REDESIGN OF INTERIOR DESIGN RESOURCE ROOM
(STUDIO PROJECT)

by

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A MASTER'S REPORT

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requirements for the degree

MASTER OF SCIENCE

Department of Clothing, Textiles, and Interior Design

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Manhattan, Kansas

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Major Professor
The report involved the efforts of two designers and is therefore, presented in two separate parts. This is Part One--Review of Literature. Part Two discusses the design program. Both parts should be referred to together in order to perceive the total concept of the problem.
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Chapter 1

INTRODUCTION

New products, systems development, and design must be based upon quantitative findings and research which identify the needs of man. The use of research data to solve actual design problems is yet to be fully accepted. However, no other basis for design and planning can be justifiable today because man has too often and too long had to adjust to whatever environment he created. The long-range question is not so much what sort of environment we want, but what sort of man we want (Sommer, 1969).

One result of the failure to understand man's true needs and psychological make-up is pollution. It has currently been well documented that man needs to live in equilibrium with the environment. It comes logically from other disciplines and deals with how our micro-environment affects the way man lives, works, and in particular how man adapts to environmental energies.

According to Commoner (1969) if modern science is to be assimilated into a technology which is compatible with the environment that must support man, there is a need to reverse the present relationship among the fields of biology, engineering, technology, economics, and the current ideas of progress.

Commoner (1969) emphasizes the need to begin with an
evaluation of human needs and desires, determine the potential of a given environment to meet them, and then determine what engineering operations, technological processes, research data, and economical resources are required to accomplish these desires in harmony with demands of the whole natural system.

We have become enticed into a nearly fatal illusion that we have at last escaped from our dependence on the balance of nature. If we fail to understand this inescapable fact of modern life, we shall forfeit our survival. We are still in a period of grace. Let us hope we can all learn that the proper use of technology is not to conquer the world, but instead to live in it (Commoner, 1969).

STATEMENT OF THE PROBLEM

The purpose of the following report was to verify the conviction that competent design can only take place and result from "disciplined imagination" which is based on an understanding of man and his needs. The objective of the report was to examine, analyze, and synthesize the common inter-relationship between research findings and design applications.

The intent of this report was to refute the belief of many individuals that the need for design based on man's needs is invalid and/or unnecessary. The discussion will purposely attempt to prove this intent and show that a design decision-making rationale should and can be used. Such a rationale can select, order, and evaluate research material into applicable guidelines and criteria. It was also an attempt to prove that proper design thinking, and identification and use of research material can lead to a workable solution of any
design problem. The goals of this project were to identify and review a rational method by which a designer could interpret and apply research information into decision-making data.

The report was limited to a theoretical problem involving only one room and is presented in two parts. Each part was authored by two different designers. A written description of the room and an understanding of the research basis for the design solutions through a review of literature are presented in Part One. The solutions to the design problems of the interior design resource room were developed from a methodological approach to design and are presented in Part Two.

**PHYSICAL DESCRIPTION**

The resource room used in this study is located between two interior design studios and is directly accessible from either of the two studios or the corridor. The room is a total of 750 square feet. One large window is on the north-side spanning the entire width of the room and five feet from ceiling to sill. No covering of any type was on the window. At the time the project was undertaken there was no large area of bare wall, but the wall that was visible was painted white. The floor was mottled beige, black, and white asphalt tile with one pale grey area rug in the center of the room. The only illumination was the fluorescent lighting in the ceiling. The wallpaper catalogs were located along the north wall under a three foot high shelf(a) that spans the entire width of the room as well as projecting three feet along both east and west
walls. There were no shelves under either of these projections. The furniture catalogs were located in a locked five foot wide cabinet(b) along the east wall; adjacent to this cabinet was another five foot wide cabinet(c) with pullout shelves, where the majority of the carpet samples were kept. Along the south wall was a grouping of small storage containers divided into three sections(d). Each section was individually closed by double doors. The fabric samples were located in several areas of the room. One grouping was hanging along the west wall on six tiered, six feet high poles projecting two feet out from the wall at two feet eight inch intervals(e). Above these samples was a shelf where old furniture was stored.

