



# Final Report: Design Studies for Alderman Library

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From mid-2018 to spring 2019, a library team conducted design studies with an anthropologist to help plan the renovation of Alderman Library at the University of Virginia. The project used freshly collected information to identify current and emerging academic work practices to be supported by a renovated library. This report presents the recommended qualitative requirements for programming the space as well as the informational basis for making those recommendations.

## I. Research-based design of libraries

Traditionally, library design relied heavily on precedent and vested most authority in architects, technologists, and institutional leaders. This approach remained successful as long as library materials, and the practices people employed to work with those materials, changed very slowly. However, the compression of time and distance characteristic of our age has created entirely different conditions for library design. Old assumptions must be tested and new information gathered in order to understand how people conduct their academic work today. Beyond this, we must document emerging practices so that today's construction supports students, staff, and faculty members for years to come.

To help plan the renovation of Alderman Library, a team of librarians and library staff worked with an anthropologist to conduct interviews, observations, department meetings, and a survey. At the same time, students in Prof. Ira Bashkow's ANTH 2040 course, "How to Do Ethnographic Field Research," conducted interviews and a survey of their own. These activities engaged upwards of 900 members of the University of Virginia community. The library team then analyzed and interpreted the data to develop qualitative requirements that speak to both the practical affordances and the aesthetic qualities of the space.

For more information about study methods, see Appendix 1.

<b>Instrument</b>	<b>Number of respondents</b>
Observations	557
Reply cards (library team)	120
Reply cards (student team)	91
Space and collection use interviews	104
Department meetings (approximate)	50
Telephone interviews	22
Timeline interviews	15
Maximum grand total (ignores possible multiple responses from same individuals)	938

## II. Academic work practices related to the library

Faculty members and students at the University of Virginia use the library in a wide variety of ways. According to our studies, a relatively small proportion use Alderman Library as a physical space in a way that is similar to what they might have done when it was built. Most use the library differently if at all. And everyone—every faculty member and student in our studies—depends on electronic journal literature and other supports for remote use of the library. In other words, the ways people use the library have changed, and even those who rely most heavily on physical collections acknowledged changes in their work practices when we interviewed them.

That said, the data support the following high-level characterizations of academic work practices related to Alderman Library as a physical space:

- » *Faculty members* depend on instant online access to journal literature. They want easy access to physical resources, which is generally satisfied by 24- to 48-hour delivery. Stack browsing is on the decline but better browsing of new books and improved shelf browsing in Virgo are desirable. Faculty members enter Alderman Library less and less frequently because most of their needs are met with online journals combined with LEO delivery of physical books. Consultations with library and digital scholarship / IT experts bring faculty to the Scholars' Lab or particular offices or meeting rooms. They place great value on the library as the physical and symbolic heart of the university and would like to see it expand beyond its legacy to support new practices, include new media, and represent contemporary ideals.
- » *Graduate students* browse Alderman stacks more than faculty members or undergraduates, although the resources they mention using most frequently are personal copies, printouts, digital files, or images of materials they have found in other collections where their dissertation fields are more thoroughly covered. Graduate students use carrels and other spaces in Alderman Library to do their dissertation research and writing. Especially when they do not have their own offices on grounds, they would prefer spots in the library where they could work without distraction and with some degree of physical comfort, and where they could safely store a collection of books and a laptop.
- » *Undergraduates* make very limited use of physical collections in Alderman Library, although they use online journals and especially scholarly resources that have been posted online by professors and instructors. University of Virginia undergraduates are at the high end of frequency and duration of study sessions compared to students at other universities that have participated in similar studies. Those in the library have longer than average study sessions; they want a quiet place to work in an environment that supports focus over the long haul. They also need to take a break from time to time. Access to online resources is a

requirement; phones may be a distraction. Most students want to work alone, some to sit near others. Only a small number need to study together or work with others on a joint project.

For more detailed information about faculty, graduate student, and undergraduate work practices, see Appendix 2.

### **III. Qualitative design requirements**

Based on our findings about the academic work practices of faculty members, graduate students, and undergraduates at the University of Virginia, we propose the following as the qualitative requirements for a renovated Alderman Library.

