THE METHODOLOGY FOR THE REDESIGN OF THE INTERIOR DESIGN RESOURCE ROOM

by

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Chapter 1

INTRODUCTION

The concern was man as the organism which occupies an environment, and the potentially stressful conditions with which he must cope as a result of inadequate facilities. More specifically, the project that was undertaken examined the Interior Design Resource Room at Kansas State University and the environmental characteristics which were associated with the activities that occur within its immediate boundaries. The room is a complex environment, that is, it is used by a wide variety of individuals who perform a diverse set of tasks.

The Resource Room merited a thorough investigation for several reasons. The room was used only sporadically throughout the day yet had the potential to serve as additional class-space. The organization of the room and its different work stations presented ineffective situations for students and faculty who utilized the room. Finally, the Resource Room did not project an image, either aesthetically or functionally coherent with the goals or image of the Clothing, Textiles and Interior Design Department.

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 (Neutra, 1969). The main objective was to examine, analyze and synthesize the common interrelationships between research of related disciplines and design application for the Interior Design Resource Room.

This report had a two-fold purpose. As stated by Jones (1970) it is the belief of many individuals that the necessity for design based on man's needs is invalid and/or unnecessary. The intent of this report was to refute that belief. The discussions purposely attempted to prove this intent and show that a design decision-making rationale should and can be used. Such a rationale can order, filter, and evaluate research material into applicable guidelines, parameters, and criteria (Bloomfield and Hays, 1970). The report was also an attempt to prove that proper design thinking, identification, and use of research material can lead to a workable solution to any problem (Koberg and Bagnall, 1974). The goal of this report was to identify and review a rational method by which a designer can interpret and apply research information into decision-making data.

PROBLEM STATEMENT

The study, theoretical in that it may not be implemented completely, involved the work of two design students and so is presented in two parts. Part I is the collection of data on psychological and physiological affects of environmental factors upon man. This is the research information

that serves as justification for the design decisions. The second part presents the methods used to gather data on the particular environment, i.e., the Interior Design Resource Room, and the design process followed for determining the recommended solutions.

The areas of concern and their relationship to the environment were: 1) to examine the activity systems in the Interior Design Resource Room as to their character and requirements, 2) to determine on the basis of research those aspects which would induce stress upon the organism in the identified activities, 3) to identify these activities whose associated equipment and environment are a source of stress upon man and, 4) to derive from this identification recommendations for improving this condition and suggestions of possible devices to aid in the correction of deficiencies.

The problem involved the users, the artificial environment and the environmental support. The users include General Home Economics, Textile, and Interior Design students and the Interior Design faculty.

The specified room is located between two Interior Design classrooms and is directly accessible from either room or the corridor. At the present time the amount of usable floor space is approximately seven-hundred fifty square feet (Figure 1). The following is a description of items in the room and where they are located (Figure 2):

North Wall: The window is five feet high and extends the length of the wall with no covering of any type. A counter-

top, three feet high and two feet deep, extends the length of the room. Under the counter-top storage shelves for wallpaper catalogs extend twelve feet, nine inches from the west wall with a horizontal file chest (containing unfiled brochures) in the remaining four feet, three inches.

East Wall (Figure 3): (From North to South): The two feet deep and three feet high counter-top extends three feet. Wallpaper catalogs are stacked underneath since no shelves are provided. At the end of the counter is a standard size four drawer file cabinet containing unorganized brochures. Beside this is a horizontal file cabinet that is rarely used. A ten foot built-in cabinet is the next unit. The first five feet section contains furniture catalogs and is usually locked. The second five feet section contains pull-out shelves where the majority of the carpet samples are kept. The remainder of the carpet samples are kept in an old chest of drawers next to the built-in cabinets.

South Wall (Figure 4): A large built-in cabinet is divided into three sections, each individually closed by double doors. In these cabinets are small storage containers.

West Wall: (From South to North): Five fabric sample display units of four tiered horizontal poles six feet, four inches high extends two feet out from the wall. Above these samples is a shelf where old furniture is stored. Beside this a three feet section of the two feet by three feet counter-top with no shelves but with wallpaper catalogs stacked underneath.

East Alcove Area: An old desk faces the corridor entrance.

West Alcove Area (Figure 5): Two open-metal bookshelves hold magazines; one unit is against each wall. Beside the one on the North side is a horizontal file where wallpaper pieces are kept.

Other Items: Also in the room is a three foot partition with pegboard on one side for display of fabric samples. On one side of the partition, toward the north wall are two drawing tables. Beside them to the East is a portable, vertical display piece (eighteen inches by eighteen inches) for display of fabric samples. On the other side of the partition is a six foot by two foot table. About three feet from that table a smaller table sets perpendicular to the larger one. Nearby is a three foot metal storage cabinet where more fabric samples are stored. Various odds and ends of chairs are scattered throughout the room. The floors are covered with asphalt tile with one area rug in the center of the room. The only light sources are the fluorescent lights in the ten foot ceiling.

The client in this case is no longer an individual but an educational body. Questions that an individual might have ignored, such as design process, benefit analysis, rationality of the solution, and most important, cost, are of utmost concern to the client group (Ferguson, 1975).

THEORETICAL FORMULATION

A research methodology was developed which identified

the data needed to fulfill the requirements presented in the problem statement. The method was based on four primary assumptions which are basic to research and design (Bloomfield, 1970). The assumptions were: 1) For any given activity there is implicit in that activity a basic physiological, psychological, and sociological need to be satisfied. 2) The physical environment should support the performance of any given activity. 3) The physical environment that does not support the performance of human activities detracts from them by contributing to excess time and energy expenditure, stress, fatigue, error, and inattention. 4) The physical environment that is not adjusted to the biological make-up of the human organism may contribute to short and long term physiological and psychological disorder. These then help to identify the logic under which the investigation was conducted.

Definition of Terms

Several terms need to be defined for those who are not familar with current developments in the design field: Environment: the total surrounding context for the person or subject of interest (Steele, 1973). A person's environment includes many forces: physical (temperature, light, physical objects and other living things); social (norms others hold about behavior); and economic (means for earning a living and general economic conditions) (Steele, 1973). Micro-Environment: man's near environment (Bloomfield, 1970) which includes spaces such as dwelling units, dwelling com-

plexes and shopping centers (Perin, 1970).

Systems Approach: An organization of the planning and design effort that requires conscious articulation in approach to the problem-solving process (Ferguson, 1975).

Design Methods: The general term used to describe the various techniques for advancing into and through the steps or phases of the problem-solving process (Koberg and Bagnall, 1974).

Design Process: A creative problem-solving procedure used to determine a solution (Koberg and Bagnall, 1974).

