If You Build It, They Will Come: Spaces, Values, and Services in the Digital Era

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Many have asked why the University of Southern California (USC) invested $28 million in a library when other institutions such as California State University—Monterey Bay decided that a library is unnecessary.1 The answer is that, from the earliest planning stages, both the library and university administration agreed that a library is the focal point of the university’s intellectual life.2 Both groups realized that scholarly communication was moving from a paper-based, text-centered model to one that is digital and multimedia based. It was also agreed that library collections would follow this trend and that the library could play an integral role in this transition by teaching students and faculty how to use emerging technologies in their daily activities.

Since the planning process began in 1985, the library has forged a number of strategic partnerships with university departments. For example, the library joined with University Computing Services (UCS) and university faculty from a variety of different schools to create a support structure for the services that would later reside in Leavey.3 The outcome of these efforts included new models for instruction and access, creation, and retrieval of information, thus constituting the first step for the university and the library to make the transition to the digital library.

Planning Process

The planning for the Leavey Library began in 1985 when USC conducted a reaccreditation self-study for the Western Association of Schools and Colleges. All academic departments at the university, including the university libraries, participated in the self-study. The final report called for improvements in the undergraduate curriculum that were to be supported by library services, more specifically a teaching library.4 The teaching library would include a core collection of about two hundred thousand volumes to support the entire university curriculum from undergraduate to graduate levels and teaching programs for alumni and other groups in the larger community.5 The report noted that technology had a major impact on the university libraries; it also defined the library's role as being instruction-oriented.

Over the next five years, the university libraries raised funds for the library, formed committees, hired architects and designers, and built the building. Influenced by the writings of the Tofflers and Zuboff, with...
their images of a postindustrial information age populated by knowledge workers, the idea of USC’s teaching library developed. In 1990, Philip Tompkins, then Deputy University Librarian, published an article on the teaching library concept which articulated many of the goals that guided the creation of Leavey. He defined the teaching library as a facility with an environment that will empower users to create a distinct learning culture with new roles for faculty, computer professionals, librarians, and students . . . a facility that will continue via computer courseware, information software, and print products the learning that is formally initiated in the lecture hall. Tompkins listed five goals for the teaching library:

1. To humanize technology in the service of learning.
2. To serve as a campus center for faculty and student collaboration in the use of information technology in teaching and research.
3. To act as a gateway to print and electronic collections on campus and around the world.
4. To integrate traditional and emerging technologies for learning and research.
5. To provide training in information access and analysis and preparation of teaching materials using computer technologies and networks.

### Staffing Leavey

Proposed staffing for the new Leavey Library included librarians and staff from the Center for Scholarly Technology (CST), a research and development center within the university library. CST staff serve as a bridge between the university libraries, UCS, and the campus, pioneering new technologies, promoting them, and training faculty and staff in their use. CST’s scope of work helped define the roles of librarians in Leavey.

The Leavey Library received funding for seven new faculty positions. This group of librarians began work without a firmly entrenched idea of what Leavey was supposed to be or how the hierarchy would function. When the director, Chris Ferguson, defined Leavey personnel as Team Leavey, everyone was willing to embrace the team concept. Two planning retreats were held for the staff, one prior to opening, the other a year later. These retreats helped the Leavey staff codify their vision and values.

This vision has the library (1) serving as a center for undergraduate intellectual life, (2) acting as a test bed for services and information technologies in the curriculum, and (3) being a concept and a place that transcends conventional notions of undergraduate education and that encourages interaction among students, faculty, and the world of ideas. The Leavey staff established a set of values that included commitment to service, focus on users, an emphasis on innovation and integration of information technologies, and opportunities for growth and development.

### Information Infrastructure for Leavey

The planners of Leavey Library realized that placing the appropriate technologies in the library would be crucial to its success. Furthermore, Leavey was conceived as a place where emerging technologies could be tested by students and faculty before being introduced to the entire campus. The goal of humanizing technology in the service of learning was especially challenging to the technology planners. The perception of technology as dehu-
managing had to be changed by the partnership of librarians and UCS staff. They needed to create an environment where both students and faculty felt comfortable with technology by (1) showing that it could be used as a means for both teaching and learning, and (2) making the technology work for everyone, not just those with technical backgrounds.

