. So we're not just clumping computers together in a lab somewhere. But it's a self-service lab. It's very much interspersed in our service areas. . . . And certainly in the . . . technology and media center, the service point is the central point. . . . We have a ring of staff, basically, around that facility so that you are readily seeing the people who are going to be providing the service. And in fact part of the current renovation was to open up, using a partial glass wall, what was the traditional technical services area within the library, in effect to say, 'Here are all these people who are providing services to you. It's not just a machine behind these walls.'"

QUESTION 2: Student study needs were met with tables and chairs, but the preferences students expressed for furniture were attended to closely. This produced a mix of lounge and firm seating. Elsewhere, student study needs have driven the decision to convert an alcove into a joint staff/student conference room where, after the workday, students can practice their presentations using appropriate equipment supplied in the room. Class presentations have become central to teaching and learning at the college. It is not clear how heavily students will use this room. "We will wait and see how they will want to use it."

"And the other thing [students recommended] was something I don't think anyone had thought of before. This building is blessed with two atriums, and the renovation has really polished those. . . . Students said it would great to have a [30' to 40'] counter right there [along the length of the atrium]. And it absolutely is. It is used for anything they want to use it for. It's dropped and powered. . . . What happens is that at the end of the term practically every seat is full. Early in the term people scatter themselves around. . . . It's been a nice expansion space and always well used."

QUESTION 4: Shelving the collections has definitely not been the most important motivation for library renovations at the college. The delivery of services has been much more important.

"Probably back . . . when we did the master plan, one of the components we were trying to get at was what are we going to do with all of these books. We're running out of space. . . . At some point, . . .we said hold it, that's not the only reason for people to come to this building. What is it that we really want them to be coming for? It made us alter our thinking to say they are coming here because of the staff expertise we can provide, because of the services and the support we can provide in relationship to their learning and their teaching activities. The collections are important, but that is really secondary to the services we are offering."

"Overall, through these renovations, we're actually reducing the amount of collection space [in the building]. It looks as if we are quite comfortable in terms of collection growth now . . . by sending off-site quite a few things."

INTERVIEW 29: LIBRARY DIRECTOR

QUESTION F. The interviewee identified five objectives for his renovation project:

1. To get two separate buildings to work together as fully integrated space
2. To create many different kinds of spaces that would prompt the campus (especially faculty) to think of the library as a teaching and learning space
3. To "deal with technology" by getting thoroughly wired
4. To deal with growth of the collections
5. To "make the library look and feel like a library and create hospitable space to work, study, and read in"

The project has been exceptionally successful, as measured by student and faculty use of the library. Library staff are swamped by requests to use library space.

QUESTION 7: The project began when the interviewee, newly arrived at the university, went to the dean to secure modest support for preliminary space planning. He recruited faculty, library staff, the head of campus facilities, and students to participate in these preliminary studies.

The interviewee recruited a member of the sociology faculty to help design a survey of student views about the library. "We tried to gather as much information as we could." The survey was comprehensive in scope, including questions about library décor, features of desirable study spaces, and a little about information technology. "I wanted to get student input right off the bat."

With this much preliminary planning, the interviewee was able to hire an architect to join the planning effort and produce "on a shoestring budget" a broad conceptual and schematic plan for renovation to be done in modules over a significant period of time.

QUESTION 8: At this point, a new president arrived at the university. He made facilities and space planning his primary agenda and readily approved a more aggressive approach to library renovations. The president's support was crucial to the success of the library project. He sent the interviewee an e-mail saying that the project "will probably cost twice as much, and let's go ahead and do it. When I got that, I said, hmmm, I don't think I've ever received an e-mail like that before."

With the president's support, the interviewee turned to the library committee to serve as a sounding board for the project and to build faculty ownership of it. The committee readily signed off on the educational features of the project and spent much of its time deliberating on less critical issues, such as carpet color. That happened because the university has a good history of supporting the library, people knew it was overdue for renovation, and a good plan was in place. The library project has been particularly successful in getting the existing building "rejuvenated and reutilized."

QUESTION 2: Asked what the interviewee meant by describing some of the renovation as producing "cultural spaces," he answered by describing events spaces, i.e., space for exhibitions, special collections, the book arts, parties celebrating the publication of faculty books, library friends lectures, and lectures sponsored by the library at commencement.

