TEACHING THE DESIGN STUDIO, A CASE STUDY:

MIT'S DEPARTMENT OF ARCHITECTURE

1865-1974

by

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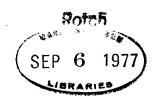Massachusetts Institute of Technology

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MIT was the first university in the United States to have an architec-
tural program. Founded in 1861 the Department of Architecture admitted its
first class in 1867 under the direction of William Ware. Ware had spent
three years studying the architectural schools of Europe before developing
the MIT program. The Ecole des Beaux Arts in Paris served as the model for
Ware's program. To implement the Beaux Arts practices, Ware hired a prize
winning graduate of the Ecole to teach the design courses. Eugene Letang
began teaching the architectural design studios in 1871. He was the first
of a number of Ecole graduates who taught design at MIT. The last Beaux
Arts graduate to direct the design studios was Jacques Carlu who retired
from teaching in 1932. The Beaux Arts influence dominated architectural
education through the early 1930's when the ideas of the modern movement
began to emerge and for the next 30-35 years was a major focus for design
studios. Since the late 1960's the focus has changed to include broader
social issues.

In the 100 plus years that architecture has operated in the university
structure, the design studio has changed considerably. At first the design
course was limited to the last two years of a four-year program. Over time
the design offerings were expanded to all years and the program lengthened
to five years. Recently the architecture program has again been restruc-
tured, this time to a four-year undergraduate plus two-year graduate Master's
program.

Originally, design studios concentrated on the design of monumental
public use buildings. Over time this has shifted, first to the smaller
scale, common-use projects like gas stations and restaurants, and then to
social and economic concerns, like rehabilitation of housing for the dis-
advantaged, and energy conservation.

Teaching methods have changed over this time from criticizing the
student's designs relative to the design standards of first the Beaux Arts
and then the Modern Movement to role playing, setting examples and facili-
tating self-criticism.

While the ideas and standards of the Beaux Arts and the Modern Move-
ment were in good currency, design students and teachers had relatively
clear design standards with which to generate and test designs. Facing
design studio teaching today is a lack of standards with which to design.
Also confronting studio teaching are the issues of information overload,
limited time frames, expanded awareness and concerns, diversity of roles
and career options and variety of interests and capabilities.

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CHAPTER I

INTRODUCTION

As the problems within the physical environment intensify, the train-
ing of individuals to address the problems becomes increasingly more
important. In order to facilitate the education and training of profes-
sionals, and by so doing offer the best potential for solution to these
problems, it is important to have some idea of how training and education
should take place. It is impossible to know the future, and what the
needs will be, and thus train people accordingly. What is possible is
to know what has been the best current practice relative to the education
of professionals in this arena. In addition to the professions of city
planning, engineering, and landscape architecture, the architectural pro-
fession has been and continues to be deeply involved with the issues of
the built environment and human beings' relationships to it. The study
of the education and training of all of the professions involved with the
built environment is an impossible task, for there is an overload of con-
cerns, issues and material relative to each one. This study has thus
been focused generally on the architectural profession, and specifically
on the teaching of the design studio in an architectural curriculum.

Unfortunately, there is very little material on the education and
training of architects and virtually no material on methods of teaching
design to architects. Various histories of architectural education in
this country have been written.

The American Institute of Architects undertook a study of the pro-
fession in 1951. The resulting publication, Evolution and Achievement,
the Architect at Mid-Century[1] dealt with the profession of architecture,

the practice, candidate training, registration practices, the AIA and education. The material on education of the architect centered on curriculum. There was one brief chapter on the history of education (architectural) in the United States. This was in the form of a chronology of school openings and the personalities involved with each school. There was nothing on teaching methods.

In 1932 Bosworth and Childs published a study of the architectural schools in operation at the time.[2] This study concentrated on curricula. It studied the technical curricula independently. It included courses directly related to the study of architecture--design, graphics, history of architecture, etc.

In 1941 Arthur Clason Weatherhead wrote A History of Collegiate Education in Architecture in the United States.[3] This was an historical survey of the schools of architecture from the beginning at MIT to the mid-1930's. It focused on how and when each school came to be.

For the centennial in 1961 of MIT's School of Architecture, Caroline Shillaber wrote a brief history of the School. This concentrated on the chronology of events and personalities in the School.[4]

Books other than histories, which relate to the teaching of architecture, tend to be inventories of exercises for teaching specific skills or issues. Paul Ritter in EDUCREATION[5] outlines a number of exercises which focus on architectural concerns and are intended to help facilitate creative responses in the students.

Gunnar Sneum in Teaching Design + Form[6] gives a series of basic design exercises that includes issues of symmetry, color, drawing, rhythm, etc.

One exception to the history or inventory orientation of books re-
lated to the teaching of architecture is Edgar Schein's study of
Professional Education.[7] This study focuses on the profession of archi-
tecture, the changing needs of society, and the need for new directions
in education to meet those needs. He argues that the architect, in order
to operate effectively as a member of a complex team of professionals,
needs to be trained and educated as a generalist. This is compared with
the present practice of training the architect to operate as an individual
and a specialist. He points out the increased rate of change that exists
in the area of architecture (needs, methods, etc.) and the potential
difficulty that can come from teaching architects specifics which will
soon be obsolete. Rather, he advocates the students learn how to learn
as the main point of their education.

Articles in the various professional journals have addressed a range
of issues related to the teaching of architecture and specifically the
design studio. Similar to the books, the journal articles include histo-
ries[8] and exercises[9] for the studio. They also include material on cur-
riculum,[10] needs of the profession,[11] and occasionally on methods.[12]
Thirteen of these articles were most applicable to this study. Comments
on each are included in the following pages.

In Horst Rittel's article, Some Principles for the Design of an
Educational System for Design, he states:

> . . . the educational system should prepare the student to
> practice, and that it should therefore focus on the typical
> and recurring difficulties of designing, on ways . . . to
> overcome the difficulties and on that knowledge necessary
> to obtain the knowledge needed for a particular project.[13]

To do this he proposes that the students learn to learn, and that the rational procedures of mathematical models, systems analysis, symbolic logic, operations research, etc., be employed in the process.[14]

Stuart Rose and Scheffel Pierce[15] in "Television as Design Tool" present an argument for the use of television and video equipment in the simulation of spatial configurations.

Bruce Erickson in an analysis of the curriculum at the University of Cincinnati states that:

> Students learn best in specialized or concentrated contexts.
>
> Students learn best and teachers teach best in contexts of their own designs and choices.
>
> Education is not training (in the Pavlovian sense) but is the acquisition of knowledge and skills, as well as the understanding of how to apply them.[16]

To address these issues Cincinnati has developed a model with the primary objective "to achieve an open pattern which allows students and faculty to group around commonly defined issues and to follow mutually designed courses of action in their investigations."[17]

In an article about the Bartlett School in London, Dean Latourell makes several points. He suggests that research in environmental issues is increasingly more important throughout the school. The undergraduate program is oriented toward breadth of study. And he adds that the graduate program consists of two concerns, independent research and specialized professional practice.[18]

In his article "Learning - While Teaching the Community,"[19] James Hall describes a service-learning program at Hampton Institute. In this program students from the school work in conjunction with neighborhood

housing groups and the City Planning Department to study the housing

situation in Norfolk, Virginia.

John Eberhard in "Emergence of a New Professional"[20] describes the

then new program at Buffalo. The program was based on a systems approach

to design where the systematic analysis of human physiological, psycho-

logical, and social needs is emphasized. The core of this program is the

practicum, "a flexibly structured laboratory course organized around the

analysis and development of real problems accepted from outside sponsors."[21]

Cedric Green, Senior Lecturer in Architecture at Gloucestershire

College of Art and Design, presents a case for the use of simulation games

in the teaching of design. In his article "Learning to Design," he

states:

> Education should be a heuristic process: a process in which
> a person is taught how to find out things for himself; as he
> becomes progressively more mature, he gradually dispenses
> with the need for a professional teacher; instead, everyone
> becomes his teacher and skill and knowledge are acquired with-
> out the same conscious effort as during a full-time education.[22]

To develop the heuristic process relative to design he proposes

simulation gaming based on theories of new language learning.

> Receiving knowledge needs <u>attention</u> but comprehension requires
> <u>response</u> from the learner; new language learning is a key to
> techniques for developing creative fluency; design simulation
> games may develop design competence in the same way.[23]

> Very simply stated, the main point of significance for design
> in the psycho-linguistic theories that have developed from the
> work of Chomsky is that what is important is the learner's
> "competence" to utter new, meaningful sentences, rather than
> his knowledge of formal grammar. This is the way children
> learn to speak by "knowing how" rather than "knowing that."[24]

So, in design, techniques that are influenced by studies of
language tend to emphasize creative <u>competence</u> in generating
design ideas and expressions rapidly and fluently.[25]

To achieve this he proposes a design simulation game where players
"design in a kind of complex dialogue with each other, putting together
models of building elements according to rules of construction, to achieve
a coherent expression of collective and individual objectives."[26]

Peter Smith, Senior Lecturer in Architecture at Sheffield University,
in a RIBA Journal article argues "that university education in general,
and architectural education in particular, tends to maximize skills which
obey the rules of logic and analysis and can be expressed verbally or
mathematically, while badly neglecting less quantifiable activities like
design or the encouragement of spontaneous awareness, innovation, and
creativity."[27]

Smith's article is based on his review of a book by Robert Ornstein
called <u>The Psychology of Consciousness</u>. The proposition put forth in
this book is that there are two distinct modes of consciousness, stemming
from the left and right sides of the brain.

In Smith's words:

Developing Ornstein's categorization, left cerebral skills
include the management of language and mathematics, and the
rational, deductive, linear processing of information.

In many ways, the right cerebral hemisphere works in direct
contrast to the left. It is non-verbal and non-numerate. On
this side of the brain resides the capacity to perceive space,
form, color, and texture. It is adept at holistic appreciation,
and is much more concerned with total pattern than with parts.[28]

Assessing architectural education in light of the binary conscious-
ness, Smith states:

Architectural education has become obsessed with information.
Despite all the input from the scientists and technologists,
architectural students are still expected to develop aesthetic
sophistication, and to produce what used to be called "elegance"
in building. And, against all the odds, the artistic element
in design still has a fingerhold on the education process. But
it hardly has a chance of making headway against such a strong
flowing tide of left cerebral impedimenta. The result is that
architectural students are subjected to a particularly subtle
kind of cruelty. They are compelled to launch out into the
realm of design, which involves right cerebral activity, within
an intellectual atmosphere which snuffs out the flame of
creativity.[29]

The issues of knowing one's feelings and working cooperatively with

others are addressed in Philmore Hart's article, Humanizing Architects:

Feeling Versus Object.[30] Hart is a practicing architect and teaching

member of the Gestalt Institute of Cleveland.

To deal with these issues Hart introduced a Gestalt encounter group

into the architectural program at Case Western Reserve. The group ses-

sions were introduced into the fifth year.

Jonathan Barnett, Director of Urban Design for the New York City

Planning Commission, wrote an article in 1970 stating, "Studio teaching

is out of date."[31] His position was that the studio is ill-equipped to

deal with a situation where the body of knowledge is changing rapidly.

The studio for him implies a master and apprentice relationship. He

argues that you can't teach today's complex architectural process in a

studio without the experience being removed from reality. He also contends

that "most of the emphasis in the schools of architecture has been on the

teaching of originality and creativity; subjects which may well be unteach-

able."[32]

Alan Meikle, an English architect, in "Education and Practice"[33] suggests a partnership be established between the schools and the profession through the development of "Teaching Offices." These would be professional offices associated with schools of architecture that would take in students to work on projects as part of the students' education.

Peter Stringer, a psychologist with the Architectural Education Research Unit at London University, in "Architecture as Education" offers the view that architecture schools could offer not only professional training, but also a general education "demanding a high level of knowledge and problem solving ability, to students who will not necessarily enter practice."[34]

M. L. J. Abercrombie in "Psychology and the Student" writes about the introduction of psychology into the architectural curriculum at the Bartlett School of Architecture in London. Two main areas of behavior were selected for course work; space perception and group behavior.[35]

The above material represents the issues addressed in the literature relative to architectural education. These articles include the most recent material on the subject. Unfortunately, there are significant gaps relative to methods of teaching design studios. Architects and architectural educators tend not to write about what is done in the studio.

Given the scarcity of material on architectural education and the teaching of the design studio, I searched the literature on education in general.

What follows is a brief summary of some of the important concepts and theories in education.

John Dewey was the first, and possibly most significant, person in recent history to present the theory of learning as a process of solving

problems encountered in interaction within an environment. While he was

Director of the University of Chicago's School of Education, he estab-

lished a laboratory school that was modeled after a community or miniature

society. In this society the students were provided with experiences in

cooperative and mutually useful living.[36] Much of his educational philos-

ophy was based on the experiences of that school.

The basic components of John Dewey's educational philosophy are:

> 1. The learner is a living organism, a biological and socio-
> logical phenomenon who possesses drives or impulses designed
> to keep him alive; 2. The learner lives in an environment
> which is both natural and social; 3. The learner, moved by
> his drives, is active and constantly interacts with his
> environment; 4. Environmental interaction produces a series
> of problems which occur as the individual seeks to satisfy
> his needs; 5. Learning itself is the process of solving prob-
> lems arising in the environment.[37]

Maria Montessori in working with pre-school children in a Rome ghetto

developed her method of teaching. This method stresses individual atten-

tion to each child within a prepared environment in which he or she is

free to choose activities from a number of specified tasks. Her method

offers the student the freedom of choice within a structured, disciplined

environment.[38]

Carl Rogers is a psychologist who views the quality of the relation-

ship between teacher and student and the classroom environment as the

decisive components of education. He argues that a child's curriculum

must be "self chosen." According to Rogers, material that can be taught

to another person is of little consequence. It is knowledge discovered

for oneself that is more significant.[39]

On this same subject John Holt argues that children learn best when

they are interested and involved in what they are doing. He sees the role

of the school as a facilitator of the growth of each child attending it. In _Freedom and Beyond_[40] he argues for self-directed learning which is initiated and conducted by the students.

Jerome Bruner, another psychologist involved with education, emphasizes the importance of a child's involvement in his own learning. He sees curiosity as a motivating force, and argues for the "discovery" approach to education. He claims a subject should be taught to "participants" and not to "spectators."[41]

Bruner argues that learning through discovery helps a person "learn the varieties of problem solving, of transforming information for better use, and helps him learn how to go about the very task of learning."[42]

Bruner also states that it is "through the exercise of problem solving and the effort of discovery that one learns the working heuristic of discovery; the more one has practice, the more likely one is to generalize what one has learned into a style of problem solving or inquiry that serves for any kind of task encountered. . . ."[43]

Erik Erikson, the psychoanalyst author of _Identity, Youth and Crisis_, addresses the issue of identity formation. He sees identity formation as a simultaneous process of self-reflection and observation of the reactions of others to the individual.[44]

A. S. Neill, in 1921, established Summerhill, an educational experience where teachers and students interact as equals in a self-governed environment. At Summerhill, courses are optional, selected by the student based on interests, and grades and tests are not given.[45]

Jean Piaget has done extensive research into the cognitive development of children. Over the last 50 years he has addressed issues of perception, concept formation, recognition, etc. Piaget argues, among many things

that all children pass through certain stages of intellectual develop-
ment in the same order, and that it is the rate at which a child passes
through the stages that determines if the child is or is not bright.[46]
He also presents the view of the individual as an organism constantly
seeking equilibrium between previous understandings and new experiences.

Robert Rosenthal and Lenore Jacobson published an article in 1968
entitled "Pygmalion in the Classroom" in which they presented the argu-
ment that student performance is a function of teachers' expectations.
The research was conducted in a San Francisco school, where 20 percent
of the children were selected at random and presented to the teachers as
potential "bloomers." When retested over the next two years the "bloomers"
had clearly advanced more than the other children.[47]

Another psychologist, B. F. Skinner, has presented the notion that
reinforced behavior persists. He argues that by reinforcing desired
behavior, repetition of that behavior will take place.[48]

Finally, a more extreme argument is presented by Ivan Illich in his
book Deschooling Society.[49] He argues that schools as institutions are
elitist, and unresponsive to the needs of people. He advocates a system
where anyone can learn anything he or she is interested in.

Given this material is useful background information, it does not
address the methods of teaching a design studio. This study was designed
to gain information on how design studios have been taught. Through
observation, surveying, questionning and discussion with people (students
and teachers) involved in the experience of the design studio, informa-
tion on the teaching of the design studio could be obtained.

For the study, the studio experience at MIT was selected because it
offered a bounded sample; it was the first school of architecture in the

United States to operate at the university level and as such it served as a model and guide for other schools. In addition, material and people related to the MIT experience were available.

The study was conceived as a holistic study of a bounded phenomenon directed toward discovery of what took place, and in the process, testing a series of hypotheses which were generated in part by my educational experiences in a comparable environment as a teacher and a student.

The hypotheses are:

A. The method of teaching design has not changed over time, as drastically as has the content changed.

B. The content of design studio teaching has changed significantly over time. It has shifted from dealing with public, monumental buildings that comprise a small percentage of the built environment to addressing issues which affect the majority of the people in a much broader context of total design.

C. Emphasis in the design studio has gone from product to process. Part of this shift is experienced in the move away from the traditional skills of drawing and graphic presentation, etc., toward technological replacements, computers, etc.

D. Design studio teaching has gone from having very specific limits, foci, theories and products toward a much less defined focus.

E. The role of the design studio teacher has shifted over time from one of master/apprentice to a more egalitarian position where teacher and student explore new material together.

The study was designed to review the teaching of a number of design teachers over time. Since the opening of the School of Architecture at MIT in October, 1868, there have been upwards of one hundred full-time

design teachers in the school. To study the methods of all would have been impossible and if possible, would have been redundant. Thus a limited sample of thirty design teachers was selected. The selection was made with the inputs of Professors Anderson and Lynch and based on their perceptions of people who had been significant figures in the school and who probably made a contribution to the students through their teaching. In this selection issues of longevity, tenure and/or reputation did not necessarily assure usefulness for the study.

When the thirty were decided upon, it turned out that fourteen were accessible in the Boston area, five were accessible through mail and telephone and eleven were deceased, necessitating historical research.

In order to reconstruct the experience of the particular design instructor's teaching, it was necessary to obtain as much information from both instructor and students whenever possible.

Three students per design instructor were selected for interview. It was felt that three samples would offer some perspective and a chance to detect patterns while not being impossible to execute.

Students were available for interview for all but the first design teacher at MIT. Thus three students from each of twenty-nine design studios and fifteen design teachers were personally interviewed.

Each interview was open-ended in nature in that I had a set of questions which outlined a specific area of inquiry dealing with the teaching of the particular design studio. Most of the questions generated very elaborate, complex answers which hit on many issues, and as such, no two people could answer the same question in approximately the same manner. The questions then served as guides for the free interview technique where the person begins to answer a direct question and in the associative

process covers issues which would be covered by other questions, had they not arisen when they did.

As the person related his/her answers, I would write them in a note-book. I asked the first two dozen people if I could tape their responses. Most refused. Subsequently taping was not done. Students were particularly concerned that if their views were on tape, there could be some negative repercussions should the instructors hear opinions about themselves.

The questions for the teachers follow:

1. What aspects of design have you concerned yourself with?

2. How have you selected the projects you have given in the design studio?

3. How do you introduce the design project?

4. How do you teach design?

5. Describe the termination of a project.

6. What alternative methods have you used to teach the design studio?

7. What changes have occurred, over time, in your teaching?

8. What has made the greatest impact on your teaching?

9. What is your image of your students?

10. What do you see your students getting from your class?

11. What projects have you worked on in practice?

The questions for the students follow:

1. What do you think (<u>design teacher</u>) was trying to accomplish in his/her design studio?

2. What did you learn in that studio?

3. (How do you select the design studio?) What criteria do you use in selecting a design studio?

4. What is your image of (<u>design teacher</u>)?

5. What were the strengths and weaknesses of the studio?

6. What changes would you have made in the studio - method - content?

7. How did (<u>design teacher</u>) teach design?

8. Which design teacher has made the greatest impact on you and why?

9. Which design teacher has impressed you least and why?

10. Describe your relationship/contact with the design teacher through-
out the semester. Do you seek him out during/outside of class?

11. What techniques did (<u>design teacher</u>) use to facilitate teaching
design?

12. What is your image of yourself relative to others in your class
and the design teacher?

Each set of questions was pre-tested on two faculty and four students
at the Harvard Graduate School of Design. During the pre-test, I focused
on three issues: was each question answerable, did the composite of all
of the questions give a picture of what transpired in the particular
design studio, and was it possible to record the results by hand writing
in a notebook?

In the pre-test I learned that the questions, "How do you teach your
design studio?" for the faculty and "How does Professor $\underline{X}$ teach the studio?"
for the students, were problematical. The questions in that form were
virtually unanswerable. The people seemed to be overloaded by the question;
they started by talking about a number of unrelated components, were gener-
ally unable to focus or make a coherent response. I modified the question,
"How do you teach design?" to "Describe your processes during one specific
design problem."

The people were then able to focus on the project and relate their actions as part of the process. As they went through their actions I would ask for clarifications as they were needed. When the interviews were finished, I compiled a series of check questions based on the patterns which developed and questioned another twenty people (18 students and 3 faculty) specifically about issues of methods, or presentation, or perceptions of their students, etc.

Generally the questions for faculty at this point were:

1. Do you use different teaching methods in your studio? If so, what are they? When are different methods used?

2. What is your image of your best students?

3. What role model do you see yourself fulfilling?

For the students the questions centered on specific clarifications of overall teaching procedures.

The material from the interviews showed general patterns of design studio teaching, which are presented as a series of six case studies. They are presented in a chronological order that parallels the development of design studio teaching in the MIT Department of Architecture.

Each design teacher could be treated as a separate case study in that each person is unique and teaches each studio somewhat differently from the previous studio. Changes can be precipitated by many factors, interest, subject matter, class composition, etc. But to present each teacher in each studio as a separate case would only generate an unuseful overload, for there are many similarities among the teaching methods of teachers at any period in time. Thus the case studies presented are of individual design teachers who are representative of the teaching methods of a number of other teachers.

