Report
of the
Subcommittee on Information Resources and Collection Management
Library Building Committee
28 March 1996

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Report of the Subcommittee on Information Resources and Collection Management

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I. Purposes of the Report

The Building Committee for the Berry Library was created in March of 1995 to develop detailed programmatic plans for the new Berry facility. The members of the Library Building Committee, which is chaired by John Crane, Director of Library Administrative Services, include the following:

Della Bennett ’96
Reed Bergwall, Assistant Director of Facilities Planning
Robert Brentrup, Director of Information Systems
Malcolm Brown, Director of Academic Computing
Margaret Dyer-Chamberlain, Associate Provost
John Crane, Chair, Director of Library Administrative Services
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Gordon DeWitt, Director of Facilities Planning
Alan Gaylord, Henry Winkley Professor of Anglo-Saxon and English Language and Literature
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John R. James, Director of Collection Services, Chair
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Kenneth Korey, Associate Professor of Anthropology
Larry Levine, Director of Computing
William Moran, Humanities & Social Sciences Librarian
Margaret Otto, Librarian of the College
William C. Scott, Humanities Distinguished Research Professor and Dartmouth Professor of Classics

The Building Committee has pursued its work by dividing into two major subcommittees — Information Resources and Collections Management and User and Consulting Services — both of which spent the months of January, February, and March developing plans and writing this initial report.

The work of the Building Committee is an extension of the Task Force on the Library of the 21st Century, a group chaired by Professor William Scott that met over a
period of eighteen months and issued an extensive report in May of 1995. This report called for a library which was designed with maximum flexibility in order to include a variety of spaces for study, learning and research, was ready to adjust to emerging technologies, and was planned in coordination with the renovation of the Baker Library in order to create one integrated and functional building to serve as a crossroads of the campus.

Briefly stated, the central purposes of this report from the Subcommittee on Information Resources and Collection Management are:

- To provide background data regarding information resources and collection management that is required to make decisions about the new Berry Library; and

- To make predictions about future library trends regarding information resources and collection management, as they impact the planning of the new Berry Library.

Throughout this report, we have tried to make educated guesses about future library trends, in an attempt to plan a library that will serve the Dartmouth community well, both in the near term and into the future. We do this with the awareness that library and information technology fields are undergoing a period of intense change. In an ideal world the library would be "all things for all people," but in the real world, we will be faced with serious choices among competing programs and priorities. In the

1 Members of the Task Force on the Library of the 21st Century included: Della Bennett '96; John Chung '94; Pamela Crossley, Professor of History; George Cybenko, Dorothy and Walter Gramm Professor of Engineering Sciences; Margaret Dyer Chamberlain, Assistant Provost for Development; Alan Gaylord, Henry Winkley Professor of Anglo-Saxon and English Language and Literature; Gordon Gribble, Professor of Chemistry; Joshua Hamilton, Associate Professor of Pharmacology and Toxicology; John James, Director of Collection Development and Bibliographic Control; Phyllis Jaynes, Director of Library User Services; Gary Johnson, Professor of Earth Sciences; Lawrence Levine, Director of Computing; Fillia Makedon, Professor of Mathematics and Computer Science; Nancy Marion, Professor of Economics; Victor McGee, Professor of Applied Statistics; Margaret Otto, Librarian of the College; Ellis Rolett, Professor of Medicine; William Scott, Professor of Classics and Chair of the Task Force; Anne Waters, Graduate Student. The report of the Task Force is available from the Chair of the Building Committee.
end, we will strive to plan the most effective library building possible, within the constraints of space, budget, and academic priorities.

The new Berry Library building will be an expression of Dartmouth’s concept of what the library is; a place in which information and people are brought together. Within that very simple definition, many possibilities are included and many types of information—literary, artistic, graphical, aural, static and animated images—are encompassed and integrated. There are many ways to express information—such as ink on paper, microfilm, video, film, and a variety of digital formats. The idea of "making information available" is the most important factor, because libraries today make information accessible that is not necessarily housed in the building, or even within the library system itself. Digital information and networks extend this concept dramatically. The Baker/Berry Library will, in a very real sense, be an "information center" that provides assistance in the use of any mechanisms necessary to see or hear certain types of information, all of which are stored in various ways and in a variety of media.

Our discussions about the growth of the collection in terms of both size and nature, and our thoughts about the use of the collection, have led us to consider the following central question; what concept of a library are we trying to embody in this new building? In part, that concept is driven by our need to have more space available for current library functions. We have, therefore, tried to plan for the evolution of current library functions and practices. We also have planned for the beginnings of new paradigms -- paradigms that will make new types of information available, and that will introduce new library services side by side with those that are more traditional in nature. Digital and print collections, in this new paradigm, will become more and more integrated. Our concept for how the Baker/Berry Library will serve the Dartmouth community, then, is shaped by a series of considerations — what Baker Library does now, how the library might change what it does now, and what services, either new or taking place elsewhere, might take place in the new Baker/Berry facility.

We also have kept in mind the fact that the opening of the Baker/Berry Library coincides with a period of enormous flux and change in the library field. According to Sidney Verba, February 1, 1996, which is available from the Chair of the Building Committee.

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2 An informative discussion of these changes is contained in an "Essay for Harvard University Library Annual Report" by Sidney Verba, February 1, 1996, which is available from the Chair of the Building Committee.
we have not wished for this report to describe a particular moment in time, but instead
to describe two temporal processes. The first process occurs as a well-known step-
function — that of designing new physical space. The second process, which is both a
cause and a result of the first, is stochastic — and represents the evolving nature, in
higher education, of the "library." Following the issuance of our report, decisions will
be made about what will and will not be included in the Baker/Berry facility. These
decisions will necessarily need to take into account limitations in resources and space.
In the end, we need to be certain that these decisions define Dartmouth's concept of
"library." We need, in short, to be sure that the concept of our library shapes the
building that we design, rather than letting the facility that we build shape our
conceptual notion of the library itself.

II. Library Collections

A. Introduction

The development of the Berry and Baker library collections must continue to
support both the teaching and research commitments of the faculty of Dartmouth
College. We recognize that future library acquisitions will increasingly include digital
resources, and that it will be commensurately important for the library to enhance the
ability of users to identify, locate, assess, and retrieve such materials. We also recognize
that the Berry project provides us with the unique opportunity and responsibility to
shape that future. But it is also our view that the production of printed texts will
continue in substantial volume; a recent study by the Association of American
Universities (AAU), perhaps the most expansive of such prognostications, estimates
that by the year 2015 at least 40% of all serial publications in the sciences will still be
transmitted in printed form.3 While the precision of this prediction may properly invite

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3 Report of the AAU Task Force on "A National Strategy for Managing Scientific and
Technical Information." Submitted to the AAU President's Steering Committee, April 4,
1994, Washington, DC. (Endorsed by the AAU Presidents, April 18, 1994.) The AAU
report, which is available from the Chair of the Library Building Committee, postulates
three key approaches to information management for scientific information in the
future. These are: 1) the classical model (classical print-on-paper form of journals that
predominated until very recently); 2) the modernized model (today's model, in which
information is still largely published and resides in print form, but with an array of
electronic journal models being discovered and attempted); and 3) the emergent model
skepticism, we can expect printed monographs in non-science fields to retain their dominance for a substantially longer period. In addition, library scholars and others have pointed out repeatedly that change in the sciences is likely to occur more rapidly than changes in the social sciences and humanities. Thus, the growth and storage of the print collection must take a prominent place in planning the new Berry Library, which will remain primarily a social science and humanities library.