Paradigm: an outstandingly clear or typical example (Woolf, 1973).

Chapter 2

REVIEW OF LITERATURE

The types of design processes can be divided into two categories. One is known as the "black box" theory and explains the process of making decisions strictly on an intuitive and/or aesthetic basis. The second category is that of an explanable, rational design decision.

CREATIVE APPROACH

The creative theory, still held by a minority of designers, implies that the most valuable part of the design process is that which goes on inside the head and partly out of reach of conscious control. Jones (1973), states:

> The human designer, like other animals, is capable of producing outputs with confidence and often success without being able to explain how these outputs were obtained. Expressed in this way, the mysteries of creativity or action are only special cases of the equally mysterious way most outputs or actions are produced. The apparently simple action of writing and the even simpler act of reaching for a pencil are just as inexplicable as is the composing of a symphony, perhaps more so. Most human action can be explained only if one assumes that they are largely governed by the skilled nervous system without the intervention of conscious thought. The creative view of designing, that of the designer as magician, is a poetic description of that which underlies the action of every human or other animal that has a nervous system.

SYSTEMS APPROACH

The second theory, that of rationality and control over the design process is usually referred to as the systems approach. This design process follows a logical and explainable course and is no different than a problem-solving approach to any other decision (Koberg and Bagnall, 1974). The most thorough description of the systems approach, found in the Universal Traveler (Koberg and Bagnall, 1974), suggest the normal, logical sequence of events included in this design process are as follows:

1. Accept the situation: to state initial intentions; to accept the problem as a challenge; to give up autonomy to the problem and allow the problem to become the process.
2. Analyze: To get to know about all the aspects of the problem; to discover what the world of the problem looks like.
3. Define: To decide what are the main issues of the problem; to conceptualize and to clarify the major goals concerning the problem situations.
4. Ideate: To search out all the ways of getting to the major goals - alternatives.
5. Select: To compare the goals as defined with the possible ways of getting there and determining the best ways to go.
6. Implement: To give action or physical form to the selected "best ways."
7. Evaluate: To determine the effects or ramifications as well as the degree of progress of the design activity.

The design process can be viewed in a variety of ways - linear, circular, feedback, and branching. The way it is viewed however, is not of great importance. If the process has been logically pursued, a systematic advancement through all the phases has been made (Koberg and Bagnall, 1974).

Although a systems approach is used, the design process is often based on strictly aesthetic rationale. To produce a plan the designer has to make a series of decisions uniting in an unambiguous and definite statement -- lines on paper translated into three dimensions. To have arrived at a plan, the designer has to decide among an enormous range of possibilities in size, shape, location, material, proportion, and cost. All his training is directed toward producing and defending a single set of plans - called in the design professions, a "solution" (Jones, 1973). His solution is the more praiseworthy the more it is unique. The role of many publications in the design field is, to a great extent, to maintain these sanctions, expressing disapproval for imitative or derivative work (Perin, 1970). If the designer has misunderstood science and interprets it as reason, which is thought to drive out intuition, he may even pride himself on offering no substantiation for decisions beyond his own poetic or aesthetic ideas (Perin, 1970).

RESEARCH IN DESIGN

New products, systems development, and design must

be based upon quantitative findings and research which identify the needs of man (Neutra, 1954). No other basis for design and planning can be justifiable today because man has too often and too long had to adjust to physical gadgetry and artifical environments. The long-range question is not so much what sort of environment we want, but what sort of man we want (Sommer, 1966).

One result of the failure to understand man's true needs, psychobiological make-up and necessary equilibrium with the environment is currently well documented and called "Pollution." Less dramatic is the literature and talk about how micro-environments are affecting the way man lives, works and in particular, how man adapts to environmental energies.

Richard Neutra (1969), was one of the first to suggest the necessity of design with a biological basis. The main thesis of Survival Through Design (Neutra, 1969), is that the principles of design should be derived from biological need rather than from the limitation or challenges of building techniques, the dictates of 'business-like function' or arbitrary canons of 'Beauty.'

James Marston Fitch (1975), points out it is the ultimate goal of design to act in favor of man:

> "To interpose itself between man and the natural environment in which he finds himself, in such a way as to remove the gross environmental load from his shoulders. The central function of design is thus to lighten the very stress of life. Its purpose is to maximize man's capacities by permitting him to focus his limited energies upon the task and activities which are the essence of human experience."

Despite the fact that man is shaped and totally

affected by the environment, complacency to do anything about its effects usually comes in the form of meager, "minimum standards," which usually become the maximum (Bloomfield, 1970). This leaves the designer looking to research, most of which lies in other disciplines, for the answers to environmental problems. However, the use of research to answer real design problems, is yet to be fully overcome.

Although there is much information in other disciplines, most of it is of such an abstract, theoretical nature it has been unrelated to useful design (Wehrli, 1974). This is largely due to the communication difference of design and the behavorial and social science (Perin, 1970). The contrast in thinking is marked. Constance Perin (1970, p. 12), describes the differences in the manner:

> "Theory derived from quantities of data is necessarily a static abstraction of the data; designing handles the ongoing or dynamic interrelations of real phenomena. Theory explaining events must attempt a universality under given conditions; each designing effort is unique in extent, terrain and degree. Theory in social life seeks to describe tendencies and habits as invariant roles or as dependent variables; from what has been. Theory in social organization classifies at a macroscale across the whole of society; designing is mainly a microscale event. Theory in the human sciences demands a value-free stance; designing is itself a value-laden commitment. Theory in the human sciences reflects the organization of the disciplines working to discover it and is consequently partial, segmented, and fractional; designing by its very nature is done with the whole environment in mind, as a system dealt with simultaneously."

Conferences, symposia, and vast bibliographies keep exhorting toward "interdisciplinary collaboration," but the specifics of how to collaborate are elusive. Many methods have been suggested but their explanations are usually not

complete from analysis to implementation. The Auditory Environment in the Home (Bloomfield and Hay, 1970), however, is an exception. The design methods of that study are thoroughly described for the general home environment. The major divisions are easily related to a specific environment such as the Interior Design Resource Room and so was the method chosen for this study.

Chapter 3

DESIGN PROCEDURE

The design process used to determine the design solutions for the Interior Design Resource Room consisted of four main areas: 1) the preliminary research used to determine existing and ideal conditions, 2) the definition of the problems, 3) the problem solution and 4) the design implementation.

