

Can We Encourage Learning by Shaping Environment? Patterns of Seating Behavior in Undergraduates

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When an undergraduate walks into the college library, where does she sit? What does he do? What determines if students study, plan for the weekend party or work in a group on a homework problem? Does the kind and placement of library furniture destine these behaviors? Is there a desired physical means to a learning end?

Statement of Problem

Faced with the need to replace aging library furniture, the library director might begin with the null hypothesis that there is no difference in the choice of seating that students make when they come to a library. It makes no difference whether the director purchases tables, sofas, or carrels, or where in the library this furniture is placed. It makes no difference how students use this furniture, whether for talking, studying, or sleeping.

The library in the present study serves a four-year, residential liberal arts college. It is a two-story building, renovated in 1987, but retaining furnishings of earlier eras in addition to furniture from the

1980s. From the entrance, a student sees a reference desk ahead, circulation desk to the left and a multi-media desk to the right. On the far side of the circulation desk is the computer classroom/lab and on the far side of the multi-media desk is an audiovisual classroom. Along the left side are four-person group tables, as well as through the center of the first floor. In the back of the first floor are older one-person desks and large carrels. On the far end of the first floor are the current periodicals pavilion, POP books, NEW books, and newspapers, with sofa/chair groupings and drum tables. On the second floor, much older furniture includes 6-person carrels, group tables, chair groupings and small study rooms holding two desks. The present numbers and types of seats available are given in Table 1. These 346 seats serve a FTE student population of 1,130, 30.6 percent of the population. In 1963, Gores wrote that although in the past a library would seat about 1/6 of the student body, college libraries were moving towards 25 percent (45). By the 1970's Quinly (1971) stated that the library should be able to seat one third of the

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Table 1. Number of Seats Available in the Library at the Beginning of the Survey

Type of Seating	Downstairs	Upstairs	Total
Seats at 4-person tables	68	28	96
Seats at desks	6	21	27
Seats in lounge chairs/sofas	36	26	62
Seats at carrels	23	138	161
Total	133	213	346

the noise and interaction that accompanies computers, can the library “provide easy access to online information and instruction, while controlling the noise and sociability of the collegial environment” (Thomas 2000, 413)?

enrollment (468), so the present number of available seats in the library seems to be adequate.

The most common variables a director might consider in the purchase of furniture might be design or comfort (or price), but anecdotal evidence leads to inferences that carrels promote quiet, independent study while group tables invite noise. Informal discussions with other directors point out the need to have comfortable, well-lit, student space with a mix of tables, lounge chairs, carrels and group study space. Carrels need to be large, well-lit and wired, if they are to compete at all with group tables. Even elegant, new carrels may remain unused at some libraries, while the group study rooms are very popular. Group tables, on the other hand, create more noise than carrels and they can be inefficient, as one student can easily occupy a four-person table. Location of the seating is also important, especially a location where the movement of friends can be monitored, whether this is catered to or obstructed by the librarian.

Although a recent article in *The Chronicle of Higher Education* bewailed the “empty library” (Carlson 2001), many librarians retorted that their libraries were busier than ever. Why? Is there a definite style of furniture that attracts students to study there? As the researcher, who also serves as director of this library, was fairly certain that the null hypothesis would be rejected in the study, she wanted to purchase new furniture that students wanted to use. It would also be beneficial if this furniture encouraged students in behaviors that should be promoted in an academic library, as well ended complaints about noise in the library.