Attention also must be paid to continuing accessibility to information not held in the collection. No library can even now physically hold all information desired by its patrons, and hence, interlibrary loan plays a prominent role in library services. Increasingly the availability of outside information will be discovered through on-line sources, both by librarians and by patrons themselves. Although the actual content of information sought often may be available only through print, information technology already shows promise in making such information available electronically.

The storage locations of the library collection must be carefully planned if the library is to maintain its characteristic level of support and service. There is need for a large number of both print and electronic resources to be available on campus so that they can be quickly and efficiently consulted in the process of research, the planning of classes, and the support of student work in courses and independent projects. These resources will be consulted to access material in locations off campus. It also will be necessary, given current and projected rates of acquisition of these materials and limits on new space, that some part of the Berry-Baker collection continue to reside in remote storage. (Section IID provides a discussion of storage issues.)

Given the faculty’s impetus to maintain a high level of publication, it is imperative that the library enhance the productivity and efficiency of faculty research. One aspect of the design of the collection, thus, must enable the faculty to have immediate access to books and journals which define the current status of research in a wide variety of academic fields and which must also permit the fortuitous discovery of

(the model of the future, in which entirely new forms of communication emerge, changing the very notion of the journal and making electronic information sharing available far more readily than today.) The AAU report cautions universities to expect a mix of these three models for the next 20 years, and makes some predictions of how the mix will evolve for scientific information.
unfamiliar resources through direct browsing. Browsing also may mean perusing on-line materials (currently indices), especially since on-line browsing aids in the discovery of materials regardless of their location. While delivery from the remote storage facility, use of inter-library loan, and travel to other libraries will remain important adjuncts to library research, the value of a centrally accessible and substantial print collection cannot be overstated, and will be key for many years to come. In a related vein, the pace of teaching at Dartmouth also demands ready access to the library holdings in support of planning classes. Between one class and the next the faculty cannot retrieve and consult books located in remote storage.

Finally, we note that an education which increasingly encourages independent work and cross-disciplinary study requires students to approach the collection in much the same way as their faculty. Students cannot be limited to those books which the faculty identifies for them, but must themselves learn to deploy a full range of bibliographic skills in pursuit of their projects. This intensification of student research activity serves to amplify the priority which we place on a robust and directly accessible collection that includes both print and electronic resources.

The following sections describe the collection use, collection growth, and storage parameters that are essential for us to understand as we plan the new Berry Library.

**B. Collection Use**

As the Report of the Task Force on the Library of the Twentieth Century emphasized, "Dartmouth has a village culture, in which members of the academic community value easy interaction with individual colleagues, students, and staff. Personalized services that recognize individual needs are a hallmark throughout the College."4 Within the library system, there is a very strong service orientation, where easy access to the collection and personalized assistance with an array of reference and other needs are commonplace. This tradition of access and library service necessarily influences and shapes the ways in which the collection is used by faculty, students, and

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4 From the *Report of the Task Force on the Library of the Twentieth Century*, May 1995, p. 15. With regard to collection use, the Report of the Task Force was informed to a great extent by a subcommittee on public services, which issued a report in May of 1994. Many of the points that we make in this report are also informed by this subcommittee.
staff. Collection use also is shaped by Dartmouth’s computing environment. The existence of the on-line catalogue, the advent of projects such as the Dartmouth College Information System (DCIS), and the ubiquitous nature of the campus network itself all influence library usage patterns. And, as we have already mentioned, collection use of the library is fundamentally shaped by Dartmouth’s dual emphases on teaching and research.

Approximate sizes of the user groups of the Dartmouth library system are as follows:

<table>
<thead>
<tr>
<th>User group</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular Faculty</td>
<td>867</td>
</tr>
<tr>
<td>Adjunct faculty</td>
<td>400</td>
</tr>
<tr>
<td>Undergraduate students</td>
<td>4,200</td>
</tr>
<tr>
<td>Graduate/professional school students</td>
<td>1,000</td>
</tr>
<tr>
<td>AP1 staff</td>
<td>665</td>
</tr>
<tr>
<td>AP2 staff</td>
<td>1,091</td>
</tr>
<tr>
<td>Service staff</td>
<td>537</td>
</tr>
<tr>
<td>Guest users/Alumni</td>
<td>1,900</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10,660</strong></td>
</tr>
</tbody>
</table>

Baker Library, as the Social Science and Humanities library, addresses the needs of users in all of these categories, particularly those within the Social Science and Humanities divisions.

The circulation statistics in Figure 1 show us that, in any given year, over 200,000 volumes of the Baker collection circulate, the vast majority to undergraduate users. Circulation statistics are not the only way to measure collection use, however. It is also important that we examine interlibrary loan statistics, statistics on traffic flow into the stacks, and the information we have about the reshelving that is required within the stacks. These provide, at the minimum, a sense of usage activity of the collection.
Interlibrary loan is an extremely active area within the library system, as Figure 2 shows. Traffic flow into the stacks, measured by turnstile activity, also helps us to make a reasonable estimate of research and browsing activity within the stacks. Over the last two years, when such statistics have been kept, over 150,000 "entries" into the Baker stacks have been recorded. Finally, it is important to examine the number of volumes that are reshelved each year within the stacks, to gain a sense of the level of browsing activity that is taking place. While detailed reshelving statistics are not kept within Baker Library, the Library staff estimates that upwards of 105,000 volumes are reshelved annually. This reflects, probably at a minimum, the amount of in-stack use of the collection as a result of browsing, where patrons refer to volumes within the library and then return them to the shelves.
Usage of Baker Library, as these statistics demonstrate, is active and intense. Baker is the hub of the library system and as a result the facility experiences heavy and constant usage throughout each academic year. We expect that the same will be true of the new Berry Library. While patterns of usage vary a great deal from one user to the next, and from discipline to discipline, there are some general observations that we can make about how the library is used now and how it will likely be used in the future. We make these observations with the caveat that the ways in which individuals use libraries are undergoing a period of flux and change. It is not at all unusual, for example, to find the same individual using the library in a number of different ways for the same research project. These library uses can range from browsing the open stacks, to searching on-line catalogues or databases, to using the Internet to find information. This mix of library uses can be accomplished either within the Baker facility itself or from an office, via computer.

Faculty Usage Patterns:

Faculty usage of the library represents a extremely wide range of patterns, habits, and preferences. All of the patterns that we will be describing in this section can vary
depending upon each individual, but we have tried to present some general trends that will be helpful to note as we plan the new library facility. For instance, the faculty in general share the characteristic of being fairly independent in their use of the library, while also requiring the assistance of reference librarians and bibliographers in their subject areas. Faculty come into the library on a regular basis, as well as accessing the library electronically. They use interlibrary loan and document delivery services quite often. Faculty use the library both for their complex and constant research needs, as well as for teaching their undergraduates how to think about and research a range of topics and subjects.

There also are difference in the ways that faculty use the collection. Some of the most notable differences are those found between academic disciplines. For faculty in the humanities, for example, monographs often are of central focus. Humanists regularly refer to information sources dating from the very earliest times up to the present, from popular to elite culture, and from all over the world. Materials printed in other languages, archival materials, visual materials, recordings, films, videos, and data files are extremely important. While faculty in the humanities very well might use electronic sources, the number of humanities sources found in electronic form are relatively few at this point. We expect that the number of electronic sources in the humanities will grow, but it is unlikely that vast amounts of archival date will ever be transmitted into electronic form. For humanists, serendipity and browsing the collection are extremely important; there is a general feeling that there is no ideal substitute for getting into the stacks and looking at the actual books.