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CHAPTER II

HISTORICAL SUMMARY OF MIT, DEPARTMENT OF ARCHITECTURE

1860-1870

In 1861 William R. Ware was asked by MIT President and founder,
William Barton Rogers, to develop the Department of Architecture. With
four years' delay due to the Civil War and with an additional three years
spent in study of European schools of architecture, the Department of
Architecture at MIT opened in October, 1868, with 16 students under Ware's
direction. Of the 16 students, four were full-time in architecture and
the rest were employed in offices and came to school only to attend
lectures.[1]

The design work of the year consisted of a series of design problems
"of gradually increasing difficulty; such as among others, A Balcony, A
Bridge, a Triumphal Arch, A Swimming Bath, A Mausoleum, A Chapel."[2]

In 1869 Francis Chandler returned from studies in Paris to assist
Ware in teaching but stayed for only a year because of commitments to
be the architect of the Treasury Department at Washington.

Subjects offered by the department in 1870 included two courses in
Architectural Design, Drawing (four courses), Construction, Applied
Mechanics (two), Descriptive Geometry (two courses), Professional Practice,
Engineering, Heating and Ventilation, and Building Materials.[3] (Number
of courses in parentheses; see Appendix A for list of subjects.)

By 1870 a number of events had taken place in the architectural arena.
The Ecole des Beaux Arts had been operating in Paris for over 70 years.
The Ecole, founded in 1797, was an outgrowth of the original Royal Academy
of Architecture established in Paris in 1671 as part of a "supplementary

system to enhance the training of apprentices and relieve their masters of the responsibility of elementary instruction."[4]

Richard Morris Hunt, in 1846, was the first American to attend the Ecole des Beaux Arts. By 1870, ten other Americans had followed him to study in Paris.[5]

During the 1830's and 1840's a number of professional organizations were formed, usually by painters and sculptors. In 1857 a permanent organization for architects, the American Institute of Architects, was founded in New York City. Richard Hunt was among the 13 founders. By 1870 the AIA had held four annual conventions and was concerned with the development of the Institute and the architectural profession.

In the field of education, the U. S. Congress passed the Morrill Land Grant Act in 1862, "to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."[6] This Act provided the support necessary to establish the first schools of architecture in this country. By 1870 there were three schools in operation; MIT (founded in 1861), Cornell (1865) and University of Illinois (1867).[7]

1870-1880

At this point Ware began to seek a replacement for Chandler but was unable to do so for more than a year because "very few young men in this country have the sort of training that fits them for school work and those few being in great demand for other work."[8] Ware, through contacts in Paris, was able to secure Eugene Letang from the Ecole des Beaux Arts. He arrived at MIT in December, 1872.

As Letang began to assist Ware, the work of the design studio remained "substantially the same (in) character"[9] with the exception that during the last half of the year a considerable number of smaller projects, each occupying a couple of days, were introduced. These projects included A Porch, A Carriage Porch, A Portico in a Garden, A Peristyle, A Mantle Piece, etc.

Support courses at this time were given through a series of lectures and included such topics as Construction, History and Criticism, Shades, Shadows and Perspectives, Composition of Mouldings, Details and the Orders. Design work was done in the third and fourth years. This was considered by Ware to offer only an introduction to architecture and he proposed in the 1871 report of the Departments that a Postgraduate course be developed which included as its main work "the study of Architecture as a branch of the Fine Arts."[10] The postgraduate course was effected in 1873 "by separating from the undergraduate work the subjects of practical construction specifications, and working drawings which the undergraduates have not time to pursue to advantage."[11] These courses were to be combined with an advanced design course which was not yet organized to form the postgraduate work.

By 1880 courses were added in Greek and Roman History, the Orders, Medieval History, Blackboard Drawing, Theory of Decoration, Perspective, the Decorative Arts, History of Ornament, Modern Architectural History, and Strength of Materials.[12]   (See Appendix A for list of subjects.) These courses in addition to the Design Studio were offered in the context of a broad, scientific education which included a required core of chemistry, physics, two languages and literature.

In the design class "The practice of design begins with simple prob-

lems intended as practice in the use of the orders, and goes on gradually

to the higher class of monumental work and to buildings of complicated and

difficult plan."[13]

By 1880 the school's enrollment had increased from four students

taking the architecture courses (two years of study) and 12 taking only

select classes while working in an office to 33 students in architecture,

five of whom were regular students in the Institute pursuing a four-year

course confined to strictly professional work. Twelve degrees were awarded

during these years.

Architectural drawing and design (studio) has increased in number of

hours per week, signaling increased importance. Architectural drawing

met 14 hours per week during the third and fourth years. Ten hours of

freehand drawing per week was introduced into the second year.[14]

In 1880 the Ecole des Beaux Arts continued to be a major model for

architectural education in this country as well as a growing attraction

for training American architects. At that time the teaching at the Ecole

was dominated by Julien Guadet. Under Guadet, Beaux Arts training "became

almost completely focused on the elaboration of multi-axially symmetrical

plan patterns of abstract but unfunctional elegance."[15]

During the 1870's the number of Americans studying in Paris continued

to increase. By 1880 26 men had received architectural training at the

Ecole.

The number of schools in this country also continued to increase with

Syracuse University opening a College of Fine Arts in 1873 with two depart-

ments, painting and architecture.

The architectural profession in this country continued to grow and become more useful, largely through the efforts of local AIA chapters. The profession at that time was concerned with the organization of "Committees of Examination to act with local building authorities, and spare no efforts to get building efforts well organized - regards utility and safety as well as beauty and architectural harmony. . ."[16]

The profession was also concerned with the U. S. government's establishing tests for "so-called fire-proof materials and methods of construction."[17]

1880-1890

In 1881 William Ware resigned his position as Head of the Architecture Department and was replaced by Theodore M. Clark, who remained until 1887 when Francis Chandler returned to the department from the Treasury Department. Professor Letang continued to teach all of the design studios through 1888 (including a fifth-year design studio)[18] when Eleazer Homer, an MIT graduate, was employed to assist in the second-year studio.

The design programs included partial problems in the early years and developed to monumental and complex ones in the later years. Designs executed during these years included a Monumental Column, a Memorial Library and a Music Hall.

During the 1880's the strength (in time and importance) of the architecture curriculum grew relative to the Institute's requirements for a degree.

Language requirements were relaxed as were some of the science requirements. The design studio continued to gain importance in the curriculum. Design studios were offered in the second through the fifth years.

Hours per week devoted to the studio continued to increase adding to the studio's central position. In 1880 a fourth-year studio met 14 hours per week. In 1890 the advanced studio met 25 hours per week. Enrollment continued to climb throughout the decade. By 1890, 100 students were enrolled in the department, 30 of whom were regular Institute degree candidates. Nineteen degrees were awarded during the decade.

Subjects offered by the department in 1890 centered on graphic communication skills, historical concerns and some professional issues. New courses included Iron Construction, Stereotomy, Business Relations, History of Construction, Advanced Design, Pen and Ink (two courses), Freehand Drawing (two courses), Watercolor (two), History of Painting and Sculpture, and Graphical Statics.[19] (Number of courses in parentheses; see Appendix A for list of courses.)

By 1890 the number of schools with architectural programs had increased to seven. Columbia University opened a school of architecture in 1881 under the direction of William Ware from MIT. George Washington University began instruction in architecture in 1884. In addition, the University of Pennsylvania opened its department of architecutre in 1890.[20]

During the 1880's the influence of the Ecole des Beaux Arts continued to intensify. Twenty-five more Americans went to Paris for architectural training during the decade.[21] A number of the Americans who attended the Ecole returned to this country and opened private ateliers in their offices. These ateliers were modeled after the French system.

During the 1880's the profession continued to grow and manifest itself in a number of societies and confederations. The largest society of architects outside of the AIA was the Western Association of Architects

centered in Chicago. In 1889 this association was incorporated into the

AIA, thus forming one professional organization at the national level.

The profession in 1890 was concerned with the role of the architect

in society and the standards by which the professional practiced. In the

late 1880's the AIA established a committee to develop a code of ethics

for the profession. This was intended to be a guide for the delivery of

more uniform professional services. At that time the architectural pro-

fession included people from widely varying backgrounds and with diverse

objectives. Some architects had been trained at the Ecole des Beaux Arts

in Paris, others had been trained in the offices of practicing architects

and still others had no training whatever. In this composite were people

very much concerned with the delivery of professional services in a pro-

fessional manner. At the same time, there were people, also called archi-

tects, who were "hustling guerillas concerned with filling their bellies."[22]

The profession was also concerned with the role of the architect in

providing services to the federal government for the design of national

public buildings. The government at that time had tended to rely on the

services of engineers much more than those of architects.[23]

1890-1900

The 1890's saw many important changes take place in the Architecture

Department. In 1891 the two-year partial course was eliminated "placing

this department, at last, upon precisely the same basis as to regular and

special students, with all others."[24] Special students could take courses

while working in an office if they had had two years of regular office

experience, if they were graduates of college, or if they were over 24

years of age.[25] In the same year (1891) Eugene Letang died after a short

illness. To replace him ". . . Professor Chandler sought from among the

well trained graduates of the Ecole des Beaux Arts one who might corre-

spondingly meet the needs of the well established school."[26] Letang's

successor was Desire Despradelle who arrived at MIT in September, 1892,

as Associate Professor of Architecture. That same year, students were

able to choose their course of study at the end of their first term.

"This change has allowed some very important improvements to be effected

in the architectural course, especially in the introduction of more of

freehand drawing, and more of descriptive geometry."[27]

In 1890 the department offered the first option to the architectural

course. This option was in architectural engineering and under the direc-

tion of William Lawrence. In the 1898 Report of the President, Professor

Chandler writes:

> For some time it has been felt that a demand existed for
> men specially trained in the computation of all the details
> of modern steel construction, and that the regular course
> should be so modified that undergraduates might be allowed
> a choice between the academic and engineering sides of
> architecture.[28]

The second option to the architectural course came in 1899 with the devel-

opment of a landscape architecture course.

By 1900 with the addition of two design studios, design was offered

in all years, second through fifth (graduate) levels. Support courses

(other than design studios) focused on graphic and simulation skills

(modeling and drawing), the profession (specification, working drawings,

business relations, etc.), and history. New courses included Structural

Design (two), Modeling (one), and Building Construction (one). Deleted

from the offerings were courses in History of Painting and Sculpture and Graphical Statics.[29] (Number of courses in parentheses; see Appendix A for list of courses.)

Growth continued in all areas; enrollment increased to 50-60 regular students with 12 faculty by 1900. One hundred thirty-five undergraduate degrees and eight Masters' degrees were awarded during the decade. Studio hours for the upper years continued at 26 hours per week. The quality of the student also improved. In the 1893 President's Report, Professor Chandler notes that "among the new students there are not less than twenty-three college graduates," and that "seven of the students in Architecture are taking a purely graduate course."[30]

During the 1890's architectural programs were started at Armor Institute of Technology (1895), Harvard (1895) and Notre Dame (1898).

The popularity of the Ecole des Beaux Arts had increased. During the decade, 110 Americans were trained in Paris.[31] Most of these people returned home fired with missionary zeal to recreate the whole Ecole-Atelier system in the United States.[32] An Association of American Alumni of the Ecole was seen as a potential means to achieve such a system. In 1894 the Society of Beaux Arts Architects was incorporated in New York with 72 members. The objectives of the Society were "to combat current architectural 'vagaries and abuses,' promote the principles of taste taught at the Ecole, encourage American students to enter the Ecole, and urge the creation of a national central school of architecture modeled on the Ecole."[33] The Society immediately issued and judged the first of their student competitions. It also created the Paris Prize as part of its educational program.

Independent of the Society of Beaux Arts Architects, an American School of Architecture in Rome was proposed in 1894 by Charles McKim and Daniel Burnham.[34] This proposal was stimulated by the "Rome Prize" of the Ecole des Beaux Arts, whereby the top graduate of the Ecole was awarded a scholarship for four years of study in Rome. Later, with the addition of painting, sculpture and landscape architecture, the school became the American Academy in Rome.

Concern in the profession continued to center on architects providing services to the federal government for the design of major buildings. In 1892 the profession prevailed upon Congress to pass the TARSNEY Act. This act impowered "the Secretary of the Treasury Department to secure designs, by competition, from the best architects in the United States for government buildings."[35] The act was proposed "because the character of buildings erected by the government fell far below the character of buildings erected under private architects, the government, . . . was by its example debasing the taste of the citizen."[36]

The profession was also concerned with informing the public of the services provided by architects, regulation and standardization of practice education, and the licensing of architects by state.[37] The question of requiring certain qualifications as legal prerequisite to architectural practice was first debated in the late 1880's in meetings of the Western Association of Architects. In 1897 Illinois became the first state to regulate the practice of architecture through legislation.[38] The Illinois Act as it was known, provided a Board of Examiners who determined whether a person was qualified to practice architecture. With this provision, a person could no longer just declare himself to be an architect without prior training and/or experience.

During the 1890's the first architectural magazines were published. These publications showed the practice of architecture to center on monumental public buildings and residences for the wealthy. The early volumes of <u>Architectural Record</u> catalogued the contents into churches, country houses, commercial buildings, and doorways.

1900-1910

During the first decade of this century, changes continued in the Department but at a slower pace than during the preceding 10 years. The course structure remained the same, with the three options of architecture, architectural engineering and landscape architecture.

The enrollment increased to a point where the physical plant was no longer adequate. To accommodate the various classes, exhibition and museum space was converted to studios, where two-or-more-year groups operated in one space. Precipitated through necessity, this arrangement generated a desirable learning environment.

In the 1906 Department report, Professor Chandler wrote, "the good results of bringing the advanced classes into closer touch with each other in the drawing rooms are already being seen."[39] He restated this in the next year's report, "the good results that have attended the union of third- and fourth-year students in a common drawing room have made it highly desirable that the second-year students should have part in the same arrangement."[40]

In the 1908 report, Professor Chandler argued for extension of the undergraduate program to five years. He wrote the following:

As affecting our present work, I beg to present to your con-
sideration two important matters. First, the desirability of
requiring in the near future, five years attendance in this
Department to attain the Bachelor's degree. Until now our
experience alone governed our desires in this matter, but
now there have come pressing demands from the architectural
profession for a higher standard of graduation from the
schools, which, if met, makes it imperative to lengthen
the course.[41]

No action was taken on this matter during this decade. Despradelle

continued to dominate the design studio teaching. With three assistants,

he directed the four years of design.

The orientation of the curriculum was toward the profession and prac-

tice of architecture. In the Institute Catalogue for 1909-10 it states,

"the instruction offered at the Institute is intended to supply the pre-

liminary training required for the practice of Architecture."[42] By 1910

new courses were offered in Elementary Design (one), Architectural History

(two), Freehand Drawing (three), Theory of Architecture (one), European

Civilization and Art (four), Heating and Ventilation (one), and Acoustics

(one). Deleted from the course offerings were two courses of landscape

design.[43] The landscape option was removed from the undergraduate cur-

riculum and operated only at the graduate level. (Number of courses in

parentheses; see Appendix A for list of courses.) In addition to design,

a high portion of the courses focused on graphic skills. In the 1910

catalogue is found the following:

Architecture is essentially a fine art. The professional work
begins with drawing from the cast and from life, growing in
importance through the four years, till in the graduate year
Decorative Figure Design is studied in its varied relations to
painting and sculpture. Supplementing this there are courses
in water-color, pen, pencil and color rendering and modelling.[44]

The school continued to grow, particularly the graduate program. In 1910, 113 regular students were enrolled with 12 faculty. During the decade, 119 undergraduate degrees were awarded and 39 Master's degrees.[45]

Criticism of student designs by the instructors continued to be a major teaching method. In the 1906 Report of the Department, Professor Chandler wrote, ". . . our larger exhibition room permits of calling the students together at short intervals to discuss their current problems in design, and to receive criticism on their work."[46] In the 1907 Report he continued on this subject, "The third and fourth year men now meet on a common ground. They help each other in many ways. They work on each other's drawings and they criticize each other's designs."[47]

The influence of the Ecole des Beaux Arts in Paris intensified during the decade. The 1909 Department Report states, ". . . the opinion until recently prevalent that the American architecture schools are hardly more than feeders of the Paris, Ecole des Beaux Arts."[48] Classical issues continued to dominate the concerns of the design studios. From the 1909-10 Institute catalogue the description of the design courses states the following:

> He is made to study and analyze the elements of the best
> examples of Classical architecture, in order to cultivate
> his tastes and sense of proportion.[49]

During the decade 1900-1910, nine new schools of architecture were opened bringing the total to nineteen. The new schools were Ohio State (1900), Washington University-St. Louis (1904), University of California (1904), Carnegie Institute (1905), University of Michigan (1906), Alabama Polytechnic Institute (1907), Tulane (1908), Georgia Tech (1908), and the

University of Texas (1909). In the schools, the influence of the Ecole des
Beaux Arts was beginning to intensify. By 1911 all of the schools had
Ecole-trained teachers on their staffs (American or French alumni).[50]

The idea of a national School of Architecture continued to be an
issue. At the 1909 AIA convention a proposal was made for a national
School of Architecture with courses at the graduate level to be located
in Washington, D. C.[51]

The profession continued to be concerned with matters of education,
ethics of practice and "the relation of the government to the profession
is held to be of supreme importance."[52]

In 1901 a plan was prepared for the future development of Washington,
D. C. Known as the McMillan Plan, it focused concerns the profession had
about town planning in general and the development of the nation's capital
specifically.

During this decade four more states adopted licensing regulations;
New Jersey (1902, Arkansas (1901), California (1901), and Colorado (1909).

The architectural magazines continued to publish work which was
relatively monumental and public in nature.[53]

1910-1920

During this decade the MIT Department of Architecture experienced
the extremes of its largest enrollment since its beginning (161 students
in 1915-16) and a few years later the suspension of classes for lack of
enrollment (1919 due to the First World War). The department also experi-
enced the death of Desire Despradelle in 1912 and the retirement of Francis
Chandler as Head of the Department. Neither position was easily filled.
It was only after the war and a succession of people in each position that
stability was established.

Replacements for Despradelle included Professor Duquesne for a one-year joint appointment with Harvard School of Architecture. He was followed by Albert LeMonnier, Edgar Williams, Stephen Codman and Ralph Adams Cram who taught the upper design courses until 1920 when he returned to practice. The Headship of the Department shifted from Chandler to James Knox Taylor and then to Ralph Adams Cram.

At the beginning of the decade the Department was involved in the development of an intercollegiate competition for architectural schools of the East. This was independent of the Society of Beaux Arts Architects' competitions begun in 1893. The following is from the 1912 Report of the Department:

> . . . In its essentials the proposition is to have at some
> stated date each year a single program given simultaneously
> to the more advanced classes in Architectural Design at
> Harvard, Columbia, Cornell, Pennsylvania and MIT, to be
> attacked and solved exactly as though it were the regular
> work of each school; the results to be brought together in
> a joint exhibition to be judged by a competent jury.[54]

Two years later, in 1914, MIT withdrew from the Interscholastic competition, "owing to the very great interruption in the regular work caused by the preparation of the drawings. . ."[55] An underlying reason for MIT's withdrawal from the competition was presented in the next year's Report (1915) of the Department which reads:

> Every effort has been made to eliminate the undesirable ele-
> ment of competition between the schools, which finally proved
> such an unsatisfactory and undignified feature of the 'Inter-
> scholastic Competition', and largely on account of which it
> has been discontinued.[56]

In place of this competition, MIT, Harvard and the Boston Architectural Club arranged to give some of the same programs to the upper design classes

of each school. Then "joint exhibitions will be held in which the work as

a whole may be studied. The plan should act as a stimulus to the stu-

dents."[57]

In 1915 a grading system, based on numerical values, was introduced.

From the 1915 Department Report the following is stated:

> Numerical values, or points, are given to each design in ac-
> cordance with the mention it receives at the judgment of the
> problem, a certain number of points being required in order
> for the student to advance from one grade to another. Only
> those drawings which receive mention or are 'placed' are
> given numerical values.[58]

—This system tended to make the design studios product oriented in

that a student's advancement was a direct result of the number of points

acquired in the judgment of the design. The design problems increased in

scale and scope as the student proceeded through the studios. The course

description for Design I from the 1919-1920 Catalogue states:

> This course lays the foundation for the aesthetic training of
> the student. He is made to study and analyze the elements of
> the best examples of classical architecture in order to culti-
> vate his taste and sense of proportion. The fundamental prin-
> ciples of architecture are inculcated and the influences gov-
> erning design are explained and discussed. By means of prob-
> lems in design the student is taught the methods of study, the
> principles of academic rendering, and obtains the necessary
> training of the hand and the eye. The course is given by
> means of individual instruction in the class-room, and by
> criticism of the students' work before the class.[59]

From the same catalogue, the Description for the Advanced Design Studio

states, "This course. . . aims to give the student training in design

through the study of buildings of monumental character, special attention

being given to the analysis of the conditions of the problem. Sketch

problems of a day's duration are given at intervals throughout the year.[60]

— Design continued to be _the_ single most important course in terms of
time allocated to it. In 1920 the catalogue shows for second year 100 of
330 hours of exercises allotted to design. This number increases for
third- and fourth-year students to a point where in fourth year, 320 of
430 hours of exercises are in design. (These are the number of hours per
10-week period.)[61]

In addition to design the courses offered in the curriculum centered
on graphics, history and practice. The courses offered in 1920 were similar—
to those offered in 1910.[62] (See Appendix A for list of courses.)

MIT at the time was a leading proponent of Beaux Arts teaching. —
Upon receipt of two medals from the Societe des Architects Diplomes par
le Gouverment Francais, for design competition awards, William Lawrence
wrote in the 1915 Department Report the following:

> This was, we believe, the first instance of an American
> school of architecture receiving recognition in this
> particular form. It may be considered as a graceful
> acknowledgment of the fact that since its inception some
> forty years ago Technology has adopted the method and
> the spirit of its instruction in architecture from
> those of the Ecole des Beaux Arts, and has had two
> distinguished graduates of that school, Professor
> Letang and Professor Despradelle, at the head of its
> courses in Design.[63]

Growth continued through 1916 when the Department had its largest
enrollment with 161 students. At that time there were 15 faculty members.
During the decade, 251 undergraduate degrees were awarded and 37 Master's
degrees.[64] The remainder of the decade marks the steady decline in
enrollment due to the First World War which had a devastating impact on

the Department. Enrollment dropped from 161 in 1916 to 18 in 1919. For

the design courses which we,re taught, the war affected the types of prob-

lems which were given.

