AN ANALYSIS OF ARCHITECTURAL PROGRAMMING PROCESS AT KANSAS STATE UNIVERSITY, MANHATTAN

A CASE STUDY OF KANSAS REGENTS EDUCATIONAL COMMUNICATION CENTER

by

AMIT B. DESAI

B. ARCH., D. C. PATEL SCHOOL OF ARCHITECTURE,
VALLABH VIDYANAGAR, INDIA, 1987.

A THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF ARCHITECTURE

Department of Architecture
College of Architecture and Design

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1994

Approved by:

M. McNamara
Major Professor

ABSTRACT

This research hypothesizes that **architectural programs written so far at Kansas State University(KSU) are not comprehensive enough or are *exclusive* and seeks to establish and identify important contextual elements or factors that are not emphasized during the programming process and thus are not addressed in the programs. Therefore, the programming process ought to be more sensitive towards the campus environment where clients are not often the users.** The term ***comprehensive*** in this analytical exploration is understood in its simplest meaning as in ***complete*** or ***inclusive***.

A comprehensive approach to programming, may address Physical, Human and External influences on the design project as well as requirements that affect its total design.[1]

This study attempts to analyze a selected architectural program of a building at KSU, Manhattan in terms of the ***programming process*** and ***comprehensiveness*** of its contents in the context of the programming models suggested by contemporary programmers. Apart from this, conclusions of informal interviews with programmers and designers of the buildings - to identify the present programming processes and effectiveness of the programs - are used as a tool for analysis.

Subsequently, an effort has been made to broadly identify issues or elements which the current programming process at KSU ignore and to discuss their implication on the built environment. The study reveals the little emphasis being laid on some important issues like ***precedent studies, expert knowledge, user participation***, and ***environment-behavior*** information during the programming process. At the same time it also reveals the neglect to discover the impact of the program on the project. It confirms the disregard for valuable program elements such as ***site analysis, design precepts***(directives), and ***adjacency diagrams***.

The study is descriptive in nature and the findings are broadly discussed as conclusions. Being a first effort of its kind, this research may form a meaningful resource in terms of feedback for the future programming processes.

---

[1] **Palmer, Mickey, The Architect's Guide to Facility Programming, American Institute of Architects, Washington D.C., 1981, p.11.**

ACKNOWLEDGEMENTS

I express my sincere gratitude towards my advisory committee members, especially my major advisor Prof. Michael McNamara. Without his perception as well as criticism and patience throughout, the study would not have been the same.

My special thanks to Prof. Lawrence Garvin, for his valuable time to help me understand the process and provide relevant information.

I would like to acknowledge the following...

: Officials at the University Planning Office for providing me the necessary documentation and information.

: Officials and operators at the Kansas Regents Educational Communications Center, Kansas State University, Manhattan.

: Designers of the ECC, Cooper Carlson Duy and Ritchie, at Kansas City, Missouri.

Finally, I would like to thank my family and friends who rendered help and support in the process of completing this study.

Amit Desai
January 1994

TABLE OF CONTENTS

LIST OF FIGURES

Exhibit

1.

Introduction

1.1 ARCHITECTURAL PROGRAMMING

1.1.1 Definition

A program in its simplest term can be defined as a document that states the requirements of the client(s) and the needs of the project for design. It is a statement of an architectural problem and requirements to be met in offering a solution. Programming is the process that elicits and systematically translates the missions and objectives of an organization, group, or individual person into activity-personnel-equipment relationships, thereby resulting in a functional program.[2] Sanoff, describes the program as a communicable statement of intent. It is a prescription for desired set of events influenced by local constraints and it states a set of desired conditions and methods for achieving those conditions.[3] Architectural programming is an approach to the design process that extends the designer's involvement in project decision making in two directions: planning needs of a facility and evaluating the design response to facility needs. It lays a foundation of information based on empirical evidence rather than assumption that helps the designer respond effectively and creatively to client requirements and facility parameters and constraints.[4] According to Michael Brill, Architectural programming tries to describe the desired range of specific human needs a building must satisfy in order to support and enhance the performance of human activities. It is a predesign

---

[2] **Ibid, p.1.**

[3] **Sanoff, Henry, Methods of Architectural Programming, Dowden, Hutchinson, & Ross, Inc., Stroudsburg, Pennsylvania, 1977, p.4.**

[4] **Palmer, Mickey, The Architect's Guide to Facility Programming, American Institute of Architects, Washington D.C., 1981, p.7.**

activity but a critical part of the design process;...the program is a document, the final output of investigation phase of a design process. Its purpose is to predict those environmental conditions that are supportive and responsive to the user's activity patterns.[5]

Everyone, however, would accept the view that a program is an organized collection of specific information that involves developing, managing, and communicating. Most will also agree that programming is the process of identifying and defining the needs of a facility.

---

[5] **Brill, Michael, as discussed by Palmer, Mickey, in The Architect's Guide to Facility Programming, American Institute of Architects, Washington D.C., 1984, p.4.**

1.2 ROLE AND IMPORTANCE : PROGRAMMING PROCESS

The objective of programming process is to provide information that is useful for design and which can create a sound basis for effective design.

"Although its FORM and ROLE may vary from project to project and from design method to design method, PROGRAMMING is nevertheless an integral part of the planning of any building. With the architect involved in projects of greater and greater complexity, the value of the program has grown from a means of "getting to know the problem" to that of an instrument which LIMITS and DIRECTS the planning process".[6]

As an instrument of design, the program helps insure that the client's interests and requirements are addressed adequately and that the designer's information needs are met satisfactorily. A program must reflect the needs of owner(s) and facility managers including the diversity and complexity of design information. At the same time, the scope of the information and requirements for facility design must extend beyond a listing of the owner's physical and economical criteria. They must include the functional, social, psychological, and aesthetic needs of those who live in, work in, operate and otherwise use the facility.[7] However, just as the design of a facility integrates all of its parts, a program should be an integration of the key elements and factors that pertain to its design.

As described by McLaughlin, a contemporary program usually goes well beyond the traditional lists of the size and character of spaces and interrelationships. It describes, among other things, the functional and design intent of a building, often suggests forms

---

[6] **White, Edward T., Introduction to Architectural Programming, Architecture Media, Tucson, Arizona, 1972, p.2**

[7] **Palmer, Mickey, The Architects Guide to Facility Programming, American Institute of Architects, Washington D.C., 1981, p. VI(Preface).**

and materials which are appropriate, the organization and interrelationship of component parts, costs, finishes, construction systems, and timing. Such a document then defines many basic design options. Decisions as to whether a building is high rise or low, or a combination of both, or whether a building project consists of one building or more are made when programming defines net-to-gross ratios and project budgets. The program frequently decides, for instance, how dormitory bedrooms relate to a lounge - whether it states so directly or sets up a series of functional imperatives which force the solution.[8]

---

[8] **McLaughlin, Herbert, 'Programming', in Current Techniques in Architectural Practice, by R. A. Class and R. E. Kohler(eds.), American Institute of Architects and Architectural Record, Washington D.C. and New York, 1976, p.121.**

1.3 UNIVERSITIES AND PROGRAMMING

Universities are amongst our oldest institutions. They have evolved and have been shaped throughout history by their purpose and sponsorship, by political, social, technical and economic considerations.

As discussed by Dober, colleges and universities have not in the past obtained their buildings by logically examining all premises as to need, cost, and design expectations. Generous donors, adequate operating budgets, the euphoria of apparently unlimited resources, the fear of making things too exact, the unavailability of administrators with both an analytical mind and institutional sensitivities are all factors that help explain historic circumstances. The halcyon times are over. Institutions now demand a comprehensive planning process so that they can pick and choose among the many demands being placed upon their limited resources with some comfort that a broad view exists about the physical plant and that adhoc approaches to planning and expedient actions have been avoided.[9]

"Today, in ever larger organizations and governments run by decision-making processes that involve consensus and committees, decisions tend to be geared toward the lowest common denominator, and thus the quality of the resulting built environment frequently does not adequately meet occupant needs".[10]

The same may be argued for many of the university buildings, too. The programming process, especially for such institutional buildings, deserves mention as a priority matter.

---

[9] **Dober, Richard, P., 'Recycling Institutional Buildings:A Data Base Technique, in Facility Programming-Methods and Applications, by Preiser, Wolfgang F.E.(ed.), Dowden,Hutchinson, & Ross, Inc., Stroudsburg, Pennsylvania, 1978, p.156.**

[10] **Preiser, Wolfgang, F.E., 'Introduction', in Programming the Built Environment, by Preiser, Wolfgang F.E.(ed.), Van Nostrand Reinhold Company, New york, 1985, p.3.**

Without a structured sequence and the participation by the owner, users, and operators of the spaces, programming- however else determined- may fail, as may, in turn the environment being designed and constructed. In lieu of the above considerations, carrying out programming would require to set up ways of gathering and sharing information on existing conditions, identifying user's requirements, communicating and evaluating draft proposals and generally involving as many people as possible in understanding the issues and the reason behind the solutions. The need for organized programming becomes even more important with the conglomerate client involving the client owner, the client user, government agencies, special interest groups and many others.

"Whatever methods or combination of methods are used, there are three aspects of programming that should not be neglected in working with institutional clients: comprehensive planning, participation and an agreed upon database."[11]

Comprehensive planning may involve visits to model facilities, literature search, consultant opinion, brain storming and observation of behavioral settings. Participation, as mentioned above, may be defined as involvement of all, users and operators, of the facility while an agreed upon database may be understood as mutually consented functional, technical, and architectural requirements.

A comprehensive(i.e. complete or inclusive) approach to programming would address; the client's wants, needs as well as the architectural requirements and other parameters and constraints.[12]

---

[11] **Dober, Richard P., 'Recycling Institutional Buildings:A Data Base Technique, in Facility Programming-Methods and Applications', by Preiser, Wolfgang F.E.(ed.), Dowden, Hutchinson, & Ross, Inc., Stroudsburg, Pennsylvania, 1978, p.156.**

[12] **Palmer, Mickey, The Architect's Guide to Facility Programming, American Institute of Architects, Washington D.C., 1981, p.22.**

1.4 PROBLEM STATEMENT AND SIGNIFICANCE OF THE STUDY

1. Traditionally, most of the building programs at Kansas State University have begun and written as proposals to acquire funding from the Board of Regents. However, same program documents are given to the facility designers as a primary source of information, too. **This study seeks to establish that as a primary source of information they may not be comprehensive or complete enough.**

2. Since no significant research in the past has been done in this area, this study may form a valuable resource for the Department of Facilities Planning(A & E Services) at Kansas State University and may also help direct future research efforts.

1.5 THE STUDY

Objectives

1. Analyze and evaluate the selected program in terms of its programming process and comprehensiveness with regard to its contents.

2. Broadly, identify elements or factors which are not addressed or are not emphasized in the programming process -thus programs- and attempt to discuss the value and implication of these factors on the contextual built environment.

3. Develop recommendation which may become helpful for structuring future programming processes.

Goal

This research is broadly aimed at developing a deeper understanding of architectural programming in an institutional context.

Scope

Though, issues of performance of the facility may be considered, the primary emphasis would be on the analysis and evaluation of the programming process and not on the evaluation of the facility.

The Audience

As stated earlier, no significant research has been done in this particular area in the past. This study may form a valuable resource for the Department of Facilities Planning-Architecture and Engineering(A & E) services - at KSU for formulating and structuring programming processes and developing more effective programs. In addition, it may also help direct future research efforts of interested individuals in similar area.

1.6 SELECTION OF ARCHITECTURAL PROGRAM

The selection of the program was made after briefly reviewing 11 programs available at the university planning office. The list of these programs is presented below.

1. Program for the Educational Communication Center, Feb., 1986.
2. Program for the Holton Hall, Dec. 1986.
3. Program for the Coliseum, Sep. 1985.
4. Program for the Plant Science Complex(Throckmorton Hall), Phase II, April 1983.
5. Program for the general classroom and office building(Bluemont), Dec. 1981.
6. Program for the addition of Weber Hall for meat science facilities and animal science industries, Dec. 1981.
7. Program for the Chemistry-Biochemistry building, Dec. 1981.
8. Program for an Agricultural Engineering Facility, Oct. 1979.
9. Program for the Renovation of Dickens Hall, July, 1979.
10. Program for the Renovation of Burt Hall, Jan. 1979.
11. Program for the Plant Science Complex, Phase I & II, Oct. 1975.

1.5.1 A Brief Review of the Programs

The programs reviewed, primarily address the functional space requirements of the facilities. The contents of the program mostly include the functional spaces and their physical requirements which are categorized and very briefly described under the headings of Utilization, Location/relationship, Personal capacity, Head Room, Ceiling Walls, Floor, Built in/Special equipments, Electrical convenience outlets, Heating,

Cooling, Ventilation, and Illumination. The proposed site is often described very briefly in a paragraph in most documents. Environmental guidelines are typically attached at the later part of the programs.

Apparently, very little or no information can be found on site analysis, i.e selection of site, its existing conditions, features...etc. Most of the programs do not identify comprehensive relationships between functional spaces. The information regarding architectural considerations such as existing campus order, prevalent building forms, materials, building heights, architectural character of the buildings on campus...etc. too is absent. They also lack user needs in terms of environment-behavior relationship.

1.5.2 Selection of Program Document

As stated above, about 11 program documents of the of the buildings at KSU were briefly reviewed and **program for the Kansas Regents Education Communication Center(Bob Dole Hall), -a ninety page document- written and completed in Feb. 1986**, was selected as a case study to analyze the programming process.

Bob Dole Hall, one of the very few single storied structures on campus, was completed in 1990, and is built to provide formal and informal television education throughout the state. This program was selected due to the location of the building(on an existing creek), its relatively larger footprint. In addition, the uniqueness as well as diversity in functional operation of the building by various disciplines were considered. The selection was also made in favor of **more recent program document**.

1.7 METHODOLOGY (Figure 1.1)

THESIS

Architectural Programs written so far at KSU are not comprehensive enough assuming that perhaps there are factors or elements which are not addressed or are not emphasized.

Phase 1

LITERATURE REVIEW
- Current literature search
- Explore different Models, issues, approaches in programming

KSU CAMPUS : CONTEXT
- Evolution, Nature, Size University Mission, Status of Campus Planning, Future Projection(s)

DOCUMENT GENERAL PROGRAMMING PROCESS AT KSU

Informal Interviews w/
- Programmers at Dept. of Facilities

(Criteria for Analysis of the selected documents)

Phase 2

MODEL:
- Discussion: Review of Literature(Ch. 2),
- Sample Questions/ Perception
- Conclusion of interviews with Programmers, Designers, and Users

ANALYSIS/EVALUATION
- Review of Selected Program: Discussion
- Document and analyze the Programming Process
- Informal Interviews with Designers and Programmers
- Informal interviews with some Users
- Summary: Program Analysis
- Identify Factors, not addressed-not emphasized
- Effectiveness as a Program
- Implications on programming process

Phase 3

SYNTHESIS

Implications of findings on development of programs
Future Research Needs
Conclusions

Though, the methodology may change to some extent during the course of the study, the entire study would be divided primarily in to three phases.

PHASE ONE : LITERATURE SEARCH AND REVIEW

1. Literature Review

Briefly study the literature on-

- Evolution of programming as a discipline,
- Contemporary programming approaches,
- Explore the issues and factors emphasized in the approaches studied.

2. KSU Campus : The Context

Describe the context of the KSU campus in terms of evolution, nature, size, university mission, status of campus planning...etc.

3. Document general Programming Processes at KSU

Informal interviews with programmers at the Department of Facilities, KSU were scheduled to identify and document the general programming process adopted at KSU.

PHASE TWO : ANALYSIS/EVALUATION

This phase will include analysis and evaluation of the documents. The analytical and evaluative process may overlap and will involve my judgement to some extent in addition to the Model presented in Figure 1.1

4. Documentation and analysis of the Programming Process of the ECC

The programming process followed while structuring these programs will be outlined and described in detail. In addition, it will be analyzed in the context of the conclusions of the informal interviews conducted with the programmers as well as Human, Physical, and External factors as discussed above.

5. Review and Analysis/Evaluation of the program for the ECC

The program document was reviewed, briefly described and analyzed with regard to the information of its contents. The analysis of the information was done in the context of the review of the literature conducted in chapter two.

It is important to note here that analysis/evaluation was influenced by the author's perception and value judgements regarding architectural programming, too.

Some of the questions which were often sought answer to, during the analysis are presented below.

- Any obvious order in the structure of the information, i.e. morphological(global to detail)?
- Is it context specific, i.e does it brief one about the character of the site and the surrounding built environment?
- Does it address the factors/issues that may affect/influence the project?
- Are there any design guidelines, if any, specific in terms of building form, material, aesthetics...etc.?
- Does it extend beyond the physical and economical criteria and include the functional, social, psychological, and aesthetical needs(i.e. privacy, territoriality, zoning) of those

who operate in or otherwise use the facility(i.e. client-user considerations)

- Is it suggestive of organizational structure of spaces?
- Life cycle cost/useful life considerations.
- How well does it communicate and define goals, objectives?

6. Informal Interviews

Informal Interviews with the following, were arranged, primarily to seek information regarding the issues, presented below.

i) Authors of the selected program

- Identify the programming process followed,
- Their perception about effectiveness of the program.

ii) Designers of the Buildings

- Effectiveness of the program,
- Quality of Information.

iii) Building Users (Department Head(s), Faculty/Staff)

- Extent of involvement in programming process.
- Emphasis on department needs:Faculty, Clerical, Maintenance, Other.
- Usefulness of the program today.

7. Summary of Findings of Analysis/Evaluation

Summarize the findings of analysis and discuss the effectiveness of the selected programs primarily in the context of the review of the current literature as well as informal interviews conducted as above.

- Describe the importance of factors, not identified or emphasized in the process.

PHASE THREE : SYNTHESIS

9. Synthesis of Findings

Synthesize and discuss the findings and information gathered through analysis/evaluation in the context of review of literature.

i) Synthesis

- Discuss the findings and their implications on programming process,
- Identify factors or elements which the programs do not address,
- Discuss future research needs and implications.

ii) Conclusions

Conclusions are presented in the form of insightful findings of the study which may help recognize the factors and issues which the present process and programs tend to disregard. This may help formulate more comprehensive -***inclusive***- programs in the future which are more sensitive to the contextual campus environment.

2.

