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Digital Humanities on Reserve: From Reading Room to Laboratory at Yale University Library

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Abstract

A 1930s reading room at Yale University Library is the site of an architectural transformation that seeks to make DH praxis visible in a collaborative, open setting. What design and policy interventions lead to the best use of this central and symbolic space? Ethnographic study, user-centered design and a focus on the materiality of both physical and digital collections combine to suggest one pathway for research libraries to support collaborative digital work in the humanities. In this article, two digital humanities staff at Yale Library discuss the relationship between inclusion v. separation, security v. transparency, and historicizing v. “modern” design in the context of a space for Digital Humanities.

Introduction

Figure 1. The Franke Family Digital Humanities Laboratory. *Photo credit: Mara Lavitt*.

A historic reading room from 1931 is the site of one of the newest scholarly support environments at Yale University: The Franke Family Digital Humanities Laboratory. While neither the first renovation of the space — the room shifted from reserve books to periodicals in the 1970s — nor the first home of the lab, which relocated from a room requiring a

campus ID for access to a publicly accessible, much larger space — the transition of a reading room to a digital humanities (DH) laboratory represented a new kind of commitment from the Library that required structural, aesthetic, and programmatic transformations. The goal was to create a collaborative, open workspace where the practice of digital humanities would be visible, accessible, and supported within Sterling Memorial Library, the so-named “heart of the university” [Schiff 2005]. Specific design and policy interventions informed the reimagining of this central and symbolic space. This article considers the role of DH labs as “humanities infrastructure,” with a focus on how location, materials, and services could be designed to support DH research and training within libraries.

The transformation of this particular room, and the services found inside it, are part of a larger process of libraries formalizing their support for digital humanities in response to local needs and resourcing [Lippincott 2015] [Webb 2018]. As staff members in Yale University Library and DH practitioners ourselves, we chronicle the project from the perspective of both library service design and new forms of academic collaboration. Ethnographic study, user-centered design, and a focus on the materiality of both physical and digital collections combine to suggest one pathway for research libraries to create spaces that offer localized support for collaborative digital work in the humanities. 2

From Reading Room to Digital Humanities Lab: Reimagining a Library Support Space

Figure 2. The Reserve Book Room in April 1931, shortly after opening. *Photo credit: Yale University Manuscripts & Archives.*

In the 2019 *Debates in Digital Humanities*, Neil Fraistat calls for a reimagining of lab programming, one that moves away from faculty fellowships toward incubator models that provide more training and capacity-building support [Fraistat 2019]. We extend this call to consider how the physical design of labs contributes to the services offered therein. Many universities and colleges have built successful models where a DH lab or center is affiliated with a single department or faculty lead: Stanford’s Literary Lab was at one point physically housed within the English department, for example. More and more, however, labs are forming within libraries. Joan Lippincott observes that “more libraries are recognizing that they may want to invest resources, including staff expertise and time, technology infrastructure such as repositories, and physical spaces such as digital scholarship centers or labs, to make a more formal commitment by the library to this type of scholarship” [Lippincott 2015]. This extension of library support for digital training spans the United States, with examples from the University of California Los Angeles, the University of Wisconsin-Milwaukee, Rutgers 3

University, University of Virginia, and Brown University, to name a few. But even within libraries, the focus and design of labs vary. Katy Kavanagh Webb's recent survey of digital support separates labs into groups covering Digital Media, Digital Humanities, Data Visualization, and Makerspaces (2018), each of which has its own spatial constraints with respect to the kind and amount of hardware needed, which in turn affects its design flexibility.

4 At Yale, the Digital Humanities Lab (DHLab) has always been physically and organizationally located within the Library, tasked from the beginning with supporting scholarship across the humanities broadly considered. In addition to departmental diversity, the audience for DH support has included a broad set of clients, from Yale College students, graduate students, faculty, curators, and librarians to occasional collaborations with external partners. This range of disciplinary and professional perspectives presented unique opportunities and challenges for designing a space that would be inspiring, inclusive, and functional.