A L-shaped partition four feet high was located five feet from wallpaper catalogs with pegboard on one side for display of fabric samples(f). A portable vertical fabric display piece one foot six inches square was located between the L-shaped partition and furniture catalog cabinet(g). Three storage cabinets had narrow horizontal shelves; one was located under the shelf next to wallpaper catalogs along north wall(h), another was next to the furniture catalog cabinet(h), and one was five feet from the small storage containers(h). A vertical file cabinet was located between the end of the built-in shelf and horizontal cabinet along the east wall(i). A built-in two feet wide vertical storage unit with two inch vertical slats was located two feet from the carpet cabinet(j). In front of this unit was a small three drawer chest-of-drawers (k). One old desk was in the southeast alcove(l). Two bookshelves(m) and a two foot wide locker were in the southwest
alcove along opposite walls(n). Another storage cabinet with vertical doors was in back of the horizontal storage cabinet at the south end of the room(o). One table six feet by two feet was in the center of the room(p); a smaller table was four feet from the larger table at the south end of the room(q). Two drafting tables were between the L-shaped partition and the wallpaper catalogs(r). Various types of chairs were arranged around the room.

A letter has been placed after each item or area in the written description of the room which corresponds to the same letter on the given floor plan (Plate I).
THIS BOOK CONTAINS NUMEROUS PAGES WITH DIAGRAMS THAT ARE CROOKED COMPARED TO THE REST OF THE INFORMATION ON THE PAGE. THIS IS AS RECEIVED FROM CUSTOMER.
PLATE I

Floor Plan--Before Redesign
Scale: 3/16 inch = 1 foot
Emphasis in the design field has been steadily changing. In the past, designers used a beaux-arts approach where the emphasis was on scale, balance, and proportion. This approach according to Robert Dober, spokesman for Environmental Design, is inadequate for analyzing the new design problems (Ferebee, 1970). The classical approach where a single designer is involved is out of place in a process that involves many designers, clients, and forms of design simultaneously interacting on each other. No individual or group can accurately predict the motivations and behavior patterns of the groups who will be affected by their decisions (Deasy, 1970). Some means of direct measurement as well as more rational procedures have to be instituted if these crucial factors are to be brought into the designers plan (Deasy, 1970).

During the past ten years a growing concern has emerged within a number of disciplines for the interrelationship between patterns of individual or collective human behavior and the physical organization of the natural or man-made setting within which that behavior occurs. This general concern is reflected in at least four distinct approaches to man-environment relationships (1) Architectural psychology: Rational design decisions require knowledge of behavior consistencies.
Decisions are concerned with the physical organization of the building or urban space and are dependent upon knowledge of the behavior characteristics of the potential users of the environment (Fitch, 1972; Alexander, 1964). (2) Environmental psychology: Behavior is determined by the organization of the environment. Variabilities in the observed behavior are partly the function of the physical characteristics of the environment in which the behavior occurs (Bartholomew, 1975; Flynn, 1973; Craik, 1968). (3) Man/Environment relations: Human behavior and the organization of the environment are mutually contingent. Decisions to change either the physical organization of the setting or the behavior of its occupants presupposes subsequent change in the other (Sommer, 1969; Strøle, 1973; Zeisel, 1970). (4) Ecological psychology: Environment and behavior are aspects of the same thing. Patterns of behavior exhibited by the occupants of the setting consist of approximate structures in congruence with the physical organization of that setting (Hall, 1966; Perin, 1970; Progner, 1971).

The merging of disciplines has produced a new approach to design solutions. Ferebee (1970) emphasizes the interprofessional approach to environmental design by stating that the designer cannot solve the problem on the basis of archaic notions of scale and perspective but from a regard for how people react in their environment, affect it and are conditioned by it. One of the difficulties has been that communication for each discipline tends to retain terms and methods characteristic of that discipline (Bartholomew, 1975).
This often causes difficulty for the designer in interpreting research into design solutions. The designer needs concepts relevant to both physical form and human behavior (Winkel, 1970). The team approach between researchers and designers must be instituted if available resources are to be utilized (Progner, 1971; Perin, 1970; Spiegel, 1975; Dreyfuss, 1967).

To date there has been more research involving animal behavior than human spatial behavior. These comparative studies of animals have helped to show how man's space requirements are influenced by his environment (Hall, 1966).

One concept of particular interest to designers, that emerged from these studies of animals is that of personal space. Robert Sommer (1969) has defined personal space as (1) the emotionally charged zone around each person and (2) the processes by which people mark out and personalize the spaces they inhabit. One of the most feasible methods of exploring individual distance and personal space is to approach people and observe their reactions. Sommer has used this method quite extensively, especially in his small group ecology studies. One such study of individual distance which showed how various students marked off their space was conducted in library study halls. The study hall was observed when it first opened and as it filled up through the day. The first students in the room arranged themselves one to a table in a chair located at the end of each table. When room density reached one per table, the next person sat down at the opposite corner of the table. Long tables made it easier for the students to ignore one another at low room densities. In the same study, readers main-
tained their privacy through offensive displays and other times through defensive gestures. Offensive displays included various locations within the room and posture. A defensive gesture could be an expression that indicated whether a person was receptive for contact or preferred to be by himself. A given area can be defended by any combination of position, posture, and gesture (Sommer, 1969).