#### **A. Requirements for faculty members**

1. Maintain and improve the building and its collections, services, and digital technologies to support the following activities:
  - » Finding, browsing, and using items in the stacks and receiving on-grounds delivery of requested items within 24 to 48 hours
  - » Using online journals and other subscription material and the full range of digital scholarly resources
  - » Borrowing material from other libraries using interlibrary loan
  - » Finding known items in the catalog
  - » Browsing online
  - » Browsing an enhanced new-book area
  - » Consulting library and IT / digital scholarship experts
2. Provide public areas to support the following activities:
  - » Doing quiet, individual work in large and small settings (e.g., small and large reading rooms, nooks and niches, tables, carrels, and comfy chairs)
  - » Meeting with students in a semi-open area
  - » Encountering and chatting with colleagues
  - » Having coffee or a snack
3. Offer specialized spaces and services to support the following activities:
  - » Working on projects in teams of three to ten people
  - » Exploring and using new technologies, often with specialist help
  - » Amassing and maintaining a project-related collection of materials in a secure shelf, locker, or area to which all members of a project team have access

- » Using audio and video technologies to communicate, meet, and work with colleagues in other locations
  - » Engaging in seminars, workshops, presentations, and similar events
  - » Using the library and its resources regardless of mobility or hearing issues
4. Reinforce shared ideals and highest hopes related to:
- » Inclusion in symbol and action of the full university community along with the rejection of legacies of prejudice and exclusion
  - » Protection of academic freedom and free expression, and the preservation of an accurate and complete scholarly record

***N.B.:*** Item 4 applies across all constituent groups despite being included only here.

## **B. Requirements for graduate students**

1. Maintain and improve the building and its collections, services, and digital technologies to support the following activities:
  - » Finding, browsing, and using items in the stacks
  - » Using online journals and other subscription material and the full range of digital scholarly resources
  - » Borrowing material from other libraries using interlibrary loan
  - » Finding known items in the catalog
  - » Browsing online
  - » Consulting library and IT / digital scholarship experts
2. Providing private or semi-private spaces for the following activities:
  - » Doing one's own work without interruption
  - » Storing amassed library materials along with laptops or other valuables for sustained work interrupted by breaks
  - » Meeting with students
3. Provide public areas to support the following activities:
  - » Doing quiet, individual work in large and small settings (e.g., small and large reading rooms, nooks and niches, tables, carrels, and comfy chairs)
  - » Encountering and chatting with professors, fellow students, and visiting scholars
  - » Having coffee or a snack

4. Offer specialized spaces and services to support the following activities:
  - » Exploring and using new technologies, often with specialist help
  - » Preparing for work in other libraries and archives
  - » Using non-print/non-textual work and supporting the use of such materials in scholarly work
  - » Engaging in seminars, workshops, presentations, and similar events
  - » Using the library and its resources regardless of mobility, hearing, or language issues or extent of previous experience in U.S.-style academic libraries

### **C. Requirements for undergraduates**

1. Provide public areas to support the following activities:
  - » Doing quiet, individual work in large and small settings (e.g., small and large reading rooms, nooks and niches, tables, carrels, and comfy chairs)
  - » Having enough room while working to spread out one's materials and devices and to maintain personal space for one's own comfort and the comfort of others
  - » With less frequency than individual work, doing collaborative work that entails talking, mainly in small groups of two or three people and occasionally in groups of five or more
  - » Having coffee or a snack
  - » Having a rest during a lengthy study session
  - » Attending special programs and events
2. Provide private or semi-private spaces for:
  - » Meeting with professors and instructors
3. Maintain and improve the building and its collections, services, and digital technologies to support the following activities:
  - » Using online journals and other subscription material, the full range of digital scholarly resources, and online reserves
  - » Using physical material on reserve
  - » Finding, browsing, and using items in the stacks
  - » Finding relevant resources in the online catalog
  - » Receiving help from library and IT specialists
4. Offer spaces and equipment to support:
  - » Printing
  - » Using basic and advanced computing applications

#### IV. Accommodating varied needs in one library

The characterizations in Section II, drawn directly from data collected in these studies, suggest that fundamental scholarly practices endure: people read, write, experiment, discuss and dispute, and so on. These enduring practices are augmented by new ones, such as emerging analytic techniques in digital humanities. Furthermore, they are often carried out in new ways, from anywhere in the world and at any time of day. Physical collections are still essential to the work of scholars and should continue to grow, although browsing the stacks is no longer the *sine qua non* of research, nor must each and every book be housed in open stacks on grounds. Indeed, it is well to note that books may be found in the library and in offsite stacks but also in large numbers in the temporary collections of those who have charged them and taken them to their offices and homes. Libraries are places for focused reading, research, and writing, and also places for academic work done in the absence of physical books. Reading on paper, developing facility with physical materials, and understanding how those materials are organized remain essential, especially to the most serious researchers. At the same time, we see the importance of emerging research and reading practices that use a much broader set of resources than would have been housed in Alderman Library when it was built.