The interviewee specified the following spaces as explicitly advancing an understanding of the library as a place for teaching and learning:

- Three electronic classrooms, with workstations, projectors, smart boards, etc.
- A writing center
- A seminar room, designed in response to faculty requests, with food service but no technology capabilities
- Fourteen group study spaces, designed with lots of student input
- A 24-hour study space, thoroughly wired and designed with significant input from the donor
- A special collections laboratory for printing and the book arts. The special collections staff does a lot of collaboration with the English and fine arts faculty, making their facility "a great place to teach."

In describing these spaces, the interviewee said they were often uncertain about the demand for them and how best to equip them. He spoke of a willingness to experiment and to take risks in affirming the library as a space for teaching and learning, rather than filling the available space with shelving. "We could have filled the place up with more shelving, but instead I took the risk that I'm sort of living with at the moment of building three electronic classrooms, a seminar room, a major reading room for rare books,

and that kind of stuff, which has paid off. I mean those spaces are just getting a tremendous amount of use. . . . We also have a writing center in the library. That was part of the politics of the reconfiguration of space. We kind of made that choice because we thought there were potential collaborative possibilities with the writing center, and historically it had been in the library. . . . We also had in mind creating spaces where teaching faculty could come in and do their thing in a variety of different settings. And that's where we weren't sure. We kind of had some encouragement, but we weren't sure."

"We're finding especially with new faculty that, when we do our orientation in some of these [cultural] spaces, they love to come back. They love to bring their classes in [even when there is no specific library-related reason for teaching in the library]."

QUESTION 6: The interviewee expressed a "yes, but" kind of agreement with the hypothesis advanced in question 6. He believes that especially in college libraries, attention is newly being given to instructional space and to collaboration with faculty. "I sense there is somewhat of an opening toward instructional space and collaboration with faculty, at least at liberal arts kinds of places. But it's not a dominant theme. A lot of it depends on your institution."

Large library projects are often driven by technology and shelving issues, or by the striving for coffee house effects. "A lot of places are missing opportunities. . . . But there is beginning to be an understanding that if we don't integrate more with the curriculum and with the research mission that things are going to be complicated and difficult."

The sources of the new attention paid to educational space are not clear. There is some "understanding that we can't deal with the historic understanding of the library as a space for the collections only. Librarians are beginning to get that point. . . . The model of the library as a warehouse is somewhat problematic at this point. We have to find a different mode of doing business."

In some cases, technology drives library design for the worse—i.e., libraries are over designed for technology. The right balance between traditional library functions, technology, and the library as a place for teaching and learning will vary from campus to campus and depends significantly on campus culture. "It's really cultural issues you're trying to deal with, and get translated into the space in some reasonable way that works."

There is no formula for doing this. Success requires working with an architect "willing to ask difficult questions about assumptions about what will be used and not used" and a willingness to get a great diversity of views in the planning stages, "so that you can hear the naysayers along the way. . . . Technology was not the solution to our problem, and we really need to let the teaching mission drive the process. So we listened closely to the faculty, and we tried to listen to students. They come and go. . . . You have their attention for limited periods of time."

QUESTION 4: The interviewee has used a fifteen-year planning horizon in thinking about collection growth. He expects to reduce significantly the amount of shelving space needed for print journals by moving rapidly to online access to journals (including JSTOR). Existing back files will move to storage or compact shelving.

The book collections will continue to grow. The interviewee sees "a lot of use of our book collection in different ways, and interesting ways. . . . We're going to find space to house the book collection locally, in the library and browsable."

Consortial arrangements, requiring the development of mutual preservation and storage strategies,

and interlibrary loan will have some impact on the growth of the book collections, but the extent of that impact is uncertain.

QUESTION 10: The interviewee has done no formal post-occupancy studies of the renovation project. He has succeeded in getting about 20 questions regarding the library into the annual survey of graduating seniors. In the future, these questions will touch on library facilities. For the present, the library will this spring participate in the LibQual project, where many of the questions focus on library space issues. "We're so busy dealing with demand issues, and dealing with managing the space and people in a positive way [that we've not had time for formal assessment]. It's kind of taken our breath away as we try to keep up with what has happened."

In a follow-up message to the interviewer, the interviewee wrote: "I think that there is a strange dialectic right now (at least since the mid-90s) between libraries and technology that we in the profession have not worked through. I['m] thinking here not just of the print/electronic nexus but also [of] the notion of a library as a space for thought, reflection, study, and active learning. It is the latter practice that technology has provided an opportunity to reformulate. In planning new spaces, we should have that part of the process foremost in our minds. But it's hard. Because many on our campuses really just want us to solve the 'space problem' rather than begin the process of rethinking the role of the library in positive, proactive way."