Review of Literature

This chapter addresses the history and evolution of architectural programming as well as the contemporary views and approaches on architectural programming discussed in the recent literature.

2.1 ARCHITECTURAL PROGRAMMING : EVOLUTION

Throughout most of architecture's formal history, it can be found that program, if not programming, is probably as old as architecture and has been an informal matter - a simple, verbal statement of requirements from client to architect. Sanoff, has noted its earliest recorded application was in 1865, when instructions were published for architects competing to design a new court house in London. Before that, the courts that were built had been found inadequate from the start. This historic text which laid down a set of instructions stated,

" The existing courts were also made available for inspection. They(architects) were warned that the arrangements of the Courts and Offices is of vital moment; on it mainly depends the success or failure of concentration, and its importance can not be overestimated. Light and quiet were major consideration and were to be indicated for each room on a three-point scale..... the arrangements to be adopted so as in the greatest degree to facilitate the dispatch and the accurate transaction of the law business of the country."[13]

Jones has noted that in the classic treatises on architecture of Vitruvius, Alberti, or Palladio too, one can find suggestion of the elements of programming. These include formal instructions to the design or designer that are beyond style, and rooted in the

---

[13] **Sanoff, Henry, Methods of Architectural Programming, Dowden, Hutchinson, & Ross, inc., Stroudsburg, Pennsylvania, 1977, p.4.**

relationship between form and function.[14] Thus, in traditional cultures too, one may find sets of instructions which precedes and directs the design and making of parts of the environment. Over the years the need for thorough and systemized methods of investigating and identifying these factors has intensified and programming has emerged as a system for investigating and analyzing the design requirements of a facility.

The development of programming as a process and a discipline has been in response to the growing complexity and diversity of the facility requirements and other influencing factors. It is often observed in the literature of programming that management experts were among the first to recognize the opportunities for programming and applying their expertise in planning and designing large office buildings. Jones has discussed several factors which have contributed to the rise of programming as a discipline. First of which has been the **development and popularization of Human/Environmental studies.** These studies have, in a way, challenged the traditional assumptions about how people behave in or respond to their environment. The architectural profession, sensitized to human issues, has begun to rationalize its design approaches in terms of social and behavioral issues. Consequently these efforts have resulted in programs describing the expectations for buildings and the rationalization of those expectations. A second factor which has influenced emergence of programming is the **logical extension, and the severest criticism** - that it did not function as a humane environment - of the revolutionary movement of modern architecture, which gave rise to a greater need for programming to ensure humanly functioning of the building. The environment would only become

---

[14] **Jones, James, S., Form in Context-A Primer on Creative Architectural Programming:Theory and Techniques, p.6**

better, according to Gropius, when the architects were involved in the totality of the project from its earliest inception to its final details.[15]

Moreover, the study of **design methodology and the increasing scale and complexity** of the projects required consideration of issues like contextual needs, regulations of safety, wide array of building materials as well as sophisticated clients and users. Programming as a predesign activity where consideration of these issues is given priority to design, has emerged as a way to manage this contemporary complexity, budget and scale. Programming also grew as up as a discipline, partly, as a way of mediating power associated with architecture. It has done so by becoming a forum and a method of broadening the base of participants in the process of creating a building project. The participation of the users and incorporation of their needs can be seen as other examples of mediating power through programming.[16] Thus, as predesign decisions increased in importance, programming became prevalent as a means for assisting and determining the project scope, function and feasibility.

"The rationale for the emergence of facility programming lies in the need to establish effective communication among those who design and those who use the man built environment".[17]

---

[15] **Gropius, W., as discussed by Jones, James, S., in Form in Context-A Primer on Creative Architectural Programming:Theory and Techniques, p.9.**

[16] **Jones, James, S., in Form in Context-A Primer on Creative Architectural Programming: Theory and Techniques, p.12.**

[17] **Preiser, Wolfgang, F.E., 'Introduction', in Facility Programming, Methods and Application, by Preiser, Wolfgang F.E., Dowden, Hutchinson, & Ross, Inc., Stroudsburg, Pennsylvania, 1978, p.2.**

2.2 CONTEMPORARY APPROACHES AND PERCEPTIONS

Programming is a word of relatively recent origin. The role of programming has changed as the nature and scope of design decisions and information have changed. The architects role in programming too, changes depending upon the project. Architectural programming is not a rigidly defined process. Since each programmer has his or her own style and emphasis, one may find a considerable amount of diversity in the use of the term, its meaning and programming approaches being followed today within the design profession.

2.2.1 Some Perceptions and Views

As described by **McLaughlin**, a contemporary program usually goes well beyond the traditional lists of the size and character of spaces and interrelationships. It describes, among other things, the functional and design intent of a building, often suggests forms and materials which are appropriate, the organization and interrelationship of component parts, costs, finishes, construction systems, and timing. Such a document then defines many basic design options. Decisions as to whether a building is high rise or low, or a combination of both, or whether a building project consists of one building or more are made when programming defines net-to-gross ratios and project budgets. The program frequently decides, for instance, how dormitory bedrooms relate to a lounge - whether it states so directly or sets up a series of functional imperatives which force the

solution.[18]

Palmer has identified and developed an inclusive list of important(human, physical, external) factors that need to be addressed in the program.[19] A brief description of these factors is presented here.

Human factors would include and encompass information that pertain to owner, users, and public relevant to the facility as well as the client's organizational structure, client's objectives, demographic characteristics, activities, perceptions, policies, behavior, and preferences to name a few.

Physical factors would include things such as space types and dimensions, functions, adjacencies, operations, circulation, equipment/furnishings, aesthetic qualities, internal and external environments, and the durable life of the facility.

External factors can be identified as those factors which influence the facility and its design and almost within control of the client and the designer. Codes, standards and regulations, construction time, costs, climate, topography, future conditions/projections and energy resources can be termed as External factors.

An extensive list of design-influencing factors made by Palmer has been presented below(see fig.2.1).

---

[18] **McLaughlin, Herbert, 'Programming', in Current Techniques in Architectural Practice, by R. A. Class and R. E. Kohler(eds.), American Institute of Architects and Architectural Record, Washington D.C. and New York, 1976, p.121.**

[19] **Palmer, Mickey, The Architect's Guide to Facility Programming, American Institute of Architects, Washington, D.C., 1981, p.19.**

Human Factors

Activities

Behavior

Objectives/Goals

Organization
- —Hierarchy
- —Groups
- —Positions
- —Classifications
- —Leadership

Characteristics (Demographics)

Social Forces

Political Forces

Interactions
- —Communication
- —Relationships
- —Transfer of materials

Policies/Codes

Attitudes/Values

Customs/Beliefs

Perceptions

Preferences

Qualities
- —Comfort
- —Productivity
- —Efficiency
- —Security
- —Safety
- —Access
- —Privacy
- —Territory
- —Control
- —Convenience

Physical Factors

Location
- —Region
- —Locality
- —Community
- —Vicinity

Site Conditions

Building/Facility

Envelope

Structure

Systems
- —Engineering
- —Communications
- —Lighting
- —Security

Space
- —Types
- —Dimensions
- —Relationships

Equipment/Furnishings

Materials/Finishes

Support Services
- —Storage
- —Parking
- —Access
- —Waste removal
- —Utilities (water, sewage, telephone)

Uses

Functions

Behavior/Activity Settings

Operations

Circulation

Environment
- —Comfort
- —Visual
- —Acoustical

Energy Use/Conservation

Durability/Flexibility

External Factors

Legal Restrictions (Codes/Standards/ Regulations)
- —Building
- —Land use
- —Systems
- —Energy
- —Environment
- —Materials
- —Safety
- —Solar access

Topography

Climate

Ecology

Resource Availability

Energy Supplies/Prices
- —Conventional
- —Solar
- —Alternatives

Economy

Financing

Time
- —Schedule
- —Deadlines
- —Operations

Costs/Budget
- —Construction
- —Materials
- —Services
- —Operations

Costs/Benefits

Fig. 2.1 Factors that Influence Facility Design

Source: Palmer(1981), p.19

Palmer has also discussed several definitions of programming as defined by architects and other programmers. A brief discussion on these perceptions and views is presented here.[20] The later part of the chapter discusses seven approaches of programming as described by Henry Sanoff.[21] An effort has been made to summarize these discussions in the later part of this chapter.

Edward Agostini defines programming as a coherent and meaningful compilation of facts which most effectively support the client's operations
and organizational goals. He appraises the program document as a comprehensive report that presents detailed quantitative and qualitative requirements of the client organization and which recommends functional space standards, space analysis, suggested organizational groupings that respond to adjacency, work and traffic flow requirements. It should also include guidelines for future growth in an orderly manner.
According to **Michael Brill**, programming tries to describe the desired range of specific human requirements a building must satisfy in order to support and enhance the performance of human activities. It should predict those environmental conditions that are supportive and responsive to user's activity patterns and provide a critical link between the present problem and the future solutions by establishing the criteria for an intervention strategy.

---

[20] **Ibid, p.4-9.**

[21] **Sanoff, Henry, 'Facility Programming', in Advances in Environment, Behavior, and Design, by Zube, Ervin, H., et.al.(eds.), Vol.2, Plenum Press, New York, 1989, p.243-249.**

Programming, according to **Howard Davis**, is the specification of the organization and of the spatial relationships requirements. For example, in an office building, apart from including "user needs" it may mean completely redefining the flow of work, the size of offices, or even the nature of working groups to provide the best and potentially most productive work environment.

Henry Sanoff considers programming as an operating procedure for systematizing the design process which provides an organizational structure for the design team and a clear, communicable set of conditions for review of those who are affected by its implementation. He views a program as a formal communication between designer and client and a means to encourage greater client participation and user feedback which also serves as a set of conditions that are amenable to postconstruction evaluation.

Wolfgang F.E. Preiser defines programming process as a communication process among the eventual occupants, the providers and the managers of the facility. The process systematically translates their mission and objectives into activity-personnel-equipment relationships which results in the functional program. Architectural program, according to Preiser, is the one which consists of a "shopping list" of hardware assembled to match the functional program.

2.2.2 Contemporary Approaches

The programming models described and compared by Henry Sanoff are briefly discussed below.[22]

Gerald Davis perceives programming as that part of the decision making process which links the management of complex organization and the users of its building to the planning, design and operation of those facilities. Here, the users, or the client on their behalf, specify requirements in the form of functional and technical programs. The functional program states and translates the requirements of management and users. The technical program states the performance requirements of the functional system to avoid constraints on the design solution.

Davis's programming approach is directed towards planning of corporate facilities where throughout the design process, the programmer provides feedback to the designer. After the facility is built, the programmer assists management moving in and in their finetuning. The programming process include gathering data on operating facilities as well as on psychological needs, and on behavioral requirements. Typically, this 21 step process(see fig. 2.2) process begins with programming and moves through evaluating the facility in use.

---

[22] **Ibid, p.243-249.**

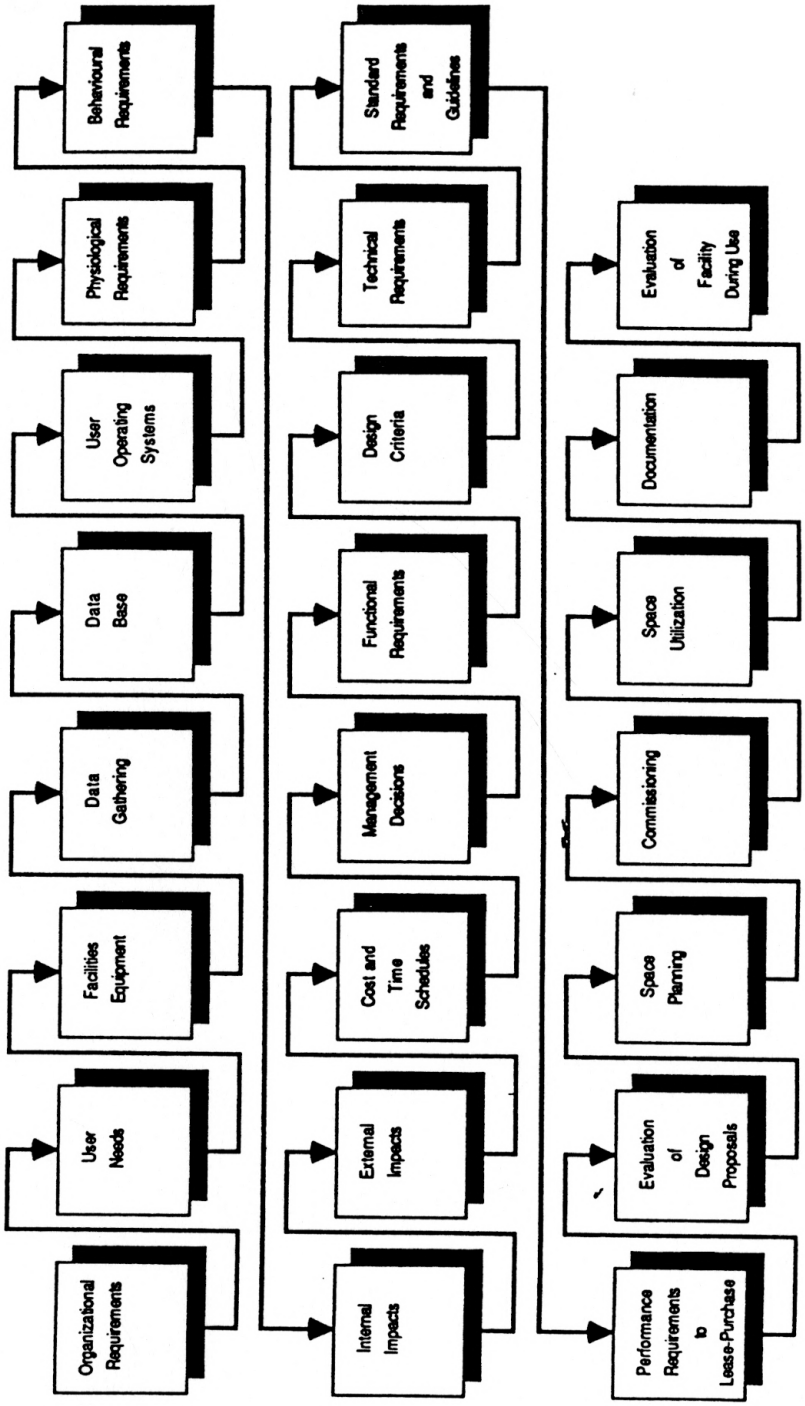


Figure 2.2. Davis's Programming Process
Source: Zube, et.al.(1989), p.243

Jay Farbstein's five step process(see fig. 2.3) searches the existing literature for the information on existing building type, identifies the users of the facility and their activities, attitudes and characteristics during the first step. The following step is to establish performance criteria, identification of design issues as well as identification of program options for each issue and assessment of each issue in terms of costs, benefits and tradeoffs. Space specifications and adjacencies are developed at the last step. Here the client is involved at each step to assess and approve the issues, options and the budget.

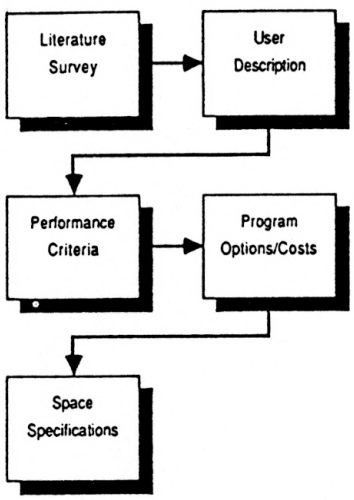


Figure 2.3. Farbstein's Programming Process
Source: Zube, at.al.(1989), p.244

Herbert McLaughlin of Kaplan, McLaughlin, and Diaz(KMD) consider programming as a distinctive form of design which allows client and architect to break through many of the preconceptions and limitations which dominate the usual design process. It is the only phase of design, where architect, user, and owner can be compelled to explore and

record their own prejudices and analysis of the solutions of others. Here, the players begin to define the design problem, the moment the building is described and therefore begin to solve it. They(KMD) follow a three phase programming process which is followed by a three phase evaluating process of their buildings(see fig. 2.4). The first phase of programming process includes user's organizational philosophy and objectives, and the financial feasibility of the project. The second phase considers the physical context, aesthetics demands, functional analysis as well as a survey of factors that may influence the form and content of the building. The final, project development phase, concentrates on building organization, specification and budgets. The three phase evaluation process starts during the programming stage when the expectations of the future occupants of the new facility are studied. Following the building occupation, a similar survey is conducted and the third and final survey is conducted after the users have adjusted to the new facility.

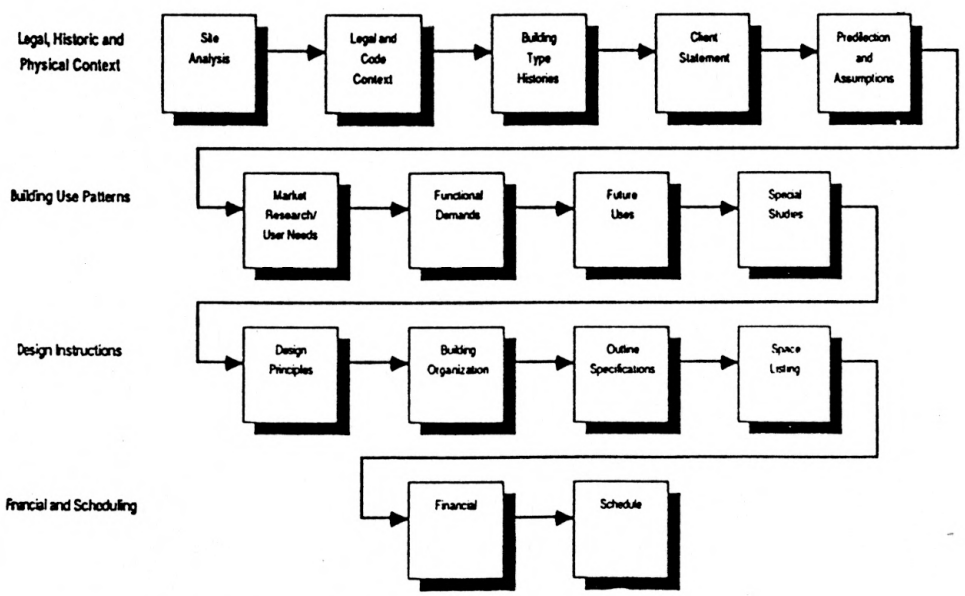


Figure 2.4. McLaughlin's Programming Process
Source: Zube, et.al. (1989), p.245

John M. Kurtz emphasizes iterative programming process which continues during the preliminary design phase as the client continues to provide feedback in reviews. This process considers the client's operation, philosophy, and objectives. The basic program including a literature search on the building type, client's operating requirements, building organization, space sizes, and relationships is presented to the client and revised time to time unless a general agreement is reached.