Alderman Library serves many constituencies and must support a broad range of contemporary practices and preferences, many of them in flux. It is not simply that the academic *practices* of faculty members, graduate students, and undergraduates are changing; the *overlap* in library-related practices among these different constituencies has also shrunk markedly. It used to be that all faculty members and students had to go to the library to get books and journals and consult reserve and reference material, and they had to do this during the day or evening. Even though serious researchers used library materials more extensively and expertly, the library building as a place hosted similar activity for everyone. The characterizations of faculty and student work practices would have looked fairly similar in terms of how these different groups used the library building and library collections. However, this situation changed with the rise of electronic resources, remote access, and online reserves.

The role of the library in the academic life of faculty members, graduate students, and undergraduates overlaps less than ever before. Accordingly, the ideal of the library and the actual use of the library have diverged. No single library can meet all needs or be what everyone considers a proper or true library.

As a thought experiment, we can borrow the many-worlds concept to imagine many-libraries. If all possibilities exist in the many-worlds of the multiverse, we can conceive of

many-libraries occupying one space, supporting the work practices and addressing the work-practice needs of multiple constituencies. Many-libraries coexisting in the place of Alderman Library might include the following:

- » A (large/enormous) physical collection with a revamped display of new books
- » A variety of quiet, individual work spaces
- » Spaces for working in groups with materials from regular and special library collections
- » A large digital humanities / digital scholarship center
- » Spaces for teaching, seminars, and special programs
- » Places to sit, relax, and have a conversation
- » Graduate student rooms and offices for dissertation work and meetings
- » Places for writing groups to meet and either talk or work in silence
- » And so on

This sort of variety of space would support the different practices and preferences of a multitude of faculty members, graduate students, and undergraduates if they could co-exist in the same space in the right proportions. Co-existence and proportion are, indeed, the challenges.

## **V. Recommendations**

The studies described in this report yielded specific information about current practices in Alderman Library as well as describing work practices associated with library use and academic work in general. Beyond that, the studies created an opportunity for members of the project team to develop more detailed, accurate knowledge of the work processes of real faculty members, graduate students, and undergraduates. Furthermore, the findings of the studies speak both to the renovation of Alderman Library as a physical place and to other possible implementations that go beyond the renovation project. Accordingly, we recommend leaders of the University of Virginia Library consider the following steps:

- » Share a report of the project with the architects to familiarize them with the work practices of students and faculty members at the University of Virginia.
- » Work with the architects to explore how a renovated Alderman Library can address the qualitative work-practice requirements listed in Section IV.



- » Explore other implications of study findings, such as:
  - Integrating the various units that currently support digital humanities projects
  - Providing spaces where project groups can work together with materials from special collections
  - Innovating the presentation of physical and digital materials to make it easier for students to connect to the full collection rather than to materials of only one kind
  - Exploring the feasibility and value of stationing a professional librarian very visibly at the main service desk
  - Rethinking how librarians may work with faculty members based on work-practice information collected during this project
  - Finding a balance between technology-rich spaces and those that support distracting technologies (e.g., creating intentional phone and Wi-Fi dead zones)
- » Engage more librarians and library staff in learning about the work practices of faculty members, graduate students, and undergraduates, for example by creating written or video-recorded interviews like the ones conducted for this project and then co-reading or co-viewing and discussing them.
- » Continue to mine the results of these studies for more insights and engage in small follow-up projects to extend the benefits of the work that has already been done.

## Appendix 1. Methods

To support the renovation of Alderman Library, we developed an information base related to current work practices in Alderman Library and in other spaces in which similar work is conducted by faculty members, graduate students, and undergraduates. The methods were selected specifically to document current use of Alderman Library, on the one hand, and more general academic work practices and needs that might bear on renovation plans, on the other.

### A. Interviews

We conducted interviews with members of all three represented groups—faculty members, graduate students, and undergraduates—using the following four protocols.

#### 1. Group interviews of faculty members in department meetings

Questions in this interview focused on research and reading; current teaching approaches and anticipated changes; use of the physical library; use of paper and electronic resources; group versus individual work; and other topics as volunteered by respondents.