Another study to which Sommer referred (1969) was conducted by Nancy Russo. The study involved the violation of spatial norms in a library. The subjects were all female students sitting alone with at least one book in front of them and empty chairs on either side and across from them. Various approaches were used -- sometimes Mrs. Russo would sit alongside the subject, other times directly across from her, etc. All of these were violations of the typical but unverbalized seating norms in the library. The norms seemed to require a newcomer sit a considerable distance from those already seated, unless the room was crowded. Wide individual differences in the way the subjects reacted were observed. Although there were direct verbal responses to the invasions, only two of the eighty students asked the researcher to move over.

Other research studies have shown that the traditional classroom arrangement is unsuitable for group discussions. Circular seating arrangements seem to produce more student participation. A high degree of interaction has been found in teaching laboratories. Functional requirements of different tasks also have an effect on spacing. Studies of cooperative activities have shown that people sit side by side when
sharing material and sit across from one another when compet-
ing i.e., debating (Sommer, 1974).

The practicality in this type of research is shown in
the form of designed physical environments that will facilitate
privacy i.e., give each student a private place of his own or
in other situations to bring people together. A library which
is intended to be a socio-fugal space, where interaction is
discouraged requires knowledge of how people should be arranged
to minimize unwanted contact (Sommer, 1969). To an increasingly
greater extent we find ourselves being arranged by impersonal
environments in lecture halls, airports, waiting rooms, and
lobbies. Many aspects of these settings have been designed
for ease of maintenance and efficient cleaning with little regard to their social functions (Sommer, 1974).

The study of small group ecology is important, not
only from the standpoint of developing an adequate theory of
human society that takes into account the context of social
relationships, but also from the practical standpoint of de-
signing and maintaining functional spaces where human rela-
tionships can develop. Just as the designer must know the
various aspects of behavior and characteristics of people be-
fore designing a particular environment, he must also have
knowledge of various environmental aspects i.e., spatial or-
ganization and scale, luminous, thermal and acoustical prop-
erties.

Spatial organization is the location of objects, facil-
ities and structures indicating the degree of dispersion, con-
centration, clustering, proximity, etc. (Schooler, 1973).
Everything man is and does is associated with the experience of space (Fitch, 1972). Man's sense of space is a dynamic synthesis of many sensory inputs from three spatial scales, the internal micro-environment of the body, the meso-environment tailored to meet human requirements, and the external macro-environment of nature (Fitch, 1975). According to Hall (1966), scale is the key factor in planning. Scale affects the judgment of what constitutes proper density within a space. Behavior patterns point out the sharp contrasts in basic differences between people, implicating the need to create congenial environments for a diverse population (Hall, 1966).

Classroom space is frequently taken for granted by those who plan educational facilities and those who use them (Sommer, 1974). Today, when space is at such a premium that it must be intensively used, it is the role of the designer to organize the space for maximum use. Pitch (1972) has stated that there is no merit in wasted space. One of the best ways for solving this problem is to design space for multipurpose use providing flexibility and variety (Perin, 1970; Sommer, 1969; Spiegel, 1975).

Any change in an environment should begin on a small scale (Perin, 1970). Changes in an environment should begin with small tangible goals that are comprehensible to the user such as, space in the user's immediate environment whether it be home, office, or school. In this way, the user becomes more involved with his environment and the trend toward user-generated and user-maintained environments becomes even more relevant (Sommer, 1972). In other words, as Perin states
there is a change in emphasis from "being in" an environment to "doing" things in it. The user is assured when entering a space he has helped to generate because it reflects things with which he is familiar (Perin, 1970). The primary function of the designer is to produce an organization of space which will elicit and support the specific modes of behavior desired.

The luminous, thermal, and acoustical properties of the environment are the facilities necessary to maintain the proper and healthful functions of the human organism (Schooler, 1973). These properties all influence our experience of a particular space. Of all the sensory means of perceiving the quality and dimensions of the real world, vision is the most comprehensive (Hall, 1966; Spiegel, 1975). Much of the data thought of as visually acquired have actually been perceived by other sensory means and only subsequently abstracted and synthesized into visual constructs (Fitch, 1975). Thus, vision-based estimates of the shape, size, and relation of objects would be impossible without previous tactile and kinesthetic experiences (Hall, 1966). Kinesthetic experiences refer to movements within a space.