5 Moving DH labs into libraries invites a rethinking of library spaces that were originally designed for oftentimes siloed engagements. Completed in 1931, Sterling Memorial Library contains nearly 450,000 square feet of space to support learning and research. Positioned immediately to the left of the main entrance, the Reserve Book Room (Figure 2) was an integral part of architect James Gamble Rogers' design. The room and its support areas total over 4,000 square feet and were designed to hold 10,000 volumes on wooden shelves that flank the northwest and southeast walls. Large expanses of leaded glass windows bring filtered natural light into the room, rising to a ceiling of decorative plasterwork and chandeliers. The abundance of craftsmanship is characteristic of Sterling Memorial Library as a whole, completed at a time when the Great Depression enabled new campus construction nationwide at relatively low cost. Yet the Reserve Room itself was described by contemporary observers as a place of relative moderation: "Inasmuch as the Reserve Book Room is really a work room where students go for study," wrote alum Ellery Husted in the *Yale Library Gazette* the year of Sterling's opening, "its architectural treatment is more restrained" than the other large reading rooms which filled the main floor of the new library [Husted 1931]. The Reserve Book Room served its role as designed well into the 1970s, when the construction of the new underground Cross-Campus Library (now renamed Bass Library) opened up more modern space for perusal of reserved books. As a result, in 1973, the room changed its function to housing periodicals, continuing in that capacity through a renovation in the late 1990s that included new furniture and a renaming to the Franke Family Reading Room in honor of a gift from Barbara and Richard Franke (Class of 1953), who share a longtime commitment to supporting the humanities.

6 By the early 2010s, consensus had built on campus that the room could serve a more prominent role in the future of research in the arts and humanities. With the availability of other rooms within Sterling to hold print periodicals, the space seemed ripe for reimagination. Discussions imagined a "Digital Center for Arts and Humanities," modeled on the successful launch of the Center for Science and Social Science Information (CSSSI) in a 1960s building in 2012 [Fox 2012] [Thondavadi and Yin 2012]. That renovation project successfully provided a home for the science and science libraries, 24-hour study space, and support for data analysis in the basement of a science building. Subject specialists in that new space worked in glass offices surrounding a central collaborative work area, where advanced statistical consulting was also provided by graduate students. CSSSI thus provided a new template at Yale for how subject specialists, technology, and data services could complement traditional library offerings such as print collections and periodicals. The challenge was how to adapt this support model for a significantly older, and less flexible, space.

7 Indeed, the design and materiality of the Franke Room was naturally much different than the 1960s environment in which CSSSI was built. Instead of the basement of a mid-century building, the Franke Room contained wooden carvings, leaded glass, and plasterwork designed to evoke the early English Renaissance. Built-in bookcases lined the room up to a height of nine feet, transitioning to walls that were designed to appear uneven, as if finished by hand.

8 At the same time, the integration of the Franke Room into the architectural and material fabric of Sterling Memorial Library also offered advantages (Figure 3). In contrast to the disciplinary-specific reading rooms on higher floors (and behind access gates that require Yale IDs), the Franke Room is near the main entrance on the ground floor, open and accessible to all, making it a strong candidate for a large and welcoming space designated for the exploration of new ideas and methods.

As a design team of architects and library staff examined the room's complex materials and physical adjacencies, several intriguing possibilities emerged. Given the room's close proximity to the library's physical collections, the reimagined space could position DH as contiguous with older traditions of humanities research rather than a radical break from it. The presence of a substantial print collection in the building could serve as a reminder that the root material for many digital projects is the print book or periodical. From a workflow perspective, this proximity could also streamline the research process: if the lab had equipment available for digitization, researchers could pull books from the stacks and bring them straight to the lab where they could transform them into machine-actionable data. 9