#### 2. Telephone interviews with individual faculty members and graduate students

These 40-minute interviews were conducted by the anthropologist with 15 faculty members and seven graduate students with teaching responsibility, representing a range of humanities, social science, and STEM fields. In these interviews, data collection was combined with an opportunity for respondents to express hopes and concerns regarding the renovation. Questions covered expectations related to student research; current teaching approaches and anticipated changes; reading; and the use of Alderman Library's spaces and collections.

#### 3. Face-to-face, project-related interviews with faculty members and graduate students

These individual 90-minute interviews were conducted with 11 faculty members and four graduate students. Respondents were asked to use simple art materials to depict a step-by-step timeline of an ongoing or recent research project. The depicted timeline, created as the interview proceeded, provided a structure for asking about the resources, spaces, technologies, and services that were used during the project and how the project was helped and hindered by a wide range of research conditions, processes, and resources.

#### 4. Interviews of undergraduate students by undergraduates

These interviews were conducted by students registered for ANTH 2040: How to Do Ethnographic Field Research, taught by Prof. Ira Bashkow. Each student interviewed three peers whom they either did not know or knew only in passing. An effort was made in an informal way to reach out to a wide variety of undergraduate students representing diversity in gender, ethnicity and country of origin, graduation year, and area of study. Respondents were asked about their most recent study sessions, including why they chose their study locations; reading practices; tangible and digital resources they used; obstacles they encountered and how they overcame them; and other issues as volunteered by respondents.

#### **B. Observations**

Project team members developed and applied a set of codes and conducted observations in Alderman Library and a small number of relevant spaces in Clemons Library.

#### **C. Surveys**

Two sets of survey responses were collected using the same instrument: a set of 91 cards distributed by students in Prof. Bashkow's anthropology class and 120 cards distributed by the project team from the library. Survey cards included questions about activities in which respondents were engaged when they received the card; reasons for selecting where to sit; whether they were using physical or electronic items from the collection; whether they had been sitting alone or with others; and, if they had been sitting with others, whether they had been working on the same or different things.

## Appendix 2. Work practices related to the use of library space and resources

This section reviews the major findings of the studies and presents lists of the academic and associated activities in which faculty members, graduate students, and undergraduates engage in libraries and in related spaces, such as offices and dorm rooms.

### D. Faculty members

The following list of faculty work practices is drawn mainly from individual interviews with faculty members in their workspaces, in which we discussed recent or current research projects, and from interviews conducted with groups of faculty members in department meetings, in which we discussed the use of library spaces and resources as well as aspects of teaching. All of these interviews were conducted face to face. Additional information comes from telephone interviews concerning the use of library spaces, physical and online resources, reading, and work with students.

#### 1. Building and participating in scholarly communities

More than anything else, the work of faculty members is marked by connection to scholarly communities. These communities include living scholars and others, such as librarians and archivists, who work on the same topics, as well as authors, living and dead, whose work they know through written scholarship on paper or online. These connections transcend time and space; the most important connections are often to scholars in other institutions around the globe. While scholars tend to seek out other academics who work on the same problems, they often look outside their fields to those with expert knowledge related conceptually but from the perspective of another discipline, such as an historian of medicine who forges connections with medical doctors or a political scientist who makes contact with environmental scientists.

#### 2. Continuously scanning for information

Faculty members continuously scan the literature as an integral aspect of scholarly work. This may be thought of as “browsing” and it goes far beyond “browsing the stacks.” Indeed, faculty respondents acknowledge that their browsing of stacks is declining significantly: well under half are stack browsers, with fewer still avid browsers in Alderman Library. However, all faculty respondents are browsers in a more general sense. They browse the book displays at conferences, at new and used bookstores, and at specialist libraries, looking for information in their fields, material of use to their colleagues and students, or anything interesting at all in their own or other fields.

Faculty members conduct much of this browsing in the physical world—including personal communication with colleagues in which recommended sources are sought—but they also browse online, for example on newspaper websites or in databases. Intellectual curiosity is a hallmark of this continuous scanning. Several faculty members mentioned the new book shelf in Alderman Library, indicating that they particularly like finding interesting work there outside their own fields.