Could certain furniture choices optimize the creation of a student culture that allowed low conversational levels on the first floor, but restricted the second floor to quiet study? Given the priority of computer technology in every corner of the library and

Review of Literature

The researcher began with architectural literature that emphasized the influence of behavior on design. In *Enclosing Behavior*, Bechtel (1977) noted, “*Behavior*, not space is enclosed by architecture” (vii). Once the desired behavior is identified, then design will follow. It was the psychologist Roger Barker (1969), the proponent of eco-behavioralism, who felt psychology was too concerned with its labs and should study behavior in the setting in which it occurred (32). He felt that this behavior must be observed in the field, but that also the field influenced the behavior. “Conformity of people to the patterns of real-life settings is so great that deviations therefrom are often newsworthy” (35). When asked to explain human behavior, Barker needed to know “where the human is—in church, in a post office” (Oldenburg 1989, 295). Bechtel (1977) used this field observation method from psychology as a basis for architectural design. He felt the questions to ask about a design were: What behavior does it encourage? What behavior does it inhibit? (11–12).

During the 1960s, there were several studies of study environments. Condon (1966) wrote on study habits and what students desired in their study space, finding agreement on preference for studying where there is access to your own books (29), in small rooms for group study (43), and in a place being used exclusively for study (99). He noted a bimodal result (a student was either very pro or very con) for studying in a very large space or studying in a small place (125–28).

Robert Sommer wrote on the study environment throughout the 1960s. He handed out questionnaires to students in libraries, classrooms, dorm rooms, and other spaces on many campuses to find out why they were studying at that location (Sommer 1968). The library was preferred because of its studious atmosphere, although it lacked in privacy compared to the

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dorm room. Carpeting was the single item most favorably noted, and half the students wanted a snack area in the library (18). In another article, Sommer noted that although librarians liked carrels, half of the readers preferred more public areas (Sommer 1966). They wanted the spaciousness, the openness and the general atmosphere of study around them, which Sommer called “social increment,” seeing other people studying enhancing your desire to study (240). In his book, Sommer directly addressed the present problem: “The long-range question is not so much what sort of environment we want, but what sort of man we want” (Sommer 1969, 172).

Sommer also cited Meier, noting that socializing among students allowed them to share library resources, which increased the collective use of books by 30 to 40 percent over what librarians officially measured (248). Meier, writing about information overload in 1963, studied student behavior with both participant observation and questionnaires. He found students spent 65 to 70 percent of their time in the library at work, 10 to 13 percent sleeping or staring into space, 10 percent getting settled, and 10 percent socializing (25). He also noticed that students claimed their seats by leaving their notebooks, as they came and went between classes (23).

Although carrels were the furniture of choice for the monks in medieval monasteries, they were only recently rediscovered in the 1960s as demand for self-paced, multi-media instruction became popular in education (Quinly 1971). In 1969, Oklahoma Christian College built 1,016 carrels, one for each student, to enhance their media intensive instruction (North 1969). These carrels were designed to keep audio noise in, as well as noise and distraction out. They tended to be large to accommodate multimedia equipment, and papers described various efficient ways of configuring them in the library.

Larason and DiCarlo (1982) field tested different carrel arrangements from 1978 to 1981. Citing Sommer’s work on how students space themselves in a library, they found preferred arrangements, based on his theories of personal space. They also noted that sometimes the test arrangements were ‘rearranged’ by the students. “Some of the unofficial changes are obviously to accommodate a group of two or more students who wish to study together, and some of them are to realign relative to a window” (17).

Carrels still are important in library design, as evidenced by their use in the Flo K. Gault Library for Independent Study at The College of Wooster (Crosbie and Hickey 2001, 44–55). Nearly 300 carrels support the I.S. Program, which requires seniors to write a thesis for graduation. These carrels have low sides, individual lighting, large surface area, and face outside through windows.

Also based on historical precedents, long rows of tables are the main furniture in large reading rooms, and studies were done during the 1960s and 70s to determine where and in what order people would sit as they entered the reading room. Russo (1967), citing Sommer’s work, used questionnaires to study desired seating at 6-person tables. Fishman and Walitt (1972) surveyed a large reserve reading room for one hour in the morning, and noted where people sat at the long reading tables. They noted *sociofugal* and *sociopetal* behavior (how far apart or close people sat), but failed to note whether people preferred the tables to the nearby carrels (291). Eastman and Harper (1971), while studying spatial behavior in another library reading area, found that although people preferred to sit alone, they did not prefer nearby carrels to the long tables (430). They noted, “some conflict clearly exists between single readers and groups studying together” (436).