Social scientists tend to approach library usage in slightly different ways. Their focus is less on monographs and more on journals and large database resources. This is particularly true for fields such as economics, psychology, and geography, and somewhat less true for fields such as sociology and government. Regardless, the pattern of usage in the social sciences more often involves electronic journals and databases, as well as government documents, conference papers, technical documents, and newspapers. Electronic resources in these areas are proliferating (such as in the case of government documents) and so electronic usage by the faculty is increasing as well. Gaining up-to-the-second information on a daily basis is often key. For some social scientists, the literature they work with is for the most part to be found in a few journals and other serial sources, often ones that they or their departments subscribe to. Their fields move too quickly for more than a few central monographs to be of strong
importance. For many of these scholars the accessibility of key reference works and sources of data is of increasing importance, and both of these are increasingly available online.

As we mentioned above, there are individual variations within all of these patterns. There are classicists who regularly use electronic resources as actively as any economist. There are geographers who prefer to use paper maps and other traditional materials instead of the new digital maps that are available. And there are many individuals who move back and forth between a variety of media -- print, electronic journals, large databases, video, etc. There can be generational differences, as well. We find some of the youngest members of the faculty most aggressively using electronic resources, but this, again, does not always hold true. We also find older faculty who were not trained in using electronic resources when they began their careers becoming the most intrigued and interested in learning more about them. The individual vignettes that we include in this section point out some of these commonalities and differences.

Student Usage Patterns:

Students at Dartmouth, both undergraduates and graduate students, share a number of common usage patterns. They use the library for a variety of reasons and at all hours of the day and night. Their usages include researching term papers or theses, pursuing reference questions related to courses, doing reserve reading, accessing databases or the "Web," reading newspapers or magazines, checking BlitzMail on library terminals, studying alone or in groups, photocopying papers, checking out books, etc. With Dartmouth's new curriculum, undergraduates increasingly are pursuing independent research, which translates into more intensive usage of the library as a research tool. This results in an increased need for the library staff to teach students how to pursue research in a number of different formats. Students, like faculty, and depending upon the discipline that they are pursuing, use a range of electronic, print, and other sources and require assistance in learning how to best use all of them. Many students need to learn how to access the Internet on a regular basis because the faculty make assignments that assume such access. Other students are
instructed by their faculty advisors to browse the stacks in order to complete their work. Students, in short, need to be taught how to manage information in a variety of formats and to become literate about the information that will be available both now and in the future.

Staff, Alumni, and Guest User Patterns:

College staff, alumni and guest users represent a smaller number of library users than the faculty and students. They often are less familiar with the library system and with how to perform library research, and as a result they can require significant time on the part of the library staff. While they are "secondary" to the faculty and students in terms of library usage, there often are significant reasons (alumni relations, community relations, information needed for the functioning of the College) for assisting them with library questions. Like the faculty and students, these users represent a vast range in terms of the disciplines they are interested in, their habits of usage, and their knowledge about electronic and other materials.

Usage Patterns for the Future:

As we look to usage patterns of the library for the future, our impressions become much less clear. As we have pointed out, library usage spans a number of print and electronic resources today, and that mix will continue for some time. Individual preferences about how to use the library, and even about what a library should be, will also continue to represent a range. We do know that the number of electronic materials and sources will increase, and that this will accelerate changes in the role of the library. This process, indeed, has indeed begun. The Library, throughout this period of change, will remain committed to providing personalized service and access to the collection, which itself will represent an integration of digital and print information. There will be a greater and greater teaching role for the library staff, as they instruct library users about an array of new, and ever changing technologies and as they serve as the gateway to information navigation and access. The actual use of the collection, therefore, will inevitably change, but the underlying priority -- that of ensuring access and service -- will remain a constant.
C. Collection Growth

Situated at the cusp of change in the physical nature of libraries and their collections, the prediction of future shelf-space requirements is at best an insecure project. However broadly shared might be the view that digital formats will eventually predominate text and data archives, there is no equivalent consensus about the schedule for this transformation. Many of the past predictions that have been made about the pace of change of technology have been proven wrong, which necessarily gives us pause. Without empirical grounds to estimate the velocity of the transition upon which we embark, our future here is little guided by our history. At this moment, even were no enduring technological impediments to separate us from this eventuality, the institutional and cultural obstacles in our path — in production and distribution and usage of text — remain formidable and inherently unpredictable in their rates of movement.

1. Print Collections

In our effort to model additional storage requirements for the Baker-Berry collection of printed materials resulting from acquisitions, we have arbitrarily restricted our planning period to cover the next twenty years. Our reluctance to extend projections beyond this date carries no guarded judgment about the useful life of the building, but reflects only a limit to our own confidence in planning beyond this date. It is important to emphasize at the outset that our model lays out a set of planning choices predicated on a variety of hypothetical schema for net acquisitions of printed materials in the year 2015. The boundaries of these patterns seem plausible to us now, although neither upper nor lower limits may prove valid in posterity. Thus we caution too-ready acceptance of the medial projections as "best guesses;" the adversity of consequences for underbuilding and overbuilding for the print collection are unlikely to be symmetrical in degree. To underbuild for print resources means that we could face the uncomfortable dilemma of finding the library full in very short order. To overbuild for print resources could, on the other hand, yield unwanted results in terms of "underbuilding" for related services and uses of the Baker/Berry Library. Either miscalculation obviously is to be avoided. Clearly the interrelationships of many variables will be considered as conceptualization and planning of the new library proceeds.
The model described here derives its primary assumptions from the pattern of Baker Library acquisition and removal (mainly to storage) of volumes and documents over the period 1989-95. It treats the prospects for growth of the printed collection separately for four classes of materials: (1) monographs; (2) bound serials; (3) government documents; and (4) cartographic collections. The model is based on recent per annum linear shelf requirements for on-site storage of volumes; such requirements provide current baseline estimates to be projected forward cumulatively over a 20-year period. Growth and decline in net acquisition rates (i.e., the difference between rates of accession and removal) is treated for simplicity as a uniform rate obtained by specifying the net shelf requirement in year 20 as a proportion of the initial baseline estimate. Given the very hypothetical nature of the target point in year 2015, there seems little advantage in considering possible non-linear approaches to this estimate.

Twenty years from now and beyond, it will be interesting to see what effect digital technologies have had on all forms of publishing, and, how, if at all, the printed book as a basic quantum of information changes, or what changes occur in the methods of use of scholarly information. Will it be "business as usual" for content providers and content users? A wrongly placed bet, particularly one that is overly optimistic regarding electronic publishing, could prove disastrous. For this reason, we have taken a relatively cautious approach to predictions about future trends.

a. Monographs

The most expansive shelving requirement to be met in the new Berry Library will result from monograph acquisitions. When we write about monographs we are referring to printed materials that are not published in serial form. Approximately 74% of Baker Library’s acquisitions over the last 13 years have been monographs. Annual net additions of monographs in the period 30 June 1990 through 30 June 1995 in Baker Library ranged from approximately 20,000 volumes in 1990-91 to 36,000 volumes in 1994-95, corresponding to an estimated 2,000 to 3,600 linear feet of shelf space. In the period examined this would translate to an average annual rate of net increase of 19% (with a 25% increase reported in the final year). Figure 3 illustrates this growth.
However, some of the annual variation in acquisition statistics is a result of the year in which volumes were catalogued, and so a more stable measure of the acquisition pattern in this recent interval is given by the annual number of monographs purchased; this statistic is also likely to be a more sensitive index of budget constraints.\textsuperscript{5} Monograph purchases for four years in the 1989-95 period were in the neighborhood of 25,000, while they were around 30,000 for the three years at midperiod. Since choice of the baseline can have significant effects propagated cumulatively over 20 years, the projections below have been calculated for net acquisitions of both 25,000 and 30,000 volumes in the initial year, translated into baseline shelf requirements of 2,500 and 3,000 linear feet, respectively.

