Trading Places: Adapting Research Library Space to Evolving Scholarly Practices at Columbia University

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Introduction

Academic research libraries in the United States operate within a complex, rapidly evolving set of environmental factors that shape the research, teaching, and learning activities at their parent institutions. Economic, technological, and other societal forces combine and recombine to transform the service needs of faculty, researchers, and students, as well as the prospects for meeting scholars' fluid expectations. To operate successfully in such an environment, research library organizations must actively engage the tumult: observing the various change dynamics at work, searching for understanding amongst the chaos, and choosing appropriate paths forward that are both sustainable and aligned with institutional research and educational missions. This complex operational reality is no better represented than by the radical transformations in space utilization initiated by research libraries over the past several years.

For Columbia University Libraries/Information Services (CUL/IS), a hybrid organization, integrating research library functions with key elements of academic technology services, successful operation entails both apprehending and responding to the insistent change affecting higher education, and in turn the local operating environment at Columbia University. Most importantly, fluctuations in the global economy, the impact of the integration of digital technologies on teaching and research practices, and widespread transformations within scholarly publishing and access to information, push CUL/IS to seek out new, more agile organizational structures and business practices and to engage opportunities for collaborative partnership and investment. The local operating environment – a large, research-focused university situated in New York City, sitting atop some of the most valuable real estate in North America – provides additional challenges and opportunities, including a constant, intense competition for space and the construction of a second campus that will include the development of two new library service facilities within the next decade.

Within this context, CUL/IS strives to align the research and teaching support services it provides, including the allocation and outfitting of space, with current and emerging faculty and student needs through a robust program of service quality assessment and improvement. Through the systematic gathering, analysis, and active use of actionable data, CUL/IS promotes data-driven decision-making in its service, workforce, and facilities planning efforts – from the periodic administration of LibQUAL+® (Association of Research Libraries 2013), a market-scale assessment instrument measuring user satisfaction with library collections, services, and spaces, to surveys, focus groups, interviews, usability studies, and other quantitative and qualitative methods targeted to specific service and facilities planning projects.

Learning from these ongoing environmental scanning and assessment efforts, CUL/IS has advanced from a conception of the research library as a passive aggregator of the fodder for scholarship to a more active engagement with teaching and research processes. This shift in approach can be seen in the evolution of service programming in support of research, teaching, and learning; changes in the qualifications and professional preparation of staff recruited into the organization; and maybe most visibly in the transformations in the utilization of space allocated for library-related purposes within the University. These local transformations mirror similar changes seen across the academic library community – libraries that are "undoubtedly changing" but "rather than going into decline...are taking on different roles to support new patterns of learning, teaching, and research" (Latimer 2011, 124). At Columbia University, this realignment of library space with evolving scholarly practice is characterized by the purposeful conversion or reallocation of library space previously used for the storage and processing of print collections to support emerging, strategically important priorities, partnerships, and opportunities.

Enabling Flexible Space Planning

Competition for space on the Columbia University campus is fierce and unrelenting. The need to allocate space for library-related functions competes with growing demand for classrooms, laboratories, faculty offices, and other campus priorities. Given the clear shift in usage from print to electronic content for many disciplines (a 48 percent decline in the circulation of print materials over the preceding decade), CUL/IS is forced to justify the retention of space for traditional library functions, such as the storage of print collections. In response to these pressures, Columbia University partnered with Princeton University, and the New York Public Library to establish the Research Collections and Preservation Consortium (ReCAP) to build and operate a high-density, offsite shelving facility to store lesser-used materials (Neal 2004, 25). The facility opened in 2001 in Princeton, New Jersey, with additional modules added in 2005 and 2008. Construction for two new modules will be completed in 2013, with projected capacity lasting through 2020. ReCAP currently holds over 10 million items, including over 4 million items from Columbia's collections, and is thought to be the largest facility of its kind in North America.

Faculty and students have, in general, responded positively to the services provided by ReCAP. Items from Columbia's collections relocated to offsite shelving are reflected in the online catalog and can be requested unmediated for delivery to any campus library location within two business days. Journal articles and book chapters requested by users are scanned and delivered electronically, unless the user requests the physical item. Almost 75,000 requests for physical and electronic delivery were placed in 2012. ReCAP facilities also provide ideal conditions for the preservation of collections, storing items at low temperature and low humidity, thereby extending the life of deteriorating, fragile materials in many formats (print, photographs, film, etc.).