Baccalaureate Colleges—General

INTERVIEW 30: LIBRARY DIRECTOR

QUESTION F: Project objectives were to respond to needs for shelving, student study space, library instruction, and excellent telecommunications. After the project was completed, the library moved to wireless technology, complementing the university's provision of laptop computers to all students.

QUESTION G: The university was motivated to do the project in part because of negative accreditation comments on the library.

QUESTION 7: The initial program for the project was based in considerable measure on a systematic comparison of the university and its library with other similar institutions and their libraries.

Once hired, the architect ran a number of focus groups for students, faculty, and administrators to determine what they wanted. Faculty wanted more information resources, office space in the library, and quality seating. Students wanted more information resources and a variety of study spaces. Otherwise, the interviewee felt that students—coming from small farm communities—generally lacked any frame of reference for what an academic library should or might be.

When the university required students to have laptops, the interviewee expected them to be used in carrels where power is provided. Instead, students favor using their laptops in lounge seating, stringing power cords (often awkwardly) to any available outlet.

At some point in the planning, the interviewee commissioned a formal study of the future of the book.

The university has a significant program in distance education. The library project included two distance education classrooms as a consequence.

QUESTION 4: The library project provided a great deal of shelving space for the collections. At some time that shelving will no doubt be filled. The interviewee believes the university will add a wing to the library rather than go to off-campus shelving, given the emphasis on current-use materials in the collection.

QUESTION 10: The interviewee commissioned a formal post-occupancy study, in which the views of faculty, students, and campus deans were surveyed. He was in part motivated by the wish to have data on the success of the library project for the accreditation process. The study indicated that the project "worked" as intended.

QUESTION K: The interviewee said the project included some "scholar work stations," i.e., rooms for 2–3 people equipped with high-end computers and sophisticated application software. These rooms were not heavily used and have been reallocated for archival collections.

The interviewee emphasized the importance of building as much flexibility as possible into library projects. It is all but impossible to predict how space will be used more than ten years out.

INTERVIEW 31: LIBRARY DIRECTOR

QUESTION F: The library was unusual in that its renovation was not a response to inadequate space. There was enough space, but it was not very useful space. The building looked worn; it did not comply with ADA standards; it had unpleasant carrels, poor instructional space, and terrible HVAC; library staff and the collections were poorly located; and the entrance was hostile. Prospective students told the college the library building was an admissions liability.

The project addressed these problems. But "we didn't start out with what I think is the traditional question, 'How much stuff do we have to get in this building and what kind of stuff is it?' . . . We didn't do that. We started out the planning by saying. 'What do we want to happen in this building?' And the answer to that was that we wanted to be much more proactive about promoting learning. . . . And that's what we were trying to do—both information literacy, which we consider our discipline, but also other kinds of learning—and we wanted the architecture to make it be like a think tank atmosphere, where there would be lots of exciting ideas bouncing around, and people could interact with each other and text and whatever technological stuff they might require, so that great minds could do their thing in this space."

QUESTION G: All the collections were put on the basement floor in compact shelving; the upper floors were dedicated to people. "We also wanted to say with the architecture that this building is not about stuff, it's about people." There have been no reader complaints about the need to go to the basement to get books.

QUESTION 7: "I think the programming stage is absolutely the most important and that if you don't have a vision at that point, you're certainly not going to get one as the project progresses." The interviewee did no formal assessment studies, nor did she collect statistics.

The regents brought an initial planning effort to a halt, feeling it was not sufficiently forward leaning. A subsequent planning session with an architect, a consultant, the interviewee, the college dean, a faculty member, two regents, and an information technology specialist was an immensely productive brain storming session. "It was an amazing experience. And that's when we came up with the whole notion that we have three things coming together in this building: we have learners, experts, and tools. And this is the only place where that particular combination comes [together]. Tools you can get anywhere now, and learners can be anywhere and should be anywhere. But experts are not quite so mobile—both librarian experts and classroom faculty experts. But where we all come together is right here in this library."

After this planning session, a core group began to develop these ideas, followed by informal consultation with faculty and students. "We had our student workers pull in other students and student government was involved, and had them talk to us. And they came up with some neat ideas. They said, 'You know, we need a place to practice a speech.' Never would have thought of that if we hadn't asked the students. . . . So we have some individual study rooms with mirrors in them, so then a person can practice a speech and watch him or herself."

The project was not a hard sell with the administration or the faculty. We shared a vision of what should be done. "I felt really lucky in the whole process that the administration was actually willing to go out on a limb with this building. And they were not only accepting of some different things to do but really eager to do some different things."