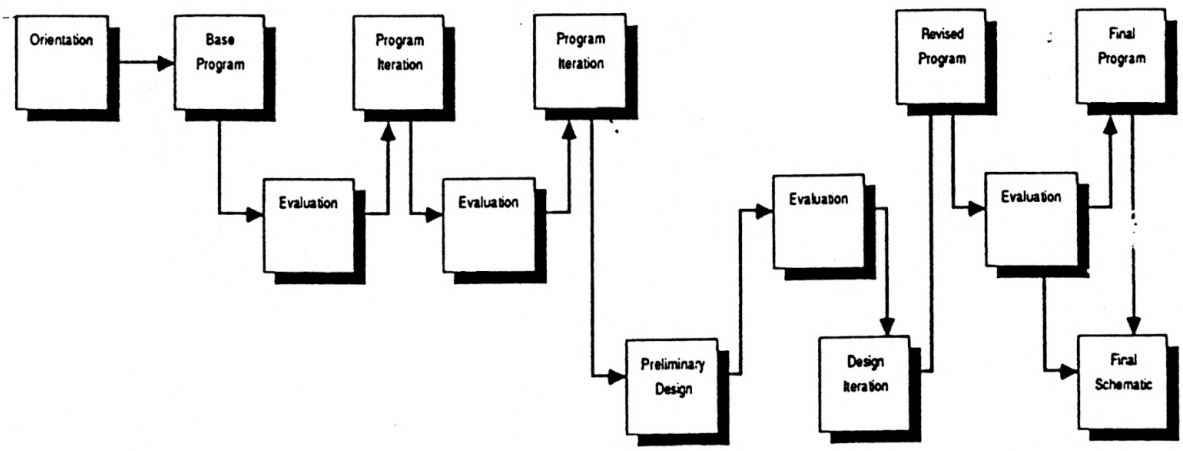


Figure 2.5. Kurtz's Programming Process
Source: Zube, et.al.(1989), p.246

Walter Moleski describes programming as that part of design process which enables the architect to identify the problems to be solved, the potential effects that the solution may have on the users of the building, and the constraints that will control the design process. It is intended to allow the designer to explore design problems in order to reveal its

complexity and to serve as a tool to find meaningful solutions that are relevant and satisfying to people who use, manage and own buildings. Moleski emphasizes the importance of investigating the organizational, social, and individual aspects of behavior as behavior is often controlled by administrative policy. His programming approach(see fig. 2.6) emphasizes familiarity with client's operations, nature of organization; its functions, and its reactions about the present facility. The information gathered through interviews, questionnaires and observations(step 2) is analyzed to show activity, relationships, problems, and needs. A meeting with the client during step 3 is organized to discuss the preliminary problem statement and concepts and to select concept for further development. The fourth step is to establish a performance criteria and a specific set of design needs and recommendations which are provided to the designer. The recommended program is presented to the client and reviewed to obtained final approval during a second meeting in the step 5. This process extends to design phase where the programmer consults with the designer on the intent of the program and evaluates the design solutions.

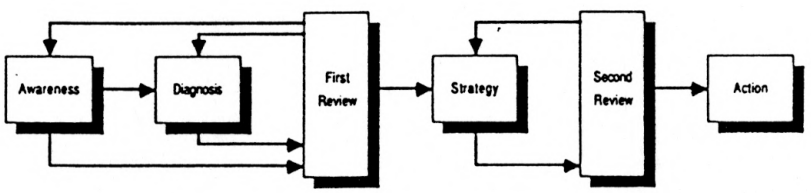


Figure 2.6. Moleski's Programming Process
Source: Zube, et.al.(1989), p.247

William T Pena regards programming as an organized process based on standard procedures which can be used on all types of building projects with single or multiple clients. He separates programming and schematic design as analysis(problem seeking) and as synthesis(problem solving) respectively and considers programming as means to seek and find the whole problem so that the design solution may be comprehensive. His programming process(see fig. 2.7) stresses and incorporates work sessions that bring together all parties involved in the project to determine a space(requirement) program. This five step process includes establishing goals, collecting facts, uncovering facts, determining needs; and redefining the problem through a consideration of the five determinants of design: function, form, economy, time, and energy. In addition, aspects like reason for the project, space requirements, and site analysis are considered during the last step.

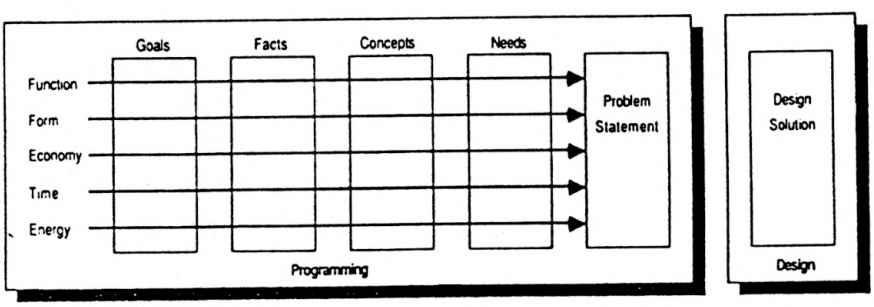


Figure 2.7. Pena's Programming Process
Source: Zube, et.al.(1989), p.248

Edward T. White discusses programming as a pre-design activity which addresses the facts, conditions, and judgements that influence and even determine form while design

addresses the making of the form. He distinguishes programming and design by the relative emphasis and attention to architectural form. His programming method(see Fig.2.8) consists of three phases: preprogramming, programming, and postprogramming. During preprogramming, client and the programmer identify and agree on the process, the rules, the responsibilities, and the content of the program. The programming stage concentrates on information gathering, organizing as well as analysis and evaluation of the information gathered. The client reviews and approves the information, space needs and budget, and design implications. Postprogramming consists of producing, presenting, and distributing the program.

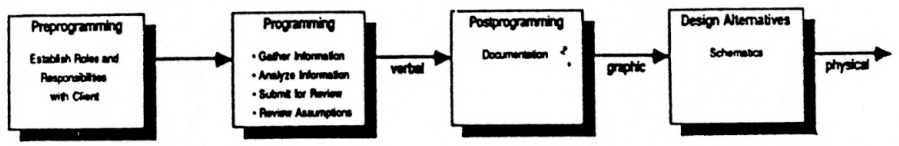


Figure 2.8. White's Programming Process
Source: Zube, et.al.(1989), p.249

2.3 SUMMARY

In conclusion, each of the models, distinctively present, the steps of collecting, analyzing and documenting the facts. At the same time they differ in terms of their form, emphasis, and description. However, an effort has been made here to identify the issues emerging from the discussion above. This discussion would form an important part of criteria for the analysis and evaluation of the selected program in the following chapters.

1. Programmers today recognize wider range of issues that have impact on design. Moreover, each programmer has his or her own style and emphasis which also differs depending on the project.
2. Effective programming depends on knowing what types of data are needed and on selecting the appropriate means of obtaining and documenting them.
3. The content of a program depends on the nature and complexity of the project. Thus the programming information differs in terms of the issues considered or the factors addressed that are relevant to design and the emphasis laid on each of them. However, it is consequential that the program contain the essential and relevant facts distilled from the veritable mountain of information.
4. Several of the processes emphasized the fact that main objective of any building program is to establish goals. This may be determining project objectives or determining architectural intent of the project. These goals and objectives were- accommodation of privacy, the desired use of existing facility, return on investment, historic preservation as well as analyzing and understanding user characteristics.

5. Pena has created a simplified classification of the factors(which influence the design). This includes Form, Function, Time, Economy, and Energy. White, describes several "typical" factors or "traditional" architectural considerations and breaks them into nine categories.

- Similar projects and Critical issues
- Client
- Financial
- Building Codes
- Planning by related organization
- Function
- Site
- Climate
- Growth and change

6. Palmer has presented a three way classification consisting of Human factors, Physical factors, and External factors. An inclusive list of these factors has been presented earlier(see fig. 2.1). Out of them certain fundamental facts which must be addressed and taken into consideration in developing a program are outlined here.

Human Factors

- Activities
- Objectives
- Organization
- Interaction
- Policies
- Preferences

Physical Factors

- Site Conditions
- Building/Facility
- Systems
- Space
- Functions
- Circulation
- Internal Environment
- Useful Life

External Factors

- Legal restriction
- Climate
- Time
- Cost

7. Specific factors like site restrictions, energy shortage, operational problems...etc. may have significant impact on the facility and may be determined by circumstances and client goals. These factors must be identified and considered for design.

8. The important issues, i.e quantitative and qualitative requirements of client organization, that the processes addressed as eminent part of the program are,

- Search and review of existing literature for the building type
- Size and character of spaces
- Organization and interrelationships of component parts
- Organizational groupings with regard to adjacency
- Net-to-gross area ratio
- Requirements for user activity responsive environmental conditions
- Predictions for productive work environment
- User's organizational philosophy and objectives
- Physical context, Aesthetic demands, Functional analysis
- Functional and Design intent of the building
- Identification of design issues and their assessment
- Constraints that will control the design

3.

KSU Campus - Context

3.1 KSU CAMPUS : BRIEF HISTORY

"Kansas State agriculture College was not born out of necessity; it was a product of idealistic dreams, local boosterism, and pragmatic expediency."[23]

Kansas State Agriculture college was founded in 1863. Located within a landscape not yet transformed by agriculture, the institution sought to introduce modern practices and a new level of expertise to rural living. The last half of the century has seen one of the nation's oldest land grant institutions transformed into a comprehensive research and practice oriented university.

Longstreth, has noted and one may recognize going through the history of the KSU campus that, it has been developed as a product of successive and differing campaigns of its presidents, to express the agriculture college idea. The emphasis and value placed on landscaping, at times, represent the agriculture college idea. Each of the college's first three presidents launched campus development projects which represented their vision. One may also observe from history that in past, the conflict over what form the new campus would take was indicative of a much deeper struggle between proponents of liberal and practical education. Richard Longstreth has noted that no major construction projects were undertaken until the 1880s. In 1884 president George Fairchild formed a committee which chose Maximilan Kern, a landscape architect, to prepare a masterplan. Kern sought to enhance the existing campus order. His design was implemented between 1885 and 1892, and according to his concept thousands of trees and shrubs were planted and new drives and walkways constructed to replace beaten paths. Zones were created

---

[23] **Longstreth, Richard, W., Form Farm to Campus-Planning, Politics, and Agriculture College Idea in Kansas, Manhattan, Kansas, p.2.**

for lawns, the academic cluster, and working fields. During 1890s the library science hall(now Fairchild Hall) was the first to be built(1893-94). This building set the standard for subsequent works, both in accommodations and imposing form.

" The buildings massiveness, its straight forward purposeful composition, and its elegant stonework set it apart form earlier projects....the Buildings that followed did not match the design refinements of the library, but emulated its stylistic feature, bold massing, and elegant, coursed lime stone exterior....No masterplan guided this work. Building location was decided one at a time, and the building themselves were the product of a rapid succession of architects."[24]

However, a general concept of placing the building was followed which directed the buildings to be placed around an open green amid a naturalistic landscape. The buildings built later on seem to have been arranged compatible with the existing order. Weisenburger has noted that during President Nichol's administration in 1899, a building program was launched which initiated many new construction projects. There are no records to indicate who was responsible for locating these buildings, roads, sidewalks, and utilities.[25] During the administration of later two presidents, Dr. Henry Waters and Dr. William Jardine, the physical form of the campus continued to evolve. However, no major decisions concerning campus development were made during this period of time. Longstreth, has noted that it was during 1920s, that a drive for order re-emerged. Initially, this effort was conducted on case by case basis. Again, in 1934, a special committee was appointed by President Francis Farrell to develop campus plan as part of a comprehensive twenty year program. This scheme was adopted in 1935 which gave

---

[24] **Ibid, p.37-38.**

[25] **Weisenburger, Ray, Campus Program: A Brief Historical Background, Kansas State University, Manhattan, 1973, p.20-22.**

official sanction to continuity as basic planning objective. In order to achieve this, the mass, materials, and placement of building were identified as a key vehicles. In Longstreth's words,

"A loose, open quadrangular pattern, softened by naturalistic plant arrangement remained the model. Coherence prevailed, adhering to a matrix rooted in nineteenth-century conventions. This conservatism marked campus development until the mid 1950s, and, despite obtrusive interventions thereafter, the setting still retains much of its historic character."[26]

Weisenburger has noted that in 1952, President James McCain appointed a landscape architecture firm to prepare a plan for the development of the campus. This was a well drawn, logical site plan. No report was made to accompany this plan and no procedures were established to implement it. In 1968, the office for University Planning was established, which for the first time created an organization responsible for the creation and evaluation of the planning proposals. Today this office, known as Architectural and Engineering services(A & E services) undertakes responsibility of developing all building projects on the campus from the very beginning till the end of the project. The university architect or his/her representative takes active part in developing conceptual programs and in completing program documents for the new building projects on the campus.

Another effort at developing campus masterplan was launched during 1988-89 and a comprehensive plan was developed. This plan proposed location of new facilities as well as potential growth direction of the existing facilities and made recommendation regarding the parking, landscaping the campus edge, maintaining building density, as well as emphasizing the pattern of building around the quadrangular open spaces.

---

[26] **Longstreth, Richard, W., From Farm to Campus-Planning, Politics, and Agriculture College Idea in Kansas, Manhattan, Kansas, 1980, p.44.**

However, this plan was not adopted officially as a result of political forces.

The status of the comprehensive campus development plan currently is not known. In other words, the development at KSU is not guided by any formal campus plan, though, a substantial amount of building development has taken place since the last official campus plan. However, certain issues like minimum relocation of utility lines, incorporation of limestone, compatibility with the existing quadrangle pattern...etc. are often emphasized during the planning and designing of a new facility. The decisions regarding the campus development are primarily influenced by the Campus Development Committee and the Central Administration Committee. A priority list(Capital Improvement List) of new building projects has been made which influences the campus development.

3.2 PROGRAMMING AND KSU

Since the establishment of the university planning office, the building process of any new facility project or an extension of an existing facility project undergoes a planning and programming process. The university here, plays a dual role as the owner(client owner) as well as the user(client user) and the primary programmer of the facility. In addition, the university being a multi-discipline educational institution, each of the facility projects has its unique background in terms of time, people involved, and the political environment. Therefore, each process of programming tends to differ from others in terms of the people involved and the emphasis laid on programmatic issues. Similarly the contents of the programs may differ, too. About eleven program documents of the buildings at KSU were randomly selected. Evidently, the review of these program documents revealed a typical pattern in structure, format, and contents of the program documents.

An attempt has been made in the following part of the chapter to identify this process in general. This is an outcome of the brief review of several program documents, as mentioned above, and the informal interviews with the programmers at the A & E services. It may be observed here that a building program document at KSU written primarily as a proposal to acquire funds from the legislature is also tendered to designers as a primary source of information for design development. The revisions made after the completion of the document are seldom documented in the program before rendering the same to the designers. The process is briefly outlined below and is described in the later part.

3.3 GENERAL PROGRAMMING PROCESS AT KSU

3.3.1 An Outline

Stage 1:Preprogramming

A. Recognition of need for a new facility or extension

- Approval of the Council of Deans

B. Formation of a Building Committee(within the college)

- The President's designee
- University Architect/designee and/or member/s of the A & E services
- Interested dean, faculty member/s of the dept., and/or experts

Stage 2:Programming

A. Constitute a Program document

- Identification of goals/needs/wishlist of the concerned dept. faculty/dean
- Gather/Analyze Information
- Translation/documentation of the needs into programmatic requirements by the members of A & E services
- Review by the committee members
- Revisions, as suggested and agreed upon by the committee members

B. Program Contents in general

- Introduction
- Objectives/Needs
- Detailed Description of Spaces
- Project Budget
- Environmental Guidelines

C. Submit request proposal of appropriation for Funds

- President's Office
- Board of Regents
- Governor's Office
- State Legislature

D. Appointment of Designers

E. Design and Construction

- Schematic Design Alternatives
- Revisions in Design
- Revisions in program requirements

3.3.2 THE PROCESS

Stage 1:Preprogramming

Typically, at KSU a building project commences with the recognition of the need for a new facility by a particular department dean and members following its approval by the Council of Deans. The decision regarding the new facilities to be constructed or extended is typically taken by the Council of Deans which makes the building priority list and also helps the president in administration.

The programming process of any facility initiates with the formation of a building committee which typically consists of the president's designee, member(s) of the A & E services -generally the university architect or his/her designee(s)- and experts of that field or the faculty member(s) or the dean interested in the new facility. The committee undertakes the responsibility of preparing the program for the facility which explains, justifies, and documents the requirements of the new facility. It also oversees the fulfillment of the programmatic needs in the design process of the facility.

Stage 2:Programming

The committee regularly schedules meetings during the planning of the project during which, the interested faculty member(s) provide the data in terms of their program, the nature of work they do and the new facility they desire for that work and their ideas and arguments about it. The member(s) of the A & E services translate this data into programmatic requirements. These requirements are presented in form of a program document which is revised until the committee members unanimously consent on them.

Program Contents in general

A typical program introduces the project and a rationale for it's need, and an explanation of its objectives and goals. Apart from this, the document discusses the management structure, operation and the staffing pattern. The proposed site and space is generally described in a page. The detail description of spaces form major part of the program document. The description is divided into utilization, location, personnel capacity, head room, materials for ceiling, walls, and floor, special equipment needed for that space, and ventilation as well as illumination requirements. A typical sample of the description is presented for reference in exhibit 4.6. The existing staffing pattern and its future projection are discussed briefly in some programs. The project budget is normally presented in a tabulated form. Environmental guidelines are typically attached at the later part of the program.

Request proposal for Appropriation of Funds

After the completion of the program document, university architect presents the program document to Board of Regents as the funds appropriation request. Following the approval for the Board of Regents, the document is presented to the Governor's office and the legislature for approval of funds.