In creating a networked environment for Leavey, the library was fortunate to have developed a close collaborative relationship with UCS. In 1993, UCS made available several UNIX servers where students, faculty, and staff could obtain computer accounts for e-mail and Internet access. Concurrently, the university libraries developed USCinfo, a rich information resource running in a client-server, distributed database environment. Also, the university libraries and UCS staff worked to develop and provide access to Internet resources such as USCgopher and later USCweb. UNIX accounts maintained by UCS provide access to all these Internet resources.

Another example of this cooperative spirit was in the composition of the Teaching Library Technology Task Force that included members from both the libraries and UCS. The task force was responsible for the design of Leavey's information infrastructure. Planning this technology program proved especially difficult in the face of a rapidly changing technology environment. Long-range technology goals had to be established without the knowledge of what the state-of-the-art equipment would be once the building was completed. Finally, it was decided to defer purchase of state-of-the-art equipment from a special budget until just prior to the library's opening.

The Facility

Leavey Library is a four-story building with seventy-eight thousand square feet of usable space and study spaces with seating for almost fifteen hundred. The first floor contains the circulation desk, a large periodicals reading room, an audiovisual room, reading carrels, and staff offices. The second through fourth floors contain open book stacks. Leavey houses a collection of over one hundred thousand volumes and subscribes to over 270 current journals, newspapers, and magazines.

The Information Commons and Learning Rooms, located on the ground floor of Leavey, account for most of the activity in the library and, consequently, most of the hardware. Licensing agreements made by the university limit use to USC faculty, students, and staff. The hardware, software, and external support afforded to these areas are identical. The Information Commons has ninety-two public high-end workstations offering three operating systems: fifty-two running Mac Operating System 7.5, eighteen running Windows/DOS, and twenty running Sun Solaris 2.4. These workstations, connected to four high-speed laser printers located in a central printing center, support networked access to USCinfo, the library's campuswide online information system, the Internet, productivity software, and curricular software.

Two Learning Rooms designed to support instruction are available. Both rooms contain instructors' workstations and video projectors. One of the rooms is outfitted with twenty-five Power Macs, and the other with fifteen Sun workstations. These rooms serve as overflow areas for the Information Commons, when no instructional sessions are scheduled. Leavey also has a fifty-seat auditorium that supports all three platforms described above, as well as a video projector, laser disc player, and an audio system. Lower-end Macs run USCinfo, TurboGopher, and Simple Text, a text-processing program, throughout the rest of Leavey. While most of these computers do not support printing, users can e-mail, download, or FTP their searches. Several dedicated CD-ROM and laser disc workstations are also available. UCS installs and maintains the software for machines located in the Information Commons and Learning Rooms on remote file servers.

The desktop configuration of software in Leavey was initially divided into three windows: Productivity Software, Network Information Tools, and Other Software. Productivity Software contained application programs such as word processing, spreadsheets, and desktop publishing. Network Information Tools contained USCinfo, two Web browsers, a gopher client, an e-mail client, a Telnet client, and an FTP client. Other Software contained curricular software, statistical packages, and any soft-
ware that was not supported by UCS. This configuration proved problematic, as it emphasized word processing over information retrieval and analysis.

Leavey and UCS staff redesigned the desktop interface and reintroduced it in the spring of 1996. The new interface has three windows. The most prominent, "The Library without Walls," features library resources and services and includes links to USCiInfo, electronic reserves, Internet resources, and online help. Network Information Tools retained its own window, but Productivity Tools and Other Software have been combined into a single window called Productivity and Other Tools.

Leavey's planners intended for it to be a gateway to learning, so they decided that users should be offered the greatest variety of software possible running on the hardware described above. While most libraries only allow students access to information retrieval tools and force them to go to a computer lab for word-processing or spreadsheet creation, the planners envisioned that a student could sit at a workstation in Leavey, research a paper using traditional and online resources, download the citations, use a word-processor to write the paper, and finally print it out. Given that planning started in the late 1980s, this one-stop-research concept, also known as holistic computing, was visionary.