PRELIMINARY RESEARCH

Review of Literature

The preliminary research involved two phases. The first phase, the compilation of information from many disciplines, is presented in Part I and is essential to the design process. This phase discusses the effects of the environment on psychological and physiological aspects of the human body. Information from that section will not be reviewed except to state that the psychological and physiological aspects of the human organism cannot be separated (Neutra, 1969). Overt acts or behaviors which are often identified as psychological have either direct or indirect physiological cause. All parts of the organism are organized to optimally function within a certain set of environmental conditions. When these are abnormal, stress is induced and

homeostasis (the body's normal functioning) of the organism is threatened (Fitch, 1975).

Environment Analysis

The next phase of the preliminary research was the gathering of data about the specific environment - the Interior Design Resource Room. Three methods were used to add to the knowledge previously acquired from having used the room. The use of several methods strengthens the system by building in areas of redundancy (Koberg and Bagnall, 1970).

Instructor Conferences (Appendix A). The first method of investigation to determine user needs was a conference with each of the four Interior Design instructors who utilize the room. Questions were primarily aimed at uncovering functions the room could potentially serve, as well as determining the present use.

Checklist for School Task Analysis (Appendix B). At this point a checklist for task analysis was developed. The Checklist for School Activity Task Analysis was derived from the listing presented in The Biology of Work (Edholm, 1967). The Edholm (1967) listing was selected from a much more extensive checklist created for industry by the International Ergonomics Society for determining the optimum man-environment relationship. Much of it was directly or indirectly related to the school environment. The checklist for school activity was based upon an apparent reliance to human activity in the resource room. The purpose of the checklist is to reveal

the environmental interrelation of the tasks.

Activity Analysis (Appendix C). This method, i.e., activity analysis, was the most important method for the room evaluation. The procedure for the analysis was similar to the one suggested for determining home activities in The Auditory Environment in The Home (Bloomfield and Hay, 1970).

The initial step was the development of a systematic classification of the activities in the room into a logical relationship. Each identified activity was expanded according to the basic human and environmental attributes which determine the characteristics of the activity.

These attributes were identified under three major classifications: 1) Physical which refers to requirements for accurate movement such as energy expenditure and coordination. 2) Mental/Sensory which includes such concepts as attention, memory, and cognition. 3) Environmental Support which refers to those aspects of the physical environment necessary to perform the activity.

Each activity to be conducted in the Resource Room was identified and then grouped according to similar physical and mental/sensory loads. The main divisions were defined and then evaluated in regard to physical and mental/sensory demands and environmental support. Since the tasks were grouped according to similarities in two areas (physical and mental/sensory), environmental support was the only area evaluated for every activity. The analysis included not only present activities but additional ones suggested by

instructor conferences.

This activity analysis needed to be carried out completely, for from the data obtained, it was possible to identify the basic needs and goals of the activities within the room. This must be one of the first steps of any process which endeavors to create the optimal situation for human performance, or to make corrections in an existing environment that inhibits completion of the task or activity (Bloomfield and Hay, 1970). As suggested by Bloomfield and Hay (1970), the information should include: 1) the manner in which the activity is conducted; 2) the type of individual who is normally involved; 3) the purpose or function of the activity; 4) any environmental characteristic which is/or should be associated with the task and 5) equipment involved.

DEFINING PROBLEMS

After the preliminary research was completed, the information about the task and about the effects of environmental conditions associated with the task was available. The information obtained from the checklist, conferences, and student experiences presented what currently exist in the room. The activity analysis, instructor conferences, checklist and Review of Literature in Part I provided information on conditions that should exist in the room.

The main problems in the room were defined as poor organization and use of room space. These problems caused difficulties in use of materials, upkeep, and aesthetics.

The particular areas which contributed to the major problem as determined from the room analysis are presented in Appendix D.

The inconsistencies that appeared between the optimal and the existing conditions was the definition of the design problem. Thus, inadequacies in the existing environment draws together the previous steps in the methodology and forms the basis for the last step, that of proposals for the corrections of the existing environment.

DESIGN SOLUTIONS

The selection of design solutions was the final stage of the process. This consisted of two steps: 1) determining alternatives and 2) selecting alternatives. The primary goal the design solutions were to achieve was identified as organization and flexibility of space.

Determining Alternatives

Alternatives are different methods of achieving an objective. They are simply ideas, no more, no less. If the objectives are poorly defined, the innovative ideas will not be useful. Instead, the issue will be confused and the designer will be kept from concentrating on defining the goals (Koberg and Bagnall, 1975). To demonstrate the process used, alternatives for one of the problems is illustrated in Appendix E.

Selecting the Alternatives

The next step of the process was to evaluate and select alternatives. The advantages and disadvantages of each idea was considered and the most suitable method was chosen. This was accomplished by using the faculty's and students' opinions, a comparison of ideas and objectives, and information from the Review of Literature in Part I. The final design solutions for the Interior Design Resource Room (Appendix F) were presented so that placement of specified materials will be unquestionable.

DESIGN IMPLEMENTATION

Design implementation was the 'action' stage of the process. The design solutions were converted to exact specifications. The final specifications (Appendix G) were established in the same manner as the solutions. The alternative specifications were determined and then evaluated in regard to need, cost, performance, aesthetic quality and research data. The final selections were then made on the best balance of these qualities.

From the initial analysis to the final specifications the financial limitations were an important factor. "Trade-offs" between aesthetics, performance, and cost were considered. Any further concessions to economics may impede the short and/or long term performance of the design. As an alternative, the design may be carried out in several phases. A three stage plan for implementing the design is presented in Appendix H.

Chapter 4

CONCLUSION

This paper demonstrated the manner in which a designer may combine several methods to determine goals and solutions of projects based on user needs and interdisciplinary research. The Checklist for Task Analysis and The Activity Analysis when used together provided a systematic approach to define the problem areas of an environment. This approach gives the designer a method for incorporating research data into a need-centered analysis.

The analysis of the activities within an environment holds potential as a method for filling the conceptual gap between design and the behavorial and social sciences. Although this method of analysis seems to have some weaknesses it is encouraging as it is within the means of most designers. The strength of the process is that every activity is analyzed from physical, mental/sensory, and environmental support needs. Alexander's "mis-match," a mathematical approach to computerized design, is impractical in terms of both time and money for most designers and their clients. On the other end of the continum are Perin's (1970) 'Behavorial Circuits' that simply identify the activities necessary to complete a task.

The weakness of the method seems to be in its lack of

preciseness. When used to evaluate a determined feature of a general environment, i.e., acoustics in the home environment, this vagueness is not obvious. However, when determining the many characteristics of a specific environment, the areas of analysis could be better defined; therefore, lessening the opportunity for overlooking an important detail.