"We tried to find literature about the design of educational spaces. . . . I was amazed; I found next to nothing [in the literatures of architecture and education], and I thought surely school designers must think about these things, don't they? But I couldn't find anything. I was trying to find out more things about learning styles. We knew we wanted to accommodate many different kinds of learning styles here. . . . But we didn't have a lot of guidance from anything except sort of our own sense as learners and teachers of what people might need. We hoped if we provided enough different kinds of spaces, people would find ones that were convenient for them, or conducive to their own styles."

QUESTION 8: "We had just put up . . . a chapel. . . . So we had the chapel as a [college] symbol of faith, and we wanted a symbol of learning. . . . And so the library had symbolic value as a learning symbol."

QUESTION 5: The vision statement mattered a lot to library planning. It was the first thing in the program booklet, and it represented the heart and soul of the project for library staff. A number of design decisions reflected the vision statement. The interviewee and the dean of the college wrote the vision statement after the brain storming session with the architect, and then sought comments on it.

QUESTION 6: "We tried hard not to design just another academic library. Information literacy had to be the driving point behind the building. So we were trying to create a space that would be very supportive of our information literacy program, and that of course is the mission of our library. . . . I've seen an awful lot of stacks covering a lot of square footage with study spaces around the edge. We didn't do that. . . . [In including a coffee shop,] we wanted a place that would really foster interaction, particularly between students and faculty. And it's done that. . . . The driving force was different [from that of most projects]."

To foster this difference, one needs "librarians who think differently. And I'm afraid I haven't seen a lot of those. I hear a lot of librarians being concerned about our relevance in this age. . . . That's a serious concern, but we're not going to answer it by doing the same old things we've always done. But I don't see a lot of really creative thinking in the profession. I'm really sorry to say that. I'm different, of course!"

QUESTION 12: "Information literacy. It's easy. . . . Educating students is our priority. Information literacy is our foundation. Producing lifelong learners is our objective. . . . There's nothing in there [i.e., the library's mission statement] about, you know, we're just handmaidens who wait to see what somebody wants us to do and then we meekly obey. We really see information literacy as our discipline; this is what we teach here [at the college]. My colleagues and I see ourselves as educators." The interviewee regards this as "completely obvious."

QUESTION K: The list of things the interviewee would do differently is very small. She was surprised by the heavy use of one staircase that is most unattractive.

Letter to Library Directors Inviting their Participation in the Study

Dear [librarian's name]

I am conducting a project for the Council on Library and Information Resources that investigates the way librarians, academic officers, and architects are now thinking about the design of library space. The project investigates how the goals that motivate new investments in library space are articulated and how library design makes those investments responsive to institutional priorities.

The first part of this project involves an easily used Web-based questionnaire to which I hope you will respond. Doing so should take you no more than 15 minutes. I am asking you to respond to this questionnaire because a literature survey suggests your library has undertaken one or more significant library construction, renovation, or remodeling projects within the last ten years. I know you receive dozens of questionnaires each year and must decide which to answer. Given the vital importance (and huge cost!) of adequate library space, I hope you will feel this survey merits your attention. The demonstrated ability of your library to act on its space needs can be most instructive to others.

You can gain access to the questionnaire customized for your library by going to CLIR's Web site, http://www.clir.org/survey, and inserting the Project Identification Number given at the top of this letter. When you do this, Project Data for your library will be automatically supplied. In some cases, more than one Project Identification Number is listed above because you have undertaken more than one project (sometimes in the same library unit), as indicated by differences in the date, project size, or architect identified for each project. Please fill out a questionnaire for each Project Identification Number you receive. You may want to look over the entire questionnaire before beginning to respond, especially if you are adding comments to your checked responses (which you are encouraged to do!). You may find that a given comment fits better with one question than another. If someone else at your library is in a better position to respond to the questionnaire, please forward this letter to him or her.

May I have your survey responses by no later than 30 September 2002?

I will conduct a number of follow-up phone interviews to learn more about individual projects. Please indicate your willingness to be interviewed in your response to Question 14.

Responses to this questionnaire and the phone interviews will be treated as confidential. Data will be aggregated, and none of the information will be reported in a way that enables others to identify the respondent or the respondent's institution, except with the permission of the respondent.

The Council on Library and Information Resources and I hope to publish the findings of this questionnaire and the phone interviews early in 2003. Those who complete the online questionnaire will be sent a free copy of the final report. I will be most grateful for your help in getting the project launched.