Computers in Leavey's Information Commons and Learning Rooms provide access to electronic reserves, curricular software, productivity software, network information tools, and USCiInfo. Because undergraduate course reserves are administered in Leavey Library and current technology is readily available, Leavey became the test site for the electronic reserves program initiated in fall 1995.

Workspaces were designed to support collaboration by facilitating student interaction. The workstations are wedge-shaped and designed to seat two or more students comfortably. Twenty-one collaborative workrooms, located around the Information Commons perimeter, allow students to reserve and utilize space for collaborative projects and group study. The rooms are popular with students who prefer working in groups and are often booked past 3 A.M. All of the rooms are furnished with white boards. Students can borrow markers and erasers for the white boards, or laptop computers to access the campus network through data jacks in these rooms. Four of the rooms are dedicated to selected departmental faculty engaged in creating new curricula using information technology. Faculty are invited to develop and display their innovations here on a rotating basis. During the first year, Leavey hosted an art professor creating a computer art class, an anthropology professor engaged in visual anthropology, a religion professor working with digital Dead Sea Scrolls, and a cinema-television professor whose students designed multimedia explorations of film. Through these labs, Leavey provides a space where faculty can experiment with innovative programs to be used in their classrooms.

Information Gateways: Instruction

As noted earlier, two of Leavey's primary goals are (1) to make technology work for everyone by incorporating it into the library instruction program, and (2) to integrate paper with online resources.

Leavey collaborated with CST, the Doheny Reference Center, and UCS to create a combined class schedule entitled Adventures in Information: Using Computers for Research and Teaching at the University of Southern California. This schedule lists open classes taught primarily in Leavey by both the university libraries and UCS. Staff from the Center for Scholarly Tech-
technology and Doheny Reference Center teach the advanced research and curricular uses of the Internet, UCS provides software instruction, and Leavey staff offer classes in beginning research applications such as USCinfo and the Internet. Classes offered during fall semester 1994 proved very successful. Nearly two thousand attended drop-in classes at Leavey: one thousand for CST/Doheny Reference Center, five hundred for UCS classes, and five hundred for classes offered by Leavey personnel. Adventures classes offered in Leavey were built around a successful program pioneered by the Center for Scholarly Technology and Doheny Reference Center entitled Academic Uses of the Internet which targeted university faculty and other academic professionals. This series had two tracks: one for research uses of the Internet and the other for curricular uses. One of the strengths of this program is in its use of faculty and administrators as teachers. Attendance at these sessions usually numbered between fifty and seventy-five participants. A similar set of classes, designed for students, was
also developed. These classes have covered library research techniques, gopher, Web, and research methods on the Internet. Attendance for these classes was close to one thousand for the 1994 academic year.

The most successful program initiated as part of the Adventures in Information series was a team-taught Saturday class that targeted commuter students and students at our satellite campuses. Here, UCS staff (1) teach students how to connect to USC from home via PPP (Point-to-Point Protocol), (2) identify the necessary software, (3) explain how to use it, and (4) provide a contact address if anyone experiences problems. Leavey personnel are responsible for teaching the basics of using USCInfo and the Internet, primarily using the Web as an Internet tool. Each class featured one hour of lecture and two hours of hands-on instruction. In the fall of 1995, Saturday classes focusing on business, education, social work, public policy, and government documents were added.

Although it is less visible, course-related instruction is an integral part of the instruction program. Leavey serves the Expository Writing program and other undergraduate courses in the humanities and social sciences. During the 1994 academic year seventeen hundred students attended classes for course-related instruction in Leavey. Although the Writing program does not require a library instruction session as part of its classes, many instructors take advantage of Leavey’s course-related instruction. The program’s curriculum is undergoing changes to incorporate information literacy as a major component. Faculty from Leavey and CST are working with the Expository Writing faculty to incorporate information literacy into a curriculum that uses the Web as its textbook.