For an analysis of the room, there is little quantifiable data with which to perform an evaluation. For the most part the common measures of quality are derived from cost (the more expensive the better) or subjective value judgements for a certain "style." Magazines and journals combine both of these to promote an image of quality that is well beyond the means of the average consumer. Not only are these impractical for most persons, but the very basis for these types of evaluations has little to do with the biological functioning of the human body.

Commoner (1969, p. 71) states:

> "I believe that if we are to assimilate modern science into a technology which is compatable with the environment that must support us, we shall need to reverse the present relationships among biology, engineering, technology, economics, and our ideas of progress. We need to begin with an evaluation of needs and desires, determining the potential of a given environment to meet them and then determine what engineering operations, technological processes, research data, and economic resources are needed to accomplish these desires in harmony with demands of the 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."

The project evaluated the Interior Design Resource

Room at Kansas State University and the environmental characteristics which were associated with the activities that occur in the room. The room, an ineffective area for both faculty and students who use it, has been poorly organized.

The study involved the work of two design students and has been presented in two parts. Part I is the review of literature that serves as the justifications for the design decisions and Part II, this report, presents the methods used to gather data on the particular environment and the design process followed for determining recommended solutions. This method is an endeavor to identify a rational manner for designers to interpret and apply research information into decision-making data.

The design approach consisted of three major steps. The first, the preliminary research, included the Review of Literature (Part I) and the environmental analysis (Part II). The environmental analysis consisted of an instructor conference, a Checklist for School Task Analysis and an Activity Analysis. The activity analysis needed to be carried out completely, for from the data obtained, one could identify the basic needs and goals of the activities within the room. The second major step, defining the problem, was determined by use of the preliminary information to find inconsistencies that appear between the optimal and the existing conditions. Thus inadequacies in the existing environment drew together the previous steps in the methodology and formed the basis for the last step. The selection of problem solutions was

the final step of the process. This consisted of two steps: 1) determining alternatives and 2) selecting alternatives. From these selected alternatives an exact set of specifications was determined.

The analysis of the activities within an environment has potential as a method for filling the conceptual gap between design and the behavorial and social sciences. The process, perhaps too lengthy for large environmental systems, needs to be modified in order to insure the inclusion of vital information. The analysis of activities for environmental support is a need-centered method that is feasible for most designers. There is more to be gained from being explicit, stating intentions, searching for regularities, and making measurements than from pronouncing still another aesthetic manifesto. But for the problems environmental designers handle, the quest must be for a humane rationality, not a narrowly defined "scientific one" (Perin, 1970).