> An interesting modification of the work in Design . . . was —
> made with the idea of bringing this work more closely into
> line with the large problems in planning hospitals, canton-
> ments which are today occupying the attention of the govern-
> ment.[65]

In 1919 the Department discontinued professional courses.

> No formal professional courses were offered during the first
> period of eleven weeks, but to accommodate a number of women
> students and others not eligible for service, informal in-
> struction was given in Design, Freehand Drawing, Water Color,
> Office Practice, History of Architecture, History of European
> Civilization and Art, and Descriptive Geometry with the under-
> standing that credit would be allowed for the work accomplished,
> at such time as the Department should return once more to a
> normal basis.[66]

But the orientation of the curriculum continued to be toward the

profession though somewhat tempered. In the 1917-18 Institute Catalogue

is stated the following:

> It is believed undesirable, in fact dangerous, to spend much
> time upon the hampering limitations of ordinary practice be-
> fore the student has acquired sufficient knowledge of the
> subject to discriminate between the general and the special
> case.

It continues:

> The student is strongly advised to spend a part of the sum-
> mer vacation in an office. The experience that he gets
> there of practical problems and conditions will be a great
> aid to him in a clearer understanding of the value of his
> school work.[67]

The 1910's were a period of considerable expansion in the country, the architectural profession and the schools. Sixteen new schools were opened during the decade, ranging across the country from Yale (1913) to University of Oregon (1914) and from University of Minnesota (1913) to Rice Institute (1912).[63]

The influence of the Beaux Arts teaching was further intensified with the incorporation of the Society of Beaux Arts Architects into the Beaux Arts Institute of Design in 1916. The BAID provided the schools throughout the country with design programs. These tended to be monumental and public at that time. The projects from all participating schools were sent to New York for one common jury, at which time awards were made. During this decade and the next, a school's reputation was a direct function of the number of awards its students had won in the BAID competitions.

The expansion in numbers and the diversity of support and administration in the schools became a concern of members of the profession. They were concerned that the schools not become isolated and provincial.[69] In order to "promote the efficiency of architectural education" and to facilitate communication among the schools the Association of Collegiate Schools of Architecture was formed in 1912.[70] James Knox Taylor of MIT was one of the eight professors instrumental in forming the association. Immediately the association (ACSA) set about establishing criteria for curriculum, admissions, courses, etc. In 1914 the first standard minima for general requirements were proposed (see Appendix B). Standard minima would continue to be a strongly contested issue in architectural education for a number of years. Concern was repeatedly expressed about the standard minima freezing architectural education in a rigid mold, destroying faculty

initiative, preventing variety, and discouraging adjustments to new needs and methods.[71]

During the 1910's the profession was concerned with the repeal of the Tarsney Act of 1892, and the resulting lack of government policy for the construction of public works.[72] There was concern about the depletion of architectural work, due in part to the effects of WW I. Town planning continued to be a concern as did education, professional advertising, relationship of architecture to allied arts, and licensing of architects.[73]

By 1920 fifteen more states had enacted licensing legislation. The AIA at that time took a neutral position on registration, leaving it to each state to determine.[74]

The publications continued to show country villas, railroad stations, expositions, churches, city halls and some neighborhood plans.[75]

1920-1930

The decade was marked by efforts to rebuild the department after the war. The 1910's had been a decade of change, flux and disruption, because of the war and the loss of people within the department. Ralph Adams Cram who had been head of the department, left in 1919 to return to practice. He had also been the major design teacher.

The efforts to re-establish the quality and subsequent growth began in 1920 with a new department head, William Emerson.

From Emerson's first Department Report in 1920 comes the following:

> That a carefully considered policy in the teaching of design
> was essential to the future success of the Department was
> obvious and a matter of agreement between the staff and
> President Maclaurin. It was further evident that such a
> policy should preferably be pursued under the guidance of
> some one individual.[76]

That one individual was to be Albert Ferran, a graduate of the Ecole des

Beaux Arts and a Grand Prix de Rome winner. He arrived at MIT in October,

1921, to take charge of teaching design. In 1924 the head of the design

courses changed from Albert Ferran to Jacques Carlu, also a Grand Prix

winner. In addition to teaching the advanced design courses, Carlu was

director of the Architectural School of Fontainebleau during the summers.

This provided the students from the Institute the opportunity to study at

the school in France during the summers.[77]

In 1922 the graduate program offered Town Planning and Architectural

Humanities, in conjunction with the Architecture and Landscape Architecture

courses it had offered. Architecture, Architectural Engineering continued

to be the degree courses for undergraduates. In the 1924 Report of the

Department, Professor Emerson again called attention to the need for a

five-year Bachelor of Architecture degree. He wrote:

> . . . That if the value of the Institute's degree in Architec-
> ture is to be maintained on the high plane that the profession
> expects of its graduates, a new schedule of courses leading to
> the degree of Bachelor of Architecture and covering a period
> of five years should be established. This should be followed
> by a sixth or graduate year leading to the degree of Master of
> Architecture.[78]

With the entering class of 1927 the Institute began the five-year Bachelor

of Architecture program that Professor Emerson had championed since his

arrival at MIT. Other curriculum changes included the introduction into the first-year courses on Architectural History, Theory of Architecture, and Drawing (freehand).[79] General Studies were introduced in 1929.[80] By 1930, additions to the course offerings included Office Practice (three), Estimating (one), Theory of Architecture (seven), Architectural History (six), Town Planning (one), Design (six), Planning Principles (one), and Color (two).[81] (Number of courses in parentheses; see Appendix A for list of courses.)

By 1930 there were 238 students in the Department with 16 faculty. During the decade, 246 degrees were awarded with 39 granted in 1929-30. This was the largest number of degrees granted in one year in the history of the department.[82] Design continued to be the dominant course in the curriculum, 36 hours per week for the advanced design courses, compared with 11 or 12 hours of class and preparation for the support courses (non-design).[83]

The practice of having older students teach younger students by being in the same studio and setting the pace was attempted in 1928 when

> . . . the department (is selecting) selected for the new
> year's group of advanced students three of the most promis-
> ing of the preceding year to continue the study of design,
> without being required to pay tuition, it being believed
> that the value of these older men as pacemakers for the new
> students will counterbalance the additional time required
> by them from Professor Carlu.[84]

Criticism of students' design continued to be a dominant method of teaching. Concern about the amount of criticism and subsequent direction given to a student was expressed by Professor Emerson in the 1924 Department Report.

> The committee on Design was satisfied that in the criticism of
> student work there was a tendency on the part of the instructors
> to give the students more assistance than was really needed,
> with the result that the student tended to become dependent
> on his teacher instead of self-reliant.[85]

Cricitism was therefore limited to two stated periods a week.

Remnants of Classical issues were still present. In the 1929-30 —

catalog, the course description for the first course in design states:

> The beginning of the study of the principles of architectural
> composition by means of problems. Given with individual in-
> struction in the drafting room and criticism of the student's
> work before the class. In combination with the lectures in
> theory of architecture, the student is made familiar with the
> elements of buildings derived from classic precedent.[86]

The Ecole des Beaux Arts tradition as manifested in the Beaux Arts

Institute of Design continued to have a major influence on the Department.

The practice of stimulating motivation through the award of prizes became

central to the educational orientation of the Department during the decade.

There were by 1930 a number of awards including the Paris Prize, "the

most coveted honour available to architectural students in the country,"[87]

the Rotch Scholarship, the Guy Lowell Scholarship, the LeBrun Scholarship,

all sending students abroad for various periods of time. In addition

there were created in 1928, "2 Fontainebleau Scholarships, which continue

to serve as a great incentive to our third- and fourth-year students."[88]

In the four years between 1926 and 1929 students from the department won

three Paris prizes which were offered by the Beaux Arts Institute of

Design in New York. The competitions tended to keep the studios product —

oriented.

Most schools used the BAID programs, but not all submitted the designs to New York for judging. A few schools began to explore other methods during this period. In the early 1920's the University of Oregon began to teach design by "means of individual problems adjusted to the needs, interests, and pace of each student, who would no longer compete for grades--there were no grades at all--but be motivated solely by the challenge of personal growth."[89]

During the 1920's eleven (11) new schools were started, bringing to 47 the number of schools with architectural curricula.

In 1922 the University of Cincinnati started a cooperative architectural program. After a regular first year, students alternated between academic work and working in the field. In 1925 the University of Florida taught all of its professional subjects entirely by means of a series of integrated projects developed as tutorials.[90]

In the late 1920's widespread concern over the merits of the BAID Competitions began to develop. Winning medals had become more important than student growth. In order to win the awards, critics and assistants in many of the schools would "help" promising projects.[91]

Throughout the decade the Association of Collegiate Schools of Architecture debated the standard minima first proposed in 1914.

The ACSA found itself in the position of an accrediting board for the schools in that membership to ACSA was controlled by the educational standards of each school.

The length of time needed for an architectural education was an issue that was discussed in the ACSA as well as the Education Committee of the AIA. Both bodies recommended the lengthening of the course of study

from four years to five years. "The additional time (to) be occupied in
increased cultural, scientific, and structural studies."[92]

In Europe in 1925 the Bauhaus moved to Dessau. Walter Gropius re-
signed as director in 1928. He was succeeded by Hannes Meyer who in turn
was succeeded by Mies van der Rohe in 1930.

The concerns of the profession during this time ranged from the
economic slump brought on by the First World War; to the coordination of
architecture with the allied arts. City planning as manifest in the
rebuilding efforts in Europe was of special interest.

Serious concern developed in parts of the profession over the emergence
of the modern movement. Ralph Adams Cram's address to the 1928 AIA conven-
tion was focused on the "Decadence in the Arts in France." He stated,
"In a word, then, I was struck with amazement by two things; one, the
incredible degree to which the war-devastated area had been restored, the
other, the apparent and progressive degeneration of all of the arts in
France, and especially architecture during the last 20 years."[93] Reference
(shown by the photographs in the article) was to the work of August Perret
and his contemporaries. Earlier the 59th Annual Convention of the AIA
went on record condemning the "tendency and policy of the modern movement
in painting and sculpture . . ."[94]

In 1920 twenty (20) states had enacted licensing legislation. In
order to coordinate the requirements of the various states for architec-
tural registration, the National Council of Architectural Registration
Boards (NCARB) was created.

By 1930 twelve (12) more states had passed registration requirements.
The architectural publications displayed banks, hospitals, high schools,

large residences, office buildings, museums, etc., as the types of build-
ings architects were designing at the time.[95]

1930-1940

The decade of the 1930's was one of change. The most significant
change was the evolution from the Beaux Arts influence toward the concerns
of the Modern Movement and the "international style" which had momentum
in Europe at the time. A number of factors contributed to the transition.

Beginning in 1929 basic design was introduced into the first year.

> To provide a training in Design which will better meet the
> present trend in modern architecture, we have been carrying
> on for the past two years experiments in the first-year class
> by giving the students exercises in abstract design as the
> proper basis of the beginning of this important subject.[96]

In 1932 Professor Carlu retired from the School. He was the last of
the Beaux Arts-trained teachers who headed the design component of the cur-
riculum. At this time the Department of Architecture became the School of
Architecture. The following year, 1933, a degree option in City Planning
was started. In 1937, the Architectural Engineering option was terminated.
Dean Emerson retired in 1939 and Alvar Aalto was appointed as Research
Professor in Architecture in 1939. Professor Emerson was replaced by
Walter R. MacCornack.

The thrust of the Department continued toward the profession and the
practice of architecture. Changes and adjustments in the curriculum were
tested in the profession. For example, in 1937, "Conscious of the changing
requirements that characterize current practice, certain members of the
Visiting and Advisory Committees united in sending out a questionnaire
to some forty or more architects throughout the country in an effort to
learn what was thought of our present teaching policy and methods."[97]

The curriculum for architecture in 1940 included the concentrations of design, the profession (practice), graphic communication and history. New course offerings included Architectural Design (two), Freehand Drawing (four), and Housing Seminar (one). Reductions were in the number of courses in Architectural History (three).[98] (Number of courses in parentheses; see Appendix A for list of courses.)

Classical issues were dropped from the course description of the design studio. From the 1939-40 catalog:

> Problems in architectural composition as applied to buildings
> of simple requirements and varied character. Carried on by
> means of eight hours preliminary sketch exercises in the form
> of sketch problems. Some of these are further developed to
> a final result in a period of 4 to 5 weeks.[99]

The technique of beginning a design problem with a sketch problem was a hold-over from the methods employed at the Ecole des Beaux Arts. The same catalogue describes Design 5 as "A continuation of 4.742 in methods, the character of the problems being of an advanced nature."[100] Design problems tended to be progressive in nature, in that they started as relatively simple concerns in the first year and got progressively more complex and demanding in the later years. The continuing importance of the competitions tended to keep the end product a major concern in the design studios. Report after report of the Dean lists the competitions won by Tech students.

The economic situation in the country during the early 1930's and the uncertain situation in Europe at the time had an impact on the growth rate of the Department. From a record of 228 in 1929-30, the enrollment steadily decreased to 85 full-time students in 1936-37. This pattern

continued until after the Second World War. In 1940 there were 18 faculty

listed for the architecture option. During the 1930's 146 undergraduate

degrees and 81 Master's were awarded in Architecture.[101]

During the 1930's more schools abandoned the BAID competitions in

favor of their own design problems. This was the beginning of the decline

of the Beaux Arts influence.

After considerable debate and increasingly strong reaction against

accrediting based primarily on "arbitrary quantitative criteria" the ACSA

in 1932 "abolished the Standard Minima and adopted a much more liberal

qualitative basis for membership based upon firsthand inspection of appli-

cants."[102] ACSA continued in the unsolicited role of accrediting board

until 1940 when the National Architectural Accrediting Board was estab-

lished (NAAB). This Board was composed of six members, two each from ACSA,

the AIA, and NCARB.

During this decade discussion in the schools and the profession focused

on the experiences between school and professional registration. In 1933

the AIA, ACSA, and NCARB collaborated to develop the Mentor Plan "which was

intended to provide each architectural candidate with the guidance of an

experienced practicing architect during the period of preparation for the

registration examination."[103]

Discussion also continued on the need for a 5-year architectural

program.

The late 1930's marked a turning point in architectural education in

this country. Walter Gropius was appointed chairman of the architecture

department at Harvard in 1937, and Mies van der Rohe was appointed director

of the school of architecture at Illinois Institute of Technology in 1938.

These schools were the first centers of the Modern Movement in this —
country.

The profession was particularly concerned about the economic situation
and the serious decline in building.

During the 1930's the architectural publications began to show a
change in the project types designed by architects. In addition to
churches, theatres, and hospitals were apartment houses, restaurants,
shoe stores, slum clearance projects, department stores, housing develop-
ments and neighborhood plans.[104]

1940-1950

The decade of the 1940's falls roughly into two parts, the first
half focused upon and impacted by the Second World War, and the second
half concerned with establishing normalcy after the war experience.

The first five years were characterized by a steady decline in
classes, enrollment and activities which reached the low point when 19
students enrolled in the Department in 1944-45. This decline closely
paralled the decline of all building activity in this country due to the
war effort.

> For the first time in the history of the architectural profes-
> sion the practice of architecture as a private business has
> ceased to exist because of the war emergency, even public and
> semi-public work has stopped, and within a few months probably
> all construction of any type requiring the services of archi-
> tects on a strictly professional basis will also cease.[105]

The last part of the decade was marked by the return to full operation
after the war. Many of the students during the late 1940's returned to
school after military service. "This first full graduating class since

the war is composed almost entirely of men whose architectural education began here after demobilization."[106] One hundred seventy people were enrolled in the department of architecture at the end of the decade.

In 1944 William Wurster took over as Dean of the School. At that time he brought in a number of people to teach who were each strong in his own right. They included the returning Alvar Aalto, Roberts Woods Kennedy, Gyorgy Kepes, Herbert Beckwith, and Henry-Russell Hitchcock. These people in combination with those on the faculty at the time, particularly Lawrence Anderson, formed the core of a faculty that decisively directed the Department of Architecture in a new direction. It was a faculty of people who after the years of transition during the 1930's set the department in motion towards the issues of contemporary architecture in an increasingly complex context. To further this orientation, Ralph Rapson and Carl Koch joined the faculty in 1946 and Vernon Demars in 1947. The design faculty were relative equals in that no one person was identified as being in charge of design and solely responsible for the direction of the design teaching. There no longer existed the major design teacher as there had under the Beaux Arts tradition. This core of teachers was augmented by the visits of leading professionals, Alvar Aalto, Buckminster Fuller, and Louis Kahn among many others.

In 1944, the School of Architecture became the School of Architecture and Planning, "with 2 coordinate departments; Architecture under the direction of Lawrence Anderson, and City and Regional Planning under the direction of Frederick J. Adams."[107]

The orientation of the department continued toward the profession and the practice of architecture. Curriculum development was done in conjunction with professional input. The responsibilities of architects

to serve the needs of their clients, in social and economic terms was

recognized.

> Perhaps the most pressing problem of all is that of shelter
> for people of small means, a problem which will require cour-
> age on the part of the architectural profession because they
> must oppose vested interests of all kinds interested in main-
> taining the status quo in building codes, zoning ordinances,
> and other practices in the building industry which are against
> the best interests of the average citizen.[108]

The broader context within which architecture was to operate was

addressed through a required course in City Planning Principles. Collab-

orative problems were offered to students in Architecture and in Planning.

"It is felt that recognition of the separateness of the two professions

should not be permitted to become a barrier between them and that prac-

tice in joint solution of problems must be maintained."[109]

During the 1940's there was a shift in the focus of the curriculum

to include". . . a broader understanding of the engineering and scientific

problems connected with architecture."[110] This orientation was generated

in part by the resources available to the Department of Architecture from

other departments in the Institute. This orientation manifested itself

in the generation of two projects during the later 1940's, a study of the

uses of Solar Energy for home heating, and an Acoustics Laboratory.

> The idea has really been implanted that acoustical design is
> part of the basic concept of space enclosure and is not to
> be sought by applied correctives. A comparably imaginative
> treatment is needed in connection with problems involving
> structures, mateirals, thermal design, sanitary and electrical
> facilities, site engineering and electrical lighting.[111]
>
> . . .
>
> Though there are many paths leading to architecture, the
> staff of this School feel that our choice of direction
> should be that which will embrace the strength of the

Institute. This means a technical approach which will utilize
the MIT laboratories, courses on materials, and such subjects
as sanitation, acoustics, illumination and heating and venti-
lation.[112]

Design continued to be recognized as the primary course. "The com-

ponents of architectural education (history, technology, economics,

graphics) are cemented together in the courses in architectural design."[113]

Design problems included the social and economic contexts. The problems

tended to be progressive from basic fundamental issues in the first design

course, increasing in complexity through each successive studio. The

following is from the 1949-50 catalogue and is a course description for

the first design course:

> Investigation of requirements and determination of solutions
> for building problems selected from many fields of human
> activity (habitation, education, health, recreation, govern-
> ment, religion, industry, merchandising, and transportation).
> Relationship of buildings to physical and social environment,
> techniques of organizing spaces of different kinds in rela-
> tion to each other, climate and orientation, and selection
> of appropriate materials and construction.[114]

For an intermediate design course the same catalogue describes the course:

> Consolidation of previous design experience. Problems
> affording an opportunity to study particular conditions
> encountered in larger buildings, such as: circulation
> control, and safety of crowds, accommodation for vehicles
> and freight and the use of elevators and special equip-
> ment. Presentation of one detailed problem in the second
> term with studies of structure, assembly of materials,
> heating and ventilating, sanitation, acoustics, elec-
> tricity, and illumination.[115]

The advanced course in design is described as follows:

> Problems emphasizing basic community needs in housing,
> recreational, commercial and educational categories, and
> inviting speculation as to the future possibilities for

adequate solutions to these problems. Disposition of groups
of buildings on new sites with analysis of economic consid- _
eration.[116] .

Criticism of student designs continued to be the important method
of teaching in the studios. "During the past year we have been able to
individualize (due to low enrollment) the educational process; that is,
we have judged and criticized each problem with each student."[117] The
design studios continued to be concerned with the end-product. Formal
juries were held at the termination of each product, the results of which
determined part of the grade. The number of intercollegiate competitions
subsided from the heights of the 1920's when the BAID dominated much in
architectural education. More liberal arts were introduced into the
curriculum through a plan which allowed for three years of liberal arts
to be followed by three years of professional work for a Bachelor of
Architecture.[118]

Additions to the course offerings in 1950 included Urban Sociology —
(one), Land Economics (two), Site Planning (one), and Structural Analysis
(two).

Deleted from the offerings were courses in European Civilization
and Art (eight), Architectural Practice (two), Freehand Drawing (three),
Color (two), Architectural History (one), Shades and Shadows (one), and
Perspective (one).[119] (Number of courses in parentheses; see Appendix A
for list of courses.)

During the decade, 126 undergraduate degrees in architecture were
awarded along with 78 Master's degrees.

The second half of the 1940's brought an enormous increase in enroll-
ment in the schools of architecture, generated by the returning veterans.

Admissions and admission standards became a primary concern for the
academic community. During the late 1940's this matter was discussed at
length. Opinions varied from admitting everyone who was interested in
architecture to admitting only the talented.

The ACSA in the late 1940's provided the forum for discussion of a
range of issues. In addition to admissions criteria were issues of research
in the schools, relationship of education to practice, and experiences
between school and licensing,

The question of one central Institute of Design (to replace the BAID)
was debated again. Also discussed were methods of teaching various courses,
objectives of architectural education, relationship of design to construc-
tion, and curriculum development.[120]

William Wurster in a paper entitled "New Directions in Architectural
Education" delivered to an ACSA meeting in 1949 summarized much of the
debate on curriculum, "What I am trying to say, of course, is that there
can be no one curriculum which is all in all, and no one place which is
the annointed one."[121]

The concerns of the profession during the late 1940's centered on
the problems generated by the war. Urban Planning was a primary concern.
Also the re-use of war plants, design of war memorials, design of veter-
ans' hospitals, and designing to resist atomic blast.[122]

The architectural publications reflected the preoccupation with
war-related designs.[123]

In 1945 NAAB (National Architectural Accrediting Board) began to function. The Board attempted to establish criteria for accrediting which were flexible and to be interpreted and implemented by each school individually.

