I. The purpose of the project

Bass Library is a two-story underground facility housing a collection of 200,000 items including graphic novels, DVDs, and audio books. The library provides access to reserve materials, collections, and a range of services to Yale faculty members and students, visitors, and members of the public.

The library is used primarily by undergraduate students for study space as well as resources and services, and is at capacity during busy times of the semester. Undergraduates use the library both heavily and frequently. The Yale undergraduate student body will grow by 800 in the next four years, and Yale University Library (YUL) leaders wish to increase the amount of seating within Bass Library to accommodate increased demand. This cannot be accomplished either by building a new library or by expanding the footprint of the current library. However, more seating could be installed if some books were relocated and shelving removed.

The size and nature of the collections in Bass Library are matters of enormous interest and concern to members of the Yale community, as are the specifics of additional study space. Accordingly, YUL launched this project to gather up-to-date information about the uses of the collections and the practices of undergraduates who use Bass Library. Information gathering in this project served to include members of the community and make the best possible use of their knowledge and insights. At the same time, the information gathered makes it possible to design alterations to spaces and physical
collections in ways that are more likely to address community needs and support undergraduate research and teaching at Yale University.

The project comprised a series of design activities in which faculty members, students, and staff participated. A project team conducted these activities under the guidance of a consulting design anthropologist. They also conducted analyses of the resulting information and developed design concepts.

This report contains the resulting information related to both aesthetic and practical concerns, and to the configuration of work space as well as collections. Its main purpose is to help architects understand the problems their designs should solve, leading to better academic and institutional outcomes. Note that not all areas of Bass Library will be renovated at this time, and the studies discussed in this report were confined to public areas and not classrooms or staff areas.

The report may also support decision making related to Bass Library's collections by laying out major pedagogical needs and concerns as well as aesthetic considerations related to physical resources. For this reason, the report is being made available more generally.

II. Project overview

The project was sponsored by Michael Bell, Associate University Librarian for IT and Administrative Services. An advisory group included Emily Horning (leader), Sarah Tudesco, and Brad Warren. Sarah Tudesco led the project team, which also included Kelly Blanchat, Emily Horning, Jenn Nolte, Jae Rossman, and Laura Sider. Logistical support was provided by Susan Chase Jones. The project was planned and facilitated by Nancy Fried Foster, design anthropologist and Principal, Nancy Foster Design Anthropology, LLC.

The project used six methods:

1. Observations were conducted in six areas of Bass Library at three times of day over one full week. The observation areas were a section of carrels (two-person desks), a section of soft seating, and some of the large tables on the upper level, as well as two group rooms, a section of soft seating, and some of the large tables on the lower level.

2. Reply cards—small cards containing 13 questions—were distributed and collected in the same six areas on five occasions. In addition to 150 general reply cards, 36 abbreviated reply cards with seven questions were distributed in the Computer and Media Labs.

3. Brief, unscheduled interviews of undergraduates concerning their use of spaces and resources during the most recent out-of-class study session were conducted
in outdoor spaces around the Yale campus. Sixty-one students responded to these interviews.

4. Longer interviews were conducted with 18 faculty members by telephone. These interviews concerned reading and the use of collections as well as expectations about student resource use and the purposes of Bass Library.

5. On-site interviews were conducted with five undergraduates, one at a time, while walking through Bass Library. In these interviews, students identified the six spaces in Bass Library they use best or most frequently and then answered questions about their use of these spaces as well as more general questions about Bass Library and its collections.

6. Design activities known as “charrettes.” In some of these charrettes, undergraduates and library staff depicted ideal undergraduate libraries and then discussed their depictions in brief interviews. In others, faculty members engaged in creative thinking about collections.

The project began on July 24, 2017, with an orientation for the project team and instruction in the design charrette method. On July 25, the project team conducted a design charrette with librarians, library staff, and IT and security personnel.

Nancy Foster conducted faculty interviews by telephone and Skype from late September through early November. On October 23, the project team participated in a training session to learn other methods to be used in the project. Remaining information gathering was conducted from October 24 through late November. Final student interviews were completed by late November.