\textsuperscript{5} While the library may buy a volume in a certain year, it can be catalogued in the next, and so looking at cataloguing statistics can be deceiving. Acquisition of volumes is generally a more useful statistic to use for this reason.
<table>
<thead>
<tr>
<th>Ratio of [Year 20 : Year 0] Net Acquisitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>r(%)</td>
</tr>
<tr>
<td>LF&lt;sub&gt;20&lt;/sub&gt;</td>
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<tr>
<td>LF&lt;sub&gt;20&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

Were the pattern of recent monograph acquisition to continue unchanged for 20 years, between 50-60 thousand linear feet of additional shelf space would be needed. Modest rates of annual increase (<2%) in net acquisition rates would add about 10 thousand linear feet to this range, while limited decline (<1.5%) in this annual rate would reduce the net requirements by 5-6 thousand linear feet. Which end of the range seems more likely? In light of recent practice (as described above) it might seem more reasonable to imagine the net volume of monograph acquisition in 2015 will be at least 40% greater than in 1995. Of course, increased publishing costs in the face of continuing budget pressures on the library could resist sustained increases of this magnitude.

Considering the lower end of the range, the development most favorable to a net reduction in acquisition rates would be a shift in monograph publication favoring
electronic distribution in some form. But for the near future the prospects for this shift (on a large scale) seem dim for several reasons:

- From commercial publishers’ perspectives, scholarly monographs would seem to have the most potential for electronic distribution — thus disqualifying trade-books (constituting a large segment of our annual acquisitions) from candidacy. Scholarly monographs, which tend to be much smaller editions and more expensive, are primarily the products of university presses (e.g., University of Chicago, Oxford University, Harvard University, Cambridge University Presses), who typically recoup their production costs for such volumes by extensive publication of trade-books. Moreover, owing to their small editions, these scholarly titles have the highest pre-press production costs per unit, costs only marginally recoverable by less expensive distribution formats. Thus, do these presses have strong economic incentives to cut distribution costs through digital publication? Probably not. Would the significant trade value of their imprimaturs remain undiminished were they to cull their most prestigious titles for digital distribution? Probably. It is therefore unclear how much the total supply side of the printed monograph equation might be affected by the alternative of electronic distribution, even were no other liabilities associated with the latter.

As both technology and copyright law advance, it will be interesting to observe the market for both print and networked information, including monographs. A “book” is typically preferably read in print form, but a book or a corpus of works in electronic form, though not best suited for reading, may be studied and analyzed. Electronic availability may be a plus, enabling or making possible work that uses a computer’s power. Many printed books produced in recent years already exist as electronic texts in order to have been sent to a printer. Creation of electronic monographs for these is not a difficult technical feat. The trick will be to do this in an economically viable way. The major costs of publication, especially when few copies are printed, are in the steps prior to printing, not in the printing itself. For publishers, it is therefore not a question of cutting costs by avoiding printing, but one of recovering costs regardless of the distribution format or formats. In progress are working models for the distribution of electronic texts that preserve the various purposes of copyright. Improvements in print-on-demand and read-it-on-the-screen technologies will
make e-text even more of a desirable option. If monographs become more widely available electronically, perhaps in a growing and significant number of cases, acquisition decisions might include the question of which form or forms to purchase, which will have future implications for space use.

- At the present time, electronic distribution of monographs would not seem to be a welcome option for either authors or users. Monographs are large and most often read in their entirely — and in digital form would require seemingly endless scrolling or printing. Display screens are not yet large enough, cheap enough or have enough resolution yet to be a primary means of access to books or large documents for reading purposes. Screen resolution is too low by about an order of magnitude (75 to 600 dpi) relative to the resolution and contrast of printed material. Large 20-inch displays cannot simultaneously show more than two or three pages. While CPU prices continue to fall, displays have not decreased in price at the same high rate. For these limitations if for no other, authors are likely to resist publication in digital format of their major works (in which their personal investments are substantial). Besides, the distribution of digital monographs necessarily restricts circulation to readers having adequate means of access, currently far from a universal condition even within U.S. institutions and much less so elsewhere. Finally, it is noteworthy that the models of digitally-distributed scientific journals and electronically self-published short papers now being mooted seem much less applicable to monographs, for which timeliness of publication is much less an important factor and —relative to self-published, electronically-distributed articles — which require more extensive editorial assistance in their preparation. Given a choice, today, both readers and authors are thus likely to favor traditionally edited and bound volumes.

In short, there currently seems little reason for the Library to pursue a reduced-growth model of monograph acquisition, and more to favor the expansion side of the range. In the future, this could change as more or more people have access to the Internet and as access to scholarly information does not necessarily mean such information is found in a library. The implication for space remains one of flexibility, and of watchfulness regarding future trends in the availability of information in varying formats.

b. Bound Serials
Following the same modeling method as described above for monographs, similar projections can be made for the growth of shelf space for bound serials. Bound serials represent 26% of the Baker Library collection that is acquired each year. The 1990-95 statistics for annual net increase in shelf-space requirements for serials are relatively (and predictably) more stable than for monographs, all falling within the range of 0.71-0.97 thousand linear feet. (Again, see Figure 3.) We have selected the mean annual increase over the period, 0.85 thousand as the baseline estimate; this is only slightly above the 1995 value of 0.82 thousand. Because of the favorable prospects for a reduced rate of bound serial acquisition over the next twenty years, this model expands the extent of potential decline in acquisition rates (relative to the monograph model), examining the possibility that by 2015 the additional shelf space requirements for bound serials might be as little as 60% of the current annual need.

\[ Mean \text{Annual Rate (r) and Linear Feet of Shelf Space (LF) at Year 20; } \]
\[ LF_{0}=0.85 K' \]

\begin{tabular}{|c|c|c|c|c|}
\hline
\text{Ratio of [Year 20 : Year 0] Net Acquisitions} & 1.2 & 1.1 & 1.0 & 0.8 & 0.6 \\
\hline
\text{r(%)} & 1.0 & 0.5 & 0.0 & -1.2 & -2.7 \\
\hline
\text{LF}_{20} & 18.7 & 17.8 & 17.0 & 15.2 & 13.3 \\
\hline
\end{tabular}

A broad consensus is developing which holds that the publication of bound journals will continue to be augmented by digital forms and, ultimately, will be largely supplanted by them.\textsuperscript{6} Without reviewing in detail here the supporting arguments

\textsuperscript{6} Some of the articles we’ve consulted which articulate this argument are the following: "Report of the AAU Task Force on A National Strategy for Managing Scientific and Technical Information" submitted to the AAU President’s Steering Committee, April 4, 1994, Washington, DC; "A Survey of STM Online Journals 1990-95: The Calm Before the Storm" by Steve Hitchcock, Leslie Carr, and Wendy Hall, Multimedia Research Group, University of Southampton; "Electronic Publishing of Scientific Journals” by Peter Boyce and Heather Dalterio, Physics Today, 42, 42, 1996; “Science Journals Go Wired,” and "Electronic Preprints Point the Way to Author Empowerment” by Gary Taubes, Science
(which seem generally cogent), it seems sufficient to note that transition to digital distribution has already begun—notably in the scientific literature—and will continue. The question left open concerns the schedule of these changes in publication format; there are few reliable grounds for prediction. The number of purely electronic publications is still very small in comparison to traditional paper journals, and the subject discipline is definitely an important factor in determining the mix. Fast moving fields particularly science, engineering and medicine are the current leaders in the transition. Practitioners in technical fields tend to have the higher end equipment necessary to view documents online, are often more comfortable with computer technology and adapt to new uses of it more readily. The primary impediments at the present to rapid increases in electronic formats for journals are more institutional than technological, and have mainly to do with (1) copyright considerations and the prevalent hegemony of commercial publishers, (2) apportioning costs of production, archiving, and access, (3) editorial and reviewing considerations, (4) assuming responsibility for digital archives, and (4) the status and prestige accruing to publication in established journals. These can be important constraints, and ones that we have carefully considered.