Selection and Appointment of Designers

The funds appropriation process is followed by the stage when selection of designers for the new facility is done. The selection process involves inviting Request for Propos-

als(RFPs) from the design professionals interested in designing that particular facility. The selection committee made of the state architect, University Architect, and Regent's representative(Regent's director of facility) reviews and evaluates the proposals primarily in terms of the design firms experience and expertise in the field, and their ability to operate locally.

Design and Construction

The program document is given to the designers as a prime source of information to design the facility. However, it was realized from the informal interviews with the programmers at university planning office as well as from the brief review of several other documents that most of the program documents are written substantially ahead of time(atleast 2-3 years) before the selection of the architects. Therefore, these programs are usually revised during the design process in terms of physical areas and their requirements which tend to change during the time period between the programming and design stage. The aesthetical brief(i.e.design directives-goals), site analysis/selection process, and adjacencies of spaces showing a comprehensive relationship between them, which are conspicuously absent in most of the original program documents are decided during the discussions with the architects during the design process. However, these elements are not, often, formally documented and thus the programs are seldom updated.

4.

Analysis

This chapter reviews and analyzes the contents of the architectural program and its programming process for the Educational Communication Center(ECC). The first part of the chapter includes an analytical review of the programming process of the ECC. The process was identified through the informal interviews with the programmers at A & E services and the programmer of the ECC who was also involved in the design and construction process of the project.

The second part of the chapter describes and analyzes various sections of the program. Each section is first briefly described and analytically reviewed. Following the review, same section is evaluated in terms of the comprehensiveness of its contents and emphasis laid on the issues with regard to their significance in the design process. This analysis is done in the context of the discussion presented in the review of literature in an earlier chapter. This part also includes a detailed area analysis, carried out to understand the programmed spaces/areas and built spaces/areas and to identify the difference between the built spaces and the programmed spaces.

The later part of the chapter summarizes the findings of the analytical review and attempts to broadly identify the issues ignored or underemphasized during the programming process.

4.1 PROGRAMMING PROCESS OF THE ECC(Educational Communication Center)

4.1.1 An Outline of the Process

Stage 1:Preprogramming

A. Recognition of possibility of federal grant from Dept. of Education, 1985-86.

B. Appointment of adhoc building committee by provost, 1986.

- Representatives from Agricultural Extension, Eng. Extension
- Representatives from Journalism and Mass Communication
- Representatives from University Planning Office

Stage 2:Programming

A. Constitute the Program Document, 1987.

- Identification of needs - by the committee
- Input of information/requirements - by the committee members
- Agreement on all the requirements - by the committee members
- Gather/Analyze information - by the A & E Services
- Translate the information into programmatic requirements - by the A & E Services
- Compilation of programmatic requirements in form of program document -by the A & E Services

B. Program Document - Major Contents

- Introduction
- Current Facilities and Programs in Place at KSU
- Goals/Objectives/Needs
- Management Structure and Operations Staffing Pattern
- Detailed Description of Spaces
- Project Budget

C. Request for approval and appropriation for funds, 1987-88.

- President's Office
- Board of Regents
- Governor's Office
- State Legislature
- U.S. Dept. of Education

D. Appointment of the Director for the Facility, 1988.

- Revisions in the programmatic requirements
- Substantial Additions in terms of area

(Continued on next page)

E. Appointment of Designers, 1989.

- Preparation of schematic design alternatives
- Revisions in programmed spaces in terms of area

F. Design and Construction, 1989-90.

G. Occupancy, 1991.

4.1.2 THE PROCESS

Stage 1:Preprogramming

Unlike most other projects, the programming process of the Bob Dole Hall was unique in many ways. It initiated with the knowledge that there was a possibility of federal grant from the Department of Education. An elaborate and influential building committee was appointed to attract the federal funds to KSU. The committee was more of a political organization with people who had vested interest in the project of Educational Communication Center. The committee included representatives from Agricultural Extension, Engineering Extension, Journalism and Mass Communication, and representatives from Architectural and Engineering(A & E) services. In other words, the program was initially written as a campaign to attract the federal funds and convince the Kansas Board of Regents to approve the Communication Center at KSU rather than any other Regent's institution in Kansas which were equally interested in the federal grant.

Stage 2:Programming

The program was written typically as most other programs written at KSU. The committee members involved in the existing audio and video production facilities at KSU laid out the requirements in terms of areas and other specific needs of those areas. These requirements were considered, discussed and revised during the committee meetings and a joint list of these requirements was agreed upon by all the members of the committee and the members of the university planning office interpreted those requirements into the program document.

Program Contents

The program contents are discussed in detail under Review of the Program section later in this chapter. An outline of the major contents of the program is presented here.

- Introduction
- Current Facilities and Programs in Place at KSU
- Needs/Objectives/Goals
- Management Structure and Operations Staffing Pattern
- Detailed Description of Spaces
- Project Budget

It is realized here that the program exclusively addresses these explicit requirements which is rationalized and abstracted into specific *quantifiable* form. Evidently it does not represent the ***implicit*** requirements -i.e. ideological environment behind the building. This may represent, with respect to institutional architecture, the cultural expectations of the building, i.e. what it should look like and how it should be organized- in *qualitative* form.

Request for Appropriation of funds

Since the grant was coming from the federal agency, the proposal was to be submitted in the prescribed format as given by the agency. After obtaining approval from the President's office, the Board of Regents and the Governor's office the grant proposal was submitted to the Department of Education by the university architect. The proposal described the Communication Center. The proposal was approved by the Department of Education and the funding was later managed by the Department of Human Resources.

Selection and Appointment of the Director

The acquisition process for funds was followed by selection process for the Director of the proposed facility. The appointment of the Director was made on the basis of experience and expertise in operating and managing similar facilities. The program document was revised by the new director along with members of the university planning office in the context of his vision and perception regarding operating this facility and - technical and operational requirements of such facilities.

Selection and Appointment of Designers

The selection of the designers were made after the Director of the facility was appointed.

Design and Construction

This phase of the project became important in the process as several major decisions were taken or revised where the new director of the facility played a key role. This also influenced certain design decisions during the design process of the ECC.

A new site was selected on the northern part of the campus(west of Call hall and Mid Campus Avenue) from a list of several potential sites on campus which were analyzed by the programmers at A & E services. A formal documentation of this site analysis is not available today. The primary criteria for the selection was the minimal cost of site development and proximity to the existing audio-video facilities.

In addition, a key decision regarding the height of the building was taken and it was decided that the new building be a single storey structure. This was specifically decided

in order to cut down the administrative cost(of managing two floors) and considering the aspect of security in response to the sophisticated equipment that were to be housed in the building.

The interviews with the director revealed that a considerable amount of time and efforts were spent on developing the space adjacency relationship within the organization during the beginning of the design phase. It also revealed that, several technical difficulties, which arose during the construction phase, in terms of laying down certain electrical utilities were worked upon and solved consequently.

Other aspects like incorporation and continuation of limestone usage as well as reduction of heat and noise through design..etc were emphasized and communicated to the designers in order to make the new facility a part of the surrounding built environment of the campus.

4.2 REVIEW OF THE PROGRAM

The program document is divided into seven sections constituting about 90 pages. An outline of the table of contents of the program document is presented below.

Preface

I. Introduction
II. Current Facilities/Programs in Place
III. Needs/Objectives/Goals
IV. Management Structure and Operations Staffing Pattern
V. Proposed Site and Space
VI. Detailed Description of Spaces
VII. Project Budget

Appendix I **Budget:4-Year Plan/Staff, operating and equipment**
Appendix II **Equipment List/Budget Estimate**
Appendix III **Environmental Guidelines**

The preface explains the rationale for the project. It is emphasized here that satellite communication continues as the University's first priority and developing such facilities is a legitimate and necessary step in the continuing evolution of the land-grant mission assigned to the University by the state and the federal government. Further, the validity of placing such facility at Kansas State University is justified. It is stated that Kansas State University has been working in radio since 1901 and began conducting experiment in television as early as 1931 and thus is a pioneer in the field. The satellite delivery will enable the existing cooperative extension service -with its present offices and talent in place in all 105 Kansas counties- to deliver information on a timely and in-depth basis. In addition, combining the existing Regents Telenet System and satellite delivery will provide two-way conversation as well as high-quality transmission.

4.2.1 (I) Introduction

This section of the document describes history of Radio and Television experiments at the University and presents the Philosophy/Organization statement. It is stated here that,

"A properly conceived satellite communication facility is a tool that would allow Kansas State to build on that already highly-developed foundation. It is, after all, that experience and expertise, built up over generations, that is the hardest to achieve. Tools merely let that experience and expertise be put to the best use. And, increasingly, that best use demands rapid and statewide response."[27]

4.2.2 (II) Current Facilities

The section describes current audio/video production facilities and programs in place at the University in operation at several departments. Out of these five listed below, first three are primarily campus teaching tools while the later two are part of the University's outreach. They, together, form the primary user group for the proposed communication center. They are-

1. The Instructional Media Center, in the College of Education is a small component of the College of Education's audio-visual support service. It produces taped interviews with faculty or guests in education, documents public school activities, records important lectures and original productions.

2. The video production facility at the Department of Journalism and Mass Communication, in the college of Arts and Sciences is a teaching laboratory.

---

[27] **Kansas State University, Program for The Educational Communication Center, Kansas State University, Manhattan, Kansas, 1986, p.3**

3. The Audiovisual Resource television facility of the College of Veterinary Medicine produces teaching tapes in studio and on location. Live programs from throughout the complex and program via satellite can be viewed on the closed-circuit receivers.

4. The Extension Radio/TV/Film unit, operated by the Cooperative Extension Service through the College of Agriculture is directly involved in the land-grant mission of the university, producing programs and support material which is delivered to the Kansas population utilizing commercial stations, university radio station KKSU, and the KSU based network of extension offices and experiment stations throughout the state.

5. The facility operated jointly by the College of Engineering, the Athletic Department and University Relations. This is the best equipped facility. It produces educational tapes, sports programs, and announcements promoting the university and archival records.

Consequently, it is argued here that Kansas State has the experience and the expertise to use the proposed communication center in a highly productive manner. It simply lacks the equipment and facilities to take best advantage of its human resources.

Conclusively, this chapter describes the existing audio-video facilities at KSU. Though, it identifies the users of existing audio-video facilities as potential user groups of the proposed facility, it overlooks and fails to identify their satisfaction and dissatisfaction

with the present facilities. It also fails to identify the user groups that will actually get involved or are currently involved in the usage and operation of the facility. This is important as the proposed facility is multi-divisional and multi-user oriented. The department of Journalism and Mass communication(J & M), Agricultural Extension, and Regents telenet are currently the primary users of the facility. The communication processes, preferences, perceptions of these users and their philosophy may differ to some extent. Therefore, they ought to be regarded during the programming process and need to be represented in the program which can guide the designers in order to conceive a user responsive environment.

4.2.3 (III) Needs/Objectives/Goals

The needs, objectives, and goals as well as potential uses and users of the proposed center are descriptively discussed in this third section. It is suggested here that the current television facilities at the university are not providing the quality or quantity of programming and delivery needed. The center would provide full service television videotaping and live via satellite teleconferencing and the principal capability of the Center would be the production of video materials and the uplinking of video transmission via satellite. In addition, the Center would make use of the Regents Telenet and Telebridge telephone conferencing apparatus already in place at Kansas State to provide one way video/two way audio conferencing, classes and meeting and other programs. The two studio production facility would be augmented by a mobile production unit

capable of traveling to all parts of the state for on-location production work. The goals include making more efficient use of present capabilities, taking immediate advantage of technology in preparation of educational tapes and making a laboratory environment available to educate telecommunication specialists. It is stated that the proposed Educational Communication Center proposed would provide the following:[28]

-A high quality television production facility incorporating two studios, a mobile production unit, large-volume/high quality videotape duplication and editing capacity.

-A conferencing apparatus capable of arranging and administering links among diverse groups and individuals over wide geographic areas.

-A satellite uplink transmitter which would efficiently deliver information to all parts of the state and the world.

The section is described in an inducing manner. However, this section lacks a reasonable focus in terms of communicating needs, objectives, and goals. One may find a repetitious attempt to strengthen the need for the proposed facility in this section. The objectives, which should be the focused statements of intent, instead describe the potential use and users of the proposed facility. Objectives may describe the performance oriented factors which can help evaluate the design solution. Goals may be simply articulation of the project concepts which can express the significance of the project and guide the designer.

---

[28] **Ibid, p.13.**

4.2.4 (IV) Management Structure and Operations Staffing Pattern

The proposed management structure and operations staffing pattern suggested in this section has been presented below.

IV. MANAGEMENT STRUCTURE AND OPERATIONS STAFFING PATTERN:

Kansas State University's suggestion for management structure and operations of a Regents Telecommunications System are incorporated in the following organizational chart. The positions on the lower part of the chart represent the staff of the Educational Communications Center. The Council of Chief Academic Officers would be the policy board. Kansas State would be responsible for day-to-day operations, with the director of the unit reporting to a senior university officer. An Operations Advisory Committee composed of fourteen representatives of the Regents Institutions, the public and public agencies, would work with the director.

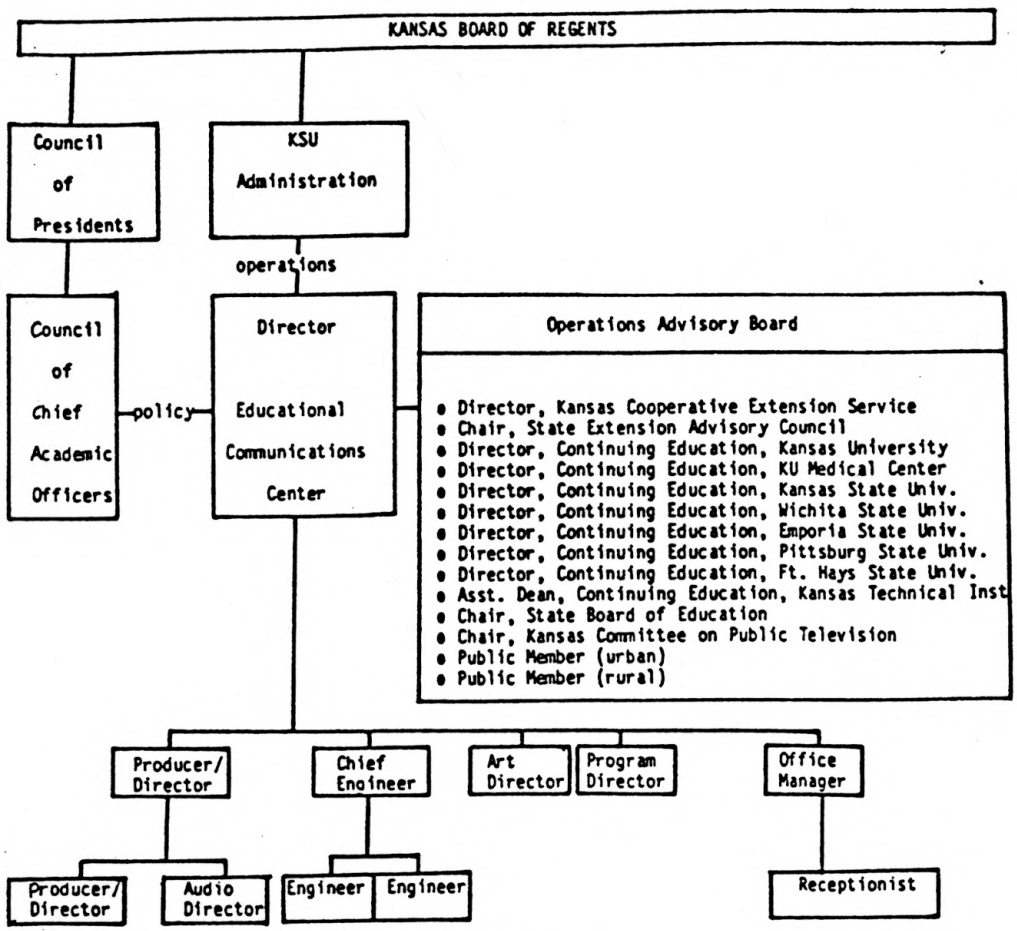


Exhibit 4.1 : Proposed Organizational Chart
Source: Program for the ECC(1986), p.15

The proposed management structure and operations staffing pattern is presented in this section of the document by means of a chart(see exhibit 4.1) seems very general in terms of the hierarchical staffing structure present today(see exhibit 4.2) and the different user groups involved in the operations of the facility. As discussed earlier, the Regents Telenet, the Agricultural Cooperative Extension, and the department of Journalism and Masscommunication - are primarily involved in the usage of the building today. Though, administratively all groups are operated by the communication center, each group is controlled by the respective department in terms of production. For example, production decisions are taken by the Dean of Agricultural extension. Similarly, the Director of Regents Telenet reports to the Provost regarding what classes to teach in the Telenet. Thus, the facility being a multi-user group oriented, the design of the building is intended to assign areas to each group which has its own control of access and thus a territorial space of its own. However, the control of access to different areas used by these groups, which is visible in the plan(see fig. 4.1) of the building is not comprehensible from the chart. At the same time the section fails to provide a staffing plan which can illustrate the conceived staffing pattern.

Notably, this section disregards information on certain important organizational qualities like ***access*** to and ***control*** of the various physical spaces, which can propose departmental territories perceived by the each user group involved as well as the organizational relationship between them. This is important as it forms a valuable source of input for the design phase in terms of determining ***organizational hierarchy*** and location relationship or ***adjacencies*** between different physical spaces.