Rosen (1980) used personality tests to see if certain traits influenced seating preferences. He surveyed 120 male students seated in carrels and in lounge chairs to rate them on impulsiveness. He found that at the beginning of the semester, 42 percent of students in carrels were nonimpulsive as compared to 16 percent non-impulsive students in lounge areas. However, as the pressure increased with the end of the semester, more students overall used the carrels. Rosen warned that designers should not overestimate “the number of students with constant intense motivation to study” (8).

One pertinent study was described by G.A.B. Moore (1967) in an ERIC report. Moore had two rooms, one with carrels and one with open tables, in which to conduct an experiment on student preferences. Although 75 percent of males and 66.6 percent of females said they preferred carrels in the questionnaire (17), 77 percent of the students actually chose to use tables (9). Commenting on noise, Moore suggested that people were more distracted by noise in the carrels, perhaps because “subjects are encour-

aged to anticipate privacy and isolation and a relatively lower tolerance threshold becomes operative" (20–21). Sommer also mentioned the greater distraction in certain areas, "against the silence of the private rooms, every sound or movement stood out" (Sommer 1966, 243). Commenting on visual distraction, Stoke et al. (1960) noted the physical response that is triggered in large rooms, "Movements are observed in the periphery of vision before the moving object can be identified, and consequently head turning to bring the object into focus occurs involuntarily" (9).

These days, literature promotes the "library as place" and offers suggestions for student comforts. There is the image of the library as living room. "The image of the library as a quiet, scholarly place has given way to that of a 'neighborhood living room or front porch'" (Jordan 2001, 27). Miller writes about the tension between architects who want the drama of high ceilings and sweeping staircases, and students who want to drink coffee, keep late hours and put their feet up when they study (Miller 2002b). The "Barnes and Nobling of the American library" (Forrest 2002, 121) has been noted by many, and cafés are springing up in many libraries, which may have fewer users who want quiet, individual study space (Clayton 2002). As Barnes and Noble emulated old-time, woodsy library décor (Miller 2002a, 1), libraries are now returning the compliment and attracting "customers" by emulating the bookstores.

Libraries are adopting not merely the informality of the café, but the collaborative learning of the college campus. Library space combines "comfortable surroundings, relaxation of eating and drinking restrictions, creation of noisy zones as well as quiet zones, creation of collaborative spaces" (Miller 2002a, 4). "Even academic librarians have grasped the importance of creating social spaces that support collaborative learning and informal interaction" at a time when "the importance of physical space seems to be increasing in the electronic age" (Cronin 2001). In an article on student use of multiple computer devices, Karl Bridges commented on students themselves, "If one considers the lifestyle and sociology of the typical modern university student one will quickly see that they don't make a clear distinction between their social and student lives—instead they combine them—going to class, socializing, studying" (Bridges 2002).

Methodology

Faced with an expensive decision, and wanting to encourage certain behavior over others, the researcher conducted a survey in the library of a 4-year liberal arts college. Although some previous studies utilized student questionnaires to elicit desired seating, this researcher preferred to discover actual seating choices made by students. As noted by Moore (1967), students verbally stated a preference for carrels but actually chose open table type accommodation (17). Bechtel (1977) also preferred observation to questionnaires. "[Observation] measures what people do with design features, not what they say they do" (9).

Accustomed to spending time roaming through the library, the researcher decided to use an unobtrusive observation methodology (Bernard 1995b). As observers remained in public spaces and did not note names or identify individuals, they remained within Bernard's definition of ethical bounds for casual observation (349). Although Bernard also warns that watching what people do may change what they are doing, the observers felt that students would not make seating changes due to being observed (Bernard 1995a).