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APPENDIXES

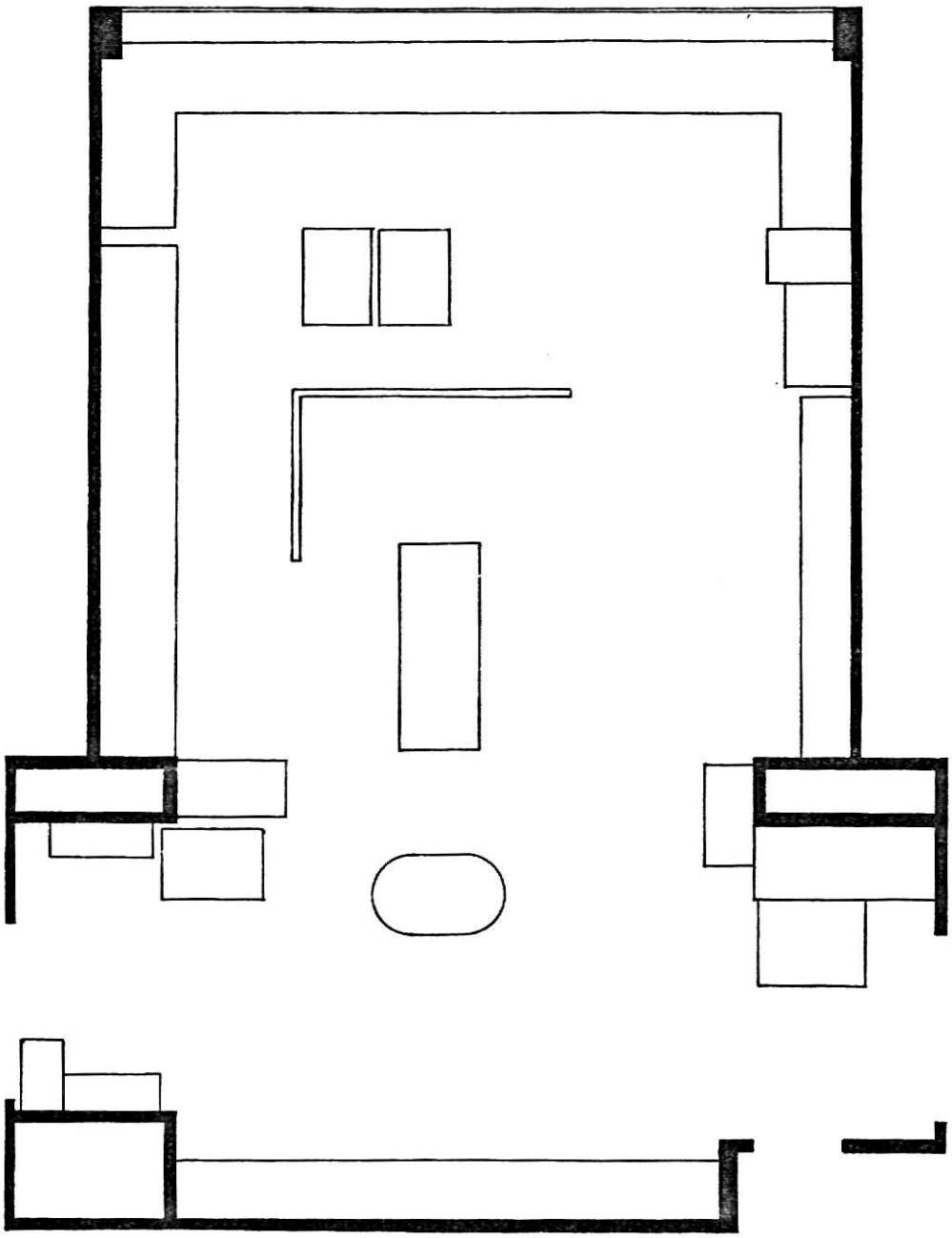

Figure 1

Present Floor Plan

Figure 2

Present Resource Room

Figure 3

Present East Wall

Figure 4

Present South Wall

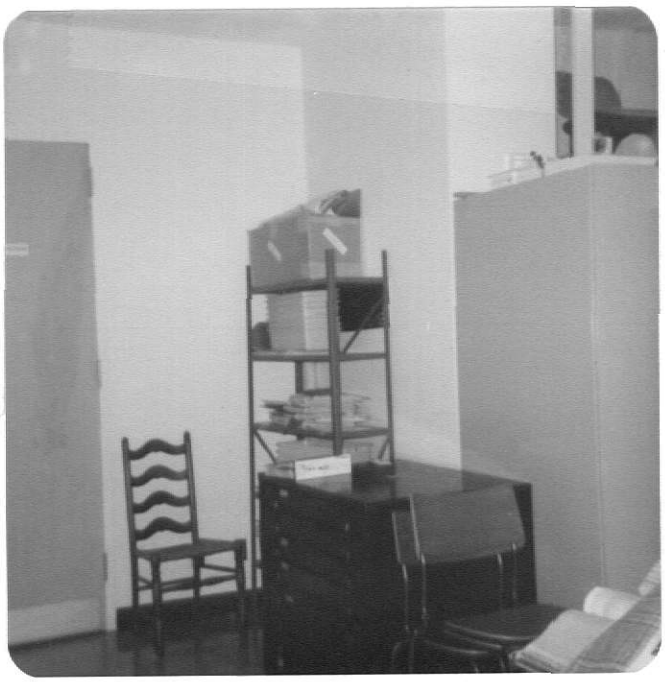

Figure 5

Present West Alcove

APPENDIX A

INSTRUCTOR CONFERENCES

1. For what activities do you use the room?
2. For what additional activities would you like to use the room?
3. Do you feel there should be a relation between the resource room and the adjoining classrooms?
4. Do you feel the storage is adequate?
5. What additional equipment do you feel is necessary to make the room more functional?
6. While at other universities have you encountered an outstanding piece of equipment that could be used in this room?
7. Do you feel the student's attitude toward the resource lab is typical?

Appendix B

CHECKLIST FOR SCHOOL ACTIVITY TASK ANALYSIS

Introduction

Answers to these general questions are intended as a guide, indicating the main features of the task.

1. What is the user expected to do, and what data are required?
2. Is there an important physical load?
3. Is there an important mental load?
4. Are high levels of motivation, and power of concentration required?
5. What is the effect of the environment?
6. Does the way in which the work is organized have an important effect on the user?
7. Is the task so disagreeable that the user is dissatisfied?
8. Are fear or repulsion evident?

Workspace

Physical Demands

1. Are the dimensions of the work-surface satisfactory in relation to posture and viewing distance?
2. Is the surface of the work-area satisfactory in regard to hardness, elasticity, color, and smoothness?
3. Is hand equipment used?
4. Are containers used: If so, is their position, size and weight satisfactory?
5. Is there any risk of accident?
6. Is the space adequate for handicapped individuals?

Mental Demands

A. Vision
   1. Does the task impose high visual demands?
   2. Is a high illumination required?
   3. Is general or local artificial light needed?
   4. Is the contrast between work place and surroundings considerable, moderate, or negligible?
   5. Is there any glare; if so, what is the source?
   6. Is color discrimination needed?
   7. Does the task demand very fine visual judgements?
   8. Are materials and equipment, etc. in comfortable visual range and adequate lit?

B. Hearing
   1. Are there any auditory signals; what are their characteristics?
   2. Is verbal communication needed in the task, and noise level permit it?
   3. Can auditory signals be easily detected and distinguished from each other?

C. Other senses
   1. Does the task require tactile discrimination?
   2. Can equipment be recognized by touch and/or position?
   3. Does the task require a good sense of balance?
   4. Does the task require good proprioceptive sense (position movements of exact application of force)?
   5. Does the task require a good sense of smell or taste?

Work Method

Physical Demands

1. Does the task involve a heavy muscular load?
2. Are large or small muscles, or muscle groups involved?
3. Is the work done sitting, standing, walking; or is there a combination?
4. Are there peak loads of muscular effort?
   -What is frequency and duration?
   -Can these loads be reduced by using suitable equipment?
5. Are heavy loads lifted and carried?
   -what are the weights?
   -how are they carried?
6. Is the muscular load predominantly dynamic or static?
7. Are small or large muscle groups involved in static exertion by holding tools or materials?

Mental Demands

1. Is there a compatible relation between direction of movement of control and the effect?
2. Does the task require great accuracy of movement?
3. Does different information have to be compared before action can be taken?
4. Are the positions of materials in the right sequence for the performance of the task?

Flow of Information

1. Are the data required to carry out the task obvious, unequivocal and relevant?

Environmental Load

1. Are conditions within the comfort zone?
2. If not, is this due to air temperature, humidity, radiation, air movement? What is the range of conditions?
3. What is the noise level; does it interfere with performance?
4. If the noise level is high, can the source be identified and preventive measures taken?
5. Are there any other potential environmental hazards?

APPENDIX C

ACTIVITY ANALYSIS

I. SELECTION OF DESIGN MATERIALS

This activity is related to the general selection of items necessary to complete design solutions for class projects.

Physical: The task is performed by Interior Design, General Home Economics and Textile students with and without assistance from instructors. A standing or sitting posture is assumed. A wide range of physiological modes is necessary. It entails all degrees of muscular activity with near and far visual acuity for two and three dimensional tasks and eye-hand coordination. Tactile information is also important to the design decisions.

Mental/Sensory: This usually satisfies psychological need for creativity and achievement. The degree of attention needed to complete the task varies.

Environmental Support: A wide range of equipment is needed for this activity. The storage areas are the most demanding space need. Lighting levels vary with the task. Table, chairs, paper cutter, and tracing table are some of the related equipment.

A. Selection of Floor Coverings

Environmental Support: The activities require storage cabinets to hold carpet and vinyl floor samples. Files are needed for brochures and magazines. A work surface is also needed near these areas.

B. Selection of Furniture

Environmental Support: This requires cabinet space for the storage of manufacturers' catalogs. Files are needed for brochures and magazines. Storage for upholstery fabric and vinyl upholstery samples are necessary.

C. Selection of Window Coverings

Environmental Support: There is a demand for display of both bound and unbound fabric samples of varying weights. Storage for woven woods and brochures is necessary.

D. Selection of Wall Treatment

Environmental Support: A storage area for paint chips, wallpaper catalogs, brochures, and magazines should be provided.

II. COMMUNICATION

This aspect is related to sending and receiving messages with content value that transpire between individuals.

Physical: These activities require the use of voice, visual, tactile and/or hearing facilities to communicate a special concept. They may or may not require large muscle activity in physical movement to communicate.
Mental/Sensory: The message of communication is expressed by the senses to a receiver and vice versa. Degrees of mental and physiological involvement vary on the content of the message and the receptivity of the receiver.
Environmental Support: A variety of lighting levels, the flexibility to provide various seating arrangements, and good acoustical properties are essential.