7 The rates of erosion of such obstacles are impossible to foresee, and as a result, our planning period seems inordinately cloudy here. [It is fortunate in this regard that bound serials constitute a smaller portion of shelf space than do monographs.] On the other hand—quite apart from the question of the format of continuing serial publication—the creation of a digital archive for back-issues of serials along the lines of a Mellon-funded project called JSTOR seems bright in its promise to alleviate the burden of shelving bound journals, while also largely avoiding (or answering) the

7 Some of the articles we have consulted with regard to the obstacles facing electronic journals include: "The Tulip Project: Contest, History and Perspective" by Clifford A. Lynch, Library Hi Tech, Issue 52, 13:4 (1995); and "Economics of Digital Libraries - Print vs. Electronic" by Charles B. Lowrey and Denise A. Troll, from a paper presented at the Tenth Anniversary Conference and at the North American Serials Interest Group, Duke University, Durham, NC, June 1-4, 1995. These articles point out some of the technical and financial challenges faced by electronic publishing, and are available from the Chair of the Building Committee.
institutional problems raised above. While we cannot yet predict the schedule for the wider implementation of JSTOR and projects like it, it offers some good (i.e., low-risk) reasons to consider a serials-acquisition model predicated on a net decline in the shelving needs for bound journals. If the JSTOR approach to archival storage proves successful, perhaps the lower bound of the model represents a prudent choice. It should also be noted that the implications of an entirely digital serial archive would not only reduce the annual storage requirements to a small fraction of current needs, its effect would be retroactive — freeing space now allocated to storage of bound issues.

c. Government Documents

Continuing the same modeling approach, projections can be obtained for shelf space needed for government documents. The 1990-95 statistics for annual net increase in shelf-space requirements for government documents fall within the range of -0.22 to 0.47 thousand linear feet. Discounting the 1991-92 "major house-cleaning" year, we have selected the 0.35 thousand mean annual increase over the period as the baseline estimate, slightly below the 1995 value of 0.39 thousand. The prospects for a reduced rate of printed document acquisition over the next twenty years seem excellent. Thus the model employs trial parameter estimates reflecting a marked decline in annual acquisition needs.

\[
\text{Mean Annual Rate (r) and Linear Feet of Shelf Space (LF) at Year 20;} \\
\text{LF}_0 = 0.35K' \\
\text{Ratio of [Year 20 : Year 0] Net Acquisitions}
\]

\[\frac{\text{[Year 20 : Year 0] Net Acquisitions}}{\text{[Year 20] Net Acquisitions}}\]

---

8 Articles about JSTOR are available from the Chair of the Library Building Committee or on the World Wide Web at "http://www.lib.umich.edu/libhome/jstorsumm.html" and include the following: "JSTOR and Scholarly Publishers" by Kevin M. Guthrie, Executive Director, JSTOR, Kansas City, MO; and "JSTOR and the Economics of Scholarly Communication" by William G. Bowen, President, The Andrew W. Mellon Foundation, October 4, 1995. JSTOR is a Mellon Foundation-funded project designed to create an electronic database of all pre-1990 issues of ten core scholarly journals in the fields of economics and history. The University of Michigan is overseeing the project, which has test sites at a number of colleges and universities. The hope is that JSTOR eventually will be self supporting, and also will help to provide publishers with a way to make transitions from paper to electronic publishing.
Congress has recently mandated a transition to digital publication of U.S. government documents, which have constituted the bulk of acquisitions in this category. As a result, the federal government is switching to electronic formats for document distribution by 1997. The first phase will move to CD-ROMs. Later, direct network access from the government may become available. In both cases this will have a heavy impact on users of government documents and the library's delivery of them. Computer workstations will become essential and generally will have some additional hardware requirements. A different kind of patron use space, with carrels containing computers, will be required. Placing frequently used CDs on our network may be highly desirable. In addition, less space will be required for storing paper and microfiche versions of government documents, although CD-ROMs and the like will still require storage space. Over our planning period, other governments and levels of government seem likely to follow the lead of the federal government; thus, as for bound serials, the lower end of the range seems a reasonable projection, and the prospect for eventually freeing space now given to document storage is convincing.

\[r(\%)\]  
\[
\begin{array}{cccccc}
0.8 & 0.6 & 0.4 & 0.2 & 0.1 \\
-1.2 & -2.7 & -4.7 & -8.1 & -11.7 \\
\end{array}
\]

\[LF_{20}\]  
\[
\begin{array}{cccccc}
6.3 & 5.5 & 4.6 & 3.6 & 2.8 \\
\end{array}
\]

\[\]

d. Cartographic Collections

The cartographic collections of Baker Library represent an assembly of diverse cartographic materials generally dating from the late nineteenth century to the present. Electronic mapping systems increasingly are included as well. The collections span a variety of thematic formats, and are archived in a variety of ways. Commonly two styles of storage are used in the Map Room: traditional stacks for bound, folio and monographic materials; and flat storage cabinets for single sheet map acquisitions. Browsing of the entire collection is permitted.

The fundamental character of cartographic materials is undergoing very rapid change made possible by newly available computer-based storage and display devices which enable large amounts of data to be quickly displayed, correlated, and analyzed. We believe the production, acquisition and user impact of paper format cartographic
materials will likely remain constant for the next decade or more. Figure 4 below illustrates our predicted constant (linear) rate of growth, based on past experience with the collection.
Developments during the past twenty years in the field of geographic information systems (GIS) have demonstrated an increasing interdependence and interactivity amongst traditional cartographic data (spacial information published in paper format) and newly acquired digital data (even including older, reprocessed cartographic) data. Increasingly, cartographic data include a variety of spatial portrayed information that can be manipulated on work stations or personal computers using sophisticated geographic/mapping software. These data can be extremely useful for teaching and/or laboratory purposes. The explosion of this technology has seen a ripple effect in the types of materials now being produced to supplement the traditional paper cartographic materials which we normally think of as representing the traditional map holdings of a library.

It is with this recognition in mind, one of changing technologies, that we must attempt to ensure the availability of resources to acquire, archive and display this material in the new Baker-Berry facility.
The present cartographic collection of Baker Library enjoys an active presence in the teaching and research activities of Dartmouth students and faculty (see Figure 5 below). Additionally, due to Baker Library’s function as a repository library for U.S. government produced topographic, hydrographic, aeronautical, and census products, the collection is widely used by non-Dartmouth researchers as well.