After data had been entered into spreadsheets, coded, and analyzed, the project team met with Nancy Foster on January 22 and 23, 2018, to interpret the data and begin to define space and collection needs.

Overall, project activities included 1,132 members of the Yale University community, as shown in the following table.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Faculty</th>
<th>Students</th>
<th>Staff</th>
<th>Other or unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observations in Bass Library</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>742*</td>
</tr>
<tr>
<td>Interviews conducted with undergraduates while walking through Bass Library</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Design charrettes</td>
<td>1</td>
<td>86</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>Brainstorming sessions related to collections in Bass Library</td>
<td>9</td>
<td>0</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Telephone interviews</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Brief interviews in non-library locations about study activities and locations

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>51</th>
<th>0</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reply card surveys in selected areas of Bass Library</td>
<td>2</td>
<td>175</td>
<td>0</td>
<td>9**</td>
</tr>
<tr>
<td>Totals</td>
<td>30</td>
<td>317</td>
<td>34</td>
<td>751</td>
</tr>
</tbody>
</table>

* Status of observed individuals could not be determined.
** Reply card respondents in the “Other” category include visiting scholars, spouses of Yale faculty members and students, and community members.

### III. Undergraduate academic practices and Bass Library

This section provides a high-level summary of the findings that emerged from studies conducted in public areas of Bass Library, including tables, soft seating, small group rooms, and carrels, but excluding classrooms, individual rooms, and the Wright Reading Room, which is part of Sterling Memorial Library. We also refer to insights gleaned from interviews conducted on campus in which students discussed their use of a wide variety of spaces. Taken as a whole, the information we gathered gave us a general understanding of where students study, what they do, what works, and where they encounter problems. The information also gave us more specific understandings about the current use of Bass Library spaces and how they might best be expanded to meet identified student needs.

#### Selecting a work space

Students tend to choose their study locations for convenience or because they are confident a seat will be available. Every student polled randomly for this project had studied in Bass Library, most of them within the previous week or two, although not necessarily for the most recent study session (session in which classwork was done outside of class time). Many had conducted the most recent session in their own dorm rooms or bedrooms, in a residential college library, in a departmental lounge, in a classroom, or in another space chosen primarily for its convenience. However, students do care about the specific affordances of the spaces that are available to them. When students need books, they pick up the items they need at Sterling or another library that has them. When their work requires specialized technologies, they find a library, lab, or classroom that provides what they need. When they need to read, write a paper, do a problem set or other assignment, or study for a test, they choose a space that matches their tasks and, especially, the level of intensity of their activities.
Working in Bass Library

Students observed and surveyed within Bass Library were mostly working alone. This is consistent with the pattern detected in random campus interviews: a large majority of students had worked alone in their most recent study sessions.

That individual work predominates is supported by findings regarding the use of group rooms. Small group rooms are often utilized as quiet spaces where a few friends can be together without working together, engaging in occasional conversation but using the space mainly as a location for individual work to be done at some separation from the mass of people in large shared spaces.

Relatedly, students go to the library to get work done. Many go specifically to Bass Library to do their work because others in Bass Library—other undergraduates and significant numbers of graduate students—are visibly focused and engaged in their own work. Many respondents find this to be highly motivating, although some feel that the atmosphere in Bass Library can be too intense and stressful.

Respondents express a preference for small, individual study rooms or freestanding carrels that provide physical barriers to reduce visual distraction and increase concentration. When these seats are not available, they work at tables. For others, tables are preferred because they put respondents in an environment that is more social even if interaction is minimal. While being with others is important to many respondents, few actually engage in work together; when they do work together, they usually work in pairs.
Data suggest a very high rate of laptop use and a much lower rate of phone use. Printers are heavily used; specialized hardware and software not so much, although at least a small number of students rely on them.

Students use their preferred spaces overwhelmingly to complete such schoolwork activities as reading, writing, and research; problem sets; “rushed” or “intense” work; and studying for quizzes and exams.
Students want to take occasional breaks; they appreciate access to the café where they can get something to eat or drink or socialize with others. Soft seating sometimes allows for a break and a conversation, although many students complete their work in these areas.