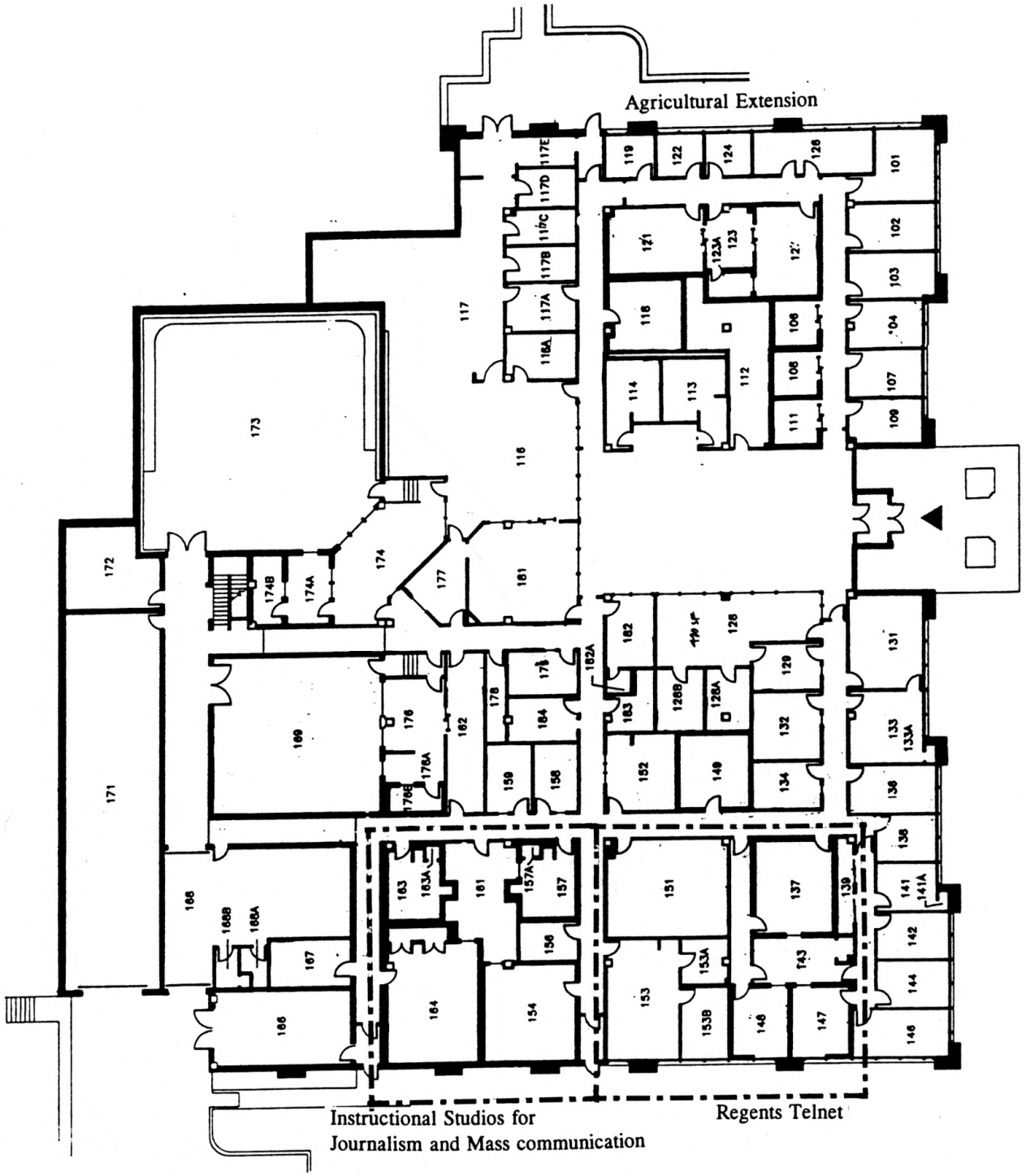


Fig. 4.1 Ground Floor Plan : The ECC
Source: KSU, Dept. of Facilities Planning

Kansas Regents

Educational Communications Center

Organizational Chart

August, 1993

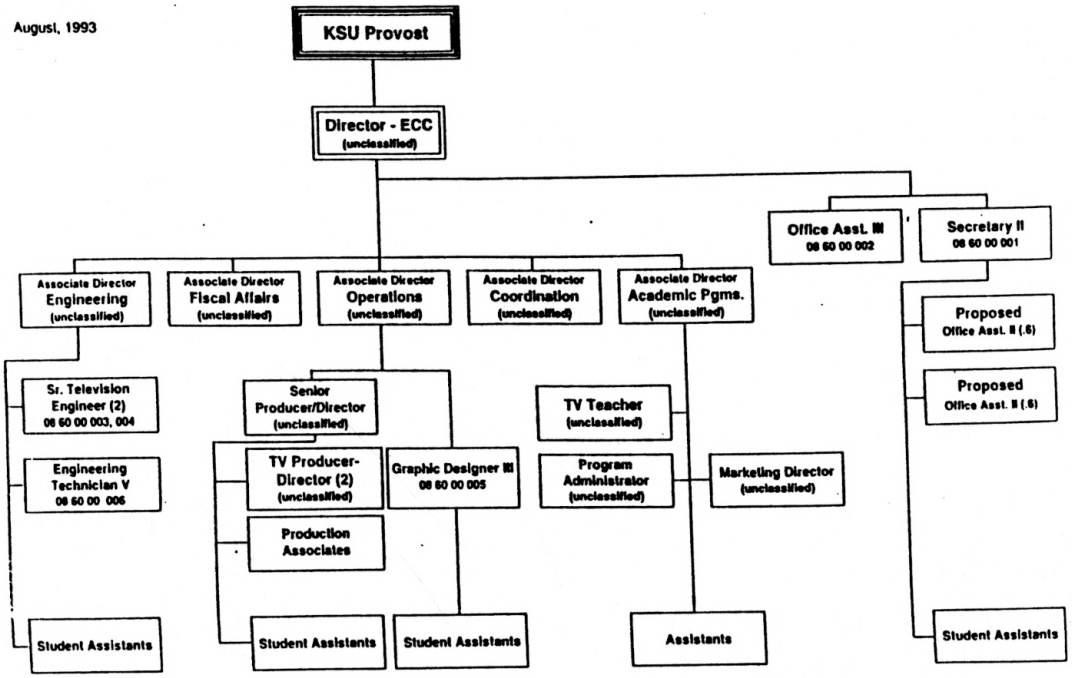


Exhibit 4.2 : Current Organizational Chart

Source: The Kansas Regents ECC, KSU

4.2.5 (V) Proposed Site and Space

This section of the document is divided in to three parts. The first part(A.) very briefly describes the proposed site in a paragraph. The second part(B.) describes special design considerations while the programmed spaces and their square footage are presented in the third part(C.). This section is presented on the following pages(see exhibit 4.3, 4.4, 4.5) in the similar form as in the document.

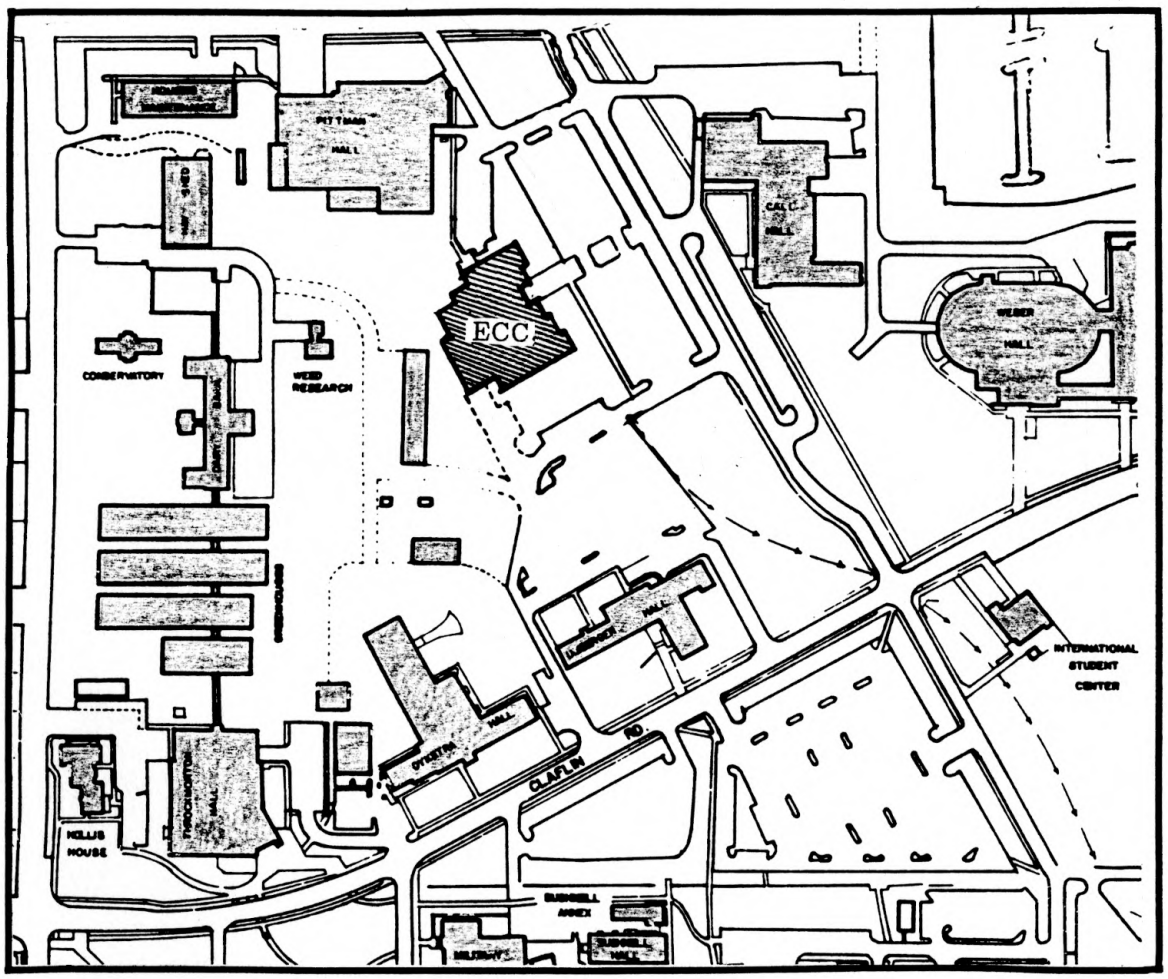


Fig. 4.2 Plan : The Actual Site and Surroundings
Source: Dept. of Facilities Planning, KSU

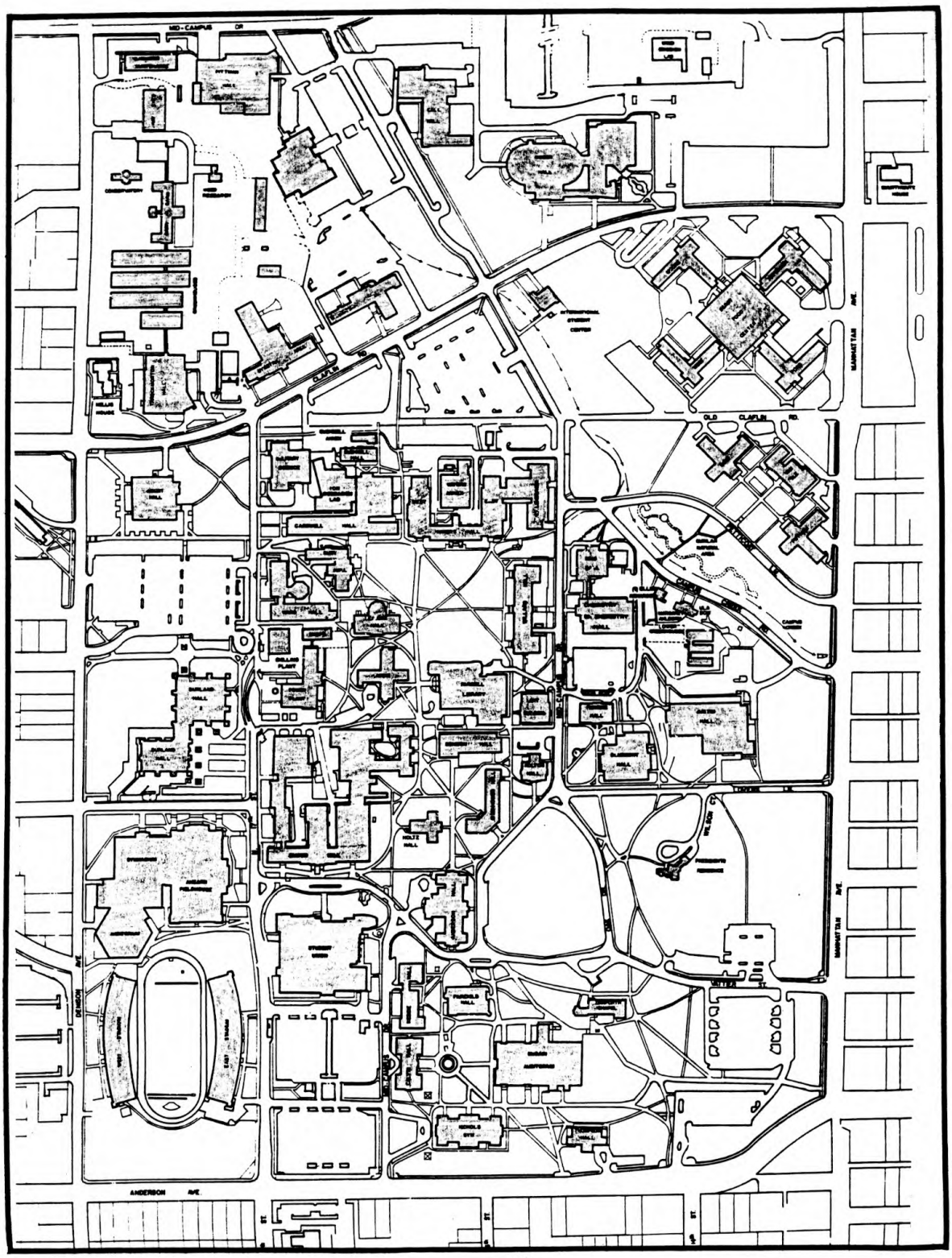


Fig. 4.3 Campus Plan
Source: Dept. of Facilities Planning, KSU

4.2.5 (V) A. Proposed Site

PROPOSED SITE AND SPACE:

A. PROPOSED SITE:

The Kansas State University Foundation has agreed to secure property in its Technipark adjoining the Kansas State University Campus. The Technipark, owned and operated by the Foundation and part of Manhattan's Enterprise Zone, is made available to companies involved in research, development, educational and professional activities.

The site is approximately one mile from the main campus.

Exhibit 4.3 Proposed Site
Source: Program for the ECC, KSU, p.16

The section(see exhibit 4.3), one of the most important parts of the program, excludes significant information regarding the site and its surrounding context and overlooks influence of this information on the design process. The brief description of the proposed site fails to provide rationale behind selection of the particular site and the analytical information regarding existing site conditions, utilities on and around the site, topographical characteristics, access as well as the a plan of the site, preferred orientation of the building in response to the surrounding context and the area for the potential facility expansion.

Though, the program proposed the site on technipark adjoining the campus, it was never used for economic and location reasons. The site actually used for the proposed building was decided from a list of various sites on the campus. A formal documentation of this site selection process is not available. However, the site was selected on the northern part of the campus across Mid-Campus Drive and on south east of Pittman Building(see

fig.4.3). The primary criteria for selection were the minimal cost of site development; minimum relocation and easy accessibility of utilities; and proximity to the existing audio video production facilities at College of Agriculture and Veterinary Medicine. The existing creek on the site was buried under two concrete tubes.

4.2.5 (V) B. Special Design Considerations

B. SPECIAL DESIGN CONSIDERATIONS:

1. All doors that are specified in sound isolated rooms should be constructed as a "Sound lock".

2. All windows that are specified in sound isolated rooms should be 3-pane windows (1 vertical glass and 2 panes at different angles).

3. A four (4) inch copper ground strap should be run through all enclosed cable trenches from all equipment racks and tied together in the Master Control Room. From there to an 8 foot outside ground rod.

4. All audio/video/intercom termination boxes should be grounded.

5. Air compressor to be isolated from all personnel areas due to noise.

6. The building should have a central vacuum system.

7. Areas with electronic equipment should be designed for minimum dust accumulation (positive ventilation system).

8. The open space under the computer flooring should have its own air flow and temperature control system. All 70" electronic equipment racks will physically connect with open sections of computer flooring and cool air will flow from the floor, thru the rack and back through the air handling system. Equipment consoles will also connect with the computer floor and will receive its positive pressure air flow.

9. The only room which will be 100% computer flooring is Master Control. The other rooms (where computer flooring is specified) will have a strip, or strips, (number and locations to be specified later) to be run the length of the room and feed into the next room. (width will be approximately 24" depending on final style selected).

10. Provisions should be made for a supplemental cooling system if the facility is to tied into a campus chilling system. The backup is necessary in the event of unscheduled cooling system interruptions.

11. The building's phone system should be divided into three separate systems - Administration, Engineering, teleconferencing.

12. The building should be totally RF shielded to prevent unwanted RF interference from outside sources (Chickenwire covering the entire outer structure and grounded).

13. Consideration should be made for future expansion of production rooms and administrative offices. Placement on the facility grounds should provide ample room for future additions.

Exhibit 4.4 Special Design Consideration
Source: Program for the ECC, KSU, p.16

The special design considerations(see exhibit 4.4) merely describe the technical design considerations for the building and ignore the architectural brief. The ***architectural brief*** could be defined as architectural considerations or "**design precepts**" which can describe the proposed building in ***qualitative*** terms of contextual environment, image, and character, as well as communicate with the designer as guiding design principles. These could simply be the statements regarding generalized architectural qualities and outstanding architectural elements existent on the campus that could provide larger context for the design process and could also be reinstated in the design as a means to achieve "**campus fit**". A notion of campus fit may be verbalized by providing an understanding of the existing buildings, their characteristics, and their outstanding architectural elements that best contribute to the campus character. An identification of these elements may provide a context in which the proposed building can become an integral part. For Example, some of the older buildings such as Holton Hall, Fairchild Hall, as well as Dickens Hall contribute to architectural richness of the KSU campus through craftsmanship, attention to details, and quality of construction. Similarly limestone has shaped the character of the early campus and is predominant wall material on the campus. The masonry walls render solidity, weight and sense of permanence and a high proportion of mass to openings.

However, the program lacks such considerations like existing campus order(open vs built spaces), layout and orientation of the buildings, size and location of open spaces, building heights, materials and details largely prevalent on the campus, as well as the pedestrian and vehicular circulation patterns. The information regarding shape of the site and

envisaged building structure, height or foot print of the building which can form a valuable set of instructions to design is absent in this section.

In other words, as noted earlier, it is perceived that the program exclusively addresses these *explicit* requirements which is rationalized and abstracted into a *quantifiable* form. Evidently, it does not represent the *implicit* or *qualitaitve* requirements -i.e. ideological environment behind the building which may represent, with respect to institutional architecture, the cultural expectations of the building, i.e. what it should look like and how it should be organized and what it should represent in symbolic terms.