**Figure 5: Summary of Key Baker Library Map Room Use Statistics for 1994/95**

<table>
<thead>
<tr>
<th>Category</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books that circulated</td>
<td>107</td>
</tr>
<tr>
<td>Maps that circulated</td>
<td>509</td>
</tr>
<tr>
<td>Student reference questions</td>
<td>719</td>
</tr>
<tr>
<td>Faculty reference questions</td>
<td>141</td>
</tr>
<tr>
<td>Other reference questions</td>
<td>822</td>
</tr>
<tr>
<td>Total questions</td>
<td>1,682</td>
</tr>
<tr>
<td>Photocopying</td>
<td>291</td>
</tr>
<tr>
<td>Maps refiled by students</td>
<td>4,541</td>
</tr>
</tbody>
</table>

While we anticipate that the acquisition rates of new paper cartographic materials will be difficult to predict, it is evident to us now that electronic format materials will be produced at much greater rates than at present. Even today, government topographic products are currently being co-published in both paper and electronic formats. The Baker/Berry Library should contain at least a modest ability to display this new material, which necessarily will include the purchase of the appropriate computer equipment. The library also will need to maintain the currency of government cartographic materials - regardless of the format in which these are available. This might include on-line GIS systems and other complicated resources that could become available in the future. The Rahr Laboratory in the Department of Geography, for example, is very involved with these efforts.

The following figure presents the space requirements that we expect will be required for this collection.
Cartographic Materials

Mean Annual Rate (r) and Number of Documents (ND) at Year 20; ND₀=62,000

<table>
<thead>
<tr>
<th>r(%)</th>
<th>1.8</th>
<th>1.0</th>
<th>0.0</th>
<th>-0.6</th>
<th>-1.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ND₀</td>
<td>147</td>
<td>136</td>
<td>124</td>
<td>115</td>
<td>111</td>
</tr>
<tr>
<td>x 1000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Microtext

Microtext resources, because they are composed to a large degree of government documents (in fact, 60-70% of microtext collections are government documents), follow the same general pattern as the government documents described in the previous section. Figure 6 shows statistics regarding microfilm resources added to Baker Library from 1983-1995.

Figure 6: Microfilm Additions to the Baker Library Collection, 1983-1995
The following figures provide space projections for annual net increases in shelf-space for microtext resources.

**Microfiche**

*Mean Annual Rate (r) and Square Feet of Space (SF) at Year 20; SF₀=10.2 sq. ft.*

<table>
<thead>
<tr>
<th>Ratio of [Year 20 : Year 0] Net Acquisitions</th>
<th>0.8</th>
<th>0.6</th>
<th>0.4</th>
<th>0.2</th>
<th>0.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>r(%)</td>
<td>-1.2</td>
<td>-2.7</td>
<td>-4.7</td>
<td>-8.1</td>
<td>-11.7</td>
</tr>
<tr>
<td>SF₂₀</td>
<td>183</td>
<td>160</td>
<td>134</td>
<td>103</td>
<td>81</td>
</tr>
</tbody>
</table>

**Microfilm Reels**

*Mean Annual Rate (r) and Square Feet of Space (SF) at Year 20; SF₀=12.5 sq. ft*

<table>
<thead>
<tr>
<th>Ratio of [Year 20 : Year 0] Net Acquisitions</th>
<th>0.8</th>
<th>0.6</th>
<th>0.4</th>
<th>0.2</th>
<th>0.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>r(%)</td>
<td>-1.2</td>
<td>-2.7</td>
<td>-4.7</td>
<td>-8.1</td>
<td>-11.7</td>
</tr>
<tr>
<td>LF₂₀</td>
<td>224</td>
<td>196</td>
<td>164</td>
<td>126</td>
<td>100</td>
</tr>
</tbody>
</table>

**Microfiche and Microfilm Reels, Combined**

*Mean Annual Rate (r) and Square Feet of Space (SF) at Year 20; SF₀=22.7 sq. ft*

<table>
<thead>
<tr>
<th>Ratio of [Year 20 : Year 0] Net Acquisitions</th>
<th>0.8</th>
<th>0.6</th>
<th>0.4</th>
<th>0.2</th>
<th>0.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>r(%)</td>
<td>-1.2</td>
<td>-2.7</td>
<td>-4.7</td>
<td>-8.1</td>
<td>-11.7</td>
</tr>
<tr>
<td>LF₂₀</td>
<td>407</td>
<td>356</td>
<td>298</td>
<td>229</td>
<td>181</td>
</tr>
</tbody>
</table>
The prospects for a reduced rate of acquisition of microtext and microfiche resources are very high. University Microfilms, a major producer of microfilm resources, has already added CD-ROMs to its product line. The company also is introducing a new product that will urge libraries to use computers to access materials previously stored in microfilm. These materials may not be widely used in the immediate future because issues of cost and equipment still remain, but their eventual development seems highly likely. Thus, as is the case with government documents, our model employs marked declines in annual acquisition needs.

3. **Electronic Resources**

One of the largest challenges in planning for a new library at the present time, as we have described already, is how to estimate the rate of change in the way information is published and how computing technology will evolve in support of publishing. In this section we first address possible effects by information technology on collection development, and then take up the highly correlated issue of collection use and information technology. Perhaps more than with other issues addressed by this report, at stake here is the conception of what will Baker/Berry Library will be — not on the first day that it is open for "business," but what the new facility, over time, will become. The ultimate questions of the degree to which the Baker/Berry Library will be an "information hub," whether the information it contains will be in print or bits, and the degree to which the Library and Computing Services will function as one organization, are addressed here and throughout this report in the context of the initial configuration of Baker/Berry Library space.

Collection Development

While many are predicting the obsolescence of paper publications and the replacement of printed books by electronic editions, the reality is that this transition will not happen immediately. Periodical publications will change to electronic formats first,

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and the shortened delivery time of electronic formats will have the greatest impact on
this type of information. Users of existing electronic journals report that the typical
mode of use is to view the material on a computer screen to evaluate it and then print
the items desired for detailed study. All of this means that there will be a long period of
transition from paper to using information on-line, during which both paper and
electronic resources will coexist and increase their interdependence.

With the advent of more electronic resources, the library will continue to need to
provide access to specialized equipment for both staff and patrons. For example, some
electronic resources will at first be distributed on physical media (like CD ROMs) and
not over the network. All people will not have all of the facilities needed on their
personal workstations to access new resources and hence will need access to unique and
typically "high-end" equipment. Such equipment should be located in the Baker/Berry
Library, but especially in the case of equipment that people use directly without the
need for staff intervention or mediation, in other locations around Dartmouth as well,
including other libraries. Much of this equipment will be generalizable to information
needs other than scholarly purposes, and so conceptually will form part of the
institutional information environment, and will need to be acknowledged by the
administration as part of the overall institutional "cost of doing business."

The opening of the Baker/Berry Library will not coincide with a vast and sudden
paradigm shift in which most printed information desired for use is available as on-line
information. That shift has begun, but will take many years to occur. Upon the
completion of the new facility, though, some electronic resources will be converted to
network access. Millions of volumes of previously published material will not be
converted for reasons of time, funding, etc. Patrons will still at times have to travel to
the materials and/or equipment to access information. Demands for additional
specialized equipment, particularly scanners and video digitizing stations, may also
arise. Such work areas are not currently available and need supervision and consulting
help. That the concept of a library is evolving to and merging with the notion of a
digital information infrastructure calls for the inclusion of such facilities in Baker/Berry.
Such facilities have implications not just for the space required for equipment, but
encompass staffing and organizational implications as well.

Collection Use:
Electronic distribution can be very cost effective and can offer many benefits to library users, such as powerful searching, timeliness of information, and the convenience of being non-location dependent (i.e. networked). However, many library users will continue to need information printed on paper. Equipment to support print on demand is likely to be needed in the new Berry Library. Print on demand has some interesting economics. Few people right now have a personal laser printer. The cost per page on low-end laser printers is fairly high; that is, more expensive than photocopying. For page image printing, speed is also an important consideration. Yet, print on demand can yield printed works in a few minutes — perhaps less time than it can take to retrieve a work from the stacks or from remote storage. If a print-on-demand service becomes a mainstay, higher-end printers may be needed to lower the overall cost and to provide sufficient speed. Printers located in physical proximity to library workspaces would obviously be preferable. Servicing and operation of the printers themselves has implications for personnel coverage, distribution of output, and storage of supplies.