The visual components of any task require different inputs of energy. Satisfactory adaptation of the eye to its task implies a dynamic balance between eye, task, and environment (Fitch, 1975). The luminous environment makes vision easier, more precise, less stressful (Kohler, 1956). Posture, gesture, movement are all conditioned by the luminous environment (Flynn, 1973).
Development of a satisfactory synthetic meso-environment is impossible without the exploitation of artificial light sources (Fitch, 1972; Friedmann, 1973). Light as a building material creates an unique atmosphere not obtained in any other way (Panero, 1962). Light is controlled at two phases in the overall design process: (1) the manipulation of natural light between macro-environment and meso-environment and (2) manipulation of artificial light source and surface response within the meso-environment (Fitch, 1972).

One of the most important attributes of artificial lighting is its effect on color (Kohler, 1956; Fitch, 1972; Friedmann, 1973). If colors are to be identical under artificial light and daylight, the designer must use sources whose luminous emission will match the color composition of daylight (Kohler, 1956). Colors of objects depend on the kind of light which illuminates them (Friedmann, 1973). In interiors the two basic types of light are incandescent and fluorescent. Incandescent light is somewhat redder than daylight, but all colors of the spectrum are present. Fluorescent light has an uneven spectrum so colors appear somewhat distorted (Friedmann, 1973). Therefore, the best lighting effect in terms of color accuracy (soft, diffused and highlights) is a mixture of lighting (Fitch, 1972).

Most interiors require supplemental artificial light. Modern standards and provisions of law require that rooms intended for continuous human occupancy must receive natural daylight (Kohler, 1956). The basic principle of the standards indicates that all good light must provide for the need of
vision, satisfy hygienic requirements, meet esthetic standards and achieve a good spatial impression (Friedmann, 1973; Kohler, 1956).

Functionally there must be adequate amounts of light for different tasks (Spiegel, 1975). The Illuminating Engineers Society (1974) has published recommended levels of lighting intensity stated in footcandles for a variety of tasks i.e., general office work--100 ftc., reading--60 ftc., sewing--150 ftc. This information stresses the quantity of light but the designer must be equally concerned with the quality of light.

Good design is never the result of a series of unrelated decisions based on the arbitrary manipulation of form or scale or texture. All are interrelated. None is more interdependent than color and light (Kohler, 1956). Reflectance of light, contrast of light and dark, emphasis of shades and shadows are qualities which make a space "come to life" and which are more significant for strong architectural interiors than the decorative choice of wall and floor surfaces (Friedmann, 1973).

Proper design of lighting involves not just consideration of the space and its objects but above all consideration of the human occupants for whom the space is designed as well as the functions and tasks to be performed in it (Fitch, 1972). Lighting can be just adequate and functional; it can also be exciting, dramatic and flexible to meet the changing needs of the users in the space.

Within the thermal habitat of man there are four interacting environmental forces: relative humidity, air move-
ment, radiant, and ambient temperature. Under natural conditions all four factors are in continuous flux and very infrequently achieve an exact balance described as comfortable (Fitch, 1972). Although the human body requires sensory stimulation of change and variety, this change must be within a "golden zone" of thermal balance and structured not indeterminate (Fitch, 1972; Hall, 1966).

The control of the thermal environment is a reality (Friedmann, 1973). The technology of heating and cooling aims at producing a stable and balanced thermal environment. The designer's task is not only to abolish any gross thermal extremes but to provide an optimum thermal environment that can operate at a optimal level of efficiency, economy, and safety (Fitch, 1972). In order to achieve this task the designer must know the qualities of different building materials i.e., glass, concrete, etc., the amount such materials are used within a space i.e., large bare walls, large windows, and the effects of carpeting, drapery, and upholstery upon the space.

The sonic environment is seldom stressful to the ears in its natural unpolluted state (Sabine, 1957). Any space must be visualized not as a merely inert and static container, but as an active interface between two sonic environments: the internal, acoustically predetermined meso-environment and the macro-environment, all too often polluted by noise (Fitch, 1972). The acoustical design problem of any space can be solved even though many solutions may fall short of the optimal (Yerges, 1969).