Floor plans of the two-story library were scanned into *Macromedia Fireworks 3*, the floor plan being the first layer and the present seating arrangement being the second layer. Fortunately, the library contains many kinds of seating: tables and chairs, sofas, lounge chairs and drum tables, and carrels of all sizes and configurations. These were indicated on the floor plans. For reliability, two librarian observers did the observing, after a few pilot rounds to see if agreement was reached on coding the students' locations. Armed with a clipboard, observers walked both floors of the library, noting the locations of students or their effects. If questioned by a student, observers would answer that they were noting where students liked to sit in order to buy new furniture for the library.

Notations used were:

M indicating a male student.

F indicating a female student.

E indicating a presence marked by material possessions, but no human body.

Circles around M's and F's indicated a group.

Only students seated were marked; those walking through an area, looking at books in the stacks, or standing in the copier rooms were not. Students were not surveyed in bathrooms and were not marked if

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seated at reference terminals or in the two classrooms, as these locations represented a forced choice of seating. Student assistants working in the library and housekeeping staff were not marked, but faculty and community patrons encountered were included.

Analyzing behavior was abandoned early in the study. Although it is easy to tell reading from sleeping, distinguishing finer points of whether the students were studying or daydreaming remains for a future study. Similarly, it was not noted if groups were “quiet” or “talking,” because talking was hard to distinguish as studying or socializing. It was assumed that all students sitting with books or papers were studying in a location they had chosen to enhance their learning.

The library was surveyed mid-spring semester (March 18–21, 2002) by spot sampling every two hours it was open, Monday through Wednesday, from 8:00 A.M. until 1:00 in the morning. Spot sampling, which records “the behavior of individuals at random times throughout the period of research (Bernard and Killworth 1993, 207) was used instead of continuous monitoring, as is appropriate with small numbers of coded behaviors (214).

Times were chosen during mid-class times to minimize students in motion, resulting in observations at 8:30 A.M., 11:15 A.M., 1:30 P.M., 3:15 P.M., 5:00 P.M., 8:00 P.M., 9:15 P.M., 11:30 P.M., and 12:30 A.M. On Thursday, the students were marked, but were also interviewed and questioned on their choice of seating.

Results

Not only did furniture preferences appear, but also areas of the library that received a lot or no use became apparent. Results are given in Table 2. Downstairs was more popular than upstairs, 473 seated students versus 374. (Note that Table 2 omits the 85 students in study rooms and 16 students at a counter, all located upstairs.) The most popular areas were the group tables across from the computer classroom, near the front entrance, followed by the group tables through the middle of the

first floor. On the second floor, the group tables in the middle were most popular, followed by the small study rooms, which held anywhere from one to three students.

Unused were almost all of the smaller carrels, wherever they were located, and the entire Childs room on the second floor. One-person desks were used if they were alongside the window ledges, which were utilized as extra desk surface. On the whole, people on the second floor were more spread out and isolated from each other.

Tables and desks were preferred 3.58:1 over carrels (508 versus 142). (Note, in the Moore study tables were preferred to carrels 3.35:1.) Comparing actual to available seating, there were 508 students using 123 available tables and desks, whereas there were only 142 students using 161 available carrel seats. (In the detailed data, the larger, white-topped carrels were highly favored over the small, brown-topped ones.)

No students ever asked the observers what they were doing as they walked around the floors, but friendly smiles were exchanged on occasion. The observers found the students very articulate when interviewed on Thursday, expressing very precisely why they were sitting where they were. They had definite opinions on what furniture they preferred, and expressed a desire to have this new furniture before they graduated!

Discussion

Although the survey was undertaken to determine preference of seating, it was apparent that large areas of the library were either extremely popular or not used at all. Some of this preference was due to the type of furniture in those areas, but other factors mattered as well, such as being “too quiet” and “too far from the front door.”