Moreover, the section fails to respond to the need for climatic information including prevailing wind conditions, ranges of variation in the temperature as well as precipitation. These factors may govern the siting and orientation of the building and influence the performance of the facility with regard to energy efficiency. Energy efficiency may be considered as an issue of great significance for such facility with highly sophisticated functions and equipments.

The ECC building as built today is a single storey limestone structure which is designed to expand on the south side. An idea of smaller footprint and two storey structure was specifically discouraged by the Director to avoid cost of two potential administrative staff(for two floors) and the security measures required for a two storied building.

4.2.5 (V) C. Programmed Spaces with Sq.Ft. Guideline

The third part of this section of the program, presents the list of programmed spaces with their area. This list is presented on the next two pages(see exhibits 4.5a, 4.5b). In the following pages, a detailed study of programmed spaces against built spaces is done in terms of their areas.

c. PROGRAMMED SPACES WITH SQUARE FOOTAGE GUIDELINES:

		No.	Net Sq. Ft. Each	Total
1.	**Communications Center**			
a.	**Administrative offices and support areas**			
1)	Director's Office	1	225	225
2)	Conference Room/Viewing Room	1	336	336
3)	Reception Area	1	450	450
4)	Office Manager's Office	1	225	225
5)	Mail Room/Lounge	1	225	225
6)	Photocopy Room	1	160	160
7)	Student's Work Area	1	400	400
8)	Senior Producer/Director Office	1	150	150
9)	Producer/Director Offices	3	150	450
10)	Art Director Office	1	150	150
11)	Chief Engineer Office	1	150	150
12)	Teleconference Coord. Office	1	150	150
b.	**Production areas**			
1)	Production Studio A	1	2,400	2,400
2)	TV Director Control Rooms A,B	2	225	450
3)	Audio Control Rooms A,B	2	100	200
4)	Audio Announce Booth	1	24	24
5)	Production Studio B	1	1,200	1,200
6)	Master Control	1	1,200	1,200
7)	Post Production Editing Center	1	150	150
8)	Editing Bays 1,2,3,	3	100	300
9)	Video Tape Duplication Room	1	280	280
c.	**Engineering Support**			
1)	Engineering Workshop	1	600	600
2)	Service Area behind TV Director Control Room A,B	2	70	140
d.	**Production Support areas**			
1)	Art/Graphics Room	1	400	400
2)	Computer Graphics Room	1	100	100
3)	Art/Graphics Storage Room	1	80	80
4)	Prop Storage and Construction	1	900	900
5)	Portable Equipment Storage	1	450	450
6)	Tape/Film Storage/Archives	1	600	600
7)	General Storage	1	300	300
8)	Garage for Production Truck	1	800	800
			TOTAL	13,645

Exhibit 4.5a Programmed Spaces with Sq.Ft. Guideline
Source: Program for the ECC, KSU, p.18

PROGRAMMED SPACES (CONTINUED)

		No.	Net Sq. Ft. Each	Total
2. Extension				
a.	Office and support areas			
1)	Producer/Section Head Office	1	150	150
2)	Producer Offices #1,2	2	150	300
3)	Engineer Work Area	1	120	120
b.	Production areas			
1)	Production/Edit Room	1	300	300
2)	Audio Production Room	1	48	48
3)	Editing Bay #4	1	100	100
c.	Storage areas			
1)	Tape/Equipment Storage	1	300	300
			TOTAL	1,318
3. University Relations				
a.	Office and Support Areas			
1)	Production Room/Office	1	200	200
			TOTAL	200
4. Building Support, Maintenance				
1)	Mechanical Room	1	250	250
2)	Telephone Terminal Room	1	80	80
3)	Custodial Room	1	150	150
4)	Rest Rooms	2	300	600
			TOTAL	1,080
5. TOTAL NET SQUARE FEET.....				16,243

Exhibit 4.5b Programmed Spaces with Sq.Ft. Guidelines
Source: Program for the ECC, KSU, p.19

The programmed area list is primarily divided in to four major divisions- Communication center, Extension(Agricultural Extension), University Relations, and Building Support and Maintenance areas. Each of these major areas is subdivided into various programmed spaces.

A detail area analysis in terms of difference in programmed spaces and built spaces has been done on the following pages. This is attempted, in order to identify the increase, in both, net area as well as gross area.

AREA ANALYSIS : Programmed Spaces Vs Major Additions/New Spaces

1. Communication Center

a. Administrative Offices and Support Areas

Programmed Space	Programmed Area(Sq.Ft.)	Built Area(Sq.Ft.)	Increase/ Decrease
1. Director's Office	1(225)=225	226	1
2. Conference Room/ Viewing Room	1(336)=336	288	(-48)
3. Reception Area	1(450)=450	430	(-20)
4. Office Manager's Office	1(225)=225	131	(-94)
5. Mail Room/Lounge	1(225)=225	122	(-103)
6. Photocopy Room	1(160)=160	0	(-160)
7. Student's Work Area	1(400)=400	476	76
8. Senior Producer/ Director's Office	1(150)=150	163	13
9. Producer/Director's Office	3(150)=450	438	(-12)
10. Art Director's Office	1(150)=150	139	(-11)
11. Chief Engineer's Office	1(150)=150	128	(-22)
12. Teleconference Coord. Office	1(150)=150	175	25
	3071	2716	(-355)

New Spaces

1. Systems Analyst Office		192	192
2. Program Director		133	133
3. Fan Room		211	211
4. Lounge		222	222
5. Design Specialist		128	128
6. Office		168	168
7. Storage		115	115
		1169	1169
TOTAL	**3071**	**3885**	**814**

b. Production Areas

Programmed Space	Programmed Area(Sq.Ft.)	Built Area(Sq.Ft.)	Increase/ Decrease
1. Production Studio A	1(2400)=2400	2391	(-9)
2. TV Director Control Rooms A, B	2(225)=450	552	102
3. Audio Control Rooms A, B	2(100)=200	170	(-30)
4. Audio Announce Booth	1(24)=24	0	(-24)
5. Production Studio B	1(1200)=1200	1090	(-110)
6. Master Control	1(1200)=1200	1289	89
7. Post Production Editing Center	1(150)=150	444	294
8. Editing Bays 1,2,3	3(100)=30	258	(-42)
9. Video Tape Duplication Room	1(280)=280	129	(-151)
	6204	6323	119

New Spaces

1. Voice Booth A,B		136	136
		136	136
TOTAL	**6204**	**6459**	**255**

c. Engineering Support

1. Engineering Workshop	1(600)=600	1064	464
2. Service Area behind TV Director Control Room A,B	2(70)=140	0	(-140)
	740	1064	324

New Spaces

1. Oper. Director		129	129
2. Eng. Library		101	101
		230	230
TOTAL	**740**	**1294**	**554**

d. Production Support Areas

Programmed Space	Programmed Area(Sq.Ft.)	Built Area(Sq.Ft.)	Increase/ Decrease
1. Art/Graphics Room	1(400)=400	365	(-35)
2. Computer Graphics Room	1(100)=100	147	47
3. Art/Graphics Storage Room	1(80)=80	85	5
4. Prop./Construction Storage	1(900)=900	904	4
5. Portable Equip. Storage	1(450)=450	91	(-359)
6. Tape/Film Storage/ Archives	1(600)=600	293	(-307)
7. General Storage	1(300)=300	317	17
8. Garage for Production Truck	1(800)=800	1486	686
	3630	3688	58
New Spaces			
1. Electrical Room		74	74
2. Green Room and Toilet		164	164
3. Equipment Check		214	214
On First Floor			
4. Observation Gallery		314	314
5. Utility Space 1		150	150
6. Utility Space 2		316	316
7. Dimmer Rack		23	23
8. Mech. Equip. Room		130	130
		1385	1385
TOTAL	**3630**	**5073**	**1443**

2. Extension

a. Office and Support Areas

Programmed Space	Programmed Area(Sq.Ft.)	Built Area(Sq.Ft.)	Increase/ Decrease
1. Producer/Section Head Office	1(150)=150	87	(-63)
2. Producer Offices #1,2	2(150)=300	164	(-136)
3. Engineer Work Area	1(120)=120	215	95
	570	466	(-104)
TOTAL	**570**	**466**	**(-104)**

b. Production Areas

1. Production/Edit Room	1(300)=300	242	(-58)
2. Audio Production Room	1(48)=48	0	(-48)
3. Editing Bay #4	1(100)=100	243	143
	448	485	37

New Spaces

1. Terminal Equipment Room		117	117
2. Voice Booth		45	45
3. Fan Room		159	159
		726	726
TOTAL	**448**	**1211**	**763**

c. Storage Areas

1. Tape/Equipment Storage	1(300)=300	101	(-199)
	300	101	(-199)
TOTAL	**300**	**101**	**(-199)**

3. University Relations

a. Office and Support Areas

Programmed Space	Programmed Area(Sq.Ft.)	Built Area(Sq.Ft.)	Increase/ Decrease
1. Production Room/ Office	1(200)=200	206	6
	200	206	6
TOTAL	**200**	**206**	**6**

4. Building Support, Maintenance

Programmed Space	Programmed Area(Sq.Ft.)	Built Area(Sq.Ft.)	Increase/ Decrease
1. Mechanical Equip. Room	1(250)=250	412	162
2. Telephone Terminal Room	1(80)=80	95	15
3. Custodial Room	1(150)=150	93	(-57)
4. Rest Rooms	2(300)=600	377	(-223)
	1080	977	(-103)
New Spaces			
1. Electrical Room		160	160
		160	160
TOTAL	**1080**	**1137**	**57**

5. Major Additions(Wings)

a. Regents Network

New Spaces	Built Area(Sq.Ft.)	Increase/ Decrease
1. Director's Office	193	193
2. Office(Staff)	119	119
3. Assistant's Office	136	136
4. Facilitator's Office	144	144
5. Office Manager's Office	144	144
6. Teleconference Room-1	160	160
7. Teleconference Room-2	160	160
8. Control/Storage	171	171
9. Classroom	294	294
10. Storage	50	50
	1571	1571
TOTAL	**1571**	**1571**

b. Instructional Studios for School of Journalism and Mass Communication

New Spaces		
1. Video Conference Room	363	363
2. Control Room	299	299
3. Classroom Studio	452	452
4. Instructor Driven Studio/Storage-1	152	152
5. Instructor Driven Studio/Storage-2	117	117
6. Faculty Office 1	123	123
7. Faculty Office 2	129	129
	1635	1635
TOTAL	**1635**	**1635**

Summary : Programmed Areas vs Built Areas

Wing	Total Programmed Area(Sq.Ft.)	Total Built Area(Sq.Ft)	Total Increase/ Decrease	
1. Communication Ctr.				
a. Administrative Offices and Support Areas	3071	3885	814	[+26.50%]
b. Production Areas	6204	6459	255	[+04.11%]
c. Engineering Support	740	1294	554	[+74.86%]
d. Production Support Areas	3630	5073	1443	[+39.75%]
	13645	16711	3066	[+22.47%]
2. Extension				
a. Office and Support Areas	570	466	(-104)	[-18.24%]
b. Production Areas	448	1211	763	[+170.31%]
c. Storage Areas	300	101	(-199)	[-66.33%]
	1318	1778	460	[+34.90%]
3. University Relation				
a. Office and Support Areas	200	206	6	[+3%]
4. Building Support and Maintenance	1080	977	(-103)	[-9.53%]
5. Major Addition				
a. Regents Telenet		1571	1571	
b. Instructional Studios		1635	1635	
		3206	3206	
TOTAL	**16243**	**22878**	**6635**	**[+40.84%]**

Total Programmed Area(Net): 16243.00 Sq.Ft.
Total Built Area(Net): 22878.00 Sq.Ft.
Total Built Area(Gross): 32923.00 Sq.Ft.

It is evident from the above summary that there was about 40% increase in the net built area compared to the net programmed area. As shown in the summary, out of this 40% increase about half(48%) of the increase amounted from the additions of new wings for Regents Telenet and instructional spaces for the Department of Journalism and Mass communication(J & M). In addition, the built area of the Communication Center Wing increased by around 22% where major contributors in increase were additions in engineering support areas, production support areas as well as administrative support areas. Similarly in Agricultural Extension wing, the area was increased by about 35% mainly due to additions in production support areas.

Conclusively, the major increases in the area were due to the additions of Regents Telenet and Instructional studios for the Dept. of J & M, which were added later to the ECC after the funds were acquired. These additions were primarily the result of political forces involved in the programming process. As mentioned above, other substantial increase in the built area resulted with several new administrative and support spaces added to the communication center wing. This increase was influenced by the vision of the new Director based on perceptions and operational expertise in administering such facilities.

It may be difficult to relate the list of programmed spaces to the existing plan of the building as the relationships between the programmed spaces with regard to their location has changed in the design. The design evidently reflects the departmentalized institutional

structure of the ECC. However, this structure in terms of physical organization of spaces, is not reflected from the documented list of programmed spaces. In other words, organizational order of programmed spaces does not correspond with the building design. **This is important in order to effectively instruct the design form determined by the physical relationship between the spaces.**

4.2.6 (VI) Detailed Description of Spaces

This section describes each programmed space in detail according to its specific functional requirements. An example of these categorized requirements is presented below(see exhibit 4.6).

VI. DETAILED DESCRIPTION OF SPACES:

A. COMMUNICATIONS CENTER:

1. ADMINISTRATIVE OFFICES AND SUPPORT AREAS:

a. Director's Office: (225 Sq. Ft.)

Utilization: Private office for Director, suitable for private counseling with clients, staff members and students, reception of guests, programming planning, creative thought and study.

Location Relationship: primary access through secretarial/reception office.

Personnel Capacity: director and up to 5 guests.

Head room: 9'-0" minimum

Ceiling: non-flammable acoustical tile.

Walls: installed from floor to ceiling and finished in good taste; with resilient base cove molding.

Floor: All-purpose carpet floor covering.

Built-in or special equipment:

1) Telephone with two jacks available on opposite walls.

2) Wardrobe closet, semi-concealed, wall installed, similar to "Vogel Peterson" Model CW-5.

3) Shelves; adjustable, to start 4'-0" above the floor and end 7'-0" above the floor; installed adjacent to the wardrobe closet and extend for entire length of wall.

4) Television RF and Baseband Video/Audio/Headset Intercom outlet. 1 1/2" Conduit for outlet originates from Master Control Room. Outlet plate will be custom designed to accommodate jacks.

5) Computer terminal outlet to connect with central computer in Office Manager Office.

Electrical Convenience Outlets: duplex 120V, 20 amp, two on each wall.

Heating, cooling and ventilation: maintain average dry bulb temperature of 65-72 degrees year around with adequate ventilation.

Illumination: Recessed in ceiling fluorescent lighting evenly distributed at 70 plus or minus 10 foot candles three feet from floor.

Exhibit 4.6 Detail Description of Spaces

Source: Program for the ECC, KSU, p.20

As seen above, this section describes each space with reasonable amount of detail and special requirements. However, the description does not emphasize important design influencing factors like activities, perceptions and preferences of the users. At the same time, it does not address the requirements in terms of comfort, access, control, privacy, security and potential growth of the spaces. The section primarily lacks adequate emphasis on adjacency diagrams which can determine comprehensive relationship of spaces with regard to their location as well as the departmental linkages. It does not reveal the major circulation patterns(like flow charts) within building which can also define the relationship between the spaces and areas. This is absolutely essential as the organizational structure of the facility is highly departmentalized. Moreover, it is evident from the design of the building that the areas within, require control of access in terms of privacy and safety envisaged for them. Evidently, very little information or criteria is established for aggregated spaces in terms of interior zoning, access to the various spaces as well as privacy and safety requirements for the spaces. The absence of adjacency diagrams or other such information presenting physical relationship between spaces and the circulation pattern within them was also evident in most of the other program documents briefly reviewed.

In addition, the section prominently disregards performance requirements or criteria for the individual spaces. Considering nature of the varied functions of the facility, this is specially important because, description on conceived environment and activity behavior settings may form a constructive guideline for the designers and increase productivity of

the users. This is as important as actual user input in the programming process which is absent in the program. Apparently, the process completely ignores the value of constituent(user) input in the process to be effective in terms of functional efficiency and user satisfaction.

VII. Project Budget

The project budget is divided in three parts under Building Budget, Staff/Operating/Equipment Budget and Total Project Budget in this seventh section. This is presented below(see exhibit 4.7) for reference. In addition, the concluding pages of the document presents various appendices which provides supplementary information regarding projected 4-year staff, operating and equipment budget, equipment list and its budget. Some examples of environmental guidelines are presented in exhibit 4.8.

VII. PROJECT BUDGET:

A. BUILDING BUDGET:

The total building budget, calculated in 1986 dollars, for the Educational Communications Center as programmed is $3,346,230. The estimated expenditures, from which this budget is based, are as follows.

ESTIMATED COST OTHER THAN CONSTRUCTION:

Architect Fee	$180,642
Printing, Travel, etc	7,000
Surveys/Soil Invest	9,000
Division of Architectural Services Fee	28,753
Project Contingency (5%)	143,765
Landscape Development	50,000
Buried 12 Fiber Cable Extension	52,000
Initial Building/Moveable Equipment	153,770
TOTAL	$624,930

ESTIMATED COST OF CONSTRUCTION:

Programmed Net Sq. Ft.	16,243
Space Contingency & Gross Factor	1.50
Gross Sq. Ft.	24,365
24,365 Gross Sq. Ft. at $118.00/gross sq. ft.	$2,875,070

TOTAL BUILDING BUDGET $3,500,000

B. STAFF/OPERATING/EQUIPMENT BUDGET:

Total Staff/Operating/Equipment Budget Over A 4-Year Period, Calculated from July, 1987, is Found in Appendix 1.

Total Staff/Operating/Equipment Budget $5,121,546

C. TOTAL PROJECT BUDGET (A & B) $8,621,546

Exhibit 4.7 Project Budget
Source: Program for the ECC, KSU, p.70

The environmental guidelines presented in appendix III of this section describe the following:

- General Guidelines,
- Landuse Guidelines,
- Circulation Guidelines,
- Landscape Guidelines,
- Service Guidelines,
- Guidelines for Construction, Alteration, and Preservation,
- Sound Guidelines,
- University Housing Guidelines, and
- Guidelines for Athletic Facilities.