While collections exist in multiple physical formats, there also will be a need to co-locate the computing equipment with more traditional materials for study. This need is influenced by policies of use, needs for conservation and concurrent demand for particular items. Today, patrons generally borrow physical books and take them to their study area. For the purposes of a course the materials are often placed on reserve to limit the time and distance of their circulation. Study spaces need to accommodate this need and allow the various levels of physical control required, as well as the computing needs that new formats require.

Social and study needs of students and faculty also are a factor. Individual dormitory rooms are not the easiest places for students to undertake collaborative projects with several other students or to study at all at certain times. There will be a need, in the new library, for a variety of group student spaces for students, as well as spaces for faculty.

Staff with computer consulting skills will be needed to support the use of electronic resources, as well. A decision must be reached about whether the new Baker/Berry space will accommodate computing professionals as well as librarians. The regular presence of computing professionals will be determined by such issues as whether support will be provided in the Baker/Berry Library for basic computing
needs that are more often the necessary precursors as well as the concomitants of using digital technologies directly for information needs. Though such support needs form a continuum with blurred boundaries between its segments, a decision to provide basic support comes with difficult organizational questions for Computing Services, and space implications for the Berry/Baker Library.

Based on the conception of the Baker/Berry Library as a facility that will increasingly accommodate information technology, at the least it would seem preferable to have consultants and librarians available to cover the entire range of topics likely to be presented by people in a single location rather than sending people to other buildings for this information. Beyond this perhaps minimal requirement, creation of a computing consulting hub with a spectrum of services beyond "library use" should also be considered. Technologies such as video conferencing might, however, lessen the need for the physical presence of computing consultants.

4. Other Collections not currently a part of the Library System

Across the Dartmouth campus, there are a number of collections that are not currently a part of the library system. Chief among these are the film and video collections housed in the Film Studies department and the Office of Instructional Services; slide collections housed in a number of academic departments, primarily Art History; and other modest collections housed in a number of other departments, programs, and offices. As we plan the new Baker/Berry Library, it is important that we think about these collections. This is the case because the Baker/Berry Library represents Dartmouth's library of the 21st century, and these collections and forms of media represent, at least to some degree, the media of the future. Videotapes, for example, are increasingly used in teaching across the campus and are seen as tools that will only grow in value over time. We expect that film and slide resources will, one day, be digitized and delivered over the campus network to students at their work stations. Interactive video will soon be used across the Dartmouth campus.

Because these types of collections are not currently a part of the Dartmouth library system, we need to begin with two very basic questions. First, should these resources become a part of the library system's collection? Second, if these collections become a part of the collection, where should they be housed? At many of our peer institutions, film, video, and slide collections are part of a centralized library collection,
but this is not always the case. At some institutions, these resources are part of a central humanities and social sciences library, while at others they are housed in a branch or a departmental library facility or in a computing services organization. The models are many, and our task will be to find one that fits Dartmouth’s academic needs and priorities. Our central point throughout this report has been that the development of the new Berry and Baker Libraries, and of their collections, must continue to support both the teaching and research commitments of the faculty of Dartmouth College. There are many reasons that we might consider incorporating film, video, and slide resources into the new Berry facility, but this point — the support of the teaching and research commitments of the faculty — must be paramount.

This said, we feel that it is important to point out the major issues that would be involved in including Dartmouth’s film, video, and slide collections in the library system. Not all of these issues directly affect the actual construction of the Berry Library, but all of them are important to consider nonetheless. Our hope is that, by identifying and discussing these issues, we will be able to gain a sense of what kinds of decisions remain to be resolved on these collections. The major issues fall into four primary categories: collection storage; viewing and usage facilities; bibliographic access; and collections building and management.

Collection Storage:

Film, video, and slide resources require storage space with air conditioning and humidity control, in order to preserve fragile and other materials. We do not have information on the amount of storage that would be required for all of the film or slide resources currently at Dartmouth, but we do know that for the Office of Instructional Services (which currently contains a collection of more than 10,000 16 mm and 35 mm films, videotapes and videodisks, audio recordings, and slide and tape programs), a storage space of approximately 20x50 would be required. Nor do we know what future storage space would be required, as we do not have a clear sense of how the collections would be envisioned to grow over time.

Viewing and Usage Facilities:

If film, video, and slide resources were placed within the library system, there would need to be appropriate viewing facilities included. Such viewing facilities would
ideally be available during regular library hours, including into the evening. We, again, are unsure of all of the space requirements for these functions, but we estimate that at the very least a small group viewing room (15x20) and a 12 station viewing center for films and video (20x30) would be required.

Bibliographic Access:

Dartmouth’s film, video, and slide collections, if they were to become a part of the library system, would need to become a part of the computerized Dartmouth online catalogue. Centralized cataloguing of these collections would be essential in increasing the community’s access to these materials. Some of the OIS collection (about 2,000 titles) is catalogued, but is not a part of the Library’s central holdings. Cataloguing also would be a major undertaking for the library staff, requiring staff time and expertise, as well as ongoing oversight. A conservative estimate is that this would require the addition of at least one FTE in the library.

Collection Building:

The existence of multiple film, video, and sound resources at Dartmouth leads to inevitable redundancies in the overall collection of the College. If these collections became a part of the library system, the goal would be to develop a centralized collection that would be built, over time, to meet academic needs, fill important gaps, and cover a variety of academic areas. If such a collection was included in the library, the effort to build the collection would fall not only on departments such as Film Studies and OIS, but would be the responsibility of the library. There is, of course, a critical question attached to such collection building, which is that of how will the library acquisition budget could be increased in order to fund such collection development. Again, the staff time and expertise that such collection building would require also is an issue.

Given these complex and wide-ranging institutional issues, we do not, as a subcommittee, have a clear image of the priority that should be attached to including Dartmouth’s film, video, and slide collections into the library system. Nor are we able to answer our second question, which is, if these collections were to be included in the library system, where should they be located physically? While it is tempting to consider the inclusion of these resources within the new Berry library, we also need to
ask ourselves whether a branch library for these resources might not be an equally valid model to consider. Another model could be increased partnerships between the library and departments such as OIS and Film Studies to manage these collections. In the end, as we mentioned before, the academic needs and priorities of Dartmouth as a whole should be the deciding factor in this inquiry.

D. Storage Options

It is something of an artificial construct to address storage issues in a section of this report that is separate from those above, because storage is as integral to library planning as are collections, user characteristics, and thoughts about information technologies for the future. In fact, it is impossible to address issues of how much space is required for the library’s print collection without planning how much and which portions of the collection are placed in various types of storage. Storage strategies for libraries should be thought of as a continuum — a continuum that ranges from open stack access to compact shelving options to remote storage outside of the central library facility to digital storage and networked access. Storage, in fact, is simply a way to manage a library’s collection.

Much of our previous discussion in this document outlines the general character of the various collections of the library; their forms, usages, acquisition rates, and impacts on future planning. By analyzing the collections and their growth we have attempted to define characteristics of the ideal library several decades from now. But we are not only concerned with the impact of this continually growing collection on the physical, functional, intellectual, and perhaps even fiscal resources of Dartmouth’s library system. We also strive to understand how this collection can be archived, accessed, perused and sampled, which by definition involves how the collection is organized, shelved, and stored.