A. Auditory Communication
Environmental Support: Acoustical ceiling tiles, carpet, heavy draperies, and fabric covered surfaces are necessary.
1. Semi-private conversations
Environmental Support: Two or three chairs facing one another or at ninety degree angles to each other. About three feet apart encourages conversation.
2. Small group discussions
Environmental Support: Twelve to sixteen chairs should be arranged in a socio-petal manner.
3. Lecture
Environmental Support: The chairs should be arranged so the speaker can be heard and seen from all positions.

B. Visual Communication
Environmental Support: Various lighting levels ranging from almost totally dark to high levels of illumination are a requirement.
1. Display Areas
Environmental Support: An area for showing both two and three dimensional work should be provided.
2. Visual Learning Aids
Environmental Support: A chalk board, bulletin board, easel, space for electrical aids, screen, electrical outlets are necessary.

III. INTELLECTUAL ACTIVITIES

A wide variety of activities in which the mental skills of the individual are used in manipulating symbolic information.
Physical: The person is usually seated. Eye-hand coordination and visual acuity for near two and three dimensional tasks is required.
Mental/Sensory: The mental attention required varies with the difficulty of the content for the individual. The primary sensory input is visual.
Environmental Support: The activity is usually performed at a desk or table. There is also an associated need for

privacy. Tables, chairs, desks, writing materials, and two dimensional materials are commonly used.

A. Writing
Environmental Support: This may occur in any part of the room where a desired surface and chair is available. Privacy may be required. The equipment includes a writing surface, chair, drawing table, stool, good lighting, writing and drawing tools, and tracing table.

B. Reading
Environmental Support: This may occur at any location in the room and require privacy. Associated equipment includes a chair and good light.

IV. SIMULATION ACTIVITIES

This activity deals with reproducing situations that are likely to occur in actual situations under test conditions.
Physical: This includes individual and group participation with and without instructor's supervision. There is a wide range of physiological modes. These entail all degrees of muscular activity with near and far visual acuity for three dimensional tasks.
Mental/Sensory: The mental attention required varies. The primary sensory input is visual.
Environmental Support: The space and equipment needs vary with the activity being simulated.

A. Spatial Areas
Environmental Support: A large spatial area with partitions that can be manipulated into various arrangements is required.

B. Lighting Area:
Environmental Support: A variety of both flourescent and incondescent bulbs and testing fixtures is needed. Storage areas for this equipment should be provided.

APPENDIX D

DESIGN PROBLEMS

1. Carpet samples are difficult to use and are not stored together.
2. Vinyl floor samples are not organized or located near the other floor coverings.
3. Furniture catalogs are cut by the students and "disappear" from the room.
4. The lock on the furniture cabinet is visually displeasing.
5. Fabric samples, which are in several locations, are difficult to locate, manipulate, and see.
6. Paint chips have no particular place for storage.
7. Wallpaper catalogs are not organized and some are stacked on the floor.
8. Brochures are in several locations and are not filed.
9. There is no chalk board, projection screen, or display area.
10. There are not enough tables and chairs for small group discussions or lectures.
11. There is no stool for the drawing table.
12. Lighting is not adequate for tasks that need high levels of visual acuity.
13. The room has no tracing table.
14. The room has no movable partitions.
15. The room has no area large enough for space simulation.
16. The room has no area dark enough for lighting simulation.
17. Lighting lab would need lighting equipment and storage for that equipment.
18. The room has no way to control outside light.
19. The room has no storage for fabric samples that are not in use.

20. The room is cold in winter.

21. The room has no coat rack.

22. The room has no area for student information dissemination.

23. The room has no chairs near the magazines.

24. Instructors give no guidance on how to use the room.

25. The area rug is not attached to the floor.

26. The following pieces of equipment are not needed:
    a. three horizontal files
    b. the old dinner table
    c. eight old chairs
    d. the old desk
    e. the upholstery stand
    f. the carpet chest
    g. the locker
    h. one open shelf unit
    i. the cabinet used for storing vinyl floor samples
    j. the built-in cabinets on the south wall
    k. the fabric-display assembly
    l. the L-shaped room divider.

27. Students receive no instruction on how to use the design resources.

28. The room has no one to oversee the activities.

APPENDIX E

DETERMINING ALTERNATIVES

Alternatives for: fabric samples are difficult to manipulate.

1. Take the samples from the books and hang the samples on individual hooks which are placed on open rods.

2. Take the samples from the books and hang the samples on individual hooks on pull-out rods in the cabinets.

3. Leave the fabric samples in the books and hang the books on pegboard with hooks.

4. Leave the fabric samples in the books and hang the books on rods that are on hooks in the pegboard.

5. Leave the fabric samples in the books and hang the books on one of several short sections of rod.

6. Use several long rods the length of the room with periodic bracing to hang samples left in books.

APPENDIX F

DESIGN SOLUTIONS

1. The carpet and vinyl floor samples should be cut into nine inch by five inch rectangles and filed according to color in nine inch by five inch by eighteen inch open file boxes. The removable boxes should be in the cabinet on the east wall.

2. Books, samples and catalogs not to be cut should be color coded. They should be stored in the non-movable shelves in the cabinet on the east wall.

3. All books and furniture catalogs that may be cut should be color coded. They should be placed on the metal open-shelf unit on the south wall of the west alcove.

4. The cabinet with non-movable shelves on the east wall should have a lock put in the door.

5. Upholstery and drapery fabrics should be left in the books and hung on a wall length rod. Each book should have an individual hook and grouped according to fabric weight.

6. Cabinets on the south wall should be removed.

7. The wallpaper catalogs should be color coded according to type.

8. Paint chips should be filed in nine inch by five inch by eighteen inch file boxes on the top shelf of the wallpaper unit.

9. Brochures should be filed in standard size file cabinets. Two of these cabinets should be placed next to the lighting equipment storage cabinet.

10. The present fabric unit should be removed from the west wall.

11. Eight tables and sixteen chairs should be placed in a circular arrangement near the west wall.

12. The wallpaper that is not in books should be cut into nine inch by five inch by eighteen inch file boxes. The boxes should be placed on the top shelf of the wallpaper unit.

13. A forty-eight inch chalk board should be attached to the movable partitions thirty-six inches from the top of the partitions.

14. A four foot chalk board should be attached to the west wall thirty-six inches from the ceiling and five feet from the end of the counter.