Simply put, the offsite shelving capacity provided by ReCAP enables the rethinking, reuse, and repurposing of library space. ReCAP provides the space necessary for collection growth without the need to construct additional shelving capacity in costly

New York City. The ability to relocate lesser-used collections to ReCAP and retrieve them when needed by scholars has also enabled space previously used for shelving collections to be reallocated for other purposes. Since 2003, CUL/IS has reallocated approximately 65,000 square feet of space for a variety of purposes, including the increase and improvement of student workspace within library facilities, and the creation of new classroom, laboratory, and faculty office spaces across the University. Relocating lesser-used, less unique collections to ReCAP has also facilitated the increase of shelving capacity for rare and unique materials on campus. The continued acquisition of large archival collections important to future scholarship places additional pressure on the space allocated for library-related functions and increases the importance of the availability of the offsite storage capacity provided by ReCAP.

New Models for Active Engagement

In recent years, organizational space planning has mirrored a change in service philosophy, which shifts the focus of activity from a more or less passive provision of information resources to a more active, overt engagement with teaching and research activities. This shift is seen at a structural level with the establishment of the Center for Digital Research and Scholarship, which develops scalable, sustainable services in support of research and publishing; the Copyright Advisory Office, which addresses the relationship between copyright and the research, teaching, and service activities of the University; and the integration into CUL/IS of the Center for New Media Teaching and Learning, which works to enhance teaching and learning through the purposeful use of technology (Renfro and Neal 2012, 166-171). This shift is also seen in the work of professional staff from across the organization, partnering with individual faculty members, academic departments, and administrative units on initiatives significant to educational and scholarly success. This deeper engagement embodies the new service possibilities envisioned by Bennett "when librarians cease to think of their mission as primarily one of supporting the academic work of others" and join "with students and faculty as collaborators in enacting the learning missions of our institutions" (Bennett 2009, 194). From collaborating with faculty members to teach courses on emergent research methodologies in the digital humanities and effective scholarly communications in the sciences to serving on juries for doctoral projects for the Graduate School of Architecture, Planning, and Preservation, professional staff are increasingly active partners in the academic and scholarly life of the University.

Promoting the integration of these new modes of engagement in library space planning, James G. Neal, vice president for information services and university librarian at Columbia University, encourages academic library leaders to "bring the classroom and the academy into the library" and to "advance from the *trompe l'oeil* library facilities we currently maintain to new strategies for learning, intellectual, social, and collaborative spaces characterized by flexibility, adaptability, and usability" (Neal 2011, 11). Thus, the twin objectives of integrating the educational and research missions of the University into the library and the application of user-centered, adaptive design principles increasingly drive space allocation decisions and planning for library facilities.

Space Reallocation and Strategic Partnerships

While academic libraries in North America have reported variability in the usage of their physical spaces in recent years, usage of CUL/IS' facilities is robust, increasing approximately 25 percent over the last decade. This increase in usage is driven primarily by the successful renovation of a number of library facilities, including a decade-long renovation of Butler Library, the principle humanities library, several areas within both the Lehman Social Sciences and Business and Economics libraries, as well as the opening of the new Science & Engineering Library in 2011. Responding to this hunger for workspace, CUL/IS has converted over 18,000 square feet of collections storage and processing space into user space since 2003, resulting in an increase of over 1,000 study seats of various types, representing a 27 percent increase in the total seating available to students and researchers.

Since 2003, CUL/IS has reallocated over 47,000 square feet of space back to the University for the creation of much-needed laboratories, offices, and classrooms. Projects that enabled these reallocations include the closing and consolidation of four departmental science libraries in 2010, in anticipation of the opening of the Science & Engineering Library the following year. In 2003, the footprint of the Engineering Library was reduced by 50 percent in order to increase available laboratory space for faculty and students; and in 2012, CUL/IS reallocated over 6,000 square feet to the Columbia Business School for the creation of faculty and staff offices. Also in 2012, CUL/IS partnered with the School of International and Public Affairs to reallocate approximately 1,500 square feet of underutilized collections processing space to build much-needed classrooms and seminar rooms. Again, all of these space reallocations were enabled by the ability to relocate lesser-used collections to ReCAP, the offsite shelving facility. Many of these projects were motivated by strategic partnerships with academic schools and entailed trade-offs between the reallocation of space for non-library uses and obtaining financial resources to renovate and improve workspaces for students, researchers, and staff within library facilities.

Two strategic partnerships with academic units – one established, the other nascent – typify efforts to more directly integrate the educational activities of the University into library spaces. The first, a longstanding collaboration with the University Writing Center,[1] co-locates writing consultation services within Butler Library alongside the research consultation services provided by subject specialist librarians. This close working relationship enables better service to students through strengthened communications and efficient referrals between librarians and writing consultants. Librarians and other professional staff also partner with writing program instructors to teach sessions tailored to specific research assignments within library instruction spaces. Looking to the future, the creation of improved space for writing consultation services is included in the planning activities for an expanded Digital Humanities Center.