Nearly all libraries today face the expansion of print collections beyond that which existing stacks can accommodate, and so clearly all of us must think about a variety of other archival or acquisition philosophies to respond to such pressures and to manage the library’s collections. Commonly, compact shelving within the library and/or off-site or remote storage facilities are the first response to the increased need for such space. These responses can be quite successful in accommodating the need for increased archival space. Our task is to ensure that these strategies also will ensure
continuing accessibility to the collection. Accessibility has long characterized the Dartmouth library system and is a characteristic that we are committed to upholding for the future.

The exact proportion of bound volumes that should remain on campus, enabling the librarians to fulfill the needs of the faculty and students, is difficult to determine. The emerging consensus among the library staff is that no more than 15% of the collection be shelved in remote storage. Currently 11% of the collection is housed in remote storage. Computer-assisted tracking of usage patterns will allow the library to consign only the least utilized volumes to off-site storage. We expect that the central library holdings will emphasize complete collections of original texts, first publications of artifacts and data, collections of secondary literature (including earlier materials), and serial publications through at least the past 30 years. The details of which portions of the collection will remain in the library and which will be stored are, of course, a matter for the library staff to determine as the new library is planned. Library planners caution that there are no hard and fast formulas for determining what percentage of a given collection should be placed in storage. Rather, different collections are used differently, and what should drive storage decisions is how the collection is used. Key to this planning will be the following characteristics of compact storage and remote storage options.

Compact Shelving:

Compact shelving is an extremely efficient way to house a library collection. Compact shelving is a range of library stacks that can be pushed together so that a given group of stacks within a bay of stacks comprise a single aisle. Compact shelving, in this way, can provide up to 90% additional space for library stacks. Compact shelving has become increasingly common in library facilities; here at Dartmouth, the Paddock Music Library and Dana Biomedical Library use compact storage quite extensively. The negative side to compact shelving is that it compromises accessibility to the collection because not all of the compact shelving stacks can be used at one time. Realistically, compact shelving is a solution for lesser used portions of the collection (i.e. older runs of a given journal, discontinued journals, etc.), and then only in relatively low traffic areas.

of the collection (e.g. sub-basement, basement stacks). Because of the mechanical character of compact shelving, multiple users of a given collection often face an ongoing shuffle of the collection piers to accommodate their searches. Therefore, the use of compact shelving must be carefully planned in the new Berry Library and the existing Baker facility, so as to optimize its positive features (the fact that it can save substantial stack space) and to mitigate its negative features (the fact that it compromises collection accessibility.)

Our estimates are that approximately 20% of the Baker collection could be placed in compact storage. (This 20% is in addition to the percentage of the collection that is put into remote shelving.) This estimate should also include growth in compact shelving over a period of years.

Remote Storage:

Remote storage refers to a facility located off-site from the library itself, where collections of lesser used materials are stored. Remote storage generally is not intended for walk-in use or for browsing. Rather, materials are retrieved from remote storage upon request, and delivered to library users at the library facility. At Dartmouth, the remote storage facility is located a few miles from Baker Library, on Route 120 in Lebanon.

Remote or off-site storage is an excellent option for the archival storage of little-used library works. The negative side of remote storage is that accessibility, collection perusal and informed selection is lost, because materials generally are not stored as they would be stored on open stacks. That is, to make the best use of space in the remote storage facility, the collection often is grouped by size, by fragility of materials, etc., not by library call number. Faculty and students, therefore, cannot peruse and selectively browse the materials in remote storage, and the spontaneous search, often conducted with very little forethought, is lost completely.

Several libraries have experimented with remote storage facilities that attempt to blend the best of the central library stack model (which emphasizes accessibility) with the best of the remote storage model (which conserves space.) In such facilities, there are a number of possibilities. Lesser used materials can be stored such that library users still can browse the materials, perhaps in compact shelving. Users can be offered the
opportunity of requesting that entire sections of the stacks be brought back to the central library to facilitate browsing. Users can go to spaces within the storage facility to peruse material. Users can be guaranteed that they will receive requested materials in an expedient timeframe — perhaps even the same day — so as to minimize "downtime" for research. Key to all of these scenarios is to carefully plan the remote storage facility so that it responds to the needs of library users. It goes without saying, also, that such storage facilities must be adequately staffed and funded in order to properly meet each library’s needs.

As mentioned above, our estimate is that 15% of the Baker collection could be placed in remote storage. As is the case with compact shelving, this amount should include growth for the future.

The space scenarios for the new library that follow provide a number of alternatives for how the new Berry library can incorporate different types of storage, with the aim of continuing to make the collection as accessible as possible to the Dartmouth community. In addition, we will want to incorporate flexibility into our storage strategies because, as the collection use within the Baker/Berry Library evolves and changes, so might our storage strategies. For example, digital formats may become a storage option for the library of the future. This type of storage is not a dominant reality now because the cost of digitizing large portions of the collection is still too high. However, it may one day be cost effective to move large portions of the collection into digital formats for preservation and other reasons. At that point, storage of electronic materials on computers will become commonplace.

III. Preliminary Library Planning Conclusions

At this stage in the library planning process, our conclusions, necessarily, are preliminary and subject to continuing discussion. Thus far, our conclusions can be briefly stated as follows:

Library Vision and Trends:

• The new Baker/Berry Library should represent Dartmouth’s overarching concept of the library of the future. To shape this concept, we have both the opportunity and responsibility to consider what the Baker Library does now, how this might
change in the future, and what services might be added to the library facility. Key to this process will be ensuring that the concept of the library shapes the new building, rather than the facility shaping the library concept.

• The new Baker/Berry Library is being planned during a period of enormous flux and change in library and information technology fields. This means that many of our predictions cannot be based on clear trends, much as we would like them to be.

Collection Use:

• The Dartmouth College Library system has a tradition of easy access to the collection and individualized service. One of our central commitments is to continue this tradition within the new Baker/Berry Library facility. Our challenge will be to continue this access and service in an environment in which individual faculty, students, and staff use a vast and integrated array of sources (print, electronic, and other media) on a daily basis.

Collection Growth:

• We have made a range of predictions about growth of the printed collection over the next 20 years, as listed below. We expect that these ranges will enable our architects to develop some initial models for stack space requirements in the new Baker/Berry Library.

<table>
<thead>
<tr>
<th>Portion of the Collection</th>
<th>Space Estimates (A Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monographs</td>
<td>44.8 - 71.4 thousands of linear feet</td>
</tr>
<tr>
<td>Bound serials</td>
<td>13.3 - 18.7 thousands of linear feet</td>
</tr>
<tr>
<td>Government documents</td>
<td>2.8 - 6.3 thousands of linear feet</td>
</tr>
<tr>
<td>Cartographic collections</td>
<td>(analysis to come)</td>
</tr>
<tr>
<td>Microtext</td>
<td>181-407 square feet</td>
</tr>
</tbody>
</table>

• Space for electronic resources is also significant and is described in our report in broad strokes. Details about spaces for these resources are stated in the report of the Subcommittee on User & Consulting Services.
• Collections not currently a part of the library system are a question mark for us and represent an area that needs to be carefully considered to determine priority for inclusion in the new facility.

Storage Options:

• Storage represents a continuum, and should be viewed as a way of managing the collection to best serve Dartmouth’s needs. We have suggested the following storage parameters:

  Compact shelving — could contain up to 20% of the collection, plus room for growth over time.
  Remote storage — could contain up to 15% of the collection, also with growth room.
  Electronic storage — over time, will increasingly be an option.