15. A projection screen should be mounted above the chalk board.

16. A stool and a desk lamp should be provided for the drawing table.

17. Additional lighting should be provided for the magazine area.

18. A portable tracing table should be placed on the counter on the east side of the room.

19. Six movable partitions three and one-half inches by six feet by five feet in a neutral color should be provided.

20. The L-shaped room divider should be removed.

21. A neutral colored over drapery and a black-out drapery should be installed.

22. Usage charts should be placed throughout the room and distributed in design classes.

23. Items that should be removed are:
    a. one open-metal shelf unit
    b. the locker
    c. the carpet chest
    d. the upholstery stand
    e. the old desk
    f. the horizontal files
    g. eight old chairs.
    h. the old dinner table
    i. the six foot table
    j. one drawing table

24. An eight foot track unit should be installed one foot from the floor and two and one-half feet from the west wall in the west alcove.

25. A flourescent light should be installed seven feet from the floor in the west alcove area.

26. A fabric display device should be installed on the south wall. The rod should be one-half inch in diameter, fifteen and one-half feet in length and twelve, eighteen, and twenty-four inches apart. Braces should be placed every two feet.

27. Fabric not in use should be stored outside the room.

28. Area rugs should be provided for the seminar area and the magazine area in the east alcove. The rugs should be attached to the floor with double faced carpet tape.

29. A drawing table should be placed on the east wall at the end of the wallpaper unit.

30. Additional wallpaper catalog storage should be provided by extending shelves to the ends of the unit.

31. Burlap covers should be installed on the doors of the cabin ets on the west wall.

32. A coat rack should be provided--placed at the end of the brochure file cabinets.

33. Lighting equipment storage cabinet should be turned facing the south wall and placed at the end of the partition of the west alcove area.

34. The chairs should be placed on the north wall of the west alcove area.

35. A glass display cabinet should be built on the north wall of the east alcove area.

36. The built-in vertical storage units on the east wall should be removed. Pegboard display units should be placed on the west wall on either side of the chalk board. Hooks and shelves should be provided for displaying three dimensional work. Hooks should be provided for displaying two dimensional work.

37. Students should be given a room orientation each semester.

38. Student help should be acquired to keep the room in order.

APPENDIX G

DESIGN SPECIFICATIONS

1. Chalk Board
   Claridge, Duralite-type A, oriental brown No. 27, Series 1, 4'x4', $69.19.

2. Movable Partitions
   Brewster, Sho-Wall, oyster gray (3 each), straw yellow (3 each), 6'x5'x3½", nylon nubble covering, seal brown molding, $352.00 each.

3. Panel Foot
   Brewster, 385-S, chrome satin, one set of four feet per panel, $39.00 per set.

4. Panel Foot Costers
   Brewster, 370, steel satin finish for 3½" panel, 2 with brakes, $23.00 per set.

5. Chalk Tray
   Brewster, 245-V, seal brown, matte finish, six 4' pieces PVC with velcro back, $3.00 per linear foot.

6. Carpet
   Cabin Craft, Proclamation, A1-625, chromium 9127, 12' width, complies with Federal flammability standards for carpets and rugs (DOC-FF-1 70), $12.25 per square yard.

7. Chairs
   School Speciality Supply, Inc., Tempo, 7041, brown upholstery, pietra enamel, piedmont nylon, seat height 17", $13.55 each.

8. Trapezoidal Tables
   School Speciality Supply, Inc., H 242448, walnut textured finish, 24"x24"x48", non-adjustable legs, $17.80 each.

9. Stools
   School Speciality Supply, Inc., 1421, metal-cordovan brown, vinyl and grospoint upholstery, adjustable 27"-33", $29.95.

10. Drapery Fabric
    Wesco Fabric, Inc., Wes Scorpio, bronze, 100% dynel, 48" width, $7.95/yard.

APPENDIX H

IMPLEMENTATION PHASES

Phase One

This phase deals with the organization and clean-up of the room. The organization of design resources presently in the room could be completed by the fall term, 1976. This phase consists of 1) purchasing an additional file cabinet, 2) purchasing file boxes for the floor coverings and wall coverings, 3) adding the shelves under the built-in counter-top for additional storage of wallpaper catalogs, 4) installing a lock in the cabinet in which the furniture catalogs are stored, 5) removing the unnecessary items from the room and 6) installing the over-drapery.

Phase Two

Phase two is the stage that converts the room into classroom space. It consists of 1) removing the present fabric display unit from the west wall, 2) removing the cabinets on the south wall, 3) installing a new fabric display unit on the south wall, 4) purchasing tables and chairs, 5) installing a chalk board and projection screen and 6) painting the room.

Phase Three

Phase three is the addition of items necessary to convert the room into a multi-purpose area. The changes are the addition of the following items: 1) the lighting

lab, 2) the black-out drapery, 3) the movable partitions, 4) the pegboard display unit, 5) the glass display cabinet and 6) the area rug.