Lighting is a significant concern, and so is access to windows, both for natural light and for a sense of connection to the outside. Students also want comfort, including ergonomic comfort, adequate heating and cooling, good air quality, and even a sense of belonging and security.

Quiet in its many flavors supports concentration. For some, quiet is silence; for others, quiet is a dull roar. In all cases, to be acceptable the noise does not call attention to itself but fades into the background. Students want to escape from auditory or visual distraction. The objective is to get work done. The rest is incidental.

### IV. Library collections and study spaces

Faculty set expectations for student work and provide mature models for the use of scholarly resources. Information gathered in interviews and during design activities provided the faculty perspective on the use of library resources by undergraduates. In this section, we summarize faculty attitudes and expectations regarding interaction with collections in general and physical collections in particular. We also provide a brief counterpoint with regard to undergraduate attitudes.
In general, faculty members feel strongly that Bass Library should help students find good resources and read them deeply and with understanding; but it should also feed their curiosity and enable them to develop general knowledge. The statements that follow, written from the faculty point of view, represent the most commonly made points.

A. Yale offers a wealth of resources across all collections

Yale faculty members use Yale’s library collections, special collections, and museums extensively, and they depend on the breadth and depth of holdings in their own research and teaching. They believe these holdings offer exceptional educational opportunities and are disappointed that students do not take fuller advantage of what they see as Yale’s wealth of holdings.

B. Physical books and electronic resources have different affordances and are good for different uses

Every responding faculty member uses both electronic and physical resources and recognizes the relative advantages of both. For example, some find it quicker to browse a journal run in print but easier to read journals and search for articles online. Similarly, many prefer to read a printed monograph but find it more effective to search through e-books for particular information.

C. Libraries meet many needs and are used very differently by different people

Researchers and graduate students rely very heavily on library collections; undergraduates less so. From field to field, scholars use libraries and their resources differently. People who use originals or rare items need collections of physical resources, but many people in STEM fields depend much more heavily on electronic access. However, they feel that, across categories and fields, curious people and people who like to read need libraries.

D. Physical books and printed paper are better for some kinds of reading

Reading on paper is a broad, sensuous experience that goes well beyond text; it entails a deeper and more sustained and critical reading. This experience may be duplicated with a dedicated e-reader such as a Kindle. However, reading on a screen that delivers diverse information simultaneously activates a different set of skills and supports a very different engagement with information. Both kinds of skill are required by contemporary scholars because they support different kinds of reading and understanding.
E. Students should read books

Students need to develop both intensive, linear reading skill and the skill of extracting information from online resources. There are many reasons to read from a book, including increased understanding and retention of material. Beyond that, faculty are concerned that excerpts lack context, that not all journals are well indexed, that not everything is online, and so on. In many cases, faculty would prefer that students bring books to class and use them for reference.

F. Bass is for reading and more

Faculty members state that Bass Library should be a place where anyone can study, read, and write among others similarly engaged. It should be a place for interaction with others engaged in similar endeavors, whether through reading the work of people who are not present or conversing or collaborating with those who are. It should be a place where students can work seriously in a place of learning. The nearby café is seen as a desirable convenience; however, the library itself is not a café or bookstore.

G. Bass does [should] offer a curated collection

Many faculty members believe that Bass Library offers a carefully curated and regularly updated collection combining the newest editions of classics with a selection of cutting-edge scholarship in all fields. This is not the case. However, underlying this assumption is a set of criteria that would make Bass Library’s collection more effective. Faculty members want the collections to allow for both purposeful research and random discovery. Many feel that a small, well-curated collection increases the likelihood a student will find something relevant and of high quality. Many also believe that the Bass collection could provide a “starter library” for students who may then use the library skills they have developed in Bass to use larger collections such as Sterling Stacks or special collections such as the Beinecke.

Faculty concern about the use of books is not misplaced. According to their own reports, students make extensive use of scholarly literature but little use of library or other printed books. While three-quarters of students polled randomly on the Yale campus had used a book or an article during the most recent study session, most had used either a textbook or an online article. One in ten had used a physical book that was not a textbook, and half of those were library books. Many respondents had not touched a book in years.
IV. Conclusions and recommendations

The previous two sections of this report provided high-level summaries of our findings regarding both the work practices of students and the expectations of the faculty members who teach them. Based on our findings, we have developed design guidelines and qualitative requirements and have shared them with Yale University planners and the architects who will reprogram Bass Library to provide space for additional students.