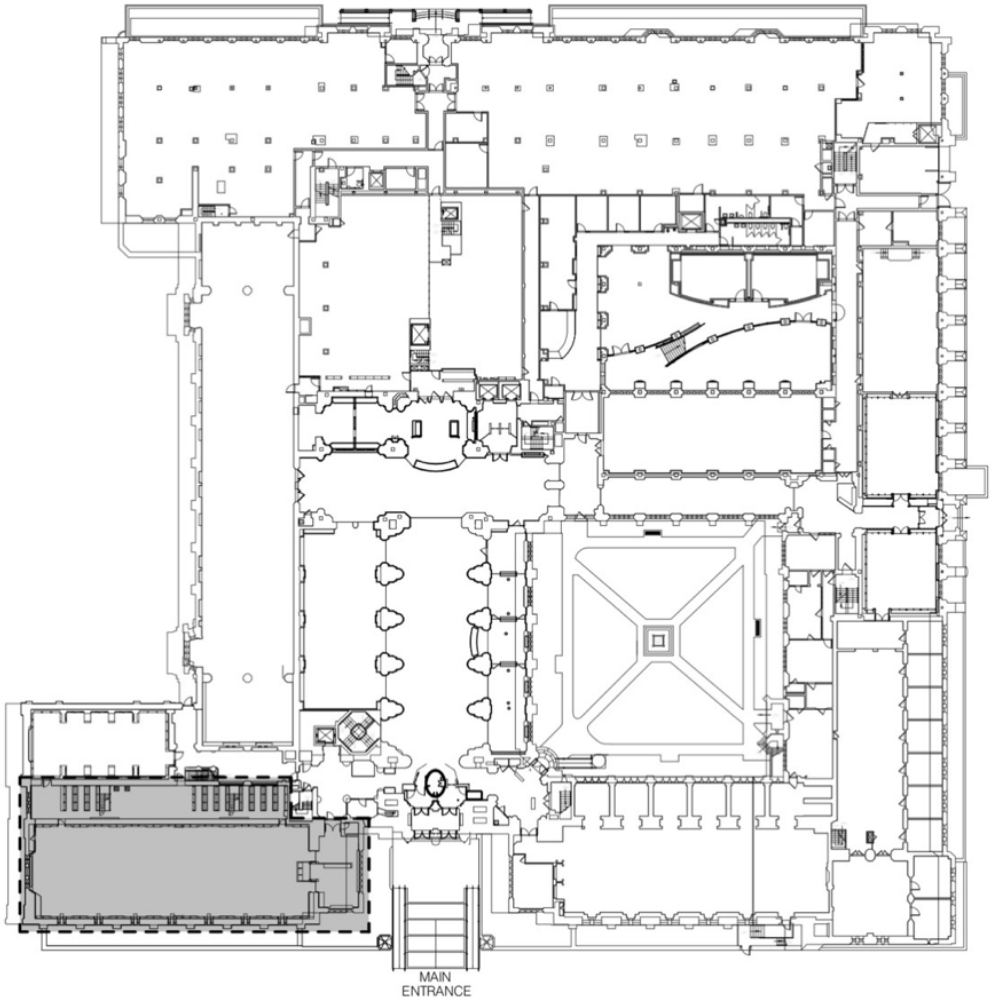

Figure 3. The Franke Family Digital Humanities Laboratory (lower left) in the context of Sterling Memorial Library.

The original infrastructure of the room also contained large amounts of hidden reserve book shelving behind a long, adjacent wall that was accessible only to library staff. The design of the DHLab re-imagined this "back-of-house" area, opening it up to support collaborative meeting spaces and on-site offices for lab staff. The 1930s ideal of hiding the mechanical aspects of scholarly support space would give way to exposing this previously backstage area to the patrons in the main room. 10

Requirements Gathering: Identifying and Responding to Local Needs

Planning for DH support at Yale coalesced in the early 2010s, ranging from conferences [Yale 2010] [Yale 2013] to graduate student-led working groups and informal committees. (For an overview of reactions to this effort, see Svensson 2012.) The Library first advertised a Librarian for Digital Humanities Research in the late 2000s, but did not fill the position until 2013. Throughout this time period, graduate students, librarians, IT staff, and faculty continued to advocate for more structured support — along with dedicated space — for DH inside the library. These conversations 11

were focused into an informal committee led by the Deputy Provost for Humanities and Initiatives, resulting in, among other things, a comprehensive survey of faculty and graduate students who self-identified as having DH interests. This report [Chiodo 2013] was essential in cataloging and characterizing the ways that scholars on campus wished to combine humanistic inquiry with new digital techniques, and it laid the groundwork for coordinated effort to further Yale's support for scholarship in this area. In 2015, Yale University Library received support from The Goizueta Foundation to inaugurate a comprehensive initiative in science, technology, engineering, arts, and mathematics (STEAM) education by launching the DHLab [Patrick 2014]. Recognizing the Franke Family Reading Room as a natural home for the new initiative, the Library began a multi-year design process with student, faculty, and staff stakeholders to identify campus needs and aspirations for DH support, which would inform the design of the space.

12 Whereas the sciences have long-established models for constructing lab spaces outfitted to their research needs, the humanities have operated more in a tradition of individual work. DH labs create opportunities for collaborative work that brings together different sets of expertise and equipment to pursue humanistic inquiries at varying scales. The challenge in designing such a space revolves, in part, around striking the right balance between different needs and possibilities. For example, should the room be a fully open workspace, or should it provide areas explicitly marked out for different functions? Which is more likely to spur activity: a space of unstructured possibility, or one that actively suggests particular modes of engagement? Is a computer with a large monitor actively displaying an interactive visualization more, or less welcoming, than an open table? In describing Penn Libraries' integration of DH, Anu Vedantham and Dot Porter underscore that "[s]paces designed to encourage brainstorming and discussion need to look, feel, and function differently from those designed to support deep reading, note taking, writing, or presentation practice" [Vedantham and Porter 2015]. Connected with the desired activity of the space, however, is the overhead required to maintain it, from both a staffing and budgetary consideration. What happens when the computer needs replacement – much sooner than the table? Who will produce and update the content displaying on the digital screens?