### 3. Conducting project work and building knowledge over the long term

The continuous scanning of the publishing environment goes hand in hand with another common practice: simultaneous work on multiple projects, many of them extending over years. This in turn supports the continuous development of a knowledge base in one's own field among a growing number of subfields and topics. Faculty members bring this knowledge base to all of their academic endeavors. Their broad and deep knowledge in their fields drives the targeted way in which they approach librarians and other specialists. While they may be sponges for new information, faculty-level researchers are often very precise about what kind of information they need to answer their questions. Only three mentioned the help they received from librarians, although several respondents called for a more visible librarian presence in Alderman Library. Furthermore, while they may seek assistance in finding a specific item when they are well into a research project, they are not so likely to ask for help casting a broad net at the beginning.

### 4. Using a wide variety of printed and online scholarly resources from sources around the globe

Faculty members are heavy users of a wide variety of scholarly resources, which they find in collections at the University of Virginia and around the world. To a person, the faculty members we interviewed track down the information they need wherever it is, whether in paper or a digital format. They use physical materials from the University's general collections and travel to other libraries, museums, cultural institutions, government collections, and archives in the United States and abroad, in addition to using digital tools to find the material they need. All faculty respondents rely heavily on the library's digital journal subscriptions; they also marvel at the breadth of material and speed at which they can have it. That said, some respondents feel the lack of some subscriptions to which they had access at former institutions. Most respondents use special collections somewhere, but only a few respondents—under a fifth of our sample—use those at the University of Virginia. We might say that an imagined global network of special collections addresses the needs of the global scholarly community, but there is no direct correspondence between where scholars are employed and where they find the most

useful collections. In this conceptual network, each collection is important—even essential—though local use may be moderate.

#### 5. Building collections for projects and for long-term pursuits

A majority of our faculty respondents create personal libraries, which may span office and home, and project libraries, which may contain large amounts of charged library material. Several faculty members also pointed out the importance of their own contributions to collection development by requesting that the library make particular purchases. Access to needed library materials for the full duration of an interest or a project is crucial. In the case of a team-based research project, many respondents would be grateful for a shared project bookshelf where charged material could be held securely and retrieved and used easily by all team members.

#### 6. Relying on the Library Express On-Grounds (LEO) delivery service

The majority of faculty members, accustomed to traveling to other locations to find the best scholarly resources, indicated that it was of small concern to them whether a book they needed was in Alderman or Ivy stacks as long as they could have it in a couple of days. As mentioned above, fewer than half of the faculty members we interviewed browse the stacks, and even those who do are regular users of LEO, a service they praise and on which they have come to rely.

#### 7. Making a place to work

Faculty members need more than one kind of space for different kinds of work. Library spaces are used primarily as sources of physical materials and locations of meetings or project work and secondarily as sites of specialist help (reference or IT), meetings with students, attendance at special events, and informal connections with colleagues. However, the use of space in Alderman Library across all primary and secondary activities is limited, with many faculty members rarely or never entering Alderman and others describing their visits as decreasing over time. When respondents described the kinds of work spaces they desired, they mentioned a variety of places that, if available, would support a range of different activities. These included departmental offices; spaces they might use temporarily for project work in libraries, departments, or special units; quiet places where they would be able to write alongside or with their writing groups; dark places where they could view films; secret places where they could work without interruption; places where they could meet with project teams or technical specialists and talk and work together; and places where they could be among other people but still get their work done. Some of these spaces exist in the desired form while others do not. Respondents indicated that the spaces available to them, including their departmental

offices, are not always optimal, being too noisy, dark, or isolated, or providing no defense against interruption. Especially for group work or work with project materials or special resources, departmental offices are insufficient.

#### 8. Exploring, developing, and using scholarly technologies

Every faculty respondent engages to some extent in digital scholarship insofar as they all make extensive use of digital technologies in reading and writing, teaching and research, and engagement with scholarly communities. A smaller but significant number engage in digital humanities and other digital projects that extend knowledge through the intentional integration of traditional and emerging technologies. Respondents in the latter category make use of the Institute for Advanced Technology in the Humanities (IATH) and the Scholars' Lab, both located in Alderman Library. In-person use revolves around project meetings and appointments with IATH staff held in back of the house spaces, as opposed to use of public spaces. Several respondents were proud of the status of the University of Virginia as an early and frontrunning site of digital humanities, and hope renewed resources will propel a new wave of excellence.

#### 9. Relying on library-supplied tools and services to make work easier

Faculty respondents rely heavily on the Virgo online catalog, LEO, and interlibrary loan. Indeed, these tools and services are so critical as to be indispensable. Continued smooth and rapid service will only increase in importance when renovation is underway.