A second example, a relatively new partnership with the Graduate School of Arts and Sciences, relocated the Teaching Center to Butler Library in 2012. The Teaching Center offers weekly workshops and drop-in consultations within library facilities to graduate

students and other instructors in collaboration with professional staff from several CUL/IS divisions, including the Center for New Media Teaching and Learning, the Center for Digital Research and Scholarship, staff from the digital centers (see description below), subject specialist librarians, and other campus partners.[2] CUL/IS and the Graduate School are also partnering on a three-year program to train graduate students in the use of appropriate technology in their teaching, funded by the Teagle Foundation. To support Teaching Center service programming and outreach, *Studio@Butler*, a newly renovated space to be shared with the Digital Humanities Center and jointly funded by the Graduate School, will open in August 2013. Based on the early success of this collaboration, the partners are working on a proposal to the University for a re-envisioned, expanded Teaching Center that would formally integrate its teaching and learning support activities with those of CUL/IS.

Looking forward, the University's development of a new campus in Manhattanville,[3] a neighborhood located a half mile north of the central campus, over the next decade will create both challenges and opportunities for providing library services to a more distributed clientele. CUL/IS will partner with both the Columbia Business School and the School of International and Public Affairs to build library service centers within each of their buildings on the new campus. The design of these new facilities will be service-based rather than collections-based, providing the full range of research and teaching support services within much smaller physical footprints than the current library facilities supporting these schools. Onsite print collections will be limited to items placed on course reserves by faculty, with daily delivery of print materials requested from offsite storage and other campus libraries and electronic delivery of articles and book chapters through an expansion of the current document delivery service. Designs for the new spaces will focus on supporting emergent research and teaching activities and be driven by extensive assessment of faculty and student needs.

Digital Centers

Over the past several years, CUL/IS successfully designed and implemented multiple discipline-based digital centers – the Digital Humanities Center, the Digital Music Lab, the Digital Science Center, and the Digital Social Science Center – each designed to support emergent teaching and research practices in the humanities, music, science and engineering, and social sciences respectively. The digital centers offer high-end computing environments with advanced discipline-specific software, specialized peripherals, and consultation services from librarians and technologists. All of these facilities are heavily used (approximately 18,000 unique users accessed digital center workstations in 2012), offering welcoming space for both individual and collaborative work. The success of the digital center concept has led to an expanded deployment of the underlying technology infrastructure to other facilities, as well as discussions of building similar centers for other disciplines such as art and architecture, business, and theology. The digital centers have received considerable recognition both on campus and within the profession. In particular, the Digital Science Center within the Science & Engineering Library received national recognition with an honorable mention in the 2012 *Library Journal* New Landmark Libraries awards (Schaper 2012). The new facility was

recognized for its redefinition of library space for the 21st century, its inclusion of group and collaboration workspaces, and for its in-person and virtual research support.

In many ways the digital centers provide both a physical platform and an organizing principle for the new modes of engagement discussed above. Librarians and technologists from the digital centers offer services tailored to the disciplines, including individual research consultations; support for citation and research notes management; media access and manipulation; and data capture, analysis, and management.[4] Students and researchers find the tools and information resources necessary to complete their assignments and scholarly projects supported by staff with professional preparation from the academic disciplines. Positions were created to strengthen support for digital scholarship in the humanities, sciences, and social sciences through new forms of student and faculty outreach and service programs supporting new digital tools and methods. The individuals recruited into these new positions bring deep discipline-based expertise – all are recent PhD recipients, with knowledge of emergent research methodologies and teaching practice in their respective fields. These positions also represent an active commitment to the reallocation of staff resources from service activities declining in relative importance toward emerging, new priorities.

Two innovative re-skilling initiatives aim to identify skills gaps among current staff working in the digital centers and provide appropriate training geared to individual learning preferences and interests. Within the Digital Science Center, staff are engaging in a skill building process designed to determine their baseline proficiency and desire to learn various software applications, along with their individual learning preferences. The goal is to enhance necessary technology skills across the staff iteratively within a supportive culture of improvement (Cartolano et al. 2013). Staff within the Digital Humanities Center are taking a different approach to skills improvement by initiating a two-year training program for librarians and other professionals to acquire new skills and methods to support the digital humanities.[5] The program is grounded in the idea that meaningful learning is most likely to occur within the context in which it is to be used; so training activities are constructed around the design and implementation of a digital humanities research project that staff participants are building as a team. The objective behind this approach is to enable participants to acquire new skills in a sustained manner that parallels how humanities researchers might approach an actual digital humanities project.