Table 2. Number of Students Observed in Different Types of Seating

Number of Seated Students	Downstairs	Upstairs	Total
Seated at 4-person tables	333	106	439
Seated at desks	22	47	69
Seated in lounge chairs/sofas	55	41	96
Seated in carrels	63	79	142
Total	473	273	746

Note: 85 students in upstairs study rooms and 16 students at upstairs counters are not included in the total.

Prime location for seating was near the front door. It was important to see who was coming in and out of the library. One male student, sitting with a female friend explained that when they studied together, they liked to see who was around, while if he needed to really study, he went upstairs. The group tables in front of the computer classroom were so popular that they had been colonized by fraternities and sororities and individual students no longer sat there. This also appears to have happened with the second floor group tables as well. Most markings at these tables have circles around them to indicate group interaction.

But other locations had permanent residents as well. A student sitting at a desk along a window wall could name other students who regularly sat at the rest of the desks. The observers came to recognize students who had favorite locations. One student said he had sat in different areas as a freshman until he found one he liked. He wanted something comfortable, near a window and in a low traffic area. He keeps returning to that place now to enter into the proper mood for studying.

The outside edges of the library were popular, as windows line the wall, electrical outlets are near, and the wide ledges allow space to scatter papers. Interior spaces with carrels received very little use. Smaller carrels are too closed off; many students commented on their dislike of "sitting in a box" or being "boxed in."

Empty places, but marked with books or jackets held to these patterns. It was assumed that these people were retrieving books, in the restroom, in the computer room or at meals. The observers were dismayed by the number of laptops, calculators and personal items left unattended, but impressed by the lack of theft. It was unclear how much territory marking would save, but it appeared that a 4-person table could be kept by spreading out one person's belongings. It was also interesting to note that some backpacks were left for long periods, and it is hoped that these belongings were absorbing some education for the absent owners.

Actual furniture preferences mentioned by students include tables and carrels with white tops rather than the brown-topped tables and carrels. The most popular carrels have outward slanting sides, white tops and are located around the base of a tree. Second to those were more modern white-topped carrels with large areas, instead of the very small, older carrels. Some

students didn't like the carrels, but deliberately choose tables that looked at a blank wall. For them, sight was more of a distraction than noise. Students mentioned they didn't want to see people coming and going. Other students that used the carrels spread their papers over the floor or other carrel tops as well.

In one of the individual study rooms, three students who were sitting on the desks and facing each other told the observer that a group table in the middle would be helpful. They also wanted it painted a nice color and have posters on the wall. They appreciated the noise barrier qualities of the room, and 5 or 6 friends could fit in one room. The study rooms were very popular at all times of the day. It should also be noted that students felt free to move some furniture to gain the desired seating, as chairs were frequently moved to different tables, and upholstered chairs moved to replace wooden ones.

There are some theories from behavioral studies that might help elucidate observed behaviors:

Territoriality: The strong territorial urge that keeps prime tables for certain groups and intimidates non-members from sitting there is certainly well known from Desmond Morris's work. "Each space-sharer develops a preference, repeatedly expressed until it becomes a fixed pattern, for a particular chair, or table, or alcove" (Morris 1977, 132). This space is defended from others by position (at the center), by posture, (by passively shielding eyes with hands or aggressively glaring at intruders), and by leaving personal effects, (or markers), lying all over the space. Not needing to see an actual label, everyone knows that "Professor Smith has a favorite chair in the library" (132).

Hall (1959) comments, "Territoriality is established so rapidly that even the second session in a series of lectures is sufficient to find a significant proportion of most audiences back in the same seats" (189). It is not surprising that students in the study knew who sat where and also knew what groups sat where. It is also not surprising that coats, books and even laptops were left to save a place for an absent body. However, this territorial marking can be a problem for managers, who see notebooks receiving "tenure" at prime locations in the library (Sommer 1969, 52).

Although a library might appear to be too public for establishing territories, Lyman and Scott (1967) noted that it is precisely in public areas that people become more territorial. Their example was a public

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swimming pool which, “while open to all—might be claimed by a few” (244). In a library, as authors of one study of seating behavior commented, “only one single strong influence is at play, that for sole possession of a table” (Eastman and Harper 1971, 427).