In addition to general programs of instruction, Leavey developed innovative programs and services designed to meet the special needs of discrete user groups including international students, commuter students, students with disabilities, and alumni. Leavey Library instituted several programs tailored specifically to the needs of USC’s increasing international student population during the 1995 academic year. The first event was an open house for international students held during orientation week. The open house included a library tour and a brief presentation introducing library and network resources available at Leavey Library and other USC libraries. Other classes designed for this group include a two-hour “Introduction to USC Libraries and the Internet” class to introduce students to the basics of using USCInfo and navigating the Internet. We offer a course-integrated library instruction class for incoming international freshmen jointly with the American Language Institute and the Language Academy, and specialized library tours for other ESL (English as a Second Language) students.
Students with disabilities have special needs for access to technology. This group's needs were an important consideration in Leavey Library's design, but our commitment to these students did not end with the building's opening. A formal relationship was initiated with the Office for Students with Disabilities. In January 1995, students registered with the Office of Students with Disabilities were queried for suggestions to further improve the facility. Based on the results and input received from the Office for Students with Disabilities, a special adaptive technology room was installed in spring 1996. Another service created to serve this population is Global Access, an additional interlibrary loan access point that serves students with disabilities.

**Information Gateways: Reference**

The Information Commons uses a proactive, three-tiered service model comprised of research/reference librarians, navigation assistants, and computer consultants to serve the library's reference needs. This tiered information service model allows each group to address specific needs of students and faculty who use the Information Commons. The model allows research librarians to concentrate on in-depth reference/research needs, including consultation of the Internet and exploration of other electronic resources. Navigation assistants help with basic informational and directional questions; they also provide some assistance with software questions. Computer consultants help with in-depth questions regarding the software found in the Information Commons.

In the Information Commons, a staff of seven librarians offers three kinds of assistance: in-person reference, term paper consultation, and e-mail reference, with an emphasis on helping students integrate paper and electronic resources in their research. The term paper consultation provides a one-on-one, in-depth, customized research consultation for students who require assistance with the research process or need special instructions in using networked resources. These sessions are generally forty-five minutes to an hour in length and afford librarians and students an opportunity to examine a research problem in more detail. Appointments may be scheduled with any of the Leavey librarians. This program has attracted many students and the number of requests has grown each semester. Finally, librarians answer e-mail reference requests that are addressed to a general reference e-mail account.

Also, librarians provide reference assistance from a core, paper-based reference collection that contains materials supporting the research needs of undergraduate students. This collection includes materials from the social sciences, humanities, arts, and physical and life sciences. The reference collection emphasizes a gateway approach to information retrieval by providing sources that facilitate access to other collections on campus. Here, users are referred to other libraries for specific subject-related reference works that fall beyond the scope of the Leavey Library Information Commons collection.

The navigation assistants are computer-proficient students who provide assistance around the clock with basic directional and informational questions to students in the Information Commons. They offer support for basic information retrieval and productivity software utilization, provide referrals both within Leavey and to other campus libraries, and handle machine operation and trouble-shooting procedures. Navigation assistants move around the Information Commons floor approaching people to see if they need help.

This program is a vital component of services in the Information Commons. Navigation assistants receive ten hours of training and attend additional in-service training programs during the semester to keep them abreast of hardware and software developments. Good computer and interpersonal skills are required. A librarian hires, trains, supervises, and evaluates the student navigation assistants.

Student computer consultants undergo training and work as UCS consultants for six months before they work in Leavey. They provide in-depth assistance with hardware/software problems in the Information Commons. The Leavey Library contracted with UCS to provide both student and full-time computer consultants who field inquiries in the Information Commons regarding microcomputer operation, the UNIX operating system, productivity tools...
While most institutions have experience with two-dimensional service, information and reference, Leavey Library has expanded successfully to a three-tiered service model. Leavey is the only library on campus, and one of the few in the nation, that has centralized computing and library assistance. The success of Leavey's Information Commons and its emphasis on collaboration have prompted a look at other service models: for example, the expansion of library services such as reference to the computer labs. This is a natural extension of offering computer center services in the library.

If Leavey is to be a model for the transition from paper-based to digital research and scholarship, paper collections must be available, and students must be instructed on their use. Paper remains the medium of choice for students' work. Each month about 212,000 pages are printed from Leavey's twenty-four-hour Printing Center, which handles networked printing from Leavey and other campus locations. Since Leavey opened, the campus has seen an increase in the use of technological resources and library services such as the circulating collection and course reserves. Before Leavey opened, such services were housed in the former College Commons located in the Doheny Library. Leavey's high-visibility, sophisticated technology, innovative programs, twenty-four-hour operation, and user-friendly design have revitalized traditional library services, such as circulation and reserves. Leavey maintains a twenty-four-hour operation during regular semesters from 9 A.M. on Sunday to midnight on Saturday. From August 30, 1994, to October 1, 1995, Leavey's gate count recorded 1.2 million visitors.