13 A workspace unencumbered by machines affords different kinds of engagement with a space and the people inside it than does one filled with monitors. The "computer lab" concept, with rows of fixed workstations, seemed to the design team to belong to an older model, which was confirmed by site visits to newly designed spaces that were more flexible in their layout, with some equipment balanced by open workspaces (Northeastern, Brown, and others). In their 2015 survey *Building Expertise to Support Digital Scholarship: a Global Perspective* for CLIR, Lewis et al. "noted variation in the kind of *facilities* these organizations occupied; collaborative space seemed to be more important than top-notch hardware" [Lewis et al. 2015]. Columbia University's *Studio@Butler*, for example, launched in 2013 with an explicit goal to de-emphasize computing equipment in the service of foregrounding human collaboration [Studio@Butler 2013]. At the same time, access to specialized hardware and software normally out of the reach of students can lower barriers to casual experimentation and initial engagement with digital forms of scholarship. The question seems to be, then, what percentage of the room should equipment (computers, scanners, virtual reality headsets, 3D printers) occupy?

14 To acknowledge, anticipate, and address, the specific DH needs on our campus, the Library engaged design anthropologist Nancy Fried Foster, formerly the senior anthropologist at Ithaka S+R, for an information-gathering phase during which she helped collect input from the Yale community. With Fried Foster, the design team conducted interviews during 2016 with current clients of the DHLab, as well as those who had not used such services in the past. The goal of including researchers who did not identify as digital humanists was to ensure that the design team did not "overfit" the service portfolio and architectural design to those who had already availed themselves of DH support services on campus. Fried Foster describes the user-centered design process as one that "begins with an understanding of work practices and obstacles and then designs solutions to support workflows and address identified problems. It is inclusive and participatory, and is intended to improve outcomes by building a foundation of valid, up-to-date information about the community for use by designers and architects" [Foster 2016, 13]. This phase of information gathering was critical for grounding our assumptions of scholars' spatial and technical needs with respect to DH research. The user-driven assessment included three types of engagements:

1. in-person interviews with students, faculty, and staff from different disciplinary backgrounds — though predominantly from the humanities — many of whom had been involved in DH activities on campus in some way, whether that meant they attended workshops, came in for consultations, or had their own

projects underway (for more on the interview process, see “Library Design and Ethnography”, which describes a comparable information-gathering process at the University of Rochester [Foster and Gibbons 2007]).
2. design workshops during which participants were asked to imagine different spatial, personnel, and technical configurations of the DHLab, and
3. benchmarking research informed by colleagues’ experiences at other institutions via site visits, Skype conversations, and reading.

15 The design workshops were particularly illuminating for seeing how researchers imagined engaging with the new space. The first workshop asked participants to draw their ideal spaces, including what technology they would like to see in the room and what sort of activities should be supported. The outputs from the first workshop became the basis for the second workshop, which took the list of imagined equipment and activities that might take place in the space (such as designated workshop areas, staff offices, desktop computers, flexible workstations, reception desks) and printed them on separate strips of papers. Participants then arranged those pieces of paper around a space roughly scaled to the Franke Room. Each strip had multiple copies so that if, for instance, a participant thought there should be five desktop computers and two workshop areas, they could arrange the room accordingly. There was no requirement that participants use strips from all of the different resource or activity types.

16 Patterns from the sessions helped inform priorities for the renovation, including the need for separate programmatic spaces for consultations, collaborative work, and project exhibitions. Participants wanted to have ready access to DHLab staff, but they recognized the need for staff to have occasional privacy as well. Large display screens emerged as a significant request for both collaborative work and exhibitions, which drove conversations among the design team toward the notion of a large-scale “data canvas” as a possibility for visualizations. Meanwhile, conventional desktop machines were lower on the list of must-have equipment: most students, faculty, and staff preferred working from their own laptops, but they acknowledged that a few high-end desktop computers in the DHLab would be helpful for accessing software and for more computationally intensive projects.

17 While the feedback received during the information-gathering phase was generally consistent, Fried Foster’s summative report [Foster 2016] indicated a few trends that appeared specific to university affiliation: faculty expressed the most interest in defining the DH as a field, graduate students engaged the most with DHLab activities (training and funding opportunities, sponsored talks, projects), and undergraduates displayed the most curiosity and willingness to experiment, as well as the strongest interest in combining the Arts and Humanities and STEM (a concept denoted on campus as STEAM). Providing insight into researchers’ expectations and work practices, the formal information-gathering phase shaped subsequent conversations with architects over how to optimize the Franke Room to serve DH scholars on campus.