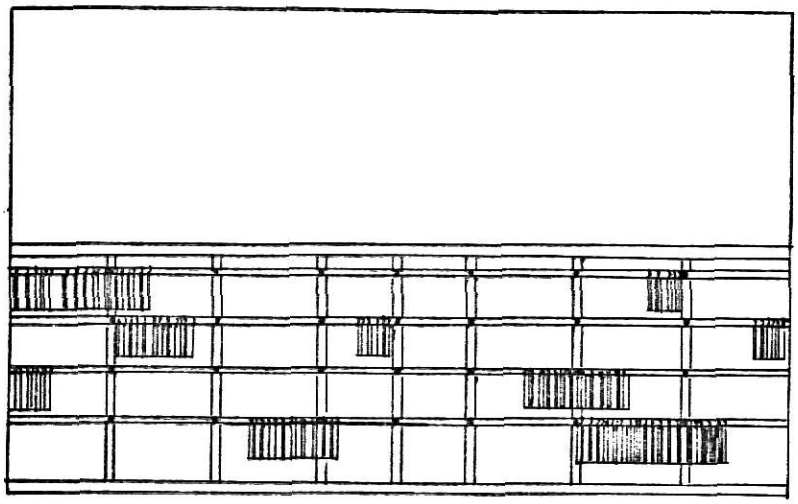

Figure 6

Proposed Fabric Display

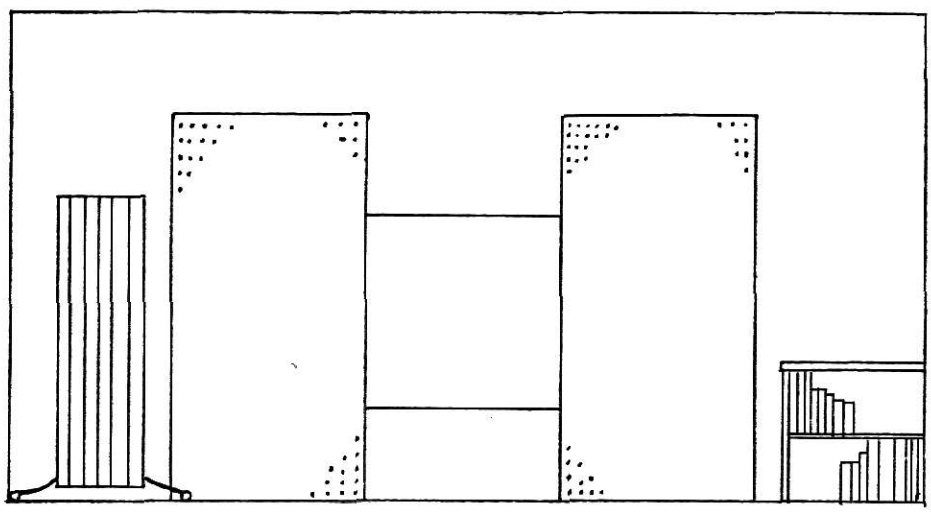

Figure 7

Proposed West Wall

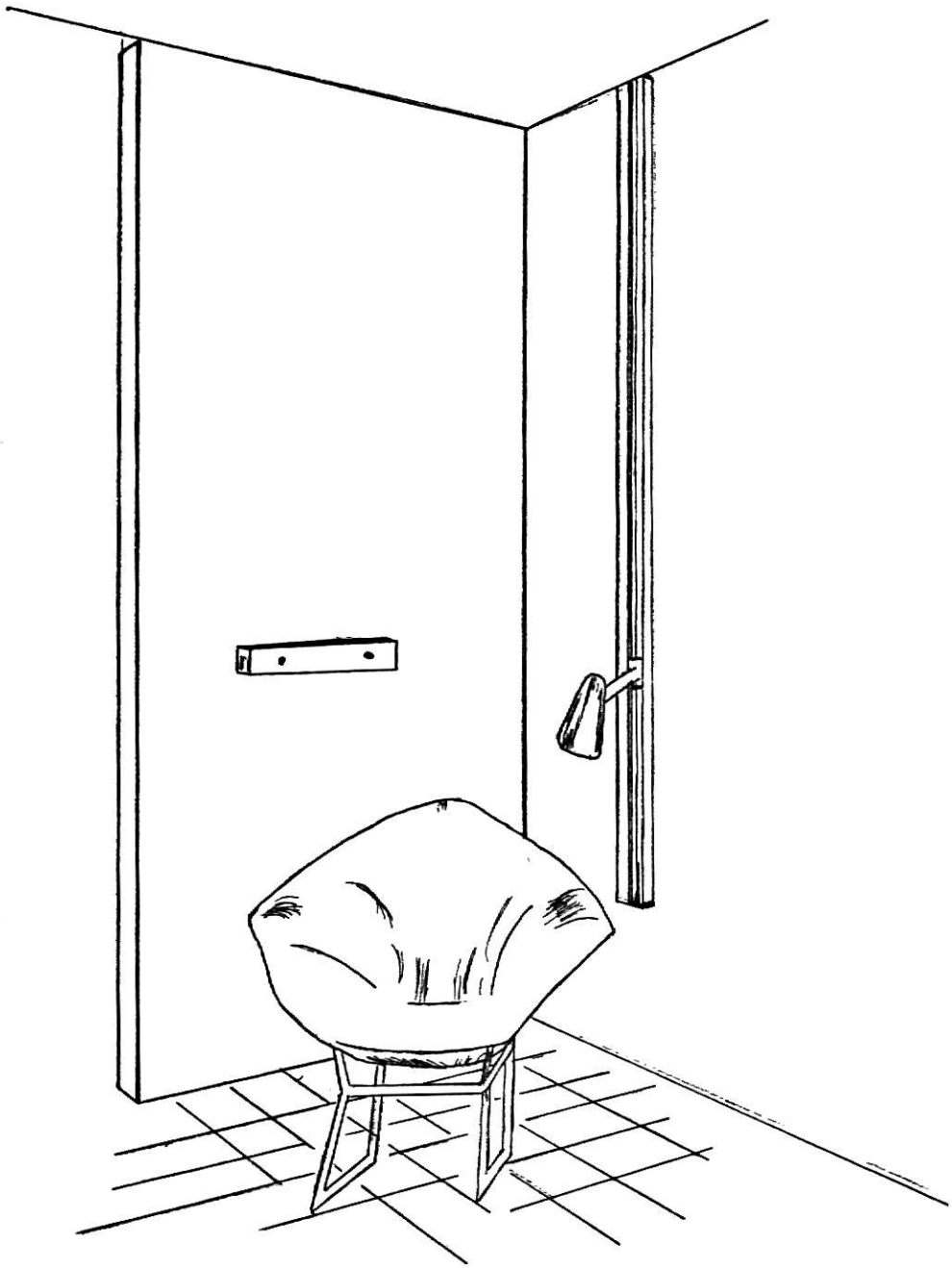

Figure 8

Proposed Lighting Lab

THE METHODOLOGY FOR THE REDESIGN OF THE INTERIOR DESIGN RESOURCE ROOM

by

CHERYL MARSHALL GILLETTE

A. B., Marshall University, 1970

AN ABSTRACT OF A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTERS OF SCIENCE

Department of Clothing, Textiles, and Interior Design

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1976

ABSTRACT

The project evaluated the Interior Design Resource Room at Kansas State University and the environmental characteristics which were associated with the activities that occur in the room. The room, an ineffective area for both faculty and students who use it, is poorly organized.

The project involved the work of two design students and so is presented in two parts. Part I is the review of literature that serves as the justifications for the design decisions; and Part II, this report, presents the methods used to gather data on the particular environment and the design process followed for determining recommended solutions. This study was an endeavor to identify a rational manner for designers to interpret and apply research information into decision-making data.

The design approach consisted of three major steps. The first, the preliminary research, included the Review of Literature (Part I) and the environmental analysis (Part II). The environmental analysis consisted of an Instructor Conference, a Checklist for School Task Analysis and an Activity Analysis. The second major step, defining the problems, was determined by use of the preliminary information to find inconsistencies that appear between the optimal and the existing conditions. The selection of problem solutions was the final step of the process. This consisted of two parts:

determining alternatives and selecting alternatives. From these selected alternatives an exact set of specifications was determined.

The analysis of the activities within an environment has potential as a method for relating research data to the design fields. The process, perhaps too lengthy for large environmental systems, needs to be modified in order to insure the inclusion of vital information. The analysis of activities for environmental support is a need-centered method that is feasible for most designers.