#### 10. Taking heart and nourishing commitment to ideals

The library is important as a physical space for reasons that go far beyond the practicalities associated with documented work practices. Many people view the library as the preeminent symbol of the highest hopes and best ideals of universities in our society. To see the library as a physical structure and to go inside it is, for them, to renew their commitment to scholarship, educational opportunity, and the common good. Respondents spoke of the library as a refuge for unpopular ideas, a safe space for controversial scholarship, and a bulwark against censorship. A library building that contains physical collections, one respondent pointed out, can provide this in a way that a purely online library cannot.

#### 11. Other considerations

When we asked about the purposes of Alderman Library, we did not receive a robust response. However, the majority of respondents, even those faculty members who acknowledge decreasing use of physical library resources and spaces, believe that the

primary purpose of Alderman Library is to provide books and other physical resources on grounds. That said, most of these respondents would be satisfied if the collections in Alderman Library were smaller as long as items held off site are delivered within 48 hours. In other words, respondents by and large believe that the library should remain a place for books, but not *exclusively* a place for books and not a warehouse for *every* book.

Smaller proportions of respondents—a third or fewer in any method—named the following as primary purposes of Alderman Library: to provide quiet work spaces, group spaces, and seminar spaces; to provide specialist help from reference librarians; and to support consultation of reference materials and browsing of physical items. That is, beyond a general sense that the library should house books, there were many ideas about what else the library should provide, but not a great deal of consistency in these responses. These inconsistent responses underline a feeling that while the library is changing, its transformation remains unclear and incomplete.

With regard to the emergence of electronic resources and reading on screens, an interesting contradiction arises from the data. A large number of faculty and graduate student respondents say that reading on paper is superior to reading on screens. They also voice serious concerns about the reading skills of undergraduates. However, only about a quarter of the faculty member and graduate student instructors we interviewed expect students to use physical library materials, and one of these respondents requires that students look at only one book.

Other interesting contrasts emerged in the data. One respondent saw no reason at all—not even safety concerns—for renovation. By contrast, a small number of respondents suggested that renovation could enable the library to anticipate emerging and future needs and interests, for example, by expanding and “hybridizing” physical collections to include such popular culture items as video or board games.

While three respondents were adamant that libraries are for books and the quiet use of books, a majority of respondents felt that libraries are “more than books”—that libraries are places to be, to learn, to make, to use new technologies, and so on. Many respondents would like to see a much more ambitious design for the building, even to the extent of exceeding traditional height limits and moving away from the Jeffersonian aesthetic, aspects of which make reference to a history of slavery and work against ideals of inclusion. And on the topic of inclusion, a small but significant thread running through many interviews was the need for the library to be accessible to people with special needs related to mobility, vision, and hearing.



## E. Graduate students

This section reviews the primary work practices and work-practice needs of graduate students, drawing information from two sets of interviews. The first includes individual interviews, conducted by telephone, that centered on research, reading, and the use of the library in person and remotely. The second comprises interviews conducted in person during which graduate students depicted and discussed a recent or current research project.

### 1. Completing the doctoral dissertation

Across the board, the graduate students in our study were narrowly focused on their dissertation projects. While some discussed related projects conducted during undergraduate or MA work, none made reference to current non-dissertation work. This was in vivid contrast to faculty respondents, many of whom had multiple projects in process concurrently and described career-long sequences of related investigations. With regard to the dissertation, respondents reported or implied many library-related concerns—such as discovering and acquiring the best resources—and other, more general anxieties—such as choosing the right topic, juggling dissertation work with teaching responsibilities, and finding a balance between isolation and time with others.

### 2. Building and participating in scholarly communities

The graduate students in our respondent pool stand at the periphery of scholarly communities and seek entrée and connection. They reach out to professors, friends, and fellow students and they reach out—sometimes tentatively, sometimes boldly—to scholars in their fields. Like their faculty counterparts, graduate students reach across institutional and national borders to the people who are writing on their topics. They also seek out written scholarship, in paper or online.

### 3. Making a place to work

One of the biggest challenges faced by the graduate students in our samples is finding suitable workspace for research and writing, preparing for teaching, or completing their own coursework. Many respondents complain that they are relegated to sub-optimal space or no space at all. They seek out space in libraries, their professors' offices, and local coffee shops, but often find those spaces to be noisy, impermanent, dark, lacking lockable storage for laptops or even a secure place to leave books, and either too isolated or too prone to distraction and interruption. Many respondents use carrels and other spaces in Alderman Library for quiet work. They are also heavy users of Alderman collections and regular browsers in the stacks. One respondent reported having used the

Scholars' Lab for both meetings and solitary work. Relatedly, the library as a place holds value for our graduate student respondents, particularly as a place where their work is itself valued and given priority.