18 During the time that design team was gathering requirements and beginning the architectural rendering process, the newly-formed DHLab — consisting of a Director (formerly the Digital Humanities Librarian) and the newly hired Engagement and Outreach Manager, User Experience Designer, and Digital Humanities Developer — began work in the repurposed rooms on the third floor. The constraints and opportunities of this temporary space led to several lessons that would, coupled with the design team’s assessment, inform the eventual design of the Franke Family Digital Humanities Laboratory. In particular, the team learned that placing its reference print collection of DH books on the old wooden shelves started innumerable conversations with curious visitors as well as clients who made appointments to meet with staff or other collaborators. As every book was placed on a metal stand that displayed its cover to onlookers, the breadth and diversity of scholarly publications in titles as *Music Data Mining* [Li et al. 2011] and *Text Analysis with R for Students of Literature* [Jockers 2014] spurred conversation and thought even among self-professed DH skeptics. In addition to theoretical and practical books on DH methodologies, the Lab also selected critical texts that sought to cast a complicating light on the larger, current “Big Data” moment: *The Master Algorithm* [Domingos 2018], *Debates in the Digital Humanities* [Gold 2012], *Algorithms of Oppression: How Search Engines Reinforce Racism* [Noble 2018], *How to Lie with Maps* [Monmonier 2018], and *New Digital Worlds: Postcolonial Digital Humanities in Theory, Praxis, and Pedagogy* [Risam 2018] were among the titles that sought to bring nuance and different perspectives to scholarly conversations around digital approaches. The oldest book on the DHLab’s shelf reflected the uncertainty for how

computational methods would (or would not) be incorporated into humanistic pursuits: *Computers for the Humanities?* (1965) contains the proceedings of a conference held on Yale's campus, with the sponsorship of IBM, with the terminal punctuation mark still an area of active debate amongst humanists and digital humanists alike. Having *Computers for the Humanities?* on the shelf of the DHLab creates a connection between Yale's early, little known — even to us — interest in how the humanities would take up computation, and its present-day, expanded commitment to providing support for DH research and teaching.

Informed Design: Building Out Spaces for Digital Humanities Support

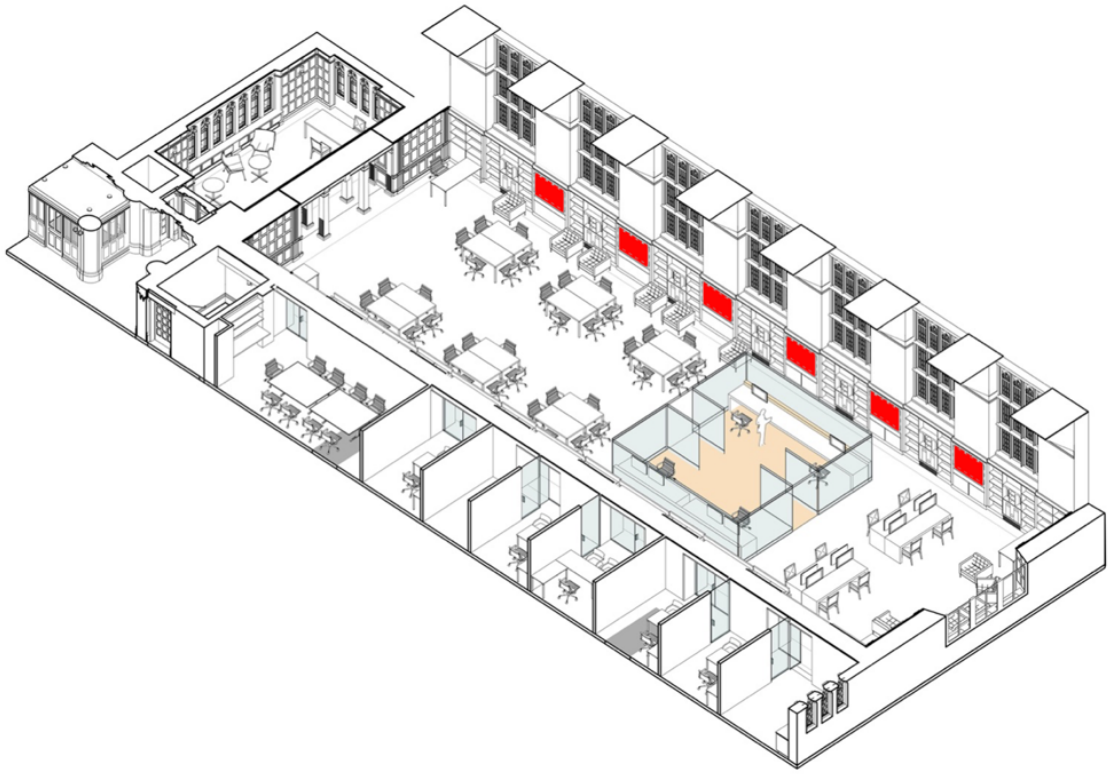

Figure 4. Figure 4. Early-stage (2017) design concept. *Photo credit: Apicella + Bunton Architects.*