In a statement to ACSA in the early 1950's NAAB outlined the characteristics it looks for in the curriculum during accrediting visits to schools. This included:

Background studies - social studies, mathematics and science

Applied science - building methods and materials

Architectural history, theory and professional practice

Creative exercises - design and necessary drawing skills.[124]

1950-1960

The decade of the 50's started with the transfer of the Deanship from William Wurster to Pietro Belluschi, and was marked with steady development in some of the scientific and research areas of architecture. This was precipitated in part by the nature of MIT, at the time, as an institute of scientific and engineering concerns. This fact combined with the Institute policy that students be admitted to the Institute and later select departments caused a great deal of concern for the Department of Architecture during the 1950's. Throughout his reports Dean Belluschi writes:

> The philosophy of education of our school depends in part upon the type of students we are able to attract. The entrance standards of the institute are of necessity based on aptitudes which may not be the most suitable for the architectural or planning professions.[125]

> We are, in fact, forced to acknowledge that in the last
> 10 years although we have strengthened our teaching pro-
> gram, and improved the quality of our teaching faculty,
> the number of students attracted to the curriculum has
> declined, and their caliber has not improved.[126]

Dean Belluschi continually referred to architecture as "ideally a union of science and art,"[127] or ". . . architecture is first and above all a high art, that its field of action is the realm of the spirit.[128]

The science component of architecture was served well by the facilities of MIT. The art component was addressed in part through the efforts of Professor Kepes and his development of courses in visual design. In 1957 the department offered courses in visual arts to the institute as electives in the various programs.

As the last decade was marked by the war and its effects, this decade was marked by an attempt to establish a direction, identity and curriculum which responded to the needs of architecture and the realities of the School's location in a highly technical institute.

Through the decade a stability emerged which included orientation and policy. The Department recognized itself as "part of a technological institution it seems proper to emphasize, even more than has been possible in the past, the technical aspects of the profession, especially the meaning of structure and of modern building techniques."[129] This technical orientation manifested itself in a number of research projects which

included: the study of illumination, procurement specifications for ⬅

mobile and demountable housing, methods for applying climatological

data in dwelling design, site selection and planning.[130] Research was

also done on the rational applications of modern plastics in the construc-

tion and equipment of housing, and on the perceptual form of the city.

The composition of the faculty was stabilized through the policy:

> Our effort is to keep a balance among three kinds of teachers:
> (1) senior teachers who have long-term appointments and re-
> sponsibility for policy, (2) young assistants among whom are
> to be found the career teachers of the future, and (3) visit-
> ing critics, men of unusual attainment who make short term
> contributions.[131]

The Department continued to be oriented toward the generation of

practicing professionals. Design problems were usually given in the con-

text of "Our methods of instruction of course vary, but in general and

whenever possible we try to give real case studies - live problems where

all the forces at work in the profession are felt and tested."[132]

The design problems were progressive in nature over the year. From

the catalogue description of Beginning Architectural Design one reads,

". . . a series of projects for simple buildings. . ."[133] For intermedi-

ate Design from the same catalogue, "Introduction of problems arising in

connection with more complex plan organization, the grouping of build-

ings . . ."[134] For Advanced Design from the same catalogue, "Concentra-

tion of project work on areas of architectural expression which have been

most inadequately resolved in contemporary urban life, with the aim of

orienting the mature student toward a serious contribution to some of

these problems."[135] From the same catalogue there is a general note

about the Design Studios:

> The sequence of undergraduate subjects in Architectural Design
> provides cumulative experience with a large number of design
> problems ranging over the whole field of architectural prac-
> tice. In general, each problem is presented as a design situa-
> tion in a complete context; it requires an evaluation of all
> pertinent factors of site, climate, purpose and social setting,
> and provides scope for the application of the students' growing
> knowledge of materials and building techniques, his skill in
> arranging space, his sense of relative values, and his artistic
> sensitivity. This learning by doing is reinforced by class
> discussions, individual and group criticism, and exhibition
> and evaluation of completed work. Through a combination of
> collaborative and individual tasks, the student learns the
> value of cooperative effort as well as the responsibility for
> independent creative work. While at all times the need for
> a broad view of all design considerations is stressed, the
> several successive terms focus in different ways on major
> areas of emphasis.[136]

Juries were still held at the end of a project but were open and
viewed as "forums for the public discussion of design principles."[137]
Team work was incorporated into the design exercicises "particularly in
the fact-finding stages but also sometimes in joint presentation of a
solution."[138] During the decade visiting critics included Buckminster
Fuller, Louis Kahn, Dan Kiley, Christopher Tunnard, Serge Chermayeff
and others.

Additions to the department's course offerings in 1960 included
Visual Design (one), Structural Analysis (two), Acoustics (one), Indus-
trialized House sign (one), and History Theory and Criticism (four).
Deletions (into the planning option) included Urban Sociology, Land
Economics, and Planning Principles.[139] (Number of courses in parenthe-
ses; see Appendix A for list of courses.) During the decade enrollment
ranged from 155 (1952) to 193 (1958) and 226 Bachelor's degrees and 158
Master's degrees were awarded in Architecture.

In the early 1950's discussion continued in the academic community on the pros and cons of a National Institute of Design. The merits of such an organization were seen to be that it would prepare design programs, coordinate design programs, conduct teacher workshops and conferences, and exhibit student work. The liabilities were seen to be the competition between schools and the resulting distortion of objectives.

In the fall of 1952 an ACSA Committee that had been studying the possibility of a Central Design Organization proposed that the ACSA conduct an experiment whereby the ACSA would be the central organization which would conduct teacher workshops, exhibit student work and provide design programs for interested schools. The proposal was accepted and put to rest the idea of a national school, making way for the teacher seminars which continue to this day.[140]

Discussion in ACSA also included the need for a second professional degree, particularly for teachers.

Admission standards and the relationship of the junior college system to the schools of architecture continued to be an issue.

Architectural practice by teachers was discussed and generally considered to be desirable and even essential.[141]

Other issues included educational objectives, teacher examination, need for specialization of practice, relationship of education to practice (how much should be done in the schools), architect in training program (successor of mentor plan of the 1930's), methods of teaching various courses, research in the schools, and teachers' seminars.[142]

The 1951 survey of the profession resulted in a number of recommendations, including the creation of teacher seminars, development of an

aptitude test (to deal with high rate of attrition) and expansion of the schools to serve the entire building industry.[143]

The profession during the 1950's was concerned with a detailed survey of the profession (resulting in the publication Architect at Mid-Century), the effects of the Cold War, the relationship of the architectural profession to the profession of planning, and Urban Renewal.

Research was a primary concern of the profession in the late 1950's, "The arm of research by the AIA is to provide architects with more and better tools for design and planning of finer buildings in every sense of structure, function, esthetics, and economy.[144]

Questions were raised during the 1950's about the time needed to train an architect. Many people began to feel that five years in school was not enough time to develop the "whole man." "There is simply too much new knowledge, there are too many new techniques, skills, and materials, and they change too rapidly to consider including them all in the undergraduate curriculum."[145] Discussion of 6-year curricula and professional education at the graduate level only followed.

The practice of architecture as represented in the publications covered the full range of types; residential, commercial, industrial, religious, etc.[146]

1960-1970

The 1960's were marked by the beginnings of the questioning of the role of the profession relative to society, technology, new knowledge, etc. Much of this questioning gained momentum in the later 1960's

and continues today. Much of the questioning was precipitated by the
rapid changes our society experienced during a relatively brief period
of time.

> There seems little doubt that our society is undergoing a
> pronounced reorientation of a sort that comes only at some-
> thing like half-century intervals. Considered both nation-
> ally and globally, there is an approaching crisis in human
> ecology. To cope with accelerating growth rates and at the
> same time to improve the quality of life in ways we know to
> be possible will require more rational allocations of
> resources and more effective deployment of professional
> skills.[147]

The 1960's were filled with the search for an identity and role for
the architect. In the early 1960's the identity centered on the
debate between the science and art components of architecture, which
had started in the later 1950's. In the 1960-61 Department Report
comes the following:

> Architectural design simply does not grow logically out of
> scientific and mathematical (nor for that matter historical
> or critical) thinking.
>
> It is not unexpected that the highest 'scholastic index' of
> applicants motivated to architecture is only about the aver-
> age level of all MIT freshmen, since this index is determined
> largely by test scores in mathematics and physics.[148]

By 1964 the art-science dilemma was no closer to resolution. In the
Report for 1963-64, Dean Belluschi wrote:

> During the year, . . . the faculty . . . spent much time
> searching for ways to make the educational program of the
> School more responsive to the great changes which have
> taken place in our society in the last few decades. We
> feel a breakthrough in architectural education is overdue,
> and we hope it will happen at MIT. The apparent slow
> progress in providing the right answers is more a reflec-
> tion of the complexity of the problem than of a lack of
> effort or resources.[149]

In the same report, Professor Anderson discusses architecture as a

profession or an art.

> This dilemma is put forward without any hope of resolu-
> tion, for no school of architecture could abandon art for
> professionalism or vice versa. The conflict though unre-
> solvable, helps us to understand some of the shortcomings
> in architectural education: 1. There is no satisfactory
> basis for selecting students. MIT, condemned to be selec-
> tive, can screen for qualities contributing to professional
> excellence but in doing so may screen against artistic
> potential which is unrecognizable before the event.
> 2. There is insufficient intellectual stockpiling. One
> looks in vain for any objective basis for research. Pro-
> posals when analyzed turn out to be in related fields -
> engineering, perception, psychology, urban problems; these
> are necessary and valuable but not themselves architectural.
> As a result virtually no basic research is even conducted by
> architectural personnel. 3. There is inadequate support . . .
> externally (outside the Institute). Architecture receives
> not even a small counterpart of the lavish encouragement
> offered by both government and industry to the scientific
> and engineering professions. 4. Teachers in all specializa-
> tions can preserve authority and reach fulfillment only
> through their own creative work. In the absence of . . .
> research activity, the architect must create in the only
> way so far known in his profession, by designing real
> buildings. 5. There is no advanced study.[150]

By 1968 the changes in society had intensified the questions of role

and identity of the architect.

> There is no question about our society's need for construc-
> tion, nor of its will and capacity to build. Whether
> architects will be important in the process depends both
> on how building is to be done, under what conditions and
> for what purposes, and on the professional designer's
> responses to a new kind of 'how.'[151]

Resolution of an identity was no closer:

> Those who are entering the problematic profession of archi-
> tecture show some tendency to polarize in two directions.
> one sector is enthusiastic to bring about a more scientific,
> more complex but at the same time more consistent and

'plan-able' process. They embrace new methods of informa-
tion processing and decision making. They enjoy teamwork
and collaboration with other professions, and they look for-
ward to a time when all designs will be fully informed and
rational.

The other sector looks critically at the self-discipline,
the impersonality and the bureaucracy characteristic of
the highly industrialized production of shelter and is
not impressed with the delights of participating in these
processes.

This architectural dichotomy, a pursuit on the one hand
of complex systems for the beauty of their organization
and process, and on the other hand an obsession with the
significance of the individual human gesture that impacts
the environment, is warring in the mind of every young
designer today. Who can foretell now what resolution will
come?[152]

Resolution was not to come during the remaining years of the decade.

Nor for that matter has it come to this day.

In 1961 a "School of Planning Arts" was proposed which would "be

based on the recognition of the fact that the three fields of city

planning, architecture, and building technology have become well estab-

lished as separate professions but that all of them are concerned with

giving workable and culturally significant form to the physical

environment."[153] This proposal never materialized.

In 1963 an argument was proposed to make architecture a graduate

course.

The need on the part of architects for a wider cultural per-
spective, and in particular the opportunity offered by
studies at MIT to feel the heartbeat of scientific activity
now strongly support the elevation of full architectural
specialization to a graduate level.[154]

This proposal to have architecture taught at the graduate level was

implemented in part in 1965-66.

> . . . the first years operation under the curriculum for
> the Bachelor in Architecture in which this first profes-
> sional degree is awarded only after at least two years of
> graduate study, following either MIT's new S.B. in Art
> and Design, or some other baccalaureate program.[155]

During that year, 1965-1966, the exploration of computers as a design

tool was started. Research into uses of "computer aids to design

continues to be one of the most brilliant and stimulating areas of

current work. . ."[156]

By 1965 urban design was offered as an option for the graduate

program, along with housing and community design for developing areas,

and construction systems. Also in 1965, Professor Anderson took over

the Deanship from Dean Belluschi. Replacing Dean Anderson as Head of

the Department was Donlyn Lyndon.

In 1967, the Center for Advanced Visual Studies was founded. Then

in the late 1960's, Community Projects Lab was founded to serve the

local communities and provide students with real world experience.

As stated in the 1968 Department Report, "Finally, we are developing

a growing respect for the usefulness of concrete example, for the

educational patterns.[157] Some of the faculty in the department saw

Design problems as progressive in nature and centered around "Involve-

ment with real communities and disadvantages peoples. . ."[158] The

course description in the 1969-70 catalogue for the beginning archi-

tectural design course states:

> Establishment of basic attitudes to architectural organiza-
> tion and its reflection in form. Small scale problems whose
> imposed conditions of site, program and building system
> emphasize the interrelationship of fundamental elements in
> the pattern of decision making that constitutes design.[159]

For the intermediate studio the description states:

> Study of more intensive and extended space uses, the grouping
> of buildings, buildings of multi-story construction, mass cir-
> culation movements, and areas requiring specialized space
> forms or equipment or having multiple uses.[160]

For the advanced studio the description states:

> Emphasis on the setting of architectural work as part of an
> organized community in projects having to do with built up
> areas as well as those on new sites.[161]

Criticism of student designs as a teaching method began to wane in

the latter 1960's. But until then it remained dominant.-

> The formalization of architectural education during the past
> century into professional schools like that at MIT has de-
> veloped a pedagogy that seeks to give the student a maturing
> experience in design based on case studies of many different
> types of building situations pursued over a period of several
> years. By encountering all of these diverse problems one
> after the other and by constant practice accompanied by criti-
> cism, the student acquires his most important professional
> qualification, a design method.[162]

The first part of the decade was relatively steady in terms of enroll-

ment. From the year 1965-1966, ". . . the Department of Architecture and

the Department of Urban Studies and Planning have taken on accelerated

growth beginning in 1965-66, resulting in a doubling of degree candidates

in the last four years."[163] There were 290 students enrolled in 1970.

During the decade students gained more self-determination and partici-

pated in curriculum development. "The adoption of a mechanism for 'inde-

pendent study projects,' done for credit under faculty supervision, pro-

vides a valuable resource applicable to needs felt by the students."[164]

By 1970 the additions to the department's offerings included Visual
Design (thirteen), Photography (nine), Film Making (seven), Architectural
and Environmental Design (eight), Industrialization (one), Computer Aided
Design (six), Structures (five), Building Process (one), Materials (one),
History, Theory and Criticism (twenty-two), Building Construction and
Management (five), and Environmental Controls (two).[163] (Number of —
courses in parentheses; see Appendix A for list of courses.)

During the 1960's the academic community was concerned with a very
broad range of issues.

In the early 1960's the ACSA created committees to study the expansion
of the schools to serve the entire building industry and to study the ad-
vancement of architectural education.

In 1963 the Committee on Advancement of Architectural Education re-
ported on the needs for a broader general education base prior to archi-
tectural training, upgrading and integrating of professional training
programs provided by the schools and offices, increased participation by
the schools in administering the state board examinations, and revision
of curricula to reflect the emerging changes in professional practice.[166]

Creativity was a major concern in the early 1960's. (Could it be
taught?) This was prompted in part by the research of Donald MacKinnon
at the Institute for Personality Assessment and Research at Berkeley into
the nature of creativity.

Urban Design and the design of environments larger than the individual
building were issues of concern throughout the 1960's and continue to the
present day.

In the late 1960's the AIA funded a study of architectural education by Robert Geddes and Bernard Spring. The report of the study published in early 1960 (known as the Princeton Report) supported, among other things, the design of larger environments when they referred to the issues of environmental design and environmental education. Another point it made was that there can be no single answer to environmental design. "It would be folly in a society as complex and dynamic as ours to have a single authoritarian structure handed down from above."[167] The report argues that it is impossible for education to deal separately with the issues of architecture, engineering, planning, landscape architecture, etc. ". . . when these subjects refuse to stay compartmented in the real world."[168] The report proposes a 6 x 6 x 6 matrix with which to model environmental design. The matrix has a scale for process, scope and scale. Process ranges from identification to evaluation, scope, from basic research to effectuation, and scale from region to component.[169]

The report recognizes that no single school can cover the whole field and proposes that each school build its own strengths in offering whatever portion of the field it chooses to cover.

Recommendations include the structuring of educational programs into nine segments; four devoted to professional education, three to general education, and two to periods of internship. "By means of the modular jointed structure, these nine segments can be combined in different ways to create several thousand different but related educational careers."[170]

Resulting from this proposed structure many schools changed their programs from five years to a combined four-plus-two program. These first four undergraduate years terminate with a Bachelor's degree (not

of architecture). The student then makes the decision to continue for two more years for a Master's degree, or do something else.

All phases of research were of primary concern to both the academic and professional community throughout the 1960's. In 1968 a joint proposal was made by the AIA and ACSA to encourage the federal government to establish a national building research station.

The information explosion generated proposals for information clearing houses in academia and the profession.

New and emerging methods were also of interest during the 1960's including computer applications, programming, television, and design management.

Continuing education for professionals, graduate programs, aptitude tests, admissions policies, internships, and methods of teaching various subjects were also academic concerns during the 1960's.[171]

During this time the profession was involved with the issues of research (joint proposal for national research station), education (Princeton report), continuing education for the profession, and urban renewal and growth, among others.

In the late 1960's the profession focused on social issues of equal rights, community design centers and ethics. At this time the profession began to voice concern about the government's military involvements and the country's national priorities.[172]

The 1970's

The first years of this decade were marked by the continuation and refinement of directions and patterns which began in the late 1960's. There continued the focus ". . . primarily on the means whereby the

systems of environment making can be more responsive to concerns that
are personal or that are under-represented in the established procedures
for design and professional services."[173] There also continued in con-
junction with this advocacy orientation the use of field work as a teach-
ing device.

From the complexity within the environment and the lack of clear
responsibility for action within this arena there has emerged a cluster-
ing of students and faculty around subject areas. These clusters were
often inter-departmental. Identifiable groups include Environmental
Design, Building Technology, Computer Studies and Visual Studies.[174]
Other patterns which continued included student participation in the
governance of the Department, and a strong concern for social issues.
Factors which may have generated this concern were the anti-war movement
associated with the Viet Nam war and the rising of the Black and female
consciousness.

During the early 1970's many of the patterns and concerns of the
1960's continued to be dominant.

In the schools, research is a primary focus, particularly as related
to issues of environmental awareness, human behavior, man environment
relations, and problem-solving processes. Concern also developed in areas
of conservation, preservation and energy.

In the profession, social matters continued to be central. In 1971
the AIA Annual Convention was called to "address issues heretofore con-
sidered outside the purview of the design profession."[175] These issues
included an anti-war vote, population control, urban land use, development
corporations, and national land use policy.

Housing and urban problems were also prime concerns, as were matters of energy, preservation, rehabilitation, and conservation. Adaptive use and users' needs also emerged as concerns.[176]

In the early 1970's, NCARB created a uniform licensing examination for all states. During this time the issue of requirements to be an architect surfaced again with a NAAB consideration that the only way to become an architect is through completion of an accredited degree program.

Summary

In summary, the changes in architecture and in MIT's department of architecture have been extensive over the past 100 plus years. MIT was the first university in this country to offer an architecture curriculum. Today there are more than 90 schools with architecture programs. Enrollment in the department has grown from 4 students in the initial class to near 300 students today. In the same time period architecture has emerged as a profession with codes of practice, licensing procedures, etc. In 1850 there were 1,300 individuals who were self-proclaimed architects. In 1970 there were 30,000 registered architects throughout the country. The standards of design have shifted from the Beaux Arts to the Modern Movement, to a less clearly defined eclectic situation today. For the first 60 years the people in charge of the design courses were usually graduates of the Ecole des Beaux Arts in Paris. The faculty changed in the late 1930's to include people who were concerned with the issues embodied in the Modern Movement. Throughout the evolution, architecture and architectural education have been greatly impacted by the numerous wars that have occurred. Some of the impacts include greatly

diminished enrollment, increased demand for rebuilding, development of
new technologies, etc.

A detailed discussion of the changes occurring in architectural
education over the 100 plus years is presented in Chapter IV of this
thesis.

Year	Notable events	Notable M.I.T. events	M.I.T. registration enrollment	U.S. architects	U.S. schools
1797	Ecole des Beaux Arts founded in Paris				
1846	1st American graduates from Ecole (Hunt)				
1857	AIA founded in N.Y.C.				
1861	Civil War (U.S.) begun	M.I.T. founded		1300	
1862	Morrill Land Grant Act				
1865	Civil War ended				
1868		Dept. of Arch opened	16 (4) full time	2000	3
1872		Letang arrives at M.I.T. from Ecole des Beaux			
1873		Post grad. course in architecture			

Year	Notable events	Notable M.I.T. events	M.I.T. registration enrollment	U.S. architects	U.S. schools
1880	26 Americans received training at Ecole		33 5 full students	3500	4
1890	25 more Americans trained at Ecole	Arch. Engineering offered as option Letang died	100 30 full students	8000	7

Year	Notable events	Notable M.I.T events	M.I.T. Dept. of Arch. enrollment	U.S. Archi- tects	U.S. schools
—1892-	Tarsney Act passed to employ archi- tects on govt. bldgs.	Despradelle arrives at M.I.T. from Ecole des Beaux Arts, Paris			
1894	Society of Beaux Arts Architects founded in N.Y. Paris Prize created American Academy in Rome started				
1897	Illinois Act passed to register archi- tects by state				
1899		Landscape Architecture offered as an option			
1900			50-60 regu- lar students	11,000	11
1901	Arkansas California pass licens- ing regula- tions				
1902	New Jersey adopts licensing regulation				
1909	Colorado adopts licensing regulation				

Year	Notable events	Notable M.I.T. (Arch.) events	M.I.T. Dept. of Arch. enrollment	U.S. Architects	U.S. Schools
1910			113	18,000	19
1912	Assoc. Collegiate Schools of Architecture (ACSA) Founded	Despradelle died			
1914	ACSA proposed "Standard Minima" - Gropius Head of Bauhaus				
1916	Beaux Arts institute of Design incorp.	Ralph Adams Cram. Major design teacher	161		
1919	World War I				
1920	20 states have licensing regulation - National Council of Architectural Registration Boards (NCARB) created			19,000	35
1921		Perran Head of design courses -			
1922		Town Planning offered as graduate option			
1924		Carlu head of design courses			
1927		Begin 5-year undergraduate program			
1930	32 states with licensing regulations		220	22,000	47

Year	Notable events	Notable M.I.T. (Arch.) events	M.I.T Dept. of Arch. enrollment	U.S. Architects	U.S. Schools
─1932		Carlu retires Last Beaux Arts teacher			
1933	Closing of Bauhaus	City Planning option started			
1936			85		
1937	Walter Gropius appointed Head of Harvard	Arch. Engineering option terminated			
1938	Miles van der Rohe appointed Head of IIT Architecture				
1940	National Architectural Accrediting Board (NAAB) founded			20,000	51
1941	Start WW II				
─1944		William Wurster, Dean, School of Architecture becomes School of Arch. & Planning	19		
1945	End WW II NAAB begins operations				
1950		Belluschi becomes Dean	145	24,000	64
1951	AIA Survey of profession				
1960			200	28,000	80
1963		Proposal to make Architecture a graduate course			

Cont.