4. Using a wide variety of printed and online scholarly resources as well as images, sound files, and non-textual materials

Graduate student respondents are heavy users of printed materials from the University of Virginia's regular and special collections as well as electronic journals, digital versions of historical documents, and e-books from Amazon, Hathi Trust, and other sources. They are also heavy users of libraries, archives, and collections in cultural institutions around the globe. They consult, collect, and make images of physical materials in addition to using electronic resources on screen, and they recognize the virtues of both media. Paper is easier to read, easier to annotate, and easier for some forms of research and writing. Electronic resources read on the screen are easier to search, do not waste paper and electricity to print, and are quicker to acquire. Graduate student respondents use and produce more than text. They incorporate images, scores, and other non-discursive material into their work and would like to see new technologies that enable the blending of visual and auditory, printed and electronic, textual and symbolic material.

5. Scanning for information and building personal and project collections

Graduate student respondents describe focused searching for materials related to their coursework and dissertation projects. With regard to the latter, these students build personal collections that combine large amounts of charged library materials with purchased books, photocopies or images of materials from local and other collections, PDFs of journal articles, and digital copies of books and other materials related to their topics. According to their responses, graduate students are susceptible to "going down rabbit holes" when looking for material online. This may result from a tendency to search for resources online combined with a relatively beginner grasp of the literature. Further underscoring their dependence on online searching, graduate students are less likely than faculty members to spend time physically browsing bookstores, book displays, newspapers, and so on, although they are more likely than faculty members to spend time in the stacks, mostly to use stack carrels but also to browse for books.

6. Relying on library-supplied tools and services to make work easier

Graduate students do not have access to LEO but they are dependent on other library services, particularly interlibrary loan and the Virgo catalog. There is some frustration with Virgo, including the difficulty of finding known items. Graduate student respondents did not indicate that they consult librarians or other specialists in

University of Virginia's libraries, but a few have made purchase requests through the library.

## 7. Other considerations

Several respondents raised the issue of making the renovated library accessible to people with special needs related to mobility, vision, and hearing. There is also some concern over helping graduate students with limited English proficiency, many of whom have little experience in U.S. libraries and may not know where to find things or how to get help.

### F. Undergraduates

The undergraduate work practices listed in this section derive from information gathered in the survey and observations conducted in Alderman Library and selected spaces in Clemons Library; the interviews conducted by anthropology students; and discussions of student requirements, practices, and needs during department meetings and phone interviews. Survey and observational data give us a picture of what happens inside Alderman Library. By contrast, interview data provide a more general picture of the behavior of the undergraduate student body.

Note that the phrases “classwork” and “study session” in this section refer to a period of reading, doing homework, studying for a test, or conducting another activity for a class. In the case of interview respondents, this would be the most recent such session. In the case of survey respondents, it was the session during which they were interrupted and asked to complete the survey card.

#### 1. Doing schoolwork often, for two to three hours per session

Undergraduates conduct study sessions on a nearly daily basis, working for approximately 2.5 hours on average across all reported locations, a duration that exceeds the average at other institutions where similar data have been gathered. The two most commonly reported locations were personal living spaces (respondents' dorm rooms or their rooms at home) and library spaces. Interview data allow us to compare the duration of study sessions in these two most popular locations: in their own rooms, students reported that they worked for 2.3 hours while in the library they reported working for 3.3 hours. The data also show that undergraduates who conduct study sessions in Alderman Library tend to be regular visitors, with half of them using the library on a nearly daily basis.

## 2. Doing schoolwork in a suitable location

Undergraduates in general choose study session locations on the basis of convenience. They choose a place that is nearby and can be counted on to have available seating. Regular users of Alderman Library select a study location that is quiet and allows them to focus. Other considerations in both cases include the ability to be in the company of others (although not necessarily working together, as discussed in the next section) and to be comfortable. Nearly half of our interview respondents chose to work in their own rooms, with a quarter selecting a library location. For the latter, access to equipment was rarely mentioned as a reason for selecting a location, and access to library books was not mentioned at all, although we know that students do use physical materials in the library, as discussed in a later section.