While it was rumored that Leavey had no books, many patrons discovered that books were available and could circulate. Leavey's print collection serves as a gateway where students can begin their research. Leavey, with a collection of ninety thousand volumes, is not intended as a place where undergraduates can find everything needed for their research. USC has fourteen other specialized research libraries, including the Doheny Memorial Library, with larger, stronger collections. Since the collection from the former College Commons housed in Doheny Library was transferred to Leavey, there has been a significant increase in circulation. Statistics show that during Leavey's first ten months of operation from August 30, 1994, to June 30, 1995, circulation increased roughly 55 percent over the immediately preceding twelve-month period when the collection was housed in College Commons.

Leavey Library handles some graduate and most undergraduate reserves. In the fall of 1995, approximately four thousand items from 250 courses were on reserve, an increase of at least 100 percent compared to the former College Commons reserves. While the increase in reserves use is due to the fact that undergraduate reserves have been centralized in one location in Leavey, the increased circulation of print materials may be attributed to the new location and extended hours. While technology may draw students into the building, they take advantage of its print collection and undergraduate course reserves. The technology and extended hours have resulted in students using traditional library services more rather than less.

Innovative Uses of the Information Infrastructure

Leavey and CST initiated several projects that emphasize Leavey's mission as a gateway to resources and a place to learn how to use technology. Two projects that are examples of this initiative are the Jumpstart Program and the Multi-Disciplinary Activities (MDA) liaison program. Jumpstart, cosponsored by CST and Leavey, encourages faculty to apply for in-kind grants that enable them to incorporate technology into their curricula. Faculty collaborate with a team of librarians and computer professionals to further explore the use of technology and its impact on both the delivery of content and the process of learning. The teams also advise the faculty on managing technology once the grant has expired. The initial Jumpstart projects have used the Web as a means of delivering a course curriculum. The projects developed under this program include the creation of a nine-hundred-image database of art objects and use of an online physics tutorial with computer simulations of
some experiments. Jumpstart projects create models that can be shared with and adapted by other faculty.

The MDA liaison program also highlights the collaboration between librarians and faculty. Librarians work with faculty in a course's design stage. MDA courses are offered at USC as a redefinition of the general studies core in the undergraduate curriculum. As new courses are created for this core curriculum, librarians meet with faculty to help them use the information infrastructure and services available in Leavey Library and elsewhere on campus. Faculty are encouraged to incorporate information literacy skills and library instruction in the curriculum. Librarians may offer suggestions on possible research assignments or help refocus existing research assignments. Other assistance has included instruction in research techniques and the use of the Internet, the creation of Web pages and the ordering of videos, software, and even books for class use.

One Year Later

Leavey’s success as an information gateway has exceeded all expectations. Workstations are heavily used day and night and the Learning Rooms and auditorium are continuously booked. After one year of operation, we have observed an increased familiarity with technology among those who use the library. Furthermore, library faculty and staff who have worked on various outreach programs report that the technology skeptics are becoming increasingly interested in, and capable of, using Leavey's information infrastructure for their work.

Leavey has impressed the rest of the campus with its success in providing information gateways and establishing successful instruction programs that use sophisticated technology. Other academic institutions and libraries have also taken note and many are planning to use Leavey as a model for their own technology development.

Leavey and CST have taken seriously their mandate to humanize technology in the service of learning through the creation of tiered reference service in the Information Commons, the development of Login and Learn, classes for beginners, special orientations for international students, alumni Internet classes, and the work of CST with university faculty through its Academic Uses of the Internet program. The Center for Scholarly Technology has been instrumental in making Leavey a campus information technology
center for faculty and student collaboration. Leavey librarians are working with faculty, who are redesigning the university's general studies curriculum, to help integrate the library and emerging technologies in these classes.