Year	Notable events	Notable M.I.T. (Arch.) events	M.I.T Dept. of Arch. enrollment	U.S. Architects	U.S. Schools
1965	Beginning of overt social unrest and Viet Nam War	Anderson becomes Dean - Urban Design offered at grad. level - Computer as design tool			
1967		Center for Advanced Visual Studies opened			
1968	AIA/Princeton Study of Design Education				
1970			290	32,000	91

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162. M.I.T. Report of the President, 1961-1962, p. 44.

163. M.I.T. Report of the President, 1969-1970, p. 106.

164. M.I.T. Report of the President, 1968-1969, p. 29.

165. Vol. 105, Catalogue of the M.I.T. 1970-71, p. 30D-38D.

166. The ACSA Committee Reports, Journal of Architectural Education, Vol. 18, September, 1963, p. 20.

167. "Education and the AIA: A Process for Change," Architectural Forum, May, 1968, p. 86.

168. Ibid., p. 87.

169. Robert L. Geddies and Bernard Spring, <u>A Study of Education for Environmental Design</u>, Report by Princeton University for the American Institute of Architects, December, 1967, p. 23-28.

170. Ibid., p. 52.

171. Review of <u>Journal of Architectural Education</u>, Vols. 15-24, 1960-1970.

172. Review of <u>Journal of the American Institute of Architects</u>, Vols. 33-53, 1960-1970.

173. <u>M.I.T. Report of the President, 1970-1971</u> (Cambridge, Mass.: Massachusetts Institute of Technology, 1971), p. 101.

174. Ibid., p. 102.

175. "AIA Convention Report," <u>Architectural Record</u>, August, 1971, p. 35.

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CHAPTER III

INTRODUCTION TO CASE STUDIES

Case Study Method

As outlined in the introduction, a list of all design studio teachers was prepared. This list included over 100 names. In consultation with Professors Lynch and Anderson 30 individuals were identified for this study. These individuals extended over the history of the department of architecture at M.I.T. from the first, Eugene, L'etang, to individuals who are actively teaching today. For each of the 30 design teachers I located three students who had taken a design studio with the individual. I tried to identify students who were available for interviews and who covered the range of the design teacher's career. Ideally then the three students would include a person from the first years of the teacher's career, one from the mid-years and one from the latter years. One important criterion in selecting students was that they be accessible. With 30 design teachers and 90 students identified, I set about interviewing the people who were accessible and doing historical research on those who were not (those who had died or were not in the New England area). I was able to interview 87 students (to the best of my information no student of Eugene Letang's was alive in the region) and 14 faculty. Five other faculty were available for interview through mail and telephone.

The interviews which average 2-3 hours were open-ended in nature. I asked each person to relate the experience he had in a specific design studio by verbally describing one studio project. This allowed each interviewee to focus on the various activities involved in the design

studio, project selection, project introduction, evaluation, interaction with teacher, etc. While the person was talking I would write down what was said.

As was needed, I would ask for clarification or elaboration on various issues. When the interviews for one individual studio teacher were finished (including teacher plus 3 students), I would write up a Case Study. When finished I reviewed the case studies and found there to be 5 or 6 identifiably different examples of design studio teaching. These case studies are presented in this chapter.

Case 1 - CA. 1870-1910

Professor David began his studio with the distribution of a project statement that he had prepared. Depending upon the level of the design class he was teaching, the projects ranged from the simpler parts of buildings (staircases, entrances, etc.) for the beginning students to complex buildings for the experienced students.

The design programs were fabrications created by Professor David without reference to any real on-going or specific project. Professor David had been exposed to a long tradition of acceptable design problems at the Ecole des Beaux Arts in Paris, and during his years of teaching at M.I.T. Some of the projects were issued many times over the years, while others were given once or twice. Throughout the design exercises, all students would work on the same program at the same time, and were encouraged to be competitive with each other as a means to the end of learning design.

The project statement was brief and usually included the areas to be included in the designs, the materials that would be used, the presentation requirements and the due dates. If the project was to be designed by students who were degree candidates, as well as non-candidates, the requirements would be increased for the degree candidates. Usually the increase was in the form of structural calculations to be presented with the design drawings.

The actual design of the project started with each student's preparation of an initial sketch or parti-solution to the problem. These partis were usually twelve to twenty-four hours in length and were generated by the students without input from the instructor. When the sketches were completed, they were reviewed individually by Professor David and the student who had prepared the design. During this review the student would be directed or coached toward development of the design, based on the strengths and weaknesses of the scheme as perceived by the instructor. The discussion also served as a vehicle to clarify any questions the student may have had about the project and what was expected of him. The students then proceeded to develop their schemes based on the direction established by Professor David.

Some of the students were anxious to follow the styles of the day (Victorian and Romanesque) and not the direction set by Professor David. He insisted on designs based on clear structural principles. Professor David's intensity and steady pressure on the students usually resulted in the students following his directions.

During the development of the designs, Professor David would go from desk to desk giving the students individual critiques of their work. At the board crits much of Professor David's effort was in the form of drawings, sketches, and overlays, which addressed the issues of design in good currency at the time. These included the beauty of the plan, symmetry of masses (horizontally and vertically), importance of axes, proportions, and accurate draughtsmanship. Professor David was a recent immigrant to the United States when he started teaching at M.I.T., consequently, his command of English and the student's command of French were limited enough to have Professor David rely heavily on graphic communication.

The individual board crits would continue throughout the time of development of the project. Each crit entailed the review by the instructor of the work generated by the student since the last review. As the project progressed, the focus of the crits would proceed more to issues of detail and then to draughtsmanship and the final presentation. Near the end of the project, the largest part of the student's time would be devoted to the preparation of presentation drawings. These usually included drawings which were fully rendered in color. The presentation drawings always included a plan, and usually one or more elevations and one or two sections. For students at an advanced level, thesis level for example, the presentations would include detailed sections and calculations related to the construction of the building.

The students were usually free to select the medium with which to present their drawings, chalk, water color, pastel, pen and ink, etc. The drawings were submitted to the instructor on the specified due date, which was rarely, if ever, extended.

The instructor had the drawings posted in the jury room with the students' names covered. This was done so the jury would evaluate the designs only on their merits as presented in the drawings. Included with the final presentation drawings was the initial sketch parti.

A jury was selected from other faculty members and architects practicing in the Boston area. The jury would assemble on the day of the jury and behind closed doors, with no students present, review the designs and eventually assign awards to the designs judged to be the best. Schemes which were radically different from the initial parti were eliminated before the review started. This was common practice in the design schools

at that time. It had to do with the way an architect was expected to operate. The architect, through training, was exposed to the various components of design which would be assembled in the generation of a design scheme. This generation was to take place in a relatively short period of time with considerably more time devoted to development and refinement of the idea.

Each jury member would review the designs independently. Any design considered a failure by all members was given a grade and eliminated from consideration for the awards. Each member would then select one or two projects which he considered most deserving of the highest award. In turn, he would make a statement to the jury of the designs' merits as he saw them. The other jurors would agree or disagree depending upon their perception of the design. Disagreement on the merits of a scheme would result in discussions which at times were very intense. When each member had had a chance to express his views of the design, the chairman of the jury (usually the instructor) would poll the members and determine the grade and the award for the scheme. A simple majority was usually all that was necessary to establish the grade. Once decided, the drawings were marked and the next design was discussed. This process continued until all of the schemes selected by the jurors were graded and given awards, if merited. The remaining designs, those not selected by any jury member for discussion and not considered a failing solution, were then graded, and the jury review was finished. At this point the jury room was opened to the students for them to learn the results of the jury's decisions.

In concert with the design problems was a series of sketch problems. These varied in length from twelve hours to forty-eight hours. The forty-eight-hour sketches were conducted over weekends. At times a sketch problem of twelve or twenty-four hours would be given as an introductory exercise for a regular design project. Professor David, as a design teacher, demonstrated a number of different roles in the course of teaching his studio. Some of the roles were directly related to his position as teacher (e.g., source of knowledge) and others were indirectly attributed to him by the students (consciously and subconsciously) (e.g., identification figure).

Roles Professor David demonstrated in the course of teaching his studio included judge of excellence, coach, identification figure, source of gratification, taskmaster, source of knowledge, and surrogate client.

The taskmaster role was demonstrated clearly at the beginning of each design project when Professor David, with the problem statement, set the task for the students to perform. This also put Professor David in the position of surrogate client, for he was seen by the students as the person who asked the students to design the project, much like a client going to an architect.

The board crits facilitated many roles. Some were concurrent, and others were a function of the specific situation. As Professor David reviewed the student's designs, he demonstrated the role of judge of excellence, when he evaluated the design and determined its weaknesses. When he recommended directions of development, he assumed the roles of source of knowledge and coach. If the student's design was commendable then the role of gratification source would be demonstrated.

Throughout the studio experience Professor David served as an identification figure for the students in his capacity as instructor and architect.

Professor David used a number of methods in teaching the design studio. With the distribution of the problem statement he set the task for the students. This allowed the designing to begin with the generation of the parti. During the design development phase, Professor David would criticize the students' work according to the standards of the day, coach them as to how to develop their schemes, occasionally present material, and during board reviews he would demonstrate with drawings points he wanted to make. Criticism was used during the final review (Jury) to determine the prize winners. (See Appendix C for detailed description of teaching methods.)

Case 2 - CA. 1910-1930

Professor Williams began his studio with the selection of a building type, as a project for the students to design. The building was selected from a long tradition of problems given in the architectural design studios in this country and especially in the Ecole des Beaux Arts in Paris. The buildings for the design program were always complex components of a monumental environment. They were usually public use buildings such as government or legislative buildings or concert halls or museums.

The studio began with the distribution of a detailed program for the building which consisted of a description of the site, a list of rooms or areas to be provided, and a brief description of the character of the building. The students would take the program and usually with 12 to 24 hours prepare an initial sketch or parti solution to the problem. This

parti was prepared individually and without advice or criticism from the
teacher. When the sketches were complete they were either posted to be
judged (hung for display) as a sketch problem and then developed further
over a longer period of time or they were discussed with Professor
Williams outright (skipping the jury) and then developed. If the designs
were posted for a jury the student would discuss the solution with the
teacher immediately afterwards. The student/teacher discussion about the
parti served two main purposes. First, it allowed the teacher the oppor-
tunity to see that the student had understood the design program and the
task at hand. If not, then Professor Williams would clarify the misunder-
standings. Second, it was through the discussions that the student was
"coached" as to how to develop a scheme. The discussions usually took
place in the form of individual board crits. The coaching consisted of
the teacher reviewing the student's drawings in order to understand the
solution. Professor Williams would then suggest possible lines of devel-
opment for the student to follow. The lines of development usually
included the straightening out of the plan into a familiar and simple
diagram that was fashionable at the time. Fashion at the time included
among other things axes, forecourts, formal gardens, and beautifully ren-
dered drawings. The students were not obligated to follow the teacher's
suggestions but most did.

The initial sketches focused on presenting a plan solution to the prob-
lem, with elevations, sections, massing considerations, etc., taking second
or lower priority. Focus on the plan as a major concern continued through-
out the development phase of the design. This pattern of teacher "coaching"
the student would continue throughout the project. Usually the coaching

was in the form of verbal suggestions, but occasionally Professor Williams
would sketch out some idea. As the project developed more and more empha-
sis was placed on the quality of the presentations, until near the end
all of the students' time was devoted to elaborate rendering of their
schemes. In the presentations primary consideration was again given to
the plan, where everything from mosaics on the floor to trees in the
garden was rendered in color. The students were free to choose the
medium with which to render their drawings; water color, tempera, chalk,
pen and ink washes, etc. The remainder of the presentation would usually
consist of color renderings of only the main elevation and possibly two
sections, each rendered to show materials and with shadows cast to show
the third dimension. Occasionally, Professor Williams would render a
small section of the student's drawing (e.g., six-inch square on a draw-
ing of two feet by three feet). This rendered section was to be the
model for the student to emulate.

The entire thrust of Professor Williams' studio (design and presenta-
tion) was oriented toward generating projects which would be entered in
national and regional competitions along with the products of other
schools or achitecture throughout the country. (Not all schemes would be
entered, only those judged by the faculty to be good enough.) At this
time in architectural education a school's merit and reputation were a
direct function of the number of competitions won. The most coveted prizes
were for the chance to study abroad in Paris and/or Rome. Each prize had
a specific time and program, and could vary from a structured program at
the Ecole des Beaux Arts to less formal arrangements where the student
would regulate his own schedule on some study of interest. Professor

Williams as a winner of a significant French prize, and as an accomplished and facile designer and renderer, was keenly aware of the type of design and presentation needed to win the various competitions. It was in this context that he focused his studio and directed his individual board crits. Professor Williams was quite happy to produce a regular supply of students who won awards.

Each design project had a specific due date which was never extended. When the students finished their designs they submitted the drawings to an administration officer who then saw that all drawings were posted (hung in the jury room). When the drawings were hung the students' names were covered and not available to the jury members. Included with each student's submission was his original sketch parti. A jury was selected by the studio teacher in concurrence with the dean of the school from the school's faculty and from practicing professionals from Boston and New York. Before the jury viewed the drawings a member of the school's administration would compare the original sketch to the final submission. If there was "radical departure" from the original sketch the project was deleted from the jury with no credit. Jury members would then review the projects behind closed doors without the students present. Projects which were considered failures by all jury members were the next to be eliminated. These projects would be marked, set aside and considered no further for the awards the jury was to distribute. From the remaining projects each juror would select those projects he considered outstanding. Each juror would then present his views of the schemes' merits. The other jurors would agree or disagree according to their view of the solution. Sometimes these discussions became very intense as people presented opposing views which they

strongly believed in. When the debate had subsided the chairman of the jury would take a vote of the members as to what grade or award the scheme should receive. A simple majority was usually all that was needed to decide the issue. Once decided the grade was placed right on the drawing. This process usually continued for the better part of a day. When the jury had finished judging all the schemes, they posted a date for the "report of the jury" to be presented to the class. It was at this time that the students were allowed into the jury room to see the results. The students then waited to hear the report of the jury, which was usually the next studio day, for clarification of the grades. All of the students eagerly waited for Professor Williams' report of the jury. He would go through the schemes giving the comments, reactions and decisions of the jury debate that ensued about each project. If he agreed with the report relative to a particular scheme he would say so, likewise he would readily express any views that he had that dissented from the concensus of the jury. The presentation of the "report of the jury" was an important teaching device for Professor Williams in that it offered a clear forum for his views to be presented in comparative fashion with the opinions of others. Most of Professor Williams' teaching was done at the board or in the presentation of the report of the jury.

Throughout the semester, interspersed between and at times preliminary to the design problems was a series of sketch problems. These varied in length from twelve to forty-eight hours. Each sketch was executed by the students individually and without assistance or criticism from the teacher. Usually these sketch problems were twelve hours or twenty-four hours long. Occasionally there would be a weekend (forty-eight hours) problem which

was done conjunctively with the students from Harvard and the Boston Architectural Center. The longer problems usually focused on planning issues (building and site). All of the sketch problems required fully rendered drawings.

Most students felt that through this studio they developed an ability to develop complex plans, were exposed to a method of organization and a method of rendering and presenting their material. They also expressed a feeling of developing confidence with which they were able to compete. Most students felt there was a clear parallel between what they received from the studio and what Professor Williams intended that they receive. Most students respected Professor Williams' facility to draw and render and to assist them (some of the students) in securing the top awards in the various competitions. The only comment which approached being negative or disconcerting was that a few of the students were concerned that while he was teaching Professor Williams did not practice as much as they would have liked. But this was a very mild comment compared to the almost universal approval and praise the students expressed for this studio and indirectly for Professor Williams. When asked what weaknesses they perceived in the studio, the usual answer about their perceptions at that point in time was "there were no weaknesses." Speaking from the vantage point of today, the weaknesses they perceived are that there was no emphasis in the studio, on the issues which are in good currency today, "client needs, client relations, and social purpose." They also saw as a weakness the fact that as graduate students they were in the department a very short time (eight months). And given the demands of the studio they were not able to interact with fellow students as much as they would have liked. Those students

who were encouraged to work on the major competitions were to do so in private and with the minimum of interaction with others. Secrecy to protect original designs from competitors contributed, in part, to the isolation.

Most students saw their relationship with Professor Williams as one of apprentice to master. They (the students) were in school to learn the trade from a professional. Some students spoke of a friendly informal relationship between young and old. Some expressed feelings of Professor Williams being fatherly.

Roles Professor Williams demonstrated in the course of teaching his studio included identification figure, source of gratification, judge of excellence, coach, master, and source of knowledge.

The taskmaster role was demonstrated at the beginning of the design project when Professor Williams would set the exercise for the students to execute.

The roles of judge of excellence, coach, source of knowledge, and master would be demonstrated at different times during the designing of the project.

Professor Williams' role as judge of excellence was exhibited at the board crits when he would assess the schemes (design and presentation). His role of coach took over when he suggested a direction the student might pursue.

In suggesting a direction for the student, the role of master was also exhibited. This action presented the quality of a master's atelier where the teacher is developing a number of schemes through "suggestions" to the apprentices who are working on the individual projects.

There was little question among the students that Professor Williams was a source of knowledge in that he knew what it took to prepare quality drawings and what was needed to win the big prizes in the competitions. The students respected the fact that Professor Williams was a facile renderer, had won big prizes, and had "coached" others to do the same.

The roles of judge of excellence and source of gratification were incorporated into the jury system and the competitions with their emphasis on awards. The awards served as a major source of gratification and confidence building for the student. Conversely, they also served as sources of anxiety, frustration, and possible self-doubt for those who did not win the prizes. Professor Williams served as an identification figure for the students in his capacities of teacher and architect.

Teaching methods used by Professor Williams in the course of teaching his studio included setting the task with the problem statement. He also used criticism, coaching, demonstration, and presentation of materials during the design phase. When the projects were finished, criticism and the presentation of opposing views in the report of the jury were used. (See Appendix C for detailed description of teaching methods.)

Case 3 - CA. 1930-1970

For Professor Michaels, one of the important issues to be addressed in his studio is the problem of "How to get people, new to design without any experience, started" designing. To begin the studio Professor Michaels selects a real site, easily accessible for the students; this is usually a large vacant house lot, surrounded by other houses. At the first class meeting the students are given a problem statement which

locates the site and describes various projects which might be designed

for the site. Once the students are ready to begin designing, they are

free to choose from among the programs. Included in the list of projects

might be dwelling units (2 or 3), a day care center, a commune, a museum.

When the class has reviewed the problem statement, there is a group

discussion to clarify issues which have arisen and to determine the

composition and tasks of the research groups. The first research groups

focus on various tasks of data gathering. These include measuring the

site, photographing site and surroundings, researching ownership, taxes,

zoning, building codes, parking requirements, etc. Collectively the data

forms the basis of a site analysis, which is the initial step in Professor

Michaels' method of design. He exposes the students to his own method as

a base or frame of reference from which they can develop their own method.

While the groups gather the data, three activities take place in the

design studio; (1) Professor Michaels presents a series of slide lectures,

(2) the students' progress is periodically reviewed, (3) the students

begin to work in the areas of drawing, drafting and graphics as a sub-

studio within the main studio. Each of these activities will be explored

further as follows: In the graphics component of the studio, the students

are assigned a series of exercises which are independent of the major

design problem, although some of the ideas and techniques learned in the

graphics component are expected to be incorporated into the final designs.

The range of graphic exercises includes field trips to do outdoor sketch-

ing, lettering, perspective drawing, etc. Behind the exercises is the

realization that students need help with the techniques of drawing and

graphic communication. As the students begin their drawing exercises,

two reference lists are distributed to the class. One is a list of refer-
ences for the student to look at that are examples of "outstanding
draughtmanship." The other is a list of reference books about graphic
standards, theory and criticism and general commentary on architecture.

Professor Michaels' slide shows are intended to "expose the students
to the richness of architecture." Each show focuses on one or a few
ideas such as light or texture or stairways, and includes examples from
cultures around the world. Professor Michaels views the slide presenta-
tions as tools to help integrate issues that might be addressed in the
history and theory of architecture courses. He also sees the slide shows
as generating a situation where many images and ideas are thrown at the
student, which contrasts the more systematic design process the students
will follow during the semester.

The reviews of the students' work (at this point the research) are
in the form of discussions between the various groups and the teacher
focusing on the material generated by the students. Professor Michaels
answers questions, gives suggestions, about where or how, additional data
may be obtained. With the reviews he is also able to follow the progress
of the entire class and adjust the pace by applying pressure of due dates
or adjusted time schedules, etc., as the case may be.