Location, location, location: As Jonge (1967–68) noted in his study of public parks, people tend to “follow fixed routes, visit certain locations, sit and lie down in fixed ‘spots of their own’” (11). He noticed that not only are people habitual in their movements, they also prefer certain locations, and the area most used in parks is near the entrance. Unless there are some focal points elsewhere, people won’t move far from the entrance. Those that do move into the park enjoy a view over an open area, with cover to their back (10). It was very noticeable that lobby areas with an eye view of the entrance to the library were very popular, closely followed by desks next to a window. The library in the study is also very fortunate to be located in the heart of the college campus, and to have an open, welcoming entrance area with accessible service desks.

Social increment: Although the ability of students to socialize in the library may be discouraged by some directors, many authors have noticed benefits from encouraging student interaction. Aside from the increasing educational emphasis on collaborative study, students like having people studying around them. “In academic libraries, many students go to the library because peer pressure and the overall ambiance put them in the mood to study” (Demas and Scherer 2002, 66).

This critical mass of intellectualism was felt in the old, massive reading rooms. As Adelphi University librarian, James W. Garvey remembered, “There was this intellectual energy all around me, this earnestness that reinforced my own scholarship” (Carlson 2001). Sommer remarked that students liked the “presence of other people studying in order to maintain their concentration” (Sommer 1966, 240). He quotes a student, “Seeing all the other students busy as bees gives me an incentive, and I really feel an urge to study which I don’t get in the dorms at all” (243). At night, students are seen at work through the glass wall in front of the Gault Library at The College of Wooster (Crosbie and Hickey 2001, 48).

The Third Place: From the writings of Ray Oldenburg (1989), comes the theory of the Third

Place. As presented, people are primarily concerned with home and work and seek an informal setting in a Third Place. Translate this to the college campus and you have students faced with the classroom and the dorm and who seek the library. Here informal situations bring human warmth and contact without prior planning or accommodation by any one party. One of the main Third Place venues for Oldenburg is the coffee house, and what bigger trend is there in library management now but to add a café?

As far back as 1966, Sommer encouraged informal interaction in the library. “The use of coffee facilities or automatic food-vending machines in certain designated areas of the library *where books are available* should be explored” (Sommer 1966, 247). Not content with a separate “dungeon in the basement,” he called for a complete integration of books, food and society and spoke for the place of gregariousness in the library (248). Three of the libraries profiled in *When Change is Set in Stone* have coffee bars.

Some extraneous observations, unsought but noted, deserve mention. Although many students had drinks with them, there was not much food around. (There is no sign forbidding food and drink in the library.) The newer, more wired, sections of the library were more popular, as students had laptops, telephones and other devices plugged in all around them. Looking at total use counts, more students had to leave when the library closed at 1:00 A.M. than were in the library when it opened at 8:00 A.M., suggesting which hours to cut if necessity ever demands. Busiest times were around noon and between 8:00 P.M. and 9:30 P.M.

Also, as a result of finding an unsavory community patron on the reference Internet computers at midnight (when the library is staffed by student assistants), the director requested password protected log-ins on those machines as already existed in the computer classroom. Librarians can log-on guests when the reference desk is staffed.

Most surprising to the director was that although her perceptions of popularity and use of some areas were confirmed, it was appalling to see how some portions of the library and its furniture were totally unused.

Conclusions

The study as conducted fell short of the study envisioned. It was hoped to distinguish “study” from “socializing,” but more work on definitions of these be-

haviors needs to be done first. Adding to the difficulty of correctly identifying behavior, students did stop talking when observers approached. This remains merely a pilot study on which to base future work on the behavioral effects of library space. As Sjoberg and Nett (1968) wrote, "Most social scientists who engage in direct observation tend to emphasize discovery rather than the formal testing of hypotheses" (169). One future modification would be to let students do the observing, as the effect of the observers' status may influence behavior.