Service Points

Serving as a focal point for — and for many, an introduction to — DH on campus, it is especially important for labs to be inviting, inclusive spaces, welcoming to long-standing DH practitioners, the curious but unsure, and everyone in between. In conceptualizing the layout of the space (Figure 4), the team advocated for modular designs that would support multiple kinds of DH engagements. DH is a robust, rapidly developing area of research and teaching, and the goal was to design a space that could respond to new needs and forms of collaboration that might surface. Nearly half of the DHLab would thus consist of an open workspace occupied only by wheeled tables and chairs. The tables, which can be linked together at the ends, can be easily reconfigured into pod formations, long rows, or U-shapes to support workshops, presentations, working groups, collaborations, and individuals working on laptops or reading books. Walls would feature alternating panels that incorporated both print book collections and digital visualization monitors. 19

One service point with a track record of inspiring initial conversations was the print book collection that had lined the shelves of the temporary space. The team wanted to expand and highlight this collection in the new, larger room — gesturing towards the original function of the space. With new support from central Collection Development funds, the books became a consistently growing resource — as well as a dramatic visual characteristic of the space. The collection was ingested into the central Yale Library catalog thanks to the work of the Technical Services team, who adjusted their workflow to accommodate call letter labels that would not obscure cover designs and who added custom bookplates designed by the User Experience specialist in the DHLab. In the higher-profile location along the walls of the 20

renovated room, the books encourage patrons to take up theoretical debates in the field, develop specific coding skills for their research, or read up on DH applications within specific disciplines.

21 Thematically organized, the books provide a snapshot view of the four DH areas the DHLab is most equipped to support (text, image, network, and spatial analysis), in addition to highlighting several books on data visualization, web development, and the DH field at large. The goal for the collection is for it to be a resource to which scholars can turn for instruction and inspiration. With the increasing uptake in e-resources and library services where books can be pulled from the shelves for patrons, there is less browsing — and by extension, fewer unanticipated connections being made — in the stacks. To stimulate engagement with the DHLab's print collection, the architects designed slanted shelves that could display books covers facing out, as the DHLab team learned from the temporary space that researchers coming to the lab for a table to work at might also find themselves drawn toward a book on telling stories with data visualizations.

22 A challenge but also affordance of an open workspace is the lack of sound barriers. While the sound carryover can be distracting for work that requires intense concentration, it also opens up the possibility for serendipitous connections. Organic collaborations, as the DHLab witnessed in the temporary space, often form in such communal spaces, where a group working on a given project realizes they had something to offer a group working on a different effort and vice versa because of overheard conversations. In this way, the team hopes that the opportunity for collaborations encouraged by the open nature of the room outweigh any disadvantage from sound travel.

23 Despite the attention paid to collaboration in library design, a significant fraction of DH activity occurs as an individual activity. This consideration emerged during the information-gathering phase, with participants requesting a space where they might, as Fried Foster described it, work "alone together" [Foster 2016, 17]. Individuals working in the space want to be able to focus on their own projects at the same time that they want to be a part of the energy growing around DH on campus. The team wanted to ensure that scholars working on their own could find places in the room that supported their needs for privacy and concentration. The flexible table arrangement in the front portion of the room and the relaxed but more isolated furniture in the back enables researchers to reconfigure the space and find a seating option that works for them.

24 Sterling Memorial Library contains a multitude of dedicated quiet spaces for solitary research; what it has fewer of are designated collaborative discussion spaces where researchers can analyze, debate, and discover out loud. Fried Foster's report reflects this need as well, with students, faculty, and staff expressing the expectation that the DHLab would be a space "conducive to interaction and the sharing of ideas and information. They envision an environment in which seeing others, working in company, and finding opportunities to talk will foster serendipitous connections" [Foster 2017]. To identify the renovated space as one that not only allows but welcomes conversations, a floor-standing stanchion positioned exactly in the middle of the front entrance doorway explicitly informs those who enter the space of this expectation.

25 But an effective discussion space requires more than just encouragement to talk out loud. Certain kinds of furniture are more conductive than others to grouping around a text or computer screen. The architects, who were provided with a copy of Fried Foster's 2016 report and who met regularly with DHLab and Library staff, were mindful of the kinds of engagements that might take place in different quadrants of the space when they made their furniture recommendations. Ergonomic considerations, such as whether chairs in front of computers should have armrests or not, together with a focus on accessibility for patrons using mobility devices, informed the choice of furniture and surfaces in the space.

26 Teaching workshops in an open space rather than a computer lab offers serious advantages as well as disadvantages that must be taken into account when determining the layout and equipment for a DH lab. To begin with the disadvantages, participants are required to bring a computer with them, and not everyone has access to a personal laptop. Many libraries have laptop checkouts available to students, faculty, and staff; however, they do not usually grant administrative access, meaning participants would be unable to download any software. Tablets can also be insufficient substitutes for laptops when it comes to certain software. Even for the participants who can bring laptops over which

they have administrative control, other challenges emerge. Personal laptops can be slow, low on memory, limited in storage space, and/or suffer from low battery capacity, which can pose a problem depending on where and how many outlets are in the space.