When the data gathering has been completed, each group makes a presen-
tation of their findings to the whole class. Each student then has a data
base of the site analysis with which to begin his or her design effort.
The students start their designs by responding to a due date set by
Professor Michaels. He will get the class started working by saying
"Friday is your due date, get something done." It may offer the students
a week to generate their initial schemes for the projects they had selected

to design. Most students saw the setting of the early due date as a device to get them working. The students were expected to and usually did generate the site plan first. Professor Michaels would review the material the students produced on a one-to-one basis. In these board crits the student would show Professor Michaels the drawings and/or model and explain what they had produced since the last discussion. Professor Michaels would "very gently" ask the student about those points he perceived as problematic, with the intent of helping the student clarify his or her thinking about the issues. The probing would be focused on "pragmatic affairs which must be coped with," including such issues as zoning, numbers of cars to be parked on the site, methods of parking cars, property lines, etc. Professor Michaels' probing would also concentrate on the student's interpretation of the program. "What are day care centers for?" "How do people arrive in the morning and leave in the afternoon?" "How do you relate inside and outside?" Depending upon what the student had presented and where the student's thinking was headed, Professor Michaels would "coach" (make direct suggestions) them, verbally, with sketches and drawings, with referrals to library materials, and to the work of specific architects. The coaching would be directed toward helping the students commit themselves and address a few manageable issues at one time, instead of "trying to think of everything" before making a commitment. At the same time, the students are directed toward the production of 1/8-inch-scale drawings and model. Included in the board crits was material about what to present and how to present it; how to make drawings read well, etc. Professor Michaels sees drawing and drafting as a vital component of design, "Design is concerned with space and form and can hardly be coordinated

mentally," thus he emphasizes the drawing accordingly. Throughout the course of the designing, there are group discussions. These come about usually when the whole class is confronted with a similar issue or problem. Discussions, either group or at the board, allowed the student to be an active participant in the process.

As the students continued to design, some of the requirements might be relaxed. This depends upon Professor Michaels' assessment of the situation. The relaxation of requirements usually comes in the form of an increased time schedule rather than in a change of areas of consideration the student must cope with. For example, "It becomes artificial to relax the zoning requirements." Midway through the design phase of the project an interim review is held. Professor Michaels and other members of the faculty comprised the jury. The students who had experienced the reviews in the past felt the mid-term review was a "very mild critique," where the faculty made an effort not to hurt the students' feelings, and only discuss the good points of the schemes. Many of the students expressed the feeling that the jurors were addressing issues far beyond the students' knowledge and experience. The students felt the jury "gave the impression that the student was violating some higher order or principle of architecture." But it was never made clear to the student what the higher order was, or who created it or how it came to be, etc. The students were left with the feeling of dealing with a standard or measure of design that was unknown to them. "Like playing a sport without being told the rules." Examples of some of the "principles" which the students violated but did not comprehend are "all rooms are the same size, there is no variety," "you never design rooms underground," "lozenge shaped rooms are not a product of our culture." The graphics of the student presentations were also addressed during the mid-term review.

After this review the students continued to develop their schemes, while Professor Michaels continued the one-to-one board crits. He also began to emphasize "work on the student's graphics" during the second part of the semester. At first the graphics were dealt with in small groups, discussing the issues at hand, and later were incorporated into the individual board crits. The studio continued in this way until the time "ran out." Professor Michaels appreciated the difficulty of placing a time frame on the design process, especially in a beginning studio. "It is difficult to finish because each design has a life of its own," and the "student must get as far as he can in a limited time." For the final presentation, Professor Michaels handed out a schedule of drawings to be completed which included twelve options of which the students were to choose seven. Professor Michaels viewed the final review as an informal gathering of students and outsiders (faculty and practicing architects) concerned with having a stimulating discussion about the issues presented in the various solutions. At the final review, each student was allocated approximately 30 minutes; 10 minutes to verbally present his scheme followed by 20 minutes for discussion. For the students, the final review was a somewhat disconcerting mix of "constructive criticism" and "personal egotistical soap-boxing." The students responded to Professor Michaels' continued efforts in the final review to treat them as "individuals and human beings." They saw him as being "supportive of their efforts," of "highlighting the positive aspects of the solutions" and of even "defending what the students had done." Many felt that "a lot of him (Professor

Michaels) was in the students' work." At the same time the students were
upset by the comments of a jury member who "gave nothing but negative
criticism." "He was a person who had an ax to grind and tried to impress
the students by finding fault in everything." "He focused on very small
details and gave very arbitrary and negative criticism." The exposure to
the negative jury member had a noticeable impact on the students. All
expressed "being upset" or of "having bad feelings." They also questioned
what a person "who had to compete with students in such a destructive
manner" was doing in education. Most expressed a desire to avoid any
further contact with the individual "at all cost." When the final review
was finished, each student met with Professor Michaels for a personal
evaluation of his or her term's work. In the personal evaluations,
Professor Michaels tried to emphasize those aspects of the student's work
which were done well, and at the same time point out the weaknesses. He
did this as a continued attempt to make the students aware of "a general
attitude of excellence" which he had and with which he made decisions
about design. Hopefully as the result of the studio, the student would
begin to develop his or her own frame of reference with which to make
decisions.

Most of the students were in close agreement with Professor Michaels'
intention about what they felt they had received from the studio -- most
felt the major learning experience was in "gaining a feeling of the
practice of architecture," of what it was to operate as an architect.
They also felt they had been exposed to some of the theories and ideas
of architecture, and to the beginnings of developing their own attitudes
about design.

Professor Michaels' relationship with his students was one based upon mutual respect. His beliefs about who and where his students are contributed significantly to the manner in which he conducted his studio. He felt there "isn't any right way to begin to design as long as you think about whatever it is you are addressing in some orderly way." This feeling was reflected in his willingness to respond to the students and their work from where the students were (beginning design students) rather than from where he was. He also believed that "the students are growing and maturing" as individuals concurrently with taking his studio and going through school and that "if we don't get in their way they will go far." The students, independent of years out of school, responded overwhelmingly to Professor Michaels, first as a person who is concerned about them and their education, then as an educator and architect. They felt he had a vast knowledge of architecture, the architectural profession and architectural history which enabled him to give the students numerous examples of others' attempts to solve design problems. The students felt the studio was "straightforward and relatively clear" about what was expected of them. There was little if any ambiguity about what they were to do. Some were not sure they knew how to achieve what it was they wanted, but no one felt he was drifting aimlessly.

All of the students were impressed with Professor Michaels' unselfish giving of himself, his time and knowledge. "I've never known him to terminate a conversation with a student' was a common compliment.

Professor Michaels oriented his studio directly toward the practice of architecture by teaching or exposing the students to a method of design that was useful for him in his practice and which might be useful for them. In that the students in his class had selected architecture as their profession, they identified with Professor Michaels as a practitioner as well as a person and an educator who cared about them. That the students consistently expressed respect for and response to many of Professor Michaels' personal qualities showed their identification with the qualities and with the person who had them.

Professor Michaels was a taskmaster in that he set the time schedule and due dates. He also assigned the range of projects, and presentation requirements from which the students were free to select.

Professor Michaels concentrated on making the student consider who would use their designs, and how they would be used. In lieu of real clients he was looked to to provide this input. In that he selected the range of projects, there were no real clients, and he questioned various components of their thinking and their designs, he was very much in the role of surrogate client.

For the students, one of the strongest roles Professor Michaels assumed was source of knowledge. He constantly would either refer the students to any number of analogous examples, both historical and contemporary of problem solutions, or he would quite explicitly explain something to a student. All of the students commented upon the breadth and depth of Professor Michaels' knowledge of architecture.

The students viewed Professor Michaels as always supportive and willing to give help to them. Professor Michaels was aware of the students' need to build confidence as they progressed through their

education and constantly worked toward being supportive and gratifying. He was also responsible for the grades at the term's end which were a direct source of gratification or anxiety and frustration, depending on what the grade was.

The technique of questioning and probing was a central component to Professor Michaels' board crits. He constantly sought to have the students clarify their thinking about the designs they were producing, and asked them probing questions which helped the clarification.

The role of judge surfaced throughout the semester in terms of Professor Michaels' identifying for the students what was good about their schemes and what was weak. Professor Michaels made a conscious effort not to employ the negative component of judging, and expressed his views on the positive, supportive side.

During the review of the design, Professor Michaels would suggest possible directions for the student to take. As such, he would coach them as to what they needed to do.

Relative to teaching methods, Professor Michaels started his studio by setting the task for the students. He would then use discussion and group research to generate useful information common to all the students. When the students were designing professor Michaels would employ criticism, coaching, demonstration, and the presentation of materials. At an interim review the method used would be the presentation of opposing views in the form of a jury. This was also a method used for the final jury in connection with criticism. Self-evaluation and discussion were the methods used in the semester end evaluations which Professor Michaels held with each student. (See Appendix C for detailed description of teaching methods.)

Case 4 - CA. 1955-1974

Professor Charles began teaching his design studio by selecting as a study area a building type (schools, housing, etc.) or a sub-type (secondary school), which was complex, could be studied at the generic level, lent itself to systems design, and could build on the work of previous studios. The focus of the teaching and the product of the class were on a generic design solution; one which was not site or client specific. Professor Charles' assumptions about the incoming student were an important criterion in the selection of a project area. He assumed that all of the students who took his studio wanted to be architects, that they were inexperienced in solving complex design problems, they had not formed values (architectural) by which they could make design decisions, and they were "thirsty" to learn, and had selected his studio over the others for what he had to offer them. Most of these assumptions generated the foci which was addressed in the studio; namely, to teach the student how to approach complex designs, how to address the dominant conditions of a project (e.g., the sight lines in an opera house project) and not be misled by secondary concerns (the shape of a triangular site), how to create generic systems designs, and in the process to develop architectural values by which they can make design decisions in the future. The architectural values, as seen by Professor Charles were rational and logical considerations of "what is needed in the project?," "what is simple and direct?," or what is logical?." He also gave his student a wealth of technical information with which he could design in the future.

With the study area determined, the actual studio began with a course description which explained that the students were to help determine a

time frame for the semester and decide what form the end-product would
take. Professor Charles had a very clear idea of what he wanted and how
it was to be presented, but he used the device of class determination of
time schedule and product to start the class working as a unit on a rela-
tively direct bounded problem. Professor Charles believed that the students
learned more from their fellow students than from the teacher, consequently
he was concerned that the class begin to work as a unit as soon as possi-
ble. There was usually a group discussion and question and answer session
on the first day about the task at hand.

As soon as the class had begun to define the time frame, Professor
Charles began to apply pressure for a quality effort on the part of the
class. He would continue to demand excellence and apply the pressures
needed to obtain it throughout the semester. His feeling that students
learn a great deal from each other plus the demand for excellence from
the students and himself stimulated the heavy criticism and pressure
techinque in his teaching.

The initial class effort was finished quickly and work began on the
design project. The students felt that Professor Charles knew exactly
what he wanted and this contributed to the expeditious effort by the class
in their first task. Design work began with the class separating into
smaller groups of from one to three people to do research into the quanti-
tative issues of the study area; uses, sizes, components, codes, standards,
etc. Concurrently, Professor Charles began a series of regular lectures
in which he presented material in the form of slides, prints of drawings,
bound documents from his professional work, and the products of previous
studios. The materials were presented as examples of 1) solutions to

comparable problems within the framework of systems design, 2) solutions

to projects that will not be addressed in the course of the studio, but

which will provide information for project designs in the future, (3)

solutions to technical problems which are not specific to any one building

type, and 4) approaches to dealing with the design tasks at hand.

When the research was finished, each group presented its findings

to the class in the form of written reports. This material was further

condensed by the class to form the general program for the design work.

Professor Charles saw this program as the quantitative measure by which

the solutions were to be judged. The regular lectures by Professor Charles

continued as the students began to design with the quantitative program;

focusing on many of the aspects the students would be confronted with in

their designs. At the same time a great deal of emphasis was placed on

a set of standards to which the class was expected to conform. These

standards were exemplified in the Professor's professional work and the

products of the previous studios. Issues of approach and sequence were

also clarified in the lectures. The students saw the Professor as having

clear ideas on both. He made it very clear that they were to begin their

designs first with a core unit which was then integrated with a structural

and mechanical system. He also made it clear that efficiency was a major

criterion for the designs at that phase.

Individual or group board crits occurred during the development of

the core and systems designs. The class, as groups or individuals, set

up projects within the study area. For example, one student might choose

a vocational school as his or her project within the program study area

of secondary education. The problem area was considered to be generic

with little if any emphasis on the site or client. The concern was to design a building which could be anywhere, for any group of people (and not individuals) in a way that was systematic.

The board crits usually entailed a presentation by the student of the drawings produced or worked on since the last board crit or the beginning of the project. Professor Charles relied very heavily on what was or was not shown in the drawings. He did not want to be told how the design was supposed to work; he wanted to see it in the ideas on the paper. He studied the drawings for what appeared to be a very long time (to the students) until he was familiar with all parts of the scheme. He then began the crit by identifying those aspects of the design which did not work, according to his view of the situation. He might not always get to all of the problem areas he perceived, but might concentrate on the major concerns at first. He would ask a student to clarify his or her intentions relative to a problem area. If the student could not state why he or she had done a certain thing, Professor Charles made an assumption based on what was shown (or was not shown) in the drawings. Problem areas were identified usually in the more "objective" areas of design. For example, the turning radius of the parking ramp was too small or the stairs were too narrow by code to allow egress from a certain room. There was very little in the crits about the symbolic or philosophical aspects of the design. There was also little said directly about aesthetics. It was more a case of inferred communication to the class through the course of the work that aesthetics would come from a logical application of a system to the program needs. When he did talk about the more subjective components of the design, it usually focused on the feelings created by the spaces created in the design. He was concerned about the student

learning architectural values which encompass a rational mix of generosity and efficiency. During the course of the board crit he rarely would draw for the student; this came only in the course of clarifying the problem areas. By focusing on specific aspects as problems, Professor Charles directed the students toward a solution for the whole design. This came about because the students after a crit tended to address themselves to solving the identified problems before the next crit, at which time new areas would be identified, and so on until some point was reached where refinement and design were stopped. Between crits it was a process of refinement, redesign and redoing of the schemes or parts of schemes based on the information from the board review. Occasionally, but not in any perceivably set patterns, there were group reviews. These usually occurred when specific aspects or components of the whole design had been completed. The students put their work up on the walls of the studio, and one by one presented their schemes. These presentations were informal and focused on issues important to the student at that point in time. During the group reviews, Professor Charles tried to direct the student's presentation so that the problem areas as perceived by the student as well as the strengths of the solution were presented. Once the student had finished, Professor Charles identified the problematical aspects of the solution as he perceived them. This was done much in the same manner employed in the desk crits. The identified problems would again be in the more "objective" detail areas.

Occasionally, Professor Charles would sketch on overlays on the drawings to clarify the problem and/or to direct the student toward a solution. Professor Charles was careful not to draw directly on the student's work, stating that most students resented such actions. Some

students used the group reviews as question and answer periods for their own interests and needs. The Professor would summarize the good and bad aspects of the various solutions. This technique of a group review is employed at the termination of each phase of the work, with the final jury including outsiders; other faculty and/or practicing professionals.

Central to Professor Charles' method of teaching was his creation of an intense pressure for professional excellence from the student in every-thing done while in the class. (With the hope that the demand for excel-lence would become an integral component of the student once he was a practicing professional.) The intensity and pressure were derived from almost constant demands on and criticism of what the students were doing. There were always comments which made the students feel that they were not performing in a way the Professor expected; "How do you expect to get a job if you can't do better work than this?" or "If this were an office it would be terrible." In addition to the direct criticism of the class in general Professor Charles incorporated indirect, more subtle criticism into the studio by regularly referring to the superior work that had been done in his studios in the past, again making the students feel that they were not performing up to expectations. Some students felt the criticism approached insult in that it was so intense and constant. The criticism appeared to lessen if it threatened the work of the student, but usually only long enough for the student to regroup and begin again. The criti-cism and the resulting pressures had the effect upon the class of setting into motion the desire to prove to the teacher that they were each better than his perceived view of them and that the class collectively was as good if not better than his previous classes. The students in the process of trying to impress the professor tended to spend more and more time in

the studio (to check on what others were doing as much as to demonstrate to the teacher that they were working) which stimulated the intercommunication among the students, which in turn spurred on the competition. (They were more aware of what others were doing if they were all present in the studio, as compared to some students working at home.) Group or peer pressure within the class intensified as the semester progressed. Each student felt he or she must out-produce in quantity and quality all of the others. Students continued to work on drawings long after they were completed in order to stay abreast of the other students who continued to work on their schemes. This was a situation where one student (who may not have completed his work) working on a scheme could easily stimulate most others in the class to keep working even beyond necessity just to keep the one individual from getting ahead. The excessive work was viewed by many students as a prerequisite to finishing the project as well as to doing well in the class. Professor Charles had communicated (at some level) that it takes a super effort to get through his studio. Occasionally the work continued to the point of necessitating due date extensions.

The students seemed better able to cope with the intense pressure for excellence and the resulting feelings of inadequacy in not attaining the expected levels of quality, by being aware that Professor Charles had set the same standard of excellence for himself and attempted to live his life accordingly. The presentations of his own work that Professor Charles made in the beginning of the semester contributed most to letting the students know his own standards. He talked quite openly about the successes and failures of his various schemes. This was perceived by the

students as an openness and honesty which helped to stimulate the students

to being open with him about professional and personal matters. Most of

the students expressed feeling the professor's concern about them as indi-

viduals. It came across as a very humanistic concern. Unfortunately the

students' feelings about Professor Charles were much more complex than just

responding to his concern about them. Many felt a very intense ambiva-

lence - "love/hate" relationship with him, while they were in the studio.

These feelings seemed to come from a mix of the intense criticism which

had them questioning their abilities, and the openness, honesty and con-

cern that was demonstrated in other ways in the studio. As a person

gained some distance on his feelings about Professor Charles, the ambiva-

lence tempered toward the positive side of the feelings. He was the only

professor studied by the author who was consistently referred to as

"professional." He maintained contact (usually professional) with many

of his former students. He was very concerned about their well-being,

getting jobs, etc. He regularly helped students in his class find posi-

tions in firms, but his concern was not limited to present students or

recent graduates; given the opportunity, he regularly inquired about his

earliest students. In Professor Charles' studio there was a close parallel

between what he intended to accomplish and what the students felt they

received. This was attributable, in the student's view, to the explicit

statements and presentations by Professor Charles concerning the focus of

the studio's efforts. There was very little doubt in the students' minds

at any point in the semester about what they were doing, how they were to

do it and exactly what was expected of them. Most important to most

students was the discipline they obtained from the studio in terms of

approach to design and personal discipline to work to the fullest of

their capacities. Most felt they learned how to approach a complex design problem, to do so within the limits of a system. They also felt that they had been made to work harder and produce more and higher quality work than they had before. This was given as a major reason for taking the class by those who had the choice. Most students felt that they had been exposed to a very clear approach to design. Although some stated that they did not see themselves adopting the approach completely as their own, they were glad that they had the exposure. Again the clarity and crispness of the students' answers seemed to be a function of time out of school and distance from the studio.

One of the major roles for Professor Charles was the authority figure. He set up the whole structure of the course including study area, due dates, material to be presented, presentation techniques, standards for the class, etc. He also made the demands upon the student to conform to his ideas and to produce an excellent product.

Another major role for Professor Charles was that of judge of excellence. This role manifested itself in the board crits, the reviews, grades, recommendations, etc. It was central to most studios and was particularly important and emphasized in this studio.

Professor Charles, through his lectures and board crits, gave the students a wealth of information that ranged from rules of thumb for sizing structural members to approaches to design. Many students commented on the amount of material presented in encapsulated form; code requirements, material specifications, etc. In addition, the work of previous studios served as information for the students.

Many students expressed respect for Professor Charles in their view of him as a professional and living by the standards he set for them. He was seen as living an integrated life where he did what he asked his students to do. Professionalism and the discipline he had and instilled in the students were mentioned most often by the students. The students clearly responded to and identified with those qualities. The students were required to perform for the entire semester in Professor Charles' manner of working. In addition the students selected his studio as a free choice because they knew what it entailed. Compounding the situation was the intense pressure and potentially threatened self-esteem on the part of the student. All of this combined to create a natural environment with which the student could and usually did (if only for the duration of the studio) identify with the design teacher. It was a situation where the students identified with the teacher as a person who had and could perform what was expected of them.

The pressure and demands were such in this studio that the teacher's every word was weighed by the students. They were constantly communicating with each other about what the professor had said to them about their work. This created an environment where the teacher as the judge of excellence and subsequently of worth served as a major source of the students' fulfillment (in the context of the studio), for if the work were approved by such a demanding critic, then the student felt gratified. This revolved around the extremely close relationship which existed between designers (not only the students) and their designs. It had the quality of being one. When a design was criticized, it was as if the person's self were criticized. And, conversely, when a design was rewarded, so was its author.

Professor Charles selected the building type or study area for the
class to design and answered any user questions which arose about the use
of the building. Questions about how the client or the future users would
use the building were reduced to a minimum because the student was directed
toward designing the generic solution. For example, the student designed
a system which was used in educational buildings, all educational build-
ings, and not just one client and site specific building. As such the
student was more concerned about designing according to criteria of the
system rather than a use or the site. And consequently the surrogate
client role was a minor role for Professor Charles in his studio.

Teaching methods Professor Charles used included setting the task
for the students to begin work. He then presented materials generated by
previous classes and his ideas about the problem at hand. He was con-
cerned that the class work as a unit and to this end he encouraged students
to student interaction. Prior to the design phase students researched
issues useful to the whole class. When the students were designing,
Professor Charles used two methods, predominantly, criticism and the
presentation of materials on a range of subjects. Occasionally during
the board crits Professor Charles would sketch some detail, or question a
student about his intentions. Criticism continued to be central throughout
the project and the final reviews. (See Appendix C for detailed descrip-
tion of teaching methods.)