Again, the designer must have knowledge of those fac-
tors which affect acoustical behavior, i.e., size and shape of room, and the physical characteristics of the enclosed surfaces. The severity of acoustical problems increases with room size (Yerges, 1969). As much texture as possible should be used where there are large, bare, reflective surfaces (Sabine, 1957). Bookshelves, pictures and other wall irregularities should be used to facilitate diffusion of sound (Knudsen, 1950). Ninety-five percent of the sound in a room may be absorbed through the use of rugs/carpet, draperies, upholstery, and acoustical tile (Sabine, 1957). Sound absorbers merely reduce noise within the room; they do not significantly affect the noise transmitted outside of the room (Knudsen, 1950).

As can be seen, man is affected by three co-extensive environments, i.e., thermal, luminous, and acoustical where any manipulation of one causes repercussions in the others. Optimum control of all environmental factors within a building is technically feasible and socially more imperative than ever (Fitch, 1972). One must know for whom an environment should be planned and have information regarding several aspects of behavior in order to determine the most suitable attributes of future environments. Man/environment research therefore, helps to identify the human requirements for design. Determining the human relationship with other aspects of the environment identifies specific kinds of environment that are needed to satisfy those requirements. In this sense, man is in the position of creating the total world in which he lives (Hall, 1966).
Chapter 3

CONCLUSION

Most of our lives are spent in interiors, which have the greatest influence upon our physical, psychological, and social well-being. An enclosed space cannot be designed until a clear concept of the environment to be created and maintained is obtained. By understanding the system of an environment which is to be changed, ways in which changes can be brought about within that system will be suggested (Gottesman, 1973).

The design program involves an examination of the problem and a description of the solutions developed from the user's needs which the designer's work is to satisfy. It should be developed out of research conducted with reference to contemporary theory in personal, cultural, and social organization (Perin, 1970).

The designer must work within a context of explicit values and priorities established by the ultimate users. Without knowledge of what is important to the users, the designer cannot see beyond the function of the equipment. The implication is toward user-generated and user-maintained environments (Sommer, 1972).

Designing interiors involves a systematic and detailed investigation of man's active relationship with his environment. Conscientious design is needed everywhere (Neutra,
1954). Although the actual art of design cannot be replaced by science or technology, methods of science can be used to determine the connection between design elements and human response (Neutra, 1954).

The designer's role is not to decide what people need but rather to help them realize their own goals and make the most of what they have (Sommer, 1972). For no matter what a designer may do he is bound to influence the people within that environment. Even doing absolutely nothing is also doing something--not to progress is to retrogress (Spiegel, 1975).

This last statement exemplifies the problem of the resource room with which this report is concerned. The room was not being used and nothing was done to make it more functional or personal for the students and instructors who used the room. The resource room could be a primary tool of the interior design students and instructors when used properly. Therefore, it was felt to be a crucial design problem and was the basis of this report.
REFERENCES


THIS BOOK CONTAINS NUMEROUS PICTURES THAT ARE ATTACHED TO DOCUMENTS CROOKED.

THIS IS AS RECEIVED FROM CUSTOMER.
APPENDIX A

PLATE II
North View of Room
PLATE III

East Wall - Furniture Catalogs
PLATE IV

South View of Room
PLATE V

Southwest Alcove
REDESIGN OF INTERIOR DESIGN RESOURCE ROOM
(STUDIO PROJECT)

by

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B. S., Southwest Texas State University, 1969

AN ABSTRACT OF A MASTER'S REPORT

submitted in partial fulfillment of the

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MASTER OF SCIENCE

Department of Clothing, Textiles and Interior Design

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ABSTRACT

Emphasis in the design field has been steadily changing. Designers have become more aware that the social and psychological aspects of an environment are as important as the physical features and that environment does affect human behavior. As such, a team approach has been incorporated into the solving of design problems. The solutions to problems can only be developed once the problem has been clearly defined in physical, psychological, social, and intellectual terms. The difficulty for the designer has been in interpreting research into design criteria. The designer needs concepts relevant to both physical form and human behavior.

To date there has been more research involving animal behavior than human spatial behavior. These comparative studies of animals have helped to show how man's space requirements are influenced by his environment. The resulting information has been of great value to designers from the standpoint of designing functional spaces where human relationships can develop.

Knowledge of the environmental aspects of a particular space is just as important as the behavioral characteristics of the users of that space. The spatial organization, scale, luminous, thermal, and acoustical properties of a space influence man's experience of that space. The designer must know the users and environmental properties of the space to be planned in order to determine the most suitable attri-
butes for it.

Designing interiors involves a systematic and detailed investigation of man's active relationship with his environment. Although the actual art of design cannot be replaced by science or technology, methods of science can be used to show the relationship between design elements and human response. As a result, a better fit between man and his environment will be possible in future designs through the application of research information into the design process.