This section includes a summary of the guidelines and requirements shared with the architects. In a final design activity, we will use artifacts provided by the planner to test them and will then report on any changes or refinements. The final document will be used, along with policy decisions from library leadership in consultation with faculty advisory groups, to develop final designs.

A. Qualitative requirements related to study space

In reprogramming Bass Library, we recommend attention to the following practical and aesthetic considerations:

1. Give high priority to accommodating the following activities
   - Work individually without auditory or visual distraction (e.g., in an individual room or at a carrel)
   - Work individually and with limited distraction but in the company of others (e.g., at a table or in a soft seating area)
   - Take a short break from work, alone or with others
   - Work with others, usually in pairs, occasionally in groups of up to five people, rarely in larger groups
   - Find and use books on open shelves; browse the bookshelves
   - Request and use reserve material, media equipment, and other items that are available at the desk

2. Include the following features and resources
   - Space that is open and allows for visibility while simultaneously providing a sense of smallness and cocooning
   - Lighting that is appropriate to the task
   - Work surfaces for spreading out laptop, books, and papers
   - Sightlines through the space for finding open seats and for feeling connected to the outside and other people
   - Easy location of open seating
• Printers, copiers, and scanners
• Specialized hardware or software as currently provided, although a smaller footprint may be adequate
• Outlets for charging laptops and other devices
• Management of noise so that it varies somewhat from subspace to subspace; is conducive to focus and concentration in most spaces; and confines medium to loud conversation to smaller areas
• Physical comfort (includes HVAC, lighting, and furniture)
• Sense of wellbeing (includes security and navigation)

3. Consider the following voiced aesthetic preferences
• Support for concentrating and being productive but not overly intense and stressed
• Support for students to sit in proximity to each other (e.g., at large tables) so that all seats can be occupied without feeling that the space is over capacity
• Connection to knowledge, scholarship, and scholars
• Light, air, and especially a connection to nature or the outdoors
• The presence of art and beauty
• A sense of belonging
• A sense of Yale

B. Guidelines related to collections

1. A Bass Library collection should help undergraduates:
• Develop skill in linear/intensive reading (as done with books or dedicated e-readers) as well as in tabular reading (as done on websites)
• Learn how to use library tools, services, and spaces so they can find and use rich and varied resources in their academic work
• Understand that the Yale University Library collection, like scholarship itself, cuts across formats and platforms
• Nurture their own curiosity and develop general knowledge as well as interests in fields outside their own

2. A collection can do this by:
• Offering a coherent, multi-media, multi-platform collection of modest size in Bass Library themed in a way that engages the attention and stimulates the curiosity of undergraduates
• Continuing to provide reserve materials
• Making paper copies of class readings available when required to support the instructional program

C. Qualitative requirements related to collections

The following are the qualitative requirements for the collection and its configuration:

1. Showcase the wealth of Yale’s collections in a smaller, curated Bass Library collection

2. Include works that cut across platforms and genres, including physical books, e-resources, works of art, and recordings, as well as new media like podcasts and immersive media; an explicitly multi-format collection may help extend undergraduates' familiarity and use of electronic resources toward increased engagement with related physical items.

3. Spur curiosity by organizing the collection around a coherent theme (e.g., works in a wide variety of formats by current and former Yale faculty; leisure reading; literature; new books; temporary collections curated by students; travel books and associated artifacts; books by and about underrepresented groups; books about books and libraries)

4. Physically configure shelving and display units so that students studying among them feel sheltered but can still see across sightlines

5. The collection makes scholarship real and visible; therefore, use the placement of the collection to help students connect to the community of scholars the works represent

6. Set a serious and inspiring tone with works of art that fall within the main themes of the collection, augmenting this with aesthetic notes that are soothing but stimulating

7. Physically configure collections in a way that allows for the penetration of light throughout the space