With many thanks for your assistance,

Scott Bennett
CLIR Consultant
Yale University Librarian Emeritus

Phone Interview Procedures for Library Directors

Before the call

- Review all e-mail correspondence with interviewee, noting any issues that may need attention during the interview.
- Review interviewee's survey responses for anything that may be may need attention during the interview.
- Note the interviewee's institution type and the project completion date, to determine whether there are any questions relating those issues that need attention during the interview.

The interview call

- (STATEMENT A) Thank interviewee for taking time to talk about library space planning at his or her institution. Confirm survey information about formal title of interviewee(s).
- (STATEMENT B) Say: "I expect our conversation will last 45 to 60 minutes. Do you have that much time?" [Answer]
- (STATEMENT C) Say: "I want to start by emphasizing that I will treat this phone interview as confidential. It will be aggregated, where appropriate. None of it will be reported in a way that enables readers to identify you or your institution, except with your permission."
- (STATEMENT D) Say: "My wish is to understand as clearly as possible what you say and to depend as little as possible on my memory for that understanding. So, if I may have your permission, I will record our conversation. Do you agree to this recording?" If permission is denied, say that I respect the interviewee's decision and skip the next step.
- (STATEMENT E) Turn on recorder and read in the following information: "[Interviewee's name] is here talking with Scott Bennett about library space planning issues. Mr./Ms. Xxx is [official title] at [institution] and we are discussing a library space project completed there in [year date]. The interview is taking place on [day of week, date, time].
- (QUESTION F) Ask: "Now, let me start by asking you what your most important goals were in undertaking this project. You are likely to have achieved all sorts of things, but which few of them were most vital to you? [Answer.] If I were to ask this same question of your academic dean or provost, or your president, do you think those persons would have the same answer as you?"
- (QUESTION G) Ask: "Is there anything else about your project that you think I should understand at the outset of our conversation?"
- (QUESTION H) Say: "You indicated that among the possible questions posed for this conversation, numbers [give numbers provided by interviewee] are probably most pertinent to your project. Let us turn to Question xx." [Proceed to work through the questions. Probe responses where they are not clear or where further development of the response appears valuable.]
- (QUESTION I) Say (optionally, depending on time and pertinence): "We've come to the end of the questions you identified as most pertinent. There are some others that are of special interest to me. With your permission, I'll ask these questions. If they really are not pertinent to your project, please just say so." [Ask these questions. Probe responses where they are not clear or where further development of the response appears valuable.]
- (QUESTION J) Ask: "I will be seeking the views of selected chief academic officers about library planning. Did the chief academic officer at your institution, or a deputy, play a significant role in developing your library project? [If yes,] Would you give me the name and e-mail address of that person?"

- (QUESTION K) Ask: "It is time to draw our conversation to a close. Is there anything else you would like to say about your library project or anything you have already said that you would particularly like to emphasize? [Answer] Is there anything you would like to ask me?"
- (STATEMENT L) Say: "You have been most generous with your time and in sharing your views with me. What you have told me will help deepen my understanding of the survey data I have from you and 240 other respondents. I will be able to report on that data in a more nuanced way because of this conversation. I am most grateful for your help."

After the call

- Selectively transcribe the interview. Summarize narrative points, following the actual course of the interview. Use question labels (e.g., Question 6 from the interview script, or Question F in the interview call procedures, above) to indicate what questions are guiding the discussion at any given point of the interview. Focus the verbatim transcription on value statements, perceptive comments, fresh formulations, telling points, etc., along with enough of the context of the conversation to establish clearly the meaning of the portion actually transcribed. Quoted remarks should adhere very closely to the words and the informal tone of the speaker, though false starts, verbal hesitations, uncertain sentence structures, and some other features of conversational English may be regularized to be suitable for written expression. [The following was not done; it did not seem necessary or productive after the first dozen or so interviews.] After the first half-dozen interviews, listen again to the tapes and adjust the judgment standards for deciding what to transcribe.
- During the transcription process, be alert to any opportunities to categorize or aggregate responses. Where useful, devise summary statements that report the dominant character or interest of the interview. [The following was not done; it did not seem necessary or productive after the first dozen or so interviews.] After the first half-dozen interviews, develop (if appropriate) a check sheet to use in remaining interviews. Continually revise the check sheet as the interviews go on, and listen again to the tapes to identify and tabulate (as appropriate) information from otherwise completed interviews.
- Make any adjustments to this procedures sheet that may be needed as the interviews proceed.