Case 5 - CA. Mid 1960's-1974

Professor Roberts began teaching his studio by selecting projects
which fulfilled two central criteria. First, the problem areas had to be
within the teacher's area of interest and/or involvement so as to bring an

intensity to the studio that would otherwise be missing. Secondly, the
project was to be one which would use the students' experiences prior to
entering the studio as the frame of reference for the designs which would
be produced. Professor Roberts' personal interests included the develop-
ment of physical forms which enabled space use to take place, group proces-
ses in design, methods for identifying user needs and research into the
design process. In order to introduce the students to the area of user
needs and space use, Professor Roberts selected projects which would
require the students to be the users for the designs they generated in
the studio. This allowed for the students to design from the experience
of having used or been in the particular environment they were to design.
Professor Roberts' assumptions about his students contributed to the over-
all orientation and attitude of the studio. He believed first, that
students should learn a great deal from fellow students (a greater per-
centage than from the teacher; that the sources of design are the interac-
tions of the self and others) and second, designers design from within
their experience frame as it is applied to or interprets design programs,
user needs, performance criteria, etc. Third, he believed that in order
to learn to design from the individual's experience base, the student
must be placed in an environment which is supportive of the student's
ideas, beliefs, perceptions and values and which concurrently encourages
the individual to risk projecting his or her ideas, designs, etc., outward
toward the group. He also believed that the central skill of designers
was to share with others his model of what he saw was and what he saw
should be and how it should be. This was based on his perception and
realization that a broad range of people were necessary to get the job

done in the real world. He held that the main intent of his studio was

to allow the students to find out for themselves in an "urban environment"

if they could design and if they wanted to pursue the design professions

further. This was to be achieved by the creation of a supportive environ-

ment within the studio which would allow each student to experience what

he called a "design experience." The design experience was in no way a

clearly identifiable or definable entity. It was an individual specific

experience whereby each student through the course of the studio synthe-

sized material from within (past experiences, perceptions, values, etc.)

and from without (real world) to form new confirmations (usually new to

the individual and not absolutely new) which constituted a solution to

the problem at hand. The "design experience" also encompassed the feel-

ings of confidence and accomplishment of having designed in a manner

which solved or addressed a specific problem. Once the student had gone

through the design experience it seemed to be relatively easy to identify

and "discuss" the feelings and the experience; much easier than trying

to define the experience to the student before he or she had been

through it.

The actual studio began with a program or a tentative schedule for

the semester and a short project intended to draw on the individual's

existing skills (developed as people living lives). The problem was

usually introduced verbally by asking each student to locate a place

or an activity in the environment which he or she felt intensely about,

find analogues to that situation and then share the information and hope-

fully the feelings with the rest of the class. This project was intended

to allow the student to develop skills at modeling the environment, and

to begin to share these models with others. The teacher then showed the

class a series of slides which constituted an analogue for them about

some place or activity. With this introduction it was intended to show

the students, at one level, what could constitute an analogue, at another

it identified the type of work that the students would be asked to do.

At another more subtle but crucial level the teacher presentation set the

stage for a protective, supportive, projective environment in that the

teachers in the course of the presentation "take the risk" to express

their feelings and attitudes about a given environment and in so doing

give the student an example of what they can do. The belief here was

that the teacher must take risks and project (to the group) his views to

serve as a model for the students. This was intended to help create the

supportive environment where everyone would feel comfortable taking the

necessary risks to project and share his position with others in the class.

Once the students felt that they were in a supportive environment and that

what they felt and perceived was real and meaningful to share with the

class, then there was a better chance of the students tapping their inner

experiences as design sources, and continuing to share with others.

Throughout the first project, the teacher continued to project his

feelings and attitudes toward the group and to be very supportive of the

efforts of the students. The first project proceeded with little if any

direct criticism or input given to the student by the teacher. The project

was to be the efforts of the individual alone, prepared in an environment

where the teacher demonstrated what an analogue could be and how it might

be presented. The project was terminated after one to three weeks with

the students' presentation and sharing of their material with the others

in the class. This was usually done in the form of slide presentations.

There was no negative criticism of the material. Again, the major concern

of the teacher was to generate a supportive environment where the individu-

al felt comfortable taking the risks necessary to share his or her ideas

and values with others. Many students felt that three weeks was too long

for such a project and were not sure in their own minds what the intent

of the project was in terms of reason for doing it, or how to do a "good"

solution to the "problem," etc. Most of the students responded to the

project as interesting and as fun, but were hard pressed to understand

why the project was given. There seemed to be little interest on the

students' part to see and hear what others had done, for during the pres-

entations there were three or four students present at any one time and

they were usually the people who were to present their material the same

day. Students who were not presenting tended to work on things other than

design. None of the students specifically identified the creation of a

supportive environment as the product of the first exercise. Some people

felt they had been able to articulate new (for them) feelings about an

environment.

The major semester project which followed the analogue study continued

the pattern of encouraging students to develop skills of designing and

modeling environments and sharing the products with others. The semester's

major project, in terms of time allocated, began with a program which very

loosely outlined a time schedule and suggested project. The project area

usually focused on designing on a fairly steep sloping site. The instructor

would suggest a possible use for the site in the program (e.g., campsite),

but this was only tentative and could be changed in any way the student

chose. Once designing the students were also free to change the site con-

figuration as they saw fit. In a group discussion about the program the

students were informed that they were to study the problem primarily in

model form with few if any drawings and sketches. At the same time, the students discussed and were shown various materials with which they could build their individual models.

The students then set about constructing their site models. Each model was roughly 3' x 3'. It was common for the bulk of the work to be done in the last two or three days before the site model was due. Once the site models were finished the whole class went to a parcel of land owned by Professor Roberts in New Hampshire where the students and teacher spent the weekend camping out on a site comparable to the one they were working with in the studio. The students were to experience, among other things, the site in their individual ways. They could build something if they chose with the materials on hand, but need not if they were so inclined. The weekend was intended to allow the students the opportunity to experience a comparable site, to experience the class in a different, more intense context (living together, preparing meals, etc.) and to experience the teacher and his relationship to them in a more informal, relaxed context. Professor Roberts felt very strongly about students knowing where a teacher stood on many of the issues confronted in the course of designing a project and being in the studio. Consequently, he made every attempt to expose the students to his views, attitudes and values. This was done throughout the semester in many different ways ranging from slide presentations of analogues of environments or professional work, to taking positions on the issues discussed in the studio, to taking the class on field trips to see buildings or parts of buildings that the teacher had designed.

Professor Roberts attempted, in the presentations of his professional work (in slides and in the field) to be open and candid about the strengths and weaknesses of the schemes, and tried to reconstruct for the students his thinking and considerations which went into the designs. Professor Roberts saw this type of teacher projection as necessary to creating an environment within which the students would be comfortable doing the same sort of thing - openly expressing their perceptions, designs, etc. He essentially created or tried to create a situation whereby the students would begin to operate in an open and sharing manner as a result of seeing the teacher act in such a way; modeling their actions after his.

> Position taking by teachers is necessary for the atmosphere
> to build for students to do it. This is what the teachers
> are asking the students to do - to create an environment
> where projection is the norm.

Professor Roberts was keenly aware of the teacher's role as an identification figure, and the potential difficulties of becoming a surrogate parental figure. Much of the potential identification was seen as a function of the age and maturity of the students, where the younger students tended to identify with the teacher as parent much more than the older students. If the surrogate parent role were too strong the student would tend to want to concentrate his learning from the one source, and this is a serious limitation in a profession where learning might want to go in many directions.

Once the students were designing, the teacher conducted one-to-one or small group exchanges and discussions with the students on a fairly regular basis. These exchanges consisted of the students presenting their work, ideas, considerations to Professor Roberts in order to establish

where the student was at that point in time. The teacher then usually
probed the student with a series of questions directed at clarifying the
communication between student and teacher and assisting the student to
clarify his or her own thinking. There was a great deal of discussion
in the exchanges about analogous situations. "What have you seen that
is comparable?" "what have I seen?" (still building on the first
exercise encouraging the student to make new connections in modeling an
environment). There was never any criticism (negative) of the students'
work; the discussions centered on clarifying the students' thinking from
the basis of the strength of the material presented, in the most supportive,
encouraging manner possible. In addition to the one-to-one exchanges,
there were throughout the design phase of the studio work group discussions
about the work produced. Here, too, the student's design, as a position
taken at a point in time, was respected and the discussion concentrated on
the differences among the schemes from their strengths.

As the work progressed, each student worked at his or her own pace.
The students were seen as going from programmed time to programming their
own time as one of the results of the studio. They were to find their
own gestation period, to create their own time frame. Consequently when
the studio terminated, the work across the class was on various levels
of development and completion. At termination, the point in time when
design activity was halted (as compared to finished) the students selected
a group of people to whom they wished to present their material. This
body formed what in other studios was called the jury. Here it was more
a select audience to which the students projected their positions while
presenting their designs. The final session (jury presentation) continued

in the supportive mode that had characterized the whole studio. Here, too, there was no negative criticism. Differences in schemes were high-lighted from their strengths and from having made more connections than others. Alternative solutions were also suggested at this time. After the final presentation the students individually met with the teacher in an informal session to discuss the experience of the semester and whether or not the student had had a '.'design experience'' in the course of the studio. Professor Roberts' experience had been that the students knew whether or not they had had such an experience.

In Professor Roberts' studio, there was not a clear fit between what he intended to achieve in the studio and what the students felt they received. Most of the students talked about the studio being too loose and not clear enough for them, well before they ever said that they responded to Professor Roberts as a human being who was deeply involved with his class. The students all expressed some form of the feeling of ''drifting aimlessly'' or ''floating between nodes of understand-ing'' or being in a ''nebulous, unclear studio'' and not being sure what they were to do. Some students saw the lack of time schedules, due dates and specific design programs as the reasons for the feeling of having no direction. Many students expressed a concern that the studio was ''too unreal,'' ''too fantasy-like'' in that there was never any negative criti-cism. Some students were concerned that the quality and intensity of Professor Roberts' involvement with the students generated a ''sensitivity session'' atmosphere rather than a design studio. Some of the students were very concerned that this studio, as their first design experience, did them the disservice of not showing them any limits, of making the

student feel that anything and everything that they (the students) did was fine and acceptable. "With such a limitless base, how are we to distinguish between solutions in future studios and in practice?" None of the students were able to state directly that the intent of the studio was to explore the individual's interest in and ability to design, to communicate their modeling of the environment to others (to project), all while in a supportive environment. The students generally stated that they "felt good" about the studio experience and that they responded to Professor Roberts as a person, but they were unable to elaborate further.

There were very few people in the studio who chose to work at home. Those who did produced schemes which were decisively different from the students who worked in the studio. Those who worked at home produced "universal" solutions which could be built anywhere rather than a scheme that responded to and respected the sloping site. In general, the students did not feel overworked or burdened throughout the studio. This was seen by many as a weakness. Many students would have preferred to work harder and more consistently (rather than in two- to three-day charrettes when a due date was finally established) on a more clearly defined project.

Professor Roberts used the method of setting the task to start his studio work. He then presented materials, used analogies and metaphors, and very consciously worked at setting an example for the students as a role model. He also worked very had to avoid any form of criticism. Instead, he probed and questioned the student in an attempt to help clarify the students' intentions. While the students were designing he continued to be the role model and presented designs he had produced, and encouraged group discussions. Discussion of alternative approaches

constituted the final review. (See Appendix C for detailed description
of teaching methods.)

Case 6: CA. Late 1960's-1972

The material for Professor Andrews' studio was generated while he
was working as a community organizer in Boston's South End. He was in-
volved with local groups who were attempting to rehabilitate and develop
local properties and at the same time help reverse the patterns of urban
renewal. The situation at that time was one where people were in need of
housing, were squatting in buildings which were scheduled for demolition,
and were unable through lack of funds and knowledge, to change the immedi-
ate situation. With the help of the community organizing efforts of
Professor Andrews, and the cooperation of a local construction company,
the problem of providing housing for some of those in need was addressed.
Some vacant buildings in the South End were available to the people for
purchase for $1.00 provided they were able to put enough work and new
materials into it to pass building and public health codes. To provide
the labor necessary to renovate such buildings, Professor Andrews proposed
studio credit for construction experience in exchange for students working
to help renovate the housing units. Professor Andrews started his studio
by writing up the project based on material he had gathered from numerous
meetings with community groups. The project statement reflected what the
community felt would be needed.

Had the time frames of academia and the world of construction dead-
lines and mortgage loans been more harmonious, Professor Andrews would
have structured the design project so as to allow the students to interview

the families who would be inhabiting the buildings. In this manner they
could gather specific information to be incorporated into the designs.
Professor Andrews was very committed to working directly with the families
who would be using the housing he was working on. This particular situa-
tion (where the design studio was involved) didn't allow for that type of
in-depth study. There were people who felt that there were so many
families in need of housing that it would be politically difficult to
interview the future users when no method of selection had been established.
The various community groups were well aware of the difficulties of select-
ing families to live in the rehabilitated projects, and recommended that
Professor Andrews not interview families as he had in the past, as part of
the design process. For the studio project one building was selected by
Professor Andrews in concurrence with the members of a local construction
company that was going to assist in the project. A building was selected
which needed major design work to rehabilitate. This building was pre-
sented to the students interested in the studio at a meeting with the
local construction group. At this meeting the contractors presented their
views, attitudes and rehabilitation objectives. With this input the stud-
ents were better able to make a decision on whether or not to take the
studio. Students who finally decided to work in Professor Andrews' studio
were of two basic orientations. One was students interested in learning —
about building construction and renovation in an actual project experience.
The second group was interested in doing socially relevant work. Some of
the students had both motivations for taking the class.

The work of the studio began with each student preparing a design for
the building which was selected for renovation. Professor Andrews would

review the designs of the individuals on a one-to-one basis. He relied

on his experience of working in the area to crit the students' work.

Economics and the provision of needed facilities were important criteria

for evaluating each design. Equally important to Professor Andrews was

the generation of designs which could be realized by a team of inexperi-

enced workers in the time frame of a semester.

Once the individual solutions were prepared, the number of possible

solutions was narrowed by Professor Andrews, the construction group, and

the students to a few, two or three. The students then worked in groups

to develop a few schemes. Finally one solution was selected by the same

group of people again based on considerations of economy, and the potential

for realization in the allotted time frame by the students.

Two significant limitations of students, as laborers, working on an

actual project, had to be addressed. First the students were, with few

exceptions, inexperienced relative to construction methods and techniques.

Secondly, the time frames of the studio and the construction group were

quite different. The studio met officially three days per week for a

semester, approximately sixteen weeks, whereas the construction workers

usually worked a thirty-seven-hour week over five days.

The students were expected to be on the site at least during their

studio time, and were encouraged to work more than that.

The limitation of inexperienced students was addressed by an arrange-

ment with the construction company whereby classes in plumbing, carpentry,

drywall application, etc., were conducted for the students. These classes

were held on the building site, usually early in the morning, on the studio

days when most students would be present. The problem of different time

frames was resolved by the arrangement whereby the construction group worked on the project on a regular basis, and the students plugged into the process at intervals (each studio meeting). When students were able to work additional hours outside of the studio hours, they would arrange their time with a member of the construction team so as to assure that someone would be on the site who could assist and indirectly supervise the student's work. This time arrangement also allowed the construction group the chance to schedule work which could be done by the inexperienced student while the laborers worked on areas which were more complicated or required more experience.

Upon arrival for a work session the students, with Professor Andrews' help, would determine the tasks which needed to be done. The determination of tasks was an informal process, which took into consideration what had been done by the construction crew since the last time the students were present, what the students were interested in doing at that point in time, and finally, what needed to be done. During the first part of the semester, tasks were divided between the male and female students. The men tended to do tasks which required putting together larger pieces of the whole, while the women worked on more detailed or tedious smaller sections. The situation began to change when the women expressed a dissatisfaction with the arrangement and a desire to work on the larger tasks. To make the changes the students started by discussing their experience of working on an actual project of contructing a new environment. In the course of the discussion most students expressed the opinion that the experience was different from what they expected it was going to be. Most did not realize beforehand what was entailed in construction and how long each task took to complete, especially a task like cleaning up. The

students found this to be an unpleasant experience, which consumed more
and more time as the project progressed. Most of the construction was com-
pleted by the end of the semester, with the summer used for finishing work.

Professor Andrews felt that the students had benefitted a great deal
from the experience, much more so than the construction group or the
future residents of the building. The reasons for the heavily one-sided
learning experience were twofold. First, the students had the most to
learn by the nature of their inexperience in the construction field.
Secondly, this inexperience combined with the short studio time frame pro-
vided the students with a minimum of assistance. Professor Andrews' evalua-
tion of the students' efforts was more a function of the progress the
student had made during the course of the studio than of anything else.

Most of the students identified very strongly with Professor Andrews
and the importance and need for the type of work they had done. The
students consistently mentioned Professor Andrews' intense commitment
to helping the people who most needed assistance. They also responded
to the experience of learning by doing. Many students were particularly
impressed with this studio experience over others because they were able
to work directly on the project with their design teacher; to work side
by side performing the same tasks.

The limitations of the studio most expressed by the students dealt
with feelings of frustration that the efforts of the studio benefitted
only a few families when there were so many in need, and that there was
not enough time in a semester to address the problem in a complete in-
depth manner. Most students expressed a concern about the limitations of
time created by the semester time frame and the demands of other classwork.

Professor Andrews offered his students the major role of model/example in that he worked directly with the students on the construction project. By working as a team with their design teacher the students were exposed to him as a model on a number of levels. Some of these levels included his role as an advocate and his attitudes about the project and people they were involved with, his work habits, how he approached the job, and the direct skills involved in performing the necessary tasks.

Professor Andrews' deep, intense commitment to helping people who were desperately in need of help was easily communicated to the students in the studio. All of the students commented about Professor Andrews' commitment to the project and how his intensity helped stimulate their feelings and commitments. Most felt that they had been exposed to a person who was acting upon deep feelings which helped the students clarify and realize their own attitudes. Many students mentioned their identification with Professor Andrews and the type of project they were involved with. Many said they had or would consider doing some comparable project now that they had been exposed to the need and the process of helping solve the need.

Professor Andrews' extensive experience in working with community groups in need of housing, and in the construction industry trying to provide the housing offered the students very specific knowledge relative to the project they were working on. Throughout the design phase, Professor Andrews was constantly providing the students with information which would assist them in making their design realistic enough to be built. Once construction started Professor Andrews, along with members of the construction group, would show the students how to approach and perform the various tasks.

The role of source of gratification is less directly attributed to Professor Andrews, and more to the process of the rehabilitation project. In this type of project the students have the potential to generate their own gratification by working on a project they feel strongly about, seeing the progress from their efforts and the final product which offers some people a better living environment.

The role of taskmaster was assumed by Professor Andrews relative to the time frame of the project, and when the various stages were to be completed. Once the construction was started the students were relatively free to select tasks which were needed to be completed in a period of time. If the students did not finish the task before they left the site, the construction team would do so, so as to keep the project on some sort of realistic schedule.

Professor Andrews was not considered by the students to assume the role of judge too often. His input during the design phase was viewed by the students as one of experience and knowledge about what was needed by the people, what could be built and how, and what best solved these problems. He was not seen in the role of judging their designs as good or bad, but more as a consultant on what was needed and what was an appropriate solution.

By the nature of Professor Andrews' experience in the construction field, he was able to show the students how to perform many of the necessary tasks. If the student ran into a problem while performing a task, Professor Andrews was there to help sort it out, and demonstrate how the task should be done.

As for methods, Professor Andrews began his studio by setting the task for the students and discussing the issues involved in the project. While the students were designing Professor Andrews criticized their work relative to the feasibility of the designs. Once rehabilitation started, Professor Andrews relied heavily on discussion and demonstration as teaching methods. This continued through the duration of the project. (See Appendix C for detailed description of teaching methods.)

Summary

The various case studies represent a number of approaches to teaching the design studio. Each reflects a range of issues specific to the teacher, when the studio was taught project, type, teaching methods, etc.

To summarize, the case studies represent a number of studios which had a number of common components. All of the studios had some component of individualized instruction through board reviews or personal demonstrations, etc. All were the major course in the student's curriculum in terms of time and commitment. Most studios were conducted in some form of structure or sequence where basic or simplified concerns were addressed in the early studios and more complicated matters in later years. Generally the first design studio a student took had the most impact on him. This is attributable in part to the noticeable contrast between a student's first studio experience and any other previous experience. Students throughout the years saw merit in the student-to-student interaction which took place in studios. Most students felt they had learned a great deal from their classmates. Some even felt they benefitted more from the student interaction or studio culture than

they did from a particular instructor. Students throughout the case studies identified very closely with their design projects, to the point that negative criticism of a design could easily be interpreted as criticism of the individual.

The differences among the case studies are presented in Chapter IV. Some of the general issues of design studio teaching are presented in Chapter V.

CHAPTER IV

CHANGES OCCURRING OVER TIME RELATIVE TO
DESIGN STUDIO TEACHING

Over the period of time (100 plus years) that design education has
operated in the university structure, some perceivable patterns of change
have taken place in the objectives, methods of teaching, content, teacher
roles, perceptions of students and teachers, and the profession of archi-
tecture.

During this time the practice of architecture has changed from a
situation where individuals with diverse training, interests and objec-
tives declared themselves architects and did whatever they wanted, to a
profession with standards of practice, methods of operation, codes,
licensing regulations, etc. The concerns of the profession have changed
and expanded from securing work from the federal government for the
design of nationally prominent buildings to social and economic issues,
of equal rights, user needs, advocacy architecture, and self-help projects.

The design work of the profession has shifted from the monumental
public buildings to areas of preservation, rehabilitation and energy
conservation.

Schools of Architecture have increased in number from three in 1870
to over 70, one hundred years later. The concerns of the schools have
changed from the development of standard methods, objectives and curricula
to development of the individual strengths of each school.

The objectives of an architectural education have changed from spe-
cifically training the practicing professional to providing an education

focused on design which may or may not result specifically in the traditional practice of architecture. This shift has been precipitated in part by the changing nature of the profession, the multiplicity of professtional roles, and the expanding concerns and arenas of operation of architects.

Training of an architect was originally viewed as a direct function of time in school. As information and the need for the architect to know more increased, the time in school was increased. As early as 1908 there was a perceived need for five years for an architectural program rather than four years. After World War II there was a perceived need for more time, six or seven years depending on whether it was at the graduate or undergraduate level.

With the information explosion that has occurred since World War II, it becomes impossible to teach a person most of what he should know to practice architecture in whatever capacity. A shift has taken place as a result of this overload. The curriculum has changed from one where the courses were all required of all students to one where students have a great deal of latitude in selecting from a broad range of courses.