These guidelines, though, may be useful to some extent, are irrelevant and radically fail to connect to the project of the ECC in terms of their content to a great extent. Attaching these environemental typically, in all programs appears to be the standard practise at KSU. However, these guidelines are broadly developed and thus are too general with regard to the substance as far as the program for ECC is concerned. As an example, Service Guidelines and Sound Guidelines are presented here.

Other important aspects which could have been included in this section, are the aspects related to growth and change of the facility in terms of functional needs and staffing pattern. This may be significant as there is often a time gap of several years between the programming stage and design stage at KSU. During this period the functional requirements of the facility often expand due to the institutional nature of the KSU. Similarly, staffing requirements also tend to change. This growth related changes influence the programmatic requirements and thus also the design. Therefore, an anticipation of such changes in the program may reduce the efforts to update the program

during the design stage.

400 SERVICE GUIDELINES

401 Water and sewer lines, heat and power supply, and communication systems shall be designed to permit growth, flexibility in planning, allow for expansion and change of elements, and be accessible for maintenance and repair without disrupting the functioning or appearance of the campus.

402 Service areas and service structures shall be well designed, landscaped, and maintained to avoid unsightly elements.

403 Accurate and accessible drawings shall be maintained to indicate the location of service lines.

600 SOUND GUIDELINES

601 Machinery, equipment, and vehicular noises shall be minimized and shall not interfere with the exchange of knowledge or the quality of the aural environment.

602 Positive features of the aural environment, such as the bells and carillion of Anderson, are worthy of maintenance.

Exhibit 4.8 Example: Environmental Guidelines
Source: Program for the ECC, KSU, p.88

4.3 SUMMARY : PROCESS AND PROGRAM

As noted earlier the program was drafted in response to a unique situation and was an effort to acquire federal grant in order to establish a comprehensive and state-of-the-art audio and video production facility at KSU. Though, it was revised by the Director and the Designers later, the original program including the budget, which was composed almost four years before the design and construction began, remained and was used as a primary source of information. The university does not have any formal documentation available of the revised program except the revised functional specification list called "Summary of Space Requirements and Functional Specifications" prepared by the Designers. This list resembles the Detailed Description of Spaces provided in the sixth section of the original program to a great extent except in description of additional spaces and detail functional specifications.

During the study, the programming process appeared to be an early one which started substantially ahead in time before the design phase and exclusively focussed on development of the functional requirements. It neglected or underemphasized some central considerations such as **actual user input, development of design precepts, expert assistance, environment-behavior relationships and documentation of changes** that occurred between the programming phase and design phase. In addition, it overlooked the likelihood of changes, that may take place after the appointment of the Director, which is generally after the program completion.

The program, as a result, emerged as an ***exclusive*** functional program which primarily described the functional space list in *quantifiable* terms and overlooked the inclusion of *architectural brief* which is equally valuable for the design process in terms of information. As discussed earlier, the *architectural brief* could simply develop important **design precepts** and depict them in *qualitative* terms. These design precepts can provide larger context for the design process and influence it to achieve some inherent architectural aesthetic qualities of the campus. The program conspicuously disregarded the inclusion of such larger contextual campus qualities or **design precepts** like ***Campus Fit***, i.e description of the outstanding architectural elements of the campus; ***Campus Order***, i.e. building density, open vs built areas; ***Outdoor Spaces***, i.e. size and location of open spaces; ***Elements of Character***, i.e building heights, materials and details largely prevalent on the campus; and ***Circulation Patterns***, i.e. existing pedestrian as well as vehicular circulation patterns on the campus. Similarly, it excluded some critical issues such as ***Site Order***, i.e. envisaged building height, layout, orientation, and potential growth; and ***Site Analysis***, i.e. site selection and evaluation criteria.

In the absence of a formal campus masterplan, these considerations in form of **design precepts** may effectively guide the design process. This may determine a building design which exhibits and supports the notion of ***campus fit*** and becomes an integral part of the larger campus environment.

The next chapter attempts to identify and synthesize some vital issues emerging as a result of this study. It discusses these contextual issues and their implication on the programming as well as design phase.

5.

Synthesis

The program for the ECC, eminently, surfaced more as a limited functional program than a comprehensive architectural program during the review and analysis. Though, the program seemed to satisfy the functional and technical requirements to a great extent, it underemphasized certain key design issues and did not address many factors which are equally important and valuable source of information for designers as are functional space requirements. The *inclusiveness* of the program in terms of both, *functional* and *architectural brief*, is especially important when the designers involvement in the project starts with the design and ends with completion of the project.

This study also found that the same program is used by several committees and departments for necessary approvals before the designers. Thus, it is evident that a program in this case, must be responsive to wide variety of conditions(prevailing between predesign and post construction phases), participants and authorities apart from being complete in terms of design instructions. Thus, it is essential that it is ***inclusive*** in terms of information to a greatest extent to be useful during funds approval phase, design phase, construction phase, and also during the building occupancy phase.

This chapter attempts to identify the issues and factors that emerged during the study which were not emphasized during the process or are not addressed in the program but have implications on the design and design process. These issues and factors are primarily discussed in the context of the study of the program for the ECC, however, the same discussion is to almost all programs briefly reviewed in the beginning of the study.

5.1 FINDINGS AND IMPLICATIONS : THE PROCESS

5.1.1 Scope of the Process

The programs written at KSU so far are typically an early programming efforts, required for budget request purpose which often amounts to little more than a space list. This is because, the development of programs at KSU is governed by a definable hierarchy of committees at the state level as well as the university level. The development of a program falls within the scope of a "need based" legislation which requires a program document. These program documents are generally composed following the Facilities Program Outline formulated by the Board of Regents. In other words, the program contents typically are governed by the minimum necessary to acquire finances.

However, being an early effort, the process often fails to acknowledge the relevance and appropriateness of architectural program(or design precepts) and commits itself to functional program only. Consequently, the scope of the present process is limited to information organization and management of funds to a greater extent. As a result of this early and rather incomplete process, the program remains as a functional program and overlooks the development of architectural intent or goals of the project and documentation of these goals in the program.

It would also be important to note here that very little or no post construction efforts are made to assess the impact of the project and thereby evaluate the effectiveness of the program or the process. As a result of this, the same process has been followed till now. The impact of this limited approach to programming has been reflected in the programs written so far and is evident in the program for the ECC.

5.1.2 Input from Analogous Situations

It is recognized during this study that the present process negates or underemphasizes aspects of facilities programming that hold the key to achieving environmental quality and satisfaction. As stated by Sanoff,

"Perhaps the most important facet of facility programming is the knowledge that existing or analogous situations are a major source of input into subsequent design phases. Learning about different ways in which the environment is used is an effective tool for gathering information and developing helpful insights into a building's performance."[29]

The current programming approach at KSU typically furnishes programmatic information in a similar manner in spite of the diversity of the project types. One may find a visible pattern with regard to nature of information in the production of the program documents. As an example of the result, the program document for the ECC fails to include any precedental information, which can become extremely helpful in understanding the sophisticated functional nature of the facility and may also become useful in operation of the facility. Inputs from analogous situations from other built facilities of similar nature may provide valuable insight into operation of such facility. Absence of precedental information is evident in other programs, too.

An inclusion of visits and studies of similar facilities during the process by simple means of "**walkthroughs**" may give an opportunity to observe built environment in action. This will help understand the human activity patterns, operational problems as well as

---

[29] **Sanoff, Henry, Facility Programming, in Advances in Environment, Behavior, and Design, by Zube, Ervin H. et.al(eds.), Vol.2, Plenum Press, New York, 1989, p.256.**

functional needs better, and may contribute to a finer understanding of potentials problems. Such precedental studies may be used as a way of learning about the nature of the envisaged facility which may offer an insight into systematic evaluation of how a problem has already been solved. The prime concern here should be to become informed of the problems as well as possible solutions and inform the designer of the potential aspects of the problem to be dealt with. This can expedite the programming process and can reinforce the programmatic requirements which can limit changes during the design phase.

5.1.3 User Participation

The programming of the ECC reveal a lack of documented and systematic study of the users of existing audio/video facilities at KSU and their satisfaction or dissatisfaction about the facility in response to their activity patterns. In the case of ECC, occupants-operators(faculty, staff...etc), and managers may be identified as prime users who have direct and constant relationship with the facility. The visitors of the facility or the students(for Journalism & Mass communication) may be classified as "related publics" as suggested by Palmer[30], who have less direct and usually occasional involvement with the facility which in most cases needs to be addressed apart from the prime users in order to make the programs(and thus the buildings) user oriented and user sensitive.

However, during the study it was evident that very few users who are currently involved in the operation and usage of the facility were actually involved in the programming process. Though, the members of the building committee are familiar with the operation of the facility to be programmed and built, they are often not the constituent users. In other words, the client(client-owner) who are involved in the process often are not the sole users(client-user) of the building. Significantly, this approach to programming is client-owner centered approach which fails to recognize the importance of client-user participation. This limited outlook is reflected in the absence of any user oriented information in the program written for the ECC and other programs briefly reviewed. White, has noted that most of the respondents of the interviews have stressed the

---

[30] **Palmer, Mickey, The Architects Guide to Facility Programming, American Institute of Architects, Washington D.C., 1981, p.42.**

importance of user involvement and participation in the process.[31] According to Farbstein, the key to user oriented programming is the most detailed knowledge about and understanding of the people who will use the facility.[32] Though, it would be difficult to represent and satisfy the personalized needs of each user, it is essential that the decisions pertaining to needs or preferences are supported by the strongest constituencies in order to involve those who impact these decisions. Here user needs pertain to the aspects of attitude and behavior which are, often related to efficiency and effectiveness of the usage of the facility. As stated by Palmer,

"The objective of investigating user needs is to obtain, firsthand, a realistic accounting of such things as how operations are performed; how people interact with each other and their surroundings; what effects lighting conditions, noise and comfort have on productivity; what equipment and furnishing are necessary; how organizational and communications structures affects space allocation and arrangement; how environment influences perception and how perception influences environment; what user preferences can be accommodated to achieve efficiency and effectiveness, and so forth."[33]

The emphasis laid on such issues during the process and incorporation of the results in the program may extend better understanding of the user community as well as their perceptions to the designers. Informal interviews, observation study, questionnaires...etc. are some of the standard practices which may be adopted. A direct involvement of the source -the users- may generate the programs which reflect real needs of the facility use.

---

[31] **White, E.T., in Interviews with Architects about Facility Programming, School of Architecture, Florida A&M University, Tallahassee, 1982, p.37.**

[32] **Farbstein J.D., in Programming the Built Environment, by Preiser, W.F.E.,(ed.), Van Nostrand Reinhold Co., New York, 1985, p.15.**

[33] **Palmer, Mickey, The Architect's Guide to Facility Programming, American Institute of Architects, Washington D.C., 1981, p.18.**

5.1.4 Expert Knowledge

Architectural programming functions within a context and requires knowledge of the whole facility, its development process and the context within which it occurs. As discussed above, the program was substantially revised by the Director after his appointment according to his perception and knowledge about operating such facilities. Similarly, various technical problems that were faced during the construction process, demanded time and expertise to resolve them.

It is evident from the study of the programming process of the ECC that, it fundamentally disregards inclusion of eliciting expert knowledge for a sophisticated facility like ECC during the early programming stage. Considering the sophisticated function and nature of the facility, it may be more significant to seek expertise and integrate it in the programming process at the outset to reduce interruption during design and construction. which require research in order to solve technical or functional problems.

Since, a director is typically hired after the completion of the program at KSU, an outside expert or consultant may be hired early in the programming process.

5.1.5 Involvement of Designers

The people involved in the programming process as well as writing the program document at KSU are generally the representatives of planning office and educational departments interested and involved in the project.

The role of the designers, here, is limited to the design of the building. Since the programming team is different from the designing team, lots of unwritten information tend to get lost. In addition, typically at KSU there is a considerable amount of time delay between programming and design. This may create a need to formally reprogram or update the original program which if done, is done after the appointment of the designers. The functional spacelist and requirements, in case of the ECC, were revised by the designers during the early design phase.

Involvement of designers, therefore, at a relatively early stage in programming may offer them an opportunity to be part of the bigger context and to get acquainted with the program beforehand which may reduce extra effort and time during the design phase. Though, this may incur extra cost, it may be worth the cost -in terms of time and effort- to consider their involvement at an early stage which may also avoid incomplete and erroneous information getting translated into design.

5.1.6 Implications of Post Occupancy Evaluation(POE)

"POE is subsumed by the higher order type of evaluation called "building diagnostics" which has both diagnostic and prognostic capabilities. POE evaluates buildings in use and has short, medium, and long-term implications, the latter being evolutionary, based upon feedforward of POE generated information. Furthermore, POE focuses on the requirements and performance of building occupants' needs, and therefore, technical performance is only considered in so far as it affects the occupants of buildings...The 'Performance Concept' proposes that POEs be built into design and construction programs of agencies from the beginning as an integral part of the building delivery process. Planning for POE should begin in the programming phase for a new facility."[34]

The current programming process at KSU essentially is limited to writing the program and nearly ends with the completion of the program and acquisition of funds. As a result very little or no efforts are made at assessing the impact of the program on the design and apparently on the building. The disregard for a feedback or assessment is evident from the inattentiveness of most programs in terms of qualitative issues as discussed earlier.

As suggested by Davis, an evaluation of the facility during its use can be incorporated in the programming process to evaluate the building in terms of its original context and purposes currently applicable to its use.[35] It may be insightful to assess the initial programming efforts versus the facility in actual use. This may reveal the differences between the programmed and actual uses; and may shed light on deficiencies in the program statements and on unintended effects of specific program requirements. This

---

[34] **Preiser, Wolfgang, F.E., in Building Evaluation, Plenum Publishing Corporation, New York, New York, 1989, p.1.**

[35] **Davis, Gerald, as discussed by Sanoff, Henry, in Advances in Environment, Behavior, and Design, by Zube, et.al.(eds.), Vol.2, Plenum Press, New York, 1989, p.242.**

may provide programmatic input into subsequent projects. For buildings, the lessons learned form such evaluation of a project may be applied to future projects to enhance building quality and at the same time can provide input for facility management, renovation, or masterplanning of similar other projects.

In order to create more sensitive and inclusive programs, the future programming processes at KSU may need to incorporate an objective assessment or evaluations of earlier programs and projects to be effective.

5.2 FINDINGS AND IMPLICATION : THE PROGRAM

5.2.1 Nature of Information

Institutional facilities, especially as sophisticated as ECC, are complex and influences on their form and function are diverse. Therefore, it is required that the information gathered be adequate, reliable, and appropriate.

However, the programs written so far at KSU are follow a narrow definition and focus only on functional programming to a great extent with very little or no information about the architectural intent or specifications and contextual environment. In other words, the programs are ***exclusive*** than ***inclusive***. They have basic information regarding the following.

1. Purpose

2. Size

3. Environmental Attributes(Heating, Ventilating, Lighting)

4. Furnishing & Fixtures

5. Special Equipments

6. Relationship to other spaces

7. Special considerations

Some of the issues, completely disregarded in the program for ECC and most other programs briefly studied, are discussed below in detail. They are pivotal design related qualitative issues and require to be addressed in the program effectively. It may not only direct and guide the design process but may also provide a basis for evaluation of the design while still on paper as well as at later stage.

i) Development of Design Precepts(Directives)

It is important to identify the **design precepts** and develop program options for each issue. This may be considered as an important function of the programming process which may aid designers develop design concept apart from supporting functional program and creating a comprehensive architectural program. The design precepts could represent the *implicit* architectural intentions or principles which can instruct the design. In other words, they could illustrate the general cultural expextation of the contextual environment and what the building should represent in symbolic terms. They could be in form of simple statements describing the attributes the given environment ought to have. Annotated design precepts describe the project in *qualitative* terms of contextual *atmosphere, image*, and *character* and would breathe life into the design process. These well defined set of shared formal assumptions constitute the expected but unstated elements of the contextual built environment and are key to the success of envisaged environment.

As discussed in the Marianna Kistler Beach Art Museum Program(Art Museum Program), these attributes are intended to convey a set of qualities found in more authentic campus buildings and should be incorporated in the design of the new building. It states,

"The precepts are not intended to suggest a historiscist building is desirable, nor should the design follow a historical style, such as campus Gothic, or Richardsonian Romanesque. The spirit of the precepts, rather, is to convey some generalizable qualities found in campus buildings which can be reinterpreted in the museum design to achieve a "materiality" and "presence" that gives the building a singular dignity while allowing it to fit into the thread of history which is the larger campus

environment."[36] Some of the critical precepts, also discussed in the Art Museum Program, which must be addressed in architectural program of any building on the KSU campus are,

1. Campus Fit

2. Site Order

3. Outdoor Spaces

4. Elements of Character

5. Design Process

Though, it may have been discussed during the design phase, the program of ECC disregarded the inclusion and documentation of design precepts which address formal, visual, and experiential attributes of the contextual environment.

The impact of the disregard for these issues during the programming process is largely prevalent in some of the recent buildings like Bluemont Hall and Lafeane Health Center. This is important as, traditionally, building developments at KSU have conserved a particular contextual character as well as order in terms of *design, aesthetics, density,* and *siting* with respect to institutional architecture.

---

[36] **Kansas State University, Detailed Program Requirements, Working Draft, Marianna Kistler Beach Art Museum, Kansas State University, Manhattan, Kansas, 1992, section 2.0.**

ii) Site Analysis

Another issue, which the programs at KSU underemphasize is the issue of site, i.e. establishment of *site analysis/evaluation criteria*. Though, it may be communicated verbally during the preliminary design phase, the site information of the ECC program and the other programs studied is not substantive as far as documentation is concerned. A complete description of the proposed site and an analysis of its existing conditions and their impact on the development of the new building is equally important for the design process. At the same time the elements which have a major impact on the site development -like shape of the site, building footprint, parking requirements, circulation and open space requirements, as well as Special constraints and requirements- also need to be analyzed in the program. This must be an important function of the programming process and inseparable part of the program.

There are various **physical, cultural, and regulatory factors**[37] related to site conditions. These factors can contribute to evaluation of the site and have a direct impact on the development of the building design. Some of them which have relevance to KSU campus and its context with regard to their impact on building development on campus are discussed here in the following pages. Inclusion of information regarding these factors in the programs will reinforce the site description and enhance the validity of criteria governing site evaluation as well as development.