Respondents to the student interviews—representing a slice of the general undergraduate population—were not frequent users of Alderman Library. Just under half had been inside Alderman during the week before the interview, and more than a third had not entered Alderman in more than a month. In general, undergraduates will enter Alderman Library if it is convenient, if they feel like being around others, or to attend a scheduled session such as office hours.

Undergraduate use of library spaces is not necessarily accompanied by the use of scholarly resources but the presence of books and other physical signs of the history of scholarly inquiry are yet important anchors for these students. Many undergraduate respondents, especially in the interviews conducted by their peers, indicated that they feel inspired to be in a space inhabited by generations of students and home to great works by scholars past and present.

## 3. Choosing isolation or companionship or collaboration

Most undergraduates conduct their study sessions alone. About a third are with someone they know; undergraduates sitting together tend to be in pairs or trios. About one in five or one in six are working together with others on the same material. Again, groups of two and three are most prevalent, with larger groups appearing rarely in our data. Faculty members and graduate students who serve as instructors report that group work is in general infrequently assigned and, when assigned, conducted mainly in class. Moreover, when group work is assigned outside of class, it may not require that students work together physically—as opposed to using communication or co-authoring tools—and is unlikely to require the use of physical library materials.

The seating pattern in Alderman Library suggests that many of the people who use the space want to be near others but not in direct contact with them. When observations

were conducted during a week that was busy—but not during the final exam period—occupancy was generally under 50 percent. About a third of observed individuals were using work surfaces to spread out their materials, but even those who were not spread out still left an empty buffer space around them. This supports the inference, based on survey and interview data, that quiet and an environment that aids focus are the top draws of the library.

#### 4. Focusing on schoolwork during study sessions

According to the interviews and surveys, undergraduates use their time during study sessions to do academic work. This mainly entails working on class assignments; reading, writing or doing research; and studying for tests or quizzes. Other tasks include peripheral academic work, such as program planning. At any moment, about one in every ten people observed in the library will appear to be taking a break, a number that is just slightly higher than self-reports in the survey. During study sessions, undergraduates report that their work went well but could have gone better if there were fewer distractions, a problem that was slightly worse for those studying in their own rooms than for those in the library.

#### 5. Using few but varied resources for classwork

Undergraduates make use of a wide variety of information resources in physical and digital formats, which they read on paper and screens, using a variety of devices. However, when describing the most recent study session, only about one in five interview respondents reported having used a published resource aside from the course textbook. Most of them had used articles, with a smaller number using an academic or trade book. When students described what they had read most recently for class, whether or not they had done this reading during the previous study session, they reported mainly having used textbooks (just under half), followed by academic and trade books and then articles. Only three of the 104 respondents described their reading as “primary sources.” In general, more reading had been done for classes in the humanities than for those in STEM or social sciences.

#### 6. Reading on paper

Regardless of whether they are reading for class or for pleasure, most interview respondents say they prefer to read on paper, although all read on both paper and screens. Undergraduates are conversant with the relative merits of paper and screens, such as the ability to annotate, read without eyestrain, maintain focus, use a convenient format, connect to the material, and retain what is read. However, students do not

attribute these affordances consistently to paper or screen reading; they do not all agree on which formats and devices better afford these advantages.

#### 7. Reading printouts and online materials more than physical books

A majority of respondents to the student interviews reported having held a book in their hands within the previous week, but half of these had held a textbook; the rest were mainly trade books. About three-quarters of interview respondents say they read for pleasure, mainly fiction and nonfiction trade books. In Alderman Library, fewer than one in five observed people were using published material. This is lower than the self-reports of survey respondents, a little over a third of whom reported having used a physical book or journal on the day of the survey. About half of all observed people in Alderman Library were using other materials on paper, such as printed PDFs or course handouts.

Fewer than one in ten survey respondents had used library materials or a combination of library materials and their own materials on the day of the survey, but many more, about four in ten, reported having used an online article, e-book, or other electronic resource the same day.

In section II.A.11 above, we discuss the concern faculty members expressed over the reading skills of students. We noted a related contradiction in our data on students: that while the reading exposure and skill of undergraduates seems to be declining, by and large undergraduates evince no awareness of this trend.

#### 8. Using laptops and, to a much lesser extent, phones

Laptop use is very frequent, exceeding seven in ten people throughout all observations. By contrast, phone use is much lower—on average, one in six. Importantly, even when observers initially felt that many phones were in use, the actual counts told a different story and it was extremely rare during any particular observation to see more than one in three individuals using phones.