Leavey is a gateway to print and electronic collections on campus and around the world through the presence of USCinfo, through full Internet access in the Information Commons, and as a service point for interlibrary loan requests. Traditional and emerging technologies are integrated for learning and research, both in collections and instruction programs, through tiered service and term paper consultation, electronic and traditional course reserves. Both Leavey staff and CST provide training in information access and analysis and preparation of teaching materials using computer technologies and networks especially through their collaboration on Adventures in Information.

Conclusion

In Leavey one sees new paradigms for library-faculty interaction similar to those envisioned in the planning documents of the late 1980s. We collaborate with faculty in course design; we search the Internet and recommend electronic resources for faculty to incorporate in their classes; we help faculty design Web pages or create CD-ROMs for use with their classes; we teach students how to navigate within the virtual and physical library; and we work with the campus bookstore to help faculty members sort through copyright issues to create electronic reserve collections. We focus on how information technology can be used by faculty to enhance the classroom experience for faculty and students. While the original plans specifically intended for Leavey to be the place for these innovations, the university libraries have seen a ripple effect. Other librarians in the specialized subject libraries are being approached by their departmental faculty for help in using the Internet in their research and in teaching their students how to use it.

As the new millennium approaches, some predict the replacement of physical libraries with digital libraries accessible at all hours of the day and night to anyone with a computer, network access, and enough money. These systems will be so easy to use that no one will need a reference librarian. While online systems may become smarter and easier to use, what these prophets fail to see is that libraries serve other purposes beyond the acquisition, storage, and retrieval of information. What many hoped for, though it was not articulated in the early planning documents, was that Leavey would become a campus center for student life and that it would act as a catalyst in the use of information technology in the classroom. The former happened quite naturally; students flocked to Leavey, decided they liked it, and stayed. The latter happened also. After seeing how faculty used the technology in Leavey, and receiving pressure to improve the quality of teaching through the use of information technology, the university began a multyear project to upgrade technology on campus, particularly in those buildings used by the College of Letters, Arts and Science, so that their faculty would have multimedia classrooms in which to schedule their classes. The library without walls must have a home and focus. While much can be broadcast and distributed to all, there will always be a need for a place where individuals and groups can assemble for teaching and learning and to work with materials in any format... the library will be the nexus that joins the seeker with the sought. 14

References

1. USC is a private, AAU university with twenty-eight thousand students of which about sixteen thousand are undergraduates. USC has fifteen libraries in its central library system, known as the "university libraries." The Schools of Law and Medicine each have their own libraries which are separate from the university libraries. Prior to Leavey's opening, the collections in Leavey were housed in College Commons, part of the Doheny Memorial Library. Services such as reference and course-related instruction were offered by librarians in Doheny, although their emphasis was and continues to be graduate students and faculty in the humanities and social sciences.

2. For the purposes of this article, "the library" refers to the "university libraries" of the University of Southern California.

3. Leavey Library houses two university library Centers, Leavey and the Center for Scholarly Technology. The personnel in
Leavey (hereafter referred to as Leavey staff) is responsible for the day-to-day operations of the library, reference service, instruction, collection development, and circulation. The Center for Scholarly Technology is the research and development arm of the university library. These two groups are administered separately but collaborate on many of the programs offered in Leavey. Unless specified, “Leavey librarians” or “Leavey staff” refers to those persons responsible for the day-to-day operations of Leavey Library.


6. Please note that “teaching” in the phrase “teaching library” was meant proactively. The library teaches certain skills to users and that is how many view Leavey, but the meaning of “teaching library” has gradually changed, so that many view “teaching” as what the library supports; much as a research library supports faculty research, a teaching library supports faculty teaching. The “teaching library” uses all information technologies available to support faculty in curricular endeavors. Leavey actually acts as both types of “teaching” libraries.

7. [Reaccreditation Self-Study], 242.


9. Ibid.

10. Ibid., 78.


12. [Reaccreditation Self-Study], 239.

13. University library, “GEAC Stats June 1995” and “GEAC Stats June 1994,” University of Southern California, Los Angeles, photocopy (Circulation statistics include charge, renewal, and discharge of both circulation and reserve items).