Staff from the digital centers are partnering with faculty members on teaching and research projects in several disciplines. Staff from the Digital Humanities Center teach or co-teach courses on research methods and on different aspects of digital scholarship for the departments of English and Comparative Literature, History, and the School of Continuing Education; while a staff member from the Digital Science Center instructs graduate students in the Department of Chemistry on successful scholarly communications and data management practices. Digital center staff are also collaborating with faculty on several research projects, including a grant-funded project with the Spatial Information Design Lab[6] in the Graduate School of Architecture, Planning, and Preservation that seeks to map the modern research library using library-

generated data and advanced data visualization technologies; the Open Syllabus Project,[7] a multi-institutional effort led by an English and Comparative Literature faculty member to create the first large-scale, open-source, full-text database of university course syllabi; and a collaborative project with Mendeley, funded by the Alfred P. Sloan Foundation, to create an open-source Citation Style Language (CSL) editor for use with various citation management tools.[8] In a partnership with the Graduate School of Arts and Sciences, the Digital Center Internship program was established to support graduate students interested in increasing their technology skills and marketability inside and outside of the academy, as well as to provide training, peer-to-peer teaching, and experiential learning in digital scholarship.[9] The first cohort of interns completed an interesting array of projects, including the design of an open-source indexing tool and the digitization and description of a collection of Roman tombstones.[10]

The digital centers are also intended to function as test beds for innovation for the larger organization – spaces where new technologies and services can be tested, scaled, or scrapped, depending on their success or failure in a bounded, pilot environment. For example, 3D printing is currently being tested in the Digital Science Center for its applicability and sustainability as a standard service offering.[11] Two new innovation or "maker" spaces are planned as outgrowths of the digital centers; the first scheduled to open in August 2013. *Studio@Butler*, the previously mentioned collaboration between the Digital Humanities Center and the Teaching Center of the Graduate School of Arts and Sciences, will enable students, faculty, librarians, and technologists to interact in both structured and unstructured ways to nurture intellectual exploration, interdisciplinary collaboration, and skill building in a hands-on environment.[12] Furniture and technology will be designed with flexibility and adaptability in mind, so users can easily reconfigure the space on-the-fly to align with a group's current objectives. Faculty and students are excited about using the new space and have already proposed a variety of possible activities, including hackathons, researchathons targeting a specific research question, digital labs for humanities courses, and theme days focusing on a particular research method or tool. A similar space is being planned in partnership with the School of Engineering and Applied Sciences, which will replace a more traditional library facility scheduled to close to provide space for a new data sciences institute. Next steps include the development of virtual environments that push the advanced software and support services provided in the physical digital centers to the network cloud to be accessed from the personal computers and mobile devices of students and scholars. This virtualization of the service environment will have interesting implications for library space planning as services and resources are decoupled from any particular physical location.

Conclusion

The evolution of library space utilization at Columbia University over the past decade was characterized above as a realignment of library space with changing educational and research missions through the purposeful reallocation of space from collections storage and processing to emerging, strategically important priorities. This evolution can also be seen as a series of strategic trade-offs – *trading places* for diverse purposes, with various partners, but always toward the end of active, meaningful engagement with the research

and teaching activities of faculty and students. Whether it is the conversion of collections space to increase and improve student workspace, to build needed classrooms or laboratories for faculty, to incentivize and support important new service partnerships, or even to leverage financial resources to further other organizational priorities, an intentional, flexible approach to library space planning is essential to the ongoing vitality of research library organizations and the services provided to the scholarly communities they support.

Notes

1. http://www.college.columbia.edu/core/uwp/writing-center

2. http://teachingcenter.wikischolars.columbia.edu

3. http://neighbors.columbia.edu/pages/manplanning

4. http://library.columbia.edu/dhc, http://library.columbia.edu/music/music_lab, http://library.columbia.edu/dsc, and http://library.columbia.edu/dssc

5. http://www.columbia.edu/cgi-bin/cul/resolve?developinglibrarian

6. http://www.spatialinformationdesignlab.org

7. http://opensyllabusproject.org

8. http://csleditor.wordpress.com

9. http://library.columbia.edu/technology/specialized-technologies/digital_internship.html

10. https://blogs.cul.columbia.edu/dcip

11. http://3dprint.cul.columbia.edu

12. http://library.columbia.edu/butler/studio.html

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