Although the study did not fully distinguish behaviors, the data on furniture preferences suggested what furniture to order. The budget necessitates incremental purchases over a three-to-five year period, but this allows time to figure out solutions to furniture questions. The director worked with Joe Agati of Chicago to find what choices would both move the library forward, yet sustain a cohesive interior design over the long replacement period. One of the major influences on their decisions was a joint visit to a Chicago Barnes and Noble to observe interior design and customer behavior.

The popular front lobby was selected for the new furniture and its 80s furniture replaced the 60s furniture upstairs. The new furniture fell along the lines of the Barnes and Noble model, and included two- and four-person tables, lounge chairs and drum tables, and three display tables for POP, new and ready reference books. These display tables allow the "facing" that Demas and Scherer (2002) suggested, "increasing the number of books and materials that are displayed face-out," a bookstore technique (67).

The colors of the library are gray / neutral, and warm colors were chosen for fabrics to add color to the interior. Tabletops were kept in a light finish; drum tables were added in darker shades to add color and hide marks of use. One small study room upstairs was redecorated with a table in the middle, new paint and a poster.

Ongoing discussions include the possibility of opening up more area of the entrance lobby for tables and group seating by moving four rows of bound serials to a location behind the present Z volumes. This would give students more social areas between the computer lab and the reference area, within view of the entrance. Adding informal seating here would allow more students to socialize in this desirable area, and preserve upstairs for those who seek secluded quiet.

Also ongoing is the decision on the types of carrels to add to the library. As the new furniture went in downstairs, the older, 6-person carrels upstairs were discarded and the furniture from the first floor was moved upstairs. There is no benefit from keeping carrels where no one sits. There are several new models of carrels under consideration, including large tables with free floating bookshelves above as at Reed College, tree house carrels as at Mary Washington College, and large, well-lit carrels with storage underneath as at The College of Wooster. Spaces near windows on the second floor would easily light carrels during the day and contribute to the quieter atmosphere on the second floor. These would serve the few students who do choose to write a seniors or honors project. Having these open areas around the perimeter of the library, with stacks in the middle, is an optimum palette on which to create seating for students that will both entice them in and let them learn while they are there.

But where to put the coffee bar?

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Bibliography

- Barker, Roger G. 1969. "Wanted: An Eco-Behavioral Science." *Naturalistic Viewpoints in Psychological Research*. Eds. Edwin P. Willems and Harold L. Raush. New York: Holt, Rinehart and Winston, 31-43.
- Bechtel, Robert B. 1977. *Enclosing Behavior*. Community Development Series. Stroudsburg, Penn.: Dowden, Hutchinson & Ross, 1977.
- Bernard, H. Russell. 1995a. "Direct, Reactive Observation." *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. 2nd ed. Walnut Creek: Altamira Press, 310-31.
- . 1995b. "Unobstrusive Observation." *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. Walnut Creek: Altamira Press, 332-59.
- Bernard, H. Russell, and Peter D. Killworth. 1993. "Sampling in Time Allocation Research." *Ethnology* 32: 207-15.
- Bridges, Karl. 2002. "The Wireless Future of Library Computing: Implications of Docomo Cell Phones." LIS News.com. Available: <http://www.lisnews.com/article.php3?sid=20020710201057>. July 15 2002.