Conversely, these latter disadvantages point to some of the benefits of participants working from their own machines. Since installations can be quirky and setting up software environments daunting and confusing, it can be helpful for participants to walk through the process with an instructor. If they're able to get everything up and running during the workshop, they can then leave it and continue practicing without having to learn first how to install everything from scratch by themselves. This is why Software Carpentry, of which Yale Library is affiliated through the New England Software Carpentry Library Consortium (NESCLiC), operates under the expectation that participants will work from their own machines. 27

Hosting workshops in an open space also yields a more collaborative environment. Rather than being hidden by monitors, participants can see one another, along with the instructor. Additionally, anyone working in other sections of the DHLab can also see and hear the workshop. While workshop registration is capped at a manageable number, the open space provides an opportunity for those who did not register to listen in and, if they are so inclined, to follow along on their own laptops. 28

Security and Transparency: The Special Projects Cube

Efforts to ensure that the "work" of DH had a place in the room led to discussion of how to best highlight the specialized equipment and activities that characterizes some (but not all) of this newer form of humanities research. Fried Foster's final assessment report captures that much of the on-campus excitement for a dedicated space for DH emerged from the hope that the space might catalyze new work by making DH research visible. In the report, Fried Foster notes that researchers "want the set-up of the space to build excitement and stimulate new work; [students, faculty, and staff] see this supported through exhibits, displays, books, and perhaps even a museum, of projects, artifacts, images, and sounds. Displays and exhibits should be visible throughout the space and include screens" [Foster 2017]. 29

In some cases, the specialized nature DH equipment created conditions requiring a secured space. The glass Special Projects Cube seeks to fulfill that requirement while still making DH practice visible. One half of the cube includes equipment for transforming print materials into machine-actionable corpora, while the other half includes machines geared toward high-performance computing. Researchers passing through one end of the lab to the other can see the labor involved in running a collection of texts through optical character recognition (OCR) software or generating scripts to process thousands of images. 30

Scholars have been duplicating library material at self-service copiers for decades, subject to the fair use provisions of US copyright laws. But advanced text-mining projects call for a more comprehensive approach: the transformation of physical collections into digitally-actionable research objects. For this reason, the Special Projects Cube includes book- and microfilm scanners to aid humanists in the creation of textual corpora. Crucially, this "research digitization" practice is not about the reproduction or preservation of an original material object: in most cases, the scanned images are discarded as soon as the textual extraction process is complete, leaving only a transformed digital text. 31

The bound volume is of course not the only form of raw material: Sterling Memorial Library's microfilm collections is large, but often under-utilized due to difficulties in handling and extracting the thousands of images often present on each reel. The DHLab, in conjunction with other library departments, installed a microfilm scanner capable of extracting documents from microfilm reels more efficiently. The resulting images, segmented by a machine vision algorithm, can then processed through OCR software installed on the DHLab's machines to create a textual corpus for later analysis. 32

Materiality and View Corridors

One of the aesthetic challenges that emerged during the information-gathering phase was how to incorporate old furnishings with new technologies. The Yale researchers who participated in our process indicated a preference for modern equipment alongside a desire to retain a feel for the a "library setting." The design team knew that preserving 33

the character of the room would thus be essential. The architects did make two changes to bookcases: re-orienting the shelves to display book covers facing outwards, and installing digital screens carefully-matched to the scale and structure of the bookcases, flush with the wall envelope. The result was an updated look for the room without changing the fundamental geometry or finishes.

34 The orientation of the room along a long axis is reinforced by the way that patrons enter at one end: the foyer has a much lower ceiling that creates a sense of compression. Proceeding into the room itself draws the eyes forward to large windows on the far wall. Subdividing the space with any materials or objects that blocked this axial view would fundamentally change the room and the experience of entering it. A key design priority was thus to preserve as much of the view corridor throughout the room as possible. This dictated the dimensions and placement of the Special Projects Cube, which is located offset from the center of the space but directly in the line of view of a patron entering the room (Figure 3). The surfaces of the cube are made of glass, which allows the transmission of light and motion from all directions. In addition, the intervention of a semi-transparent object in the middle of the room heightens the visual drama of the space, as viewers have both a filtered view of the length of the room, and the people working in the cube.

Staff Spaces

35 The fact that DHLab staff, in the temporary space on the third floor, worked in an open environment right beside computer workstations meant we experienced auditory interference from overheard conversations, along with a constant sense of "being on call" for impromptu tech support. On the one hand, this arrangement provided valuable insights into the projects people were taking on and the technical or methodological difficulties they were encountering. On the other hand, it meant that professional staff might be interrupted at any moment and pulled away from other support efforts that required sustained concentration.