---

[37] **These factors are also discussed in detail by Haviland, David in the section 2.4 on "Predesign Services", in The Architect's Handbook of Professional Practice, American Institute of Architects, Student Edition, Washington D.C., 1987, p.1-7.**

Physical Factors:

Climate : Several Macro and micro climatic factors like wind, solar orientation, temperature and precipitation may directly affect the building form and determine building siting and orientation. Prevailing wind direction, affect the comfort level of the outdoor spaces as well as the energy efficiency of the building. Similarly, air temperature together with solar radiation can affect the building configuration, orientation and energy efficiency of the building. The differing characteristics of precipitation and their drainage will affect the load bearing requirements of structural system and the drainage network on site.

Topography : Topographical characteristics like slope and drainage patterns as well as proximity to drainage ways; and existing natural features like vegetation and land forms together, may act as primary determinants of the building potential of the site and can significantly influence the cost and feasibility of the project.

Utilities : The location and capacities of existing utilities may affect the intensity of development as well as siting of building elements. Thus, information regarding existing and future utility services may be extremely important.

Site Character : Views from the site, within the site, access to the site, and unique or striking character of the site will have a major impact on the site development and building design and orientation.

Soil Type : Geotechnical characteristics of the soil has important implication for foundation, structural design and drainage.

Cultural Factors:

Site History : This may include historic land used and merits of existing structures, both on and adjacent to the site. Historic preservation and rehabilitation of existing structures/land marks may maintain site character and may support architectural traditions of the campus.

Surrounding Land Uses : A project of any size may have impacts beyond the site boundaries. Specially, in a campus environment, this may affect contextual aesthetics, traffic i.e. circulation of pedestrian and vehicular patterns...etc. An analysis of land uses on and around the site will develop an understanding of the surrounding community's composition, needs, and concerns which may extend compatibility of the project within the existing community and integrate the building with the surrounding community.

Economic Value : Analysis of economic value of the site may be used as a tool to identify the feasibility of buildable site area at the expense of added costs of construction, specially when a site has restrictions to development such as steep topography, soft soil...etc.

Regulatory Factors:

Codes : Building, fire, and other construction codes establish minimum standards which also affect the site and building development.

However, the program for the ECC, evidently neglected inclusion of these factors affecting the building development. In addition, very little or no information was found on the following elements, which have important implication on the site development.

This information may vary depending on the program and project, but their incorporation in the program is very important.

Building Footprint : An analysis of net-to-gross area ratio, the number of floors envisaged, and the configuration of the building(organization of spaces, building massing...etc.) may determine the footprint of the building.

Parking Requirements : The area required for parking including landscaping with the lot as well as areas given to entries and drop-offs often form the biggest site requirement. The parking ratios established(for campus) may affect the building siting and the site development.

Circulation and Open Space Requirements : Circulation requirements may include the area required for pedestrian and vehicular circulation, and access to service areas/docks. The landscape buffer required at the periphery of the site and unbuildable areas of the site may constitute the open space requirements.

The ECC program fails to recognize and emphasize the importance of these elements which impact site development as well as building development. Though, the emphasis laid on each of these features may vary according to the scope and extent of the project, visual presentation of this information -e.g. annotated plans- will significantly communicate this information in a readable manner.

A conscientious site analysis may avoid and discourage indecorous placement of buildings like Lafeane Health Center. This is more essential and valuable as KSU at present does not have any formal campus master plan which can be followed or which can guide the development on the campus.

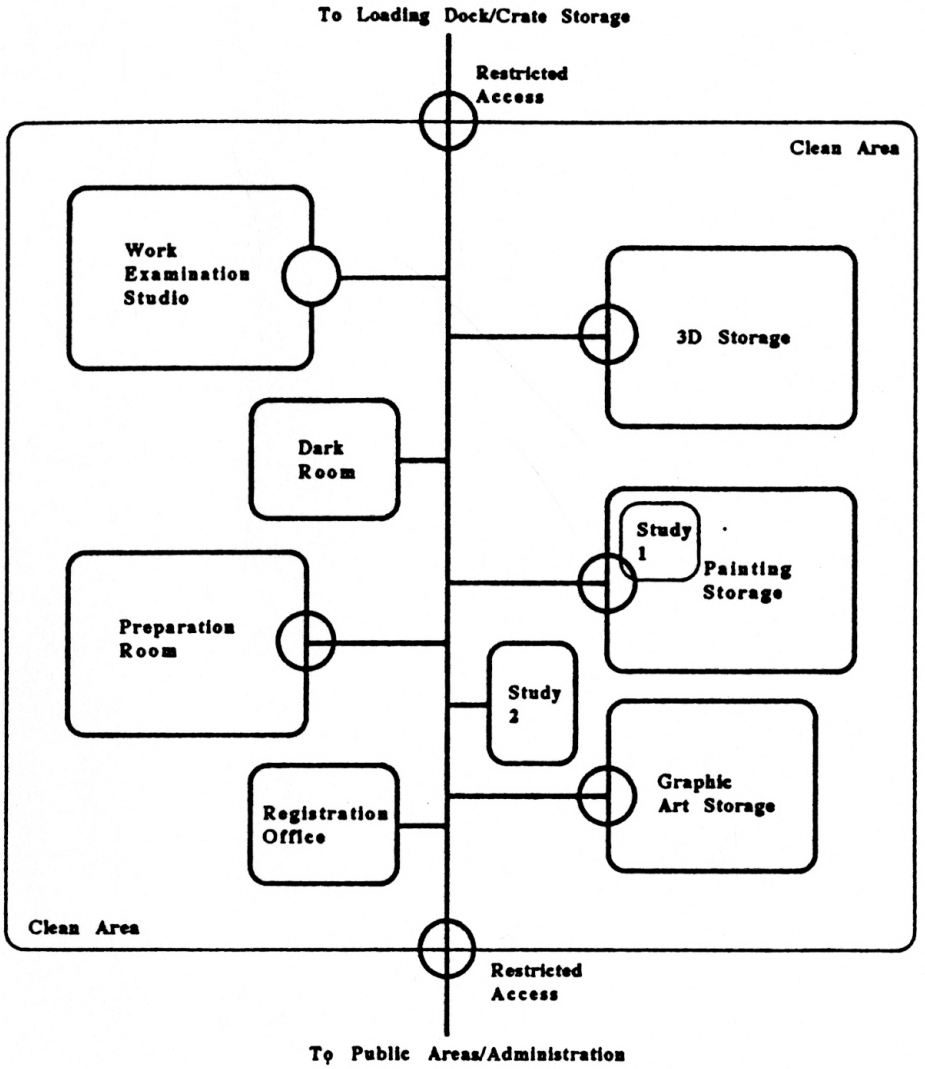
iii) Spatial Relationships (Adjacencies)

It is important that while programming a multidivisional facility like the ECC, one of the primary task must be to outline a direct and concise layout of the interdepartmental relationships in terms of adjacencies.

Especially, when the designer's role is limited to the design of the project it is important that these relationships are clearly identified in the program. However, most of the programs written at KSU indicate a clear pattern of neglect for adjacency and flow diagrams. Apparently, the program for the ECC too, provides sketchy relationships between the various departments and the spaces within each department. It may be significant to note here again that, the new director along with the project architect spent considerable amount of time working out the adjacencies.

Detail analysis of space adjacencies may also enhance and support the notion of the program to be generative of several possibilities in terms of building and circulation geometry. Visual depiction of data invariably help to understand more clearly. Graphic presentation allow to organize the information efficiently and perceive relationships between program elements. It may also suggest zoning or grouping of similar function with respective adjacency and access requirements. In other words, this would convert the raw data into a form that is analytically illuminating. A diagrammatic presentation of space to space linkage patterns and the different circulation geometries needed to accommodate them can generate various schematic designs without conflict in the activities. At the same time, a comprehensive adjacency diagram may suggest the organizational concept for the building. Bubble diagrams, too, can serve as abstract

graphic representations of the program spaces and their layout. Some examples of this form of presenting information is shown below.



Preparation and Collection Storage Areas

An Example of Adjacency Diagram

Source: Mariana Kistler Beach Art Museum, Detailed Program Requirements(1992), Section 4.0

iv) Environment/Behavior Studies

"A significant body of modern architecture has been influenced by social and behavioral forces. Demands for better Mass housing, a human workplace, and a cry for quality across the entire spectrum of public spaces have catalyzed architects' awareness of contributions from the environment/behavior field. This broad field represented by environmental psychology, sociology, and cultural anthropology has in turn been stimulated to investigate current architectural problems."[38]

Today, the influence of the built environment on the performance of the human activities has been recognized and thus the importance of behavioral studies is widely acknowledged. As suggested by Michael Brill, prediction of the environmental conditions that are supportive and responsive to the user's activity patterns is an important function of the program.[39]

Thus it may be essential, as suggested by Davis, to analyze and develop strategies and criteria for the certain "humane" aspects of facilities that affect motivation, learning, perception, attitudes towards the organization, intergroup communications, group functioning, image and status, control of sharing of territory...etc.[40] At the same time, identifying, analyzing, and providing recommendation and criteria for those ambient conditions affecting the physical performance of tasks may also be essential.

The program written at KSU fundamentally overlooks the significance of behavioral

---

[38] **Pressman, Andy, in The Program, in Architecture 101- A Guide to the Design Studio, John Wiley & Sons Inc., New York, New York, 1993, p.37**

[39] **Brill, Michael, as discussed by Palmer Mickey in, The Architect's Guide to Facility Programming, The American Institute of Architects, Washington D.C., 1981, p.4.**

[40] **Davis, Gerald, as discussed by Palmer Mickey in The Architect's Guide to Facility Programming, The American Institute of Architects, Washington D.C., 1981, p.30.**

reviewed. Affiliation of behavior studies with the functional activity in the program may reduce "guesswork" during the design process resulting in an efficient design and responsive built environment in terms of human activities and productivity.

5.2 CONCLUSIONS

1. Traditionally, most of the programs at KSU have begun and are written as proposals to acquire funds from the legislature which is substantially ahead in time before the design process begins. Thus, it is apparent that programs written at KSU are an early programming effort which primarily serves the "need based" legislation and the "committee client".

2. As early efforts, perhaps, they often amount to little more than a functional spacelist(the minimum state requirement for a proposal to acquire finances) and are considered the programming part of the job. These programs are seldom formally updated before they are given to designers and thus remain functional programs to a great extent.

3. These functional programs do estimate almost accurate space requirements in terms of area. However, they disregard the significance and inclusion of design precepts or directives which can translate the qualitative issues of programming.

4. Since the same programs are given to designers as a primary source of information, these, rather incomplete programs, therefore, need to become ***inclusive*** in terms of qualitative aspects of programming. These aspects are, development of design precepts, inclusion of behavioral issues, site analysis as well as space adjacency diagrams and consider them as an eminent part of programming process.

5. The current programming process also needs to recognize the value of contextual campus environment and needs to acknowledge the notion of "fit" and stress the

importance of the concept of campus fit in the programs to avoid another development like Bluemont Hall.

6. It is the premise for the programming process at KSU that the architectural programmer is not the designer and therefore, needs to record all pertinent information and analysis useful to the designer of the project. In other words, the programs need to be sensitive towards designers' informational needs -both functional and architectural- and become designer oriented and client(user) oriented instead of only being client(owner) oriented.

7. Review of research on specific behavior types as well as investigation of user behavior in terms of environment behavior relationships may help enhance work environment and productivity. This may be supported by, as Farbstein suggested in his user description step, an identification of user objectives for the facility, which appears to be the most comprehensive analysis of the users' social and behavioral characteristics.

8. Today, client participation and user involvement in the process is often stressed by most programmers and has increased attention to user needs. An increasing user participation will help provide first-hand data for decision making in programming studies and program conclusions. The programming process at KSU needs to recognize the importance of user involvement in the process.

9. Review of literature on similar building types and visits(walkthrough's) to similar facilities in the beginning of the process may reduce the number of changes later on during the design phase. This should be an integral part of the process.

10. Diagramming information has been emerging as an effective tool for communicating

information in an articulated and distinct manner. Inclusion of information in this manner in the KSU programs will make them visually expressive and effective.

11. It emerged during the study that, there is often a significant amount of time delay between the programming and design phase. During this period, a lot of unwritten information tends to get lost. This eminently suggests a need to at least update the program. This may become more important as the programming team at KSU is different than the one designing. More time spent on programming may reduce extra time consuming efforts during the designing and construction phase.

12. Typically at KSU, though a lot of new information, apparently absent in the program, get communicated to designers during the meetings and discussions, it is seldom formally documented. Therefore, it is essential that the programs be updated on time to reflect additions or changes. This may help assess the design both while on paper as well as after construction and at the same time may also make the designers more accountable.

13. The programs, especially the one for ECC, prominently overlooked the inclusion of future projections with regard to change, growth, staff, functional space needs...etc. Considering the time delay, it may be essential as well as productive to look at the long term consequences of these decisions. A complete document with such information may be used as a management tool for updating and assessing staff and space needs.

14. As future implication, the programming process at KSU needs to recognize the value of assessing the impact of the project and include it as significant part of the process. A post occupancy evaluation effort may help assess the functioning of the building and in

turn the impact of the program.

15. Nonetheless, to be more complete and effective, future programs at KSU may require, besides a functional spacelist, development of **design precepts**, a meticulous **site analysis**, an augmented explanation and analysis of **functional relationships**(space adjacencies), and a sensitive examination of the humane issues based on **environment-behavior relationships**.

16. Finally, it is also envisaged that, similar analytical studies are required to reinforce the findings of this study and further explore and understand the variations in programming practices at the other institutions of the region in response to context and comprehensiveness.

6.

Bibliography

6. BIBLIOGRAPHY

American Institute of Architects — **The Architect's Handbook of Professional Practice**, Student Edition, The American Institute of Architects, Washington, D.C., 1987.

Educational Facilities Laboratories, Inc. — **Information Needs: For Planning Physical Facilities in Colleges and Universities-An Overview**, Educational Facilities Laboratories, Inc., New York,

Evans Benjamin H., and **Wheeler C. Herbert Jr.**, — **Emerging Techniques: Architectural Programming**, The American Institute of Architects, Washington D.C., 1969.

Gordon, Douglas, E., and **Stubbs, Stephanie, M.**, — **"Programming"**, The AIA Journal, (May 1988): 203-210.

Kansas Board of Regents, — **"Programming for Physical Facilities"**, Foreword, Kansas Board of Regents, Topeka, Kansas.

Kansas State University, — **Program for the Educational Communications Center**, Kansas State University, Manhattan, Kansas, 1986.

_____. — **Marianna Kistler Beach Art Museum, Detailed Program Requirements- Working Draft**, Kansas State University, Manhattan, Kansas, 1992.

Lang, Jon et al.(eds.), — **Designing for Human Behavior**, Dowden, Hutchinson, & Ross, Inc., Stroudsburg, Pennsylvania, 1974.

Longstreth, Richard W., — **From Farm to Campus- Planning, Politics, and the Agriculture College Idea in Kansas**, Manhattan, Kansas, 1980.

Manuel, Marti, Jr., — **Space Operational Analysis, A Systematic Approach to Spatial Analysis and Programming**, PDA Publishers Corporation, Mesa, Arizona, 1981.

P. Suedfield, et.al.,(eds), — **The Behavioral Basis of Design, EDRA 7 Proceedings**, Dowden, Hutchinson, & Ross, Stroudsburg, Pennsylvania, 1976.

Palmer, Mickey, — **The Architect's Guide to Facility Programming**, American Institute of Architects, Washington D.C., 1981.

Pena, William, "**Organizing for Programming**", Building Research, (April/June 1969):8-11.

Pena W., and Focke J., **Problem Seeking: An Architectural Programming Primer**, Cahners Books International, Inc., Boston, MA, 1977.

_____. **Problem Seeking: New Direction in Architectural Programming**, Caudil Rowlett Scott, 1969.

Preiser, Wolfgang F.E., (ed.), **Building Evaluation**, Plenum Publishing Corporation, New York, New York, 1989.

_____. **Design Intervention: Towards a More Humane Architecture**, Van Nostrand Reinhold, New York, New York, 1991.

_____. **Facility Programming- Methods and Application**, Dowden, Hutchinson, & Ross, Inc., Stroudsburg, Pennsylvania, 1978.

_____. **Programming for Habitability**, University of Illinois, Champaign, Illinois, 1975.

Preiser, Wolfgang F.E., **Programming the Built Environment**, Van Nostrand Reinhold Co., New York, 1985.

Pressman, Andy, **Architecture 101- A Guide to Design Studio**, John Wiley & Sons, New York, New York, 1993.

Richardson, Stephen, "**The Value of Program to the Architect**", Building Research, (April/June 1969):40-42.

Robinson J., & Weeks S., **Programming as Design**, School Architecture, University of Minnesota, 1984.

R. A. Class and **R. E. Koehler, (eds.),** **Current Techniques in Architectural Practice,** American Institute of Architects and Architectural Records, Washington D.C. and New York, 1976.

Sanoff, Henry, **Methods of Architectural Programming**, Dowden, Hutchinson, & Ross, Inc., Stroudsburg, Pennsylvania, 1977.

Studer, R.G., and **Stea D.,** "**Architectural Programming, Environment and** Human Behavior", Journal of Social Issues 22 (Oct. 1966):127-36.

Weisenburger, Ray, **Campus Program: Brief Historical Background**, Kansas State University, Manhattan, Kansas, 1973.

White, Edward T., **Facility Programming: A Growing Architectural Service**, School of Architecture, Florida A & M University, Tallahassee, 1982.

_____. **Interviews with Architects about Facility Programming**, School of Architecture, Florida A & M University, Tallahassee, 1982.

_____. **Introduction to Architectural Programming**, Architecture Media, Tucson, Arizona, 1972.

_____. **Programming, Post-Occupancy Evaluation, and the Financial Success of the Architect**, Architectural Media Ltd., Tucson, Arizona, 1988.

_____. **Space Adjacencies Analysis**, Architecture Media, Tucson, Arizona, 1986.

White, Edward T., and **Anderson, Richard L.,** **Why Programming**, William Wilde and Associates, Inc., Tucson, Arizona, 1972.

Zube, Ervin H.,and **Moore, Gary T.,(eds.),** **Advances in Environment, Behavior, and Design**, Vol.2, Plenum Press, New York, 1989.