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- Carlson, Scott. 2001. "The Deserted Library." *The Chronicle of Higher Education* November 16, 2001: A35.
- Clayton, Mark. 2002. "Food for Thought." Available: <http://www.csmonitor.com/2002/0122/p12s01-lehl.html>. January 24 2002.
- Condon, John Thomas. 1966. "Study Habits and Perceptions of Desirable Study Space by California Community College Students." Doctor of Education. Stanford University.
- Cronin, Blaise. 2001. "A Safe Haven." *Library Journal* 70.
- Crosbie, Michael J., and Damon D. Hickey. 2001. *When Change Is Set in Stone: An Analysis of Seven Academic Libraries Designed by Perry Dean Rogers & Partners: Architects*. Chicago: Association of College and Research Libraries.
- Demas, Sam, and Jeffrey A. Scherer. 2002. "Esprit De Place." *American Libraries* 33.4: 65–68.
- Eastman, Charles M., and Joel Harper. 1971. "A Study of Proxemic Behavior: Toward a Predictive Model." *Environment and Behavior* 3: 418–37.
- Fishman, Diane, and Ruth Walitt. 1972. "Seating and Area Preferences in a College Reserve Room." *College & Research Libraries* 33.4: 284–97.
- Forrest, Charles. 2002. "Building Libraries and Library Building Awards—Twenty Years of Change: An Interview with Anders C. Dahlgren." *Library Administration & Management* 16.3: 120–25.
- Gores, Harold B. 1963. "Facilities for the Future." *Liberal Education* 49.1: 34–47.
- Hall, Edward T. 1959. *The Silent Language*. Garden City, N.Y.: Doubleday.
- Jonge, Derk de. 1967–68. "Applied Hodology." *Landscape* 17: 10–11.
- Jordan, Anne. 2001. "Branching Out." *Governing* 15.1: 26–29.
- Larason, Larry, and Rebecca DiCarlo. 1982. *Personal Space and User Preference for Carrel Arrangement Patterns in an Academic Library*. Monroe, La.: Northeast Louisiana University.
- Lyman, Stanfold M., and Marvin B. Scott. 1967. "Territoriality: A Neglected Sociological Dimension." *Social Problems* 15: 236–49.
- Meier, Richard L. 1963. "Information Input Overload: Features of Growth in Communications-Oriented Institutions." *Libri* 13.1: 1–44.
- Miller, William. 2002a. "The Library as a Place: Tradition and Evolution." *Library Issues* 22.3: 1–4.
- . 2002b. "What Constitutes Quality Academic Library Space?" *Library Issues* 23.1: 1–4.
- Moore, G.A.B. 1967. *A Study into Environmental Aspects of Student Accommodation in the Foreign Language Laboratory*. Washington, D.C.: Office of Education.
- Morris, Desmond. 1977. "Territorial Behaviour: The Defence of a Limited Area." *Manwatching: A Field Guide to Human Behavior*. New York: Abrams, 126–32.
- North, R. S. 1969. "Design Follows Concept: A Case Study of Facilities Development." *Educational Technology* 9.12: 69–71.
- Oldenburg, Ray. 1989. *The Great Good Place: Cafes, Coffee Shops, Bookstores, Bars, Hair Salons, and Other Hangouts at the Heart of a Community*. New York: Marlowe & Company.
- Quinly, William J. 1971. "Carrels for Learning." *Library Trends* 19.4: 467–74.
- Rosen, Theodore. 1980. *Influence of Personality on Choice of Library Study Space*. Northeastern Educational Research Association.
- Russo, Nancy Felipe. 1967. "Connotations of Seating Arrangements." *Cornell Journal of Social Relations* 2: 37–44.
- Sjoberg, Gideon, and Roger Nett. 1968. "Direct Observation." *A Methodology for Social Research*. New York: Harper & Row.
- Sommer, Robert. 1966. "The Ecology of Privacy." *Library Quarterly* 36.3: 234–48.
- . 1968. *The Ecology of Study Areas*. Washington, D.C.: Office of Education.
- . 1969. *Personal Space: The Behavioral Basis of Design*. Englewood Cliffs, N.J.: Prentice-Hall.
- Stoke, Stuart M., et al. 1960. *Student Reactions to Study Facilities with Implications for Architects and College Administrators*. Amherst: Amherst.
- Thomas, Mary Augusta. 2000. "Redefining Library Space: Managing the Coexistence of Books, Computers, and Readers." *The Journal of Academic Librarianship* 26.6: 408–15.