36 For the renovation, the DHLab staff wanted to retain awareness of the kinds of work clients were doing in the space, along with being visible ourselves so that we could provide support, but we (as well as the faculty and students Fried Foster interviewed) also recognized the need to work quietly without interruption at times. The final design result was to locate the staff offices along the periphery of the main space, with a glass wall on the one side that faces the space, thereby enabling staff to see out and researchers to see in. An open door signifies staff are available for questions, while a closed door asks that you return later. The signs on all offices display the schedule for the DHLab's open office hours, a regular time during which staff are reliably available for drop-in consultations (researchers who cannot meet during office hours can schedule consultations for other times).

37 Implementing this design involved creating several openings in a structural wall to transform what was the former bookstack annex into a space for human specialists. DHLab staff worked alongside architects to optimize the offices for DH workflows. For instance, the DHLab's User Experience Designer and Developer share an inner sliding door they can push back so that they can, on occasion, turn their two offices into one, allowing them to more easily converse during production sprints. The repurposing of the annex created designated, visible spaces for expertise and support that also provided DHLab staff with mechanisms for signaling availability.

38 The meeting room, a rectangular space that occupies part of the former annex and is therefore also adjacent to the main open lab space, provides DHLab staff and collaborators with a sound-controlled location for presentations, meetings, and smaller classes. Display screens are affixed to each of the shorter walls in the room to facilitate presentations. On one of the longer walls, there is a magnetic, glass whiteboard to help with sketching ideas and designs, while the opposite wall acknowledges Yale's early interest in humanities computing. A poster of Father Roberto Busa working on a teletype at Yale in 1956 is affixed to one end of the wall, while a poster of the cover page to the proceedings of the "Computers for the Humanities?" conference held at Yale in 1965 is at the other end. Between the posters are windows that look out into one of the Library's hallways. Given the DHLab's investment in making DH work visible, these windows remain uncovered so that people passing through the Library can have a glimpse into what the DHLab is working on.

Campus Connections

Although DH labs can serve as effective hubs on campuses for computational work, they are often not the only places where digital work occurs. Studying the larger ecosystem of where such work takes place can help to identify opportunities for cross-unit collaborations, whether that take the form of shared expertise or equipment. At Yale, two centers that predate the DHLab — the Center for Engineering Innovation and Design (CEID) and the Center for Collaborative Arts and Media (CCAM) — have 3D printers available for researchers to use, along with training sessions to help people get started. When it was time to make a decision about what to include in the DHLab, the team decided that the strength of other campus units in 3D printing meant that we could refer clients to those existing service points (and their accompanying expert staff). This freed up space in the Special Projects Cube for other kinds of equipment less readily accessed by humanists on campus. 39

To bring the expertise of subject librarians and curators — those most familiar with the promise and idiosyncrasies of the Library's holdings — into DH conversations, the DHLab has designated four touchdown spaces where Library staff can meet with researchers or demonstrate projects of interest. Located in the four corners of the main space, the touchdown desks signal specialized support. For instance, the Geographic Information Specialist (GIS) Librarian, whose office is located in CSSSI, holds weekly office hours in the DHLab. She meets with researchers at the corner desk that is located next to the GIS books in the space so that she may easily refer to texts in the collection that might be helpful resources. Even when she is not physically present in the DHLab, researchers may still find her contact information on the desk. Along with serving as touchdown spaces for library and museum professionals on campus, the corner desks also provide a workstation for visiting scholars who might be on campus to give a talk or workshop in the space. 40

Conclusion

The transformation of a 1931 Reserve Book Reading Room into the Franke Family Digital Humanities Laboratory involved new ways of thinking about location, materiality, transparency, security, collaboration, and adjacency. The challenge of adaptive reuse of a historic (and historicizing) space is undoubtedly different from the process of renovating a newer, less decorative facility — or constructing a completely new room. The diverse team that came together to accomplish this — student and faculty participants, library and IT professionals, external architects, and university facilities specialists — were well aware of the significance of this room to Sterling Memorial Library's design and history, as well as the scholarly practice that is emerging around DH on campus. The various interventions in structure, materials, function, and organization of the room to transform it into the Franke Family Digital Humanities Laboratory involved both empirical evidence, discussions with campus stakeholders, and educated guesses about what DH scholarship might evolve towards in an era when interdisciplinarity is increasingly inflected by the algorithm and the dataset. Yale's deep commitment to the Humanities, and its Library's scholarly support for the same, has always been expressed in world-class physical holdings and subject specialist expertise. The design of the Franke Family Digital Humanities Laboratory is an effort to reflect that same commitment, and that same support, in a new lab embedded within a historic room. 41

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