Review of the case studies shows a change in the degree of teacher directedness. In the early studios (Cases 1 and 2) almost all activity centered around the teachers. They selected the projects for the students, directed the development of each design, evaluated the schemes, and awarded the prizes. A shift is seen in Case 3 where students are offered a choice of projects and data collection activity. In the later studios (Cases 5 and 6) the teacher still has the major responsibility for the direction of the studio, but the students are much more free to select the studio

and the project they want. At this time the students are much less

dependent upon the teacher for direction at every turn.

Change has also taken place in the expected behavior of the students.

In the early studios (Cases 1 and 2) students were expected to work alone

on the development of the parti and with the teacher's direction on the

development of the design. In the last case (6), students collaborated

with each other (with teacher direction) to rehabilitate a house.

Studios have changed from competitive environments where students

are in contention for awards to supportive environments where students

focus on self-expression (Case 5) and where students work together to

effect change (Case 6).

A shift from product to process has also occurred. The early studios

were oriented toward the generation of preliminary designs for a given

need, the development of that scheme, the jury of the product and the

award of the prizes. The awards were in part the response to the Beaux

Arts systems of awards used as generators of motivation to do the best

work; and as such, were a major component of the studio process. The

awards were given based solely on the jury's reaction to the end product

(this included an expectation of the close similarity of the final design

to the preliminary sketch design).

The context of the early years allowed for the relatively clear

determination of merits of various designs which in turn facilitated the

award system. This was the case because there existed a fairly well

defined and accepted set of design standards with which to determine

the award winners. With the waning of the importance and influence of

the neo-classical traditions of design through the impacts of the Modern

Movement of design, there continues in the design studio the preoccupation

with the product. This time mid-1930's to early 1960's, the design

standards shifted in form language from the classical to modern, but

still focused on the end result, the product.

With the increase in areas of concern and complexity, and with the

advent of the experimentation and individual approach to design, there

began a dual situation. On one hand there was a search for techniques

with which to facilitate issues of complexity, overload and uncertainty

and on the other hand the dissolution of an acceptable norm or measure

with which to evaluate end products. There no longer existed the "theories"

of the neo-classicists or the quest for the modern design "form follows

function" tests with which to evaluate the products of design. Thus in

the 1960's there was the beginning of a "demand-pull" shift toward the

concerns of process and "how" designs came to be and away from the spe-

cifics or formal design concerns of product. Determination of user needs,

incorporation of user in design process, delivery of services, and the

necessary and related methods and processes of achieving them have bcome

the new areas of concentration. Much more of a concern exists with how

the problem is defined, how the solution affects the users and how it came

to be rather than with the formal concerns which relate to the product

viewed as an end in and of itself.

The primary methods of teaching the design studio have shifted from

criticism and coaching according to the design standards of the day, toward

probing, questioning and the clarification of intentions. Through the

1920's the design standards of the Beaux Arts were in good currency. These

standards were concerned with axes, symmetry of masses and the like. After

this time the concerns of the modern movement, on technology, standardiza-

tion, geometric form, began to take precedence.

With these accepted standards a teacher could criticize a student's design in terms of how well it followed the accepted guides of design. As the guides became less clear and definitive it became increasingly more difficult for instructors to evaluate the students' designs other than on personal terms, (I like it), or on those issues which lend themselves to measure and test, (a car is so wide, consequently, a ramp for a car needs to be so wide, or the code requires three hours' construction, etc.). Thus the issues to which criticism or coaching lend themselves narrowed, and the probing and questioning mode of criticism developed. This was an attempt by the teacher to help the students clarify their thoughts, intentions and to discover or be lead to solutions through the Socratic method.

With the decline of clear standards teacher-evaluation of students' work changed. It went from evaluation of the product (which could be tested against standards) to processes the student went through to generate a design. Motivation, attitude and other concerns have also replaced or been included with the product in evaluation of student work.

Another shift from the critique and criticism has been in the attempts of some instructors to generate "positive criticism." This ranges from efforts to constructively point out the weaknesses of a student's design and suggest possible solutions, to situations where only the positive attributes of a student's design are mentioned. The intent of the latter is to teach the student through positive reinforcement.

The dissolution of the clear standards by which to test a design has had some impact on the jury mechanism. In the earlier model (Cases 1 and 2) a design was judged independent of student presentation and relative

to specific issues of axes, monumentality, beauty of drawings, etc.
These measures gave way after the early 1930's to presentations in the
jury by the students and were judged relative to the issues of the modern
movement, standardization of materials, technology, functional considera-
tions, etc. Today the "jury" operates in many modes, some (though rare)
are relatively formal examples of the traditional jury with student
presentations and jury member critiques. Others take the form of pres-
entations, discussions and class evaluations where the focus is on the
collective definition of the problem, or the statement and testing of
intentions. Other teachers review each student's work relative to the
efforts of others in the studio, or favor directed self-evaluation by
the students, or an end-of-project conference with the instructor.

The design experiences in the studio have usually focused on the
design of specific projects. Following is a sample of design projects
given over time. They are presented in ten-year intervals. (A more
detailed list is to be found in the appendix).

    1870   Column
            Balcony
            Mausoleum

    1880   Bridge
            Peristyle
            Swimming bath
            Chapel

    1890   A monumental bridge
            A theatre
            A grand staircase
            A memorial library

    1900   A monumental chimney piece, for one of the principal halls
                of Hague Palace
            A monumental fountain in a city of importance
            Special residence at a fashionable watering place
            A memorial hall for a college

1910   A study in domestic architecture, an apartment house
        A front piece composed of architectural details and fragments
        A small library
        A colonial museum

1920   An indoor public swimming bath
        A study of the ionic order, a small savings bank
        An art museum
        A post office

1930   A railroad station near a stadium
        A doorway at the end of a hall
        A marine museum
        A niche and vase
        The decoration of a vaulted ceiling

1940   A florist's shop
        A boat house
        A dental office
        An aircraft warning station
        Semi-detached house

1950   A summer house and studio
        A small museum of American sculpture
        An office building for a State Highway Department
        A gas filling station
        Industrialized house
        Dorchester Bay Development Plan

1960   A town house
        A nursery school
        A hotel in Caribbean
        A fine restaurant
        An institute of contemporary art
        A hockey rink

1970   A study of Columbia Point
        Housing in Lower Roxbury
        A day care center
        Design/construction of housing in the South End
        Mobile home industry, a case study in industrialization

Since the School of Architecture opened in the late 1860's, many

shifts have occurred in the nature of the design projects given in the

studios. The practice of designing parts of buildings has shifted toward

designing total buildings. The practice through the 1920's was to give

the students in the beginning studios design problems which focused on

building parts. As the student became more experienced, the problems
(in later studios) would become more complex and include components simi-
lar to those the students had designed as limited focus projects in the
early years.

The programs for the later studios focused on the design of buildings
which were public oriented, monumental in nature and usually unique in a
particular environment. For example, an opera house, or a monumental
bridge, an art museum.

During the 1920's and the 1930's the designs still focused on build--
ings which were public oriented and which required a sizeable population
to support; a railroad station or a swimming bath. The notion of monu-
mentality had been removed at least from the program statements.

After the Second World War, the projects throughout the years
addressed total buildings which tended to be modest in size and much
more utilitarian or commonplace in nature as compared to the monumental
concerns of the 1800's and early 1900's (gas stations, post offices,
florist shops).

Since the late 1960's, design programs have included projects which
are analytic and directed toward socio-economic concerns of communities
and neighborhoods as well as projects which are at the scale of the
single building but which serve some specific need; for example, a day
care center, buildings in the South End, youth center for street gangs,
and study of psycho-social concepts and their relationship to the
physical environment (see Appendix B). These changes in the content of
the design programs and the resultant design represent a shift from the
designing abstractions (without specific site or client, etc.) to design-
ing within specified context where actual sites, environments, needs,
clients, etc., are identified.

There has been a shift in the skills used to design the projects.
For the first 70-80 years of the schools' operation, the skills were

product oriented were most used. These included the skills of graphics (model and drawing) and the capacity to synthesize. With the move toward the study of sociological and psychological issues through design, the need for skills which are process oriented became more important. These are the skills of data gathering, analysis and problem definition.

The design programs have shown a shift from the anonymous client to the specific client and user. This shift is partially a function of the shift from the monumental type project which is supported by a large unknown population toward the smaller scale projects which are neighborhood or community specific. Many of the programs (particularly in the years before 1920) described the client as a person of great wealth and/or prestige or a city or community of importance. After World War II the clients shifted from the wealthy to the average or middle class where the task was to design the common use buildings (e. g., florist shop) that anyone could own or operate.

With the rise of social awareness during the mid-1960's, the client and consequently the inferred arena of practice has shifted toward the poor and disadvantaged; toward the people who need the services of the architect most and have been the least capable of securing them.

With the shift in foci and the resulting expansion of the concerns of the architectural schools, there has been some movement to integrate the information of other disciplines into the education and experience of today's student. From economics, psychology, sociology, law, business, education have come methods of teaching which are new to the studio. These include in-depth research as might be used in the social sciences, case studies which have been a major teaching device in schools of law and business, self-paced learning devices (packaged learning) from among other areas, correspondence schools, simulation (beyond drawing and model

making) from operations research, systems analysis, and computer appli-
cations, role-playing from psychology, self-criticism as might be used
in therapy, psychology or possibly education. The development of con-
ferences, continuing education courses, workshops, etc., in areas of
interest and concern to architects has allowed for their use in the
teaching of the design studio.

Some new methods have developed from the particular orientations,
perceptions and interests of individual instructors. Giving analogies
and metaphors is an example. It doesn't appear to be a method which is
transported from another discipline, nor is it a method that has been
widely used in the teaching of design studios over time. Giving a
student a solution to develop is another method that is relatively indi-
vidual specific and as such does not have widespread use.

Roles or role models stem from two indirectly related areas, the
profession and the studio, specifically the student-teacher interaction.
Over time the roles which are profession related have become more diversi-
fied while the roles which stem from the academic environment have remained
somewhat more constant.

For the first sixty years of its operation, the School of Architec-
ture at M.I.T. had a very clear model of the professional role the de-
sign instructors were to have. The major design instructors during those
years were trained at the Ecole des Beaux Arts in Paris and were usually
practicing architects who either had their own offices or consulted with
a number of people in the profession. Over the years since 1930 the
role of the design instructor as a practicing architect has continued
to be dominant. Most of the design teachers have been architects who

had some degree of experience in the profession before teaching or who practice concurrently while teaching. The role of identity figure as professional is provided through this activity. The students have selected the profession of architecture as a career and are exposed to professionals who are operating in the field in their design studios.

As the profession has begun to respond to change and broaden its focus, the areas of concern for architects have expanded and new professional roles have emerged for the student.

New roles include the advocate; the professional who practices in a community and uses his expertise to strengthen the negotiating position of the people in their dealings with various institutions, agencies and organizations.

The role of advocate shifts to that of community organizer if it is the professional who identifies a problem in a community and sets out to gain support of the people for a solution to the problem.

The urban designer who operates between the single project scale of the architect and the policy concerns of the planner is also a new role.

The role of the academic has expanded beyond teaching and now includes concerns of research, theory and the application of knowledge developed in other disciplines (psychology, computers, law, economics, etc.).

The architect-developer is a role that has emerged in recent years. It entails a practice that offers comprehensive services, from programming and design to financing and construction.

Manager of the environment is also new. It operates on levels from construction management to policy generation for management of whole systems of resources (Environmental Protection Agency for example).

The academic roles develop from the various functions of the teacher at different points in time. A teacher is usually put in the surrogate client role by setting the task for the students. The teacher, like the client, is asking for the design. Depending upon the methods of teaching used, the teacher may be seen in the roles of judge, coach or questioner. Usually, almost by definition the teacher is viewed as a source of knowledge.

Teachers and students have shifted their views of each other over the years with the most perceptible shift occurring only recently.

When asked to relate the strengths and weaknesses of their experience in the design studio, it was relatively easy for all of the students to relate something they perceived to be a strength. But for weaknesses it was only students who graduated after the early to mid-1960's who expressed any sort of a weakness anywhere in their experience. The students before 1960 who found any weaknesses generally commented on their not liking the negative criticism but were quick to accept it as the mode of teaching. They also thought that their educational experience prepared them well to operate for five to ten years in the profession before they would need to supplement their education in any way. The students after the mid-1960's tended to be much more critical and vocal about their perceived weaknesses of specific courses, instructors, the curriculum, their educa-tion, etc. There was not a perceptible pattern to the criticism other than that it was verbalized. The students before the 1960's saw no weak-nesses. They tended to express an affinity with the profession and with their design teachers as practicing professionals. After the early 1960's the students were much more expressive of attitudes about the design

instructors as people and individuals, independent of their professional orientation. It is difficult to know the causes of such a change. It seems to be part of the questioning that took place in the 1960's of all authority--governmental, religious and academic.

When talking about their images of their design teachers, the students closest (in years) to the experience tended to include negative as well as positive statements about the individual and the studio experienc. As the students gained perspective through removal from the situation over time, their expression of images shifted toward positive impressions and tended to be simplified. Students who had the same design instructor, years apart, would express very similar, concise images of the instructor. An example is that students would say "He is very disciplined and that is what I learned from him," or "He is very incisive and with one question can cut through the basic problem of a design."

The teacher's perception of the students is always positive but general. The difference between the students' images and the teachers' is the difference between images of one person and the images of a large amorphous group (students). The teachers who have been teaching for a number of years generally felt the students coming to the university today are more sophisticated and have had a greater exposure than those of ten years ago.

The only clear perception the teachers had about their students is that individuals who returned to school after World War II operated on a much higher level and were able to achieve better results than those who did not have the war experience behind them. Most of the teachers who had experienced this phenomenon considered the difference to be a

function of the maturity and level of motivation these students had

before they got to the university.

Throughout the shifts in content and roles is the pattern of accel-

erated rate of change. Much of this has been precipitated by the increase

in knowledge and communication and the resulting increase in the concerns

of the profession. In part the rate of change has been generated directly

and indirectly by war and the results of war. A few examples related to

architecture:

> The opening of M. I. T. was delayed three years due to the Civil
> War.
>
> World War I brought the devastation of Europe and the need for
> housing and rebuilding.
>
> World War II brought another devastation of Europe and increased
> demand for housing and rebuilding and the technology necessary to
> to do.

It also increased communications about the various architectural

movements in Europe. As a result of pre-World War II activities, the

Bauhaus was terminated. This intensified the Bauhaus as an idea and

caused the migration to this country of most of the important people from

the Bauhaus. The Viet Nam war has generated a much broader based social

concern. It has also stimulated a strong return to the land and ecological

movement. The latest Mid-East war precipitated the oil shortages and the

new energy consciousness.

Each of these wars and the resulting impacts have affected the

architectural profession and indirectly, architectural education. It

is very difficult if not impossible to anticipate the specific shifts and

changes before they occur. And as such, it is difficult if not impossible

to specifically prescribe methods of teaching, other than to realize

that change is constant, the rate of change is increasing, and the spe-

cific changes are unknown.

CHAPTER V

ISSUES BASIC TO TEACHING THE DESIGN STUDIO

This section will present some issues which appear from this study
to be basic to the teaching of an architectural design studio. If basic
is taken to mean the issues are common and apply to any and all design
studios, then the issues center around those components which are pres-
ent in or support all studios; namely, students, teachers, objectives
and context (curriculum).

A student electing to become an architect today selects a profession
which is considerably more complex and diverse than the profession of 100
years ago. The breadth and diversity of the role of the architect has
developed through response to and pressure from the demands of a changing
society, technological innovation, and a greatly expanded awareness.

During the era of the Beaux Arts the student had an explicit model —
of the architect, essentially as the designer of monumental public use
buildings. This view was relatively homogeneous throughout a design
studio. The perceptions of the teachers supported this model. Conse-
quently the objective of the design studio of the Beaux Arts era (CA 1930) —
was teaching the student how to produce designs (usually monumental)
according to the accepted design standards of the day. To do this the
student needed the capabilities to generate and elaborate upon "multi-
axially symmetrical plan patterns of abstract, but unfunctional elegance."[1] —
The student also needed to be capable of design development from an —
initial parti, and of graphic presentation of the designs.

During this period individual differences and capabilities of students were addressed by the teacher as a function of the distance each student was from the teacher's standard or norm. Essentially all students were measured, judged and coached according to the standard the teacher held. This was based on the model of the practicing architect at that point in time. Those students who had difficulty performing according to the teacher's expectations (those who were more distant from the desired norm) were given additional coaching during the board reviews as to how to operate according to the standards. The students judged capable of operating in an accepted manner were usually allowed to do so with periodic checking by the teacher. Given that all of the awards at that time were based on the final product, it was to a student's advantage to minimize any time delays that could result from working on an "unacceptable" design.

Today, within each studio is found a population of students which reflects the diversity of concerns, options, interests and approaches related to architecture and architectural design. Each student has a different experience frame, set of interests, career objectives, perceptions of his needs and reasons for being in the studio. In addition, each student has different skill levels, rates of development, capabilities and propensity toward design.

The first issue of teaching the design studio is the range of diversity of the students relative to interests, objectives, skills, perceptions, etc., present in a studio.

Clearly the all-fit-one model of capability development is no longer applicable (for among other reasons there are multiple roles of the

architect). It is no longer valid for the teacher to take time (teaching) from the "strong" student who is performing according to expectations to give to the weak student who is not. No one can do everything relative to architecture equally well. Students who are strong in one aspect of design are often weak in others. Teaching should be oriented more toward the development of students' weaknesses and not just re-exercise of their strengths.

Related to the diversity of students in a design studio is the perceived benefit of student-to-student interaction. Consistently throughout the interviews, students and teachers commented favorably on the teaching-learning potential of students interacting with their peers. Such an exchange may happen through the structure of the design studio with its common purpose, close proximity and extended time frame. But this should not be left to chance; the teacher must be aware of the benefits of student-to-student interaction and facilitate it.

A second issue basic to teaching the design studio centers on the teacher, his style, actions, and methods, in the studio.

Any teacher is in a very influential position, almost by definition. Students look to a teacher as an authority figure (parent surrogate) to be more knowledgeable and experienced than they are. That is one reason he is the teacher. The design studio teacher differs from most other teachers a student encounters in two ways. First, the studio teacher usually is a professional role model for the student and second, the common mode of teaching the design studio is through some form of one-to-one exchange between teacher and student. The individualized instruction that is prevalent in most design studios is one of the strengths of the

studio mode of teaching. Along with this close contact between student and teacher is the potential for the studio teacher to make great impacts on the students. Intensifying the potential for the design studio teacher to have an impact on students is the extended time frame of studios and the importance studios have in most architectural curricula. Because of the potential for impact a teacher's actions, statements and style are important.

What a teacher says and does in a studio is, to a large extent, a function of the teacher's perceptions of the students, the subject, the needs of the class, his interests, etc. Depending upon these perceptions, and which issues are considered important, different behavior, expectations, and experiences will result. The identification of important issues like the solution to a problem is determined by the way the problem is perceived. For example, given the problem of hunger in a particular region of the country, depending upon how this problem is perceived, different solutions will be generated. If hunger is seen as a problem of distribution of goods (transportation), it will be approached differently than if it is perceived as a problem of economics (not having enough money to buy the food), or of education (of not knowing what food to buy), or of supply, or of advertising, etc.

The same is true for the teacher of the design studio. For example, if the teacher sees the students' relationship to knowledge as clearing through him, he will behave differently than if he sees knowledge as equally available to students and teacher alike. If the teacher perceives the transfer of information to be important, he will operate

differently than if he views the development of student self-image as most important.

Whatever a teacher does in a studio can and usually does communicate to the students on a number of levels. Some of the messages communicated are intended, others are not considered. For example, if a teacher selects one project for a studio to design, he not only sets the task for the students, but also legitimizes the project for the students as something they should be concerend with (or why do it?). He also establishes a potentially competitive environment and sets the stage for future student behavior with the explicit and implicit expectations included in the problem.

If a teacher sets up a situation in a studio where each student must clear each decision with him, his (the teacher's) intention may be to monitor a student's decision making capabilities. But unintended and equally strong as a message to the students is the communication that the students are not capable of making independent decisions, and need assistance all along the way. This unintended message could easily generate very dependent behavior from the students.

When a teacher criticizes a student's work, the intention may be to highlight a weakness of the design or clarify a thought process, but the unintended result may be the undermining of the student's self-confidence or the deterioration of communication between student and teacher.

Criticism has long been the dominant method used in teaching the design studio. But it is also a problematic area of design teaching, due, in large part, to the propensity of design students (and designers)

to identify very closely with the designs they generate and the lack of clear standards on which to base the criticism.

Consistently throughout the interviews of the students the issue of criticism was raised, usually in the context of weaknesses of the design studio. This was particularly the case where negative criticism was seen as excessive or abusive or where the basis of the criticism was not clear, or was seen as arbitrary, subjective, and debatable.

One last example of the different levels of communication that can exist in a design studio is in the problem statements. The design programs given in the early years (through the 1910's) called for the design of bridges, fountains, columns, etc. Inferred in the programs was the arena within which the students were to operate. This was definitely the monumental arena. The programs consistently referred to a monumental design; a monumental column, a monumental bridge, a monumental fountain in a city of importance, etc.

During the 1920's and 1930's the programs focused on public buildings which might be less monumental. During the years after the Second World War, the inferred arena for the students included most building types--public and private, large and small. After the mid-1960's the students were given the message that the social and psychological issues of a design were important and must be taken into account. Since the early 1970's the socio-economic concerns have combined with those of ecology, energy and resource allocation.

Not only have programs inferred the type or scale of the buildings the student is to design, but they also have communicated much about who the clients are and as such can affect the value and attitude structure of the student.

The potential impact on students holds for everything a teacher does in the studio. Consequently teachers of design must work at being aware of the many levels on which they can and do communicate. They must also test how what they are doing and saying is being received by the students.

A third group of issues centers on the objectives of the design studio and the architectural curriculum. The objectives of the design studio are usually determined by the teacher based upon his perceptions of the subject, the situation and the students. The collective perceptions of a faculty determine the curricular objectives of a school and as such determine the direction the school follows and the range of capabilities to be developed in the students.

Through the Beaux Arts era (CA. 1930) the perceptions of design teachers about necessary capabilities and methods of development were relatively clear and homogeneous through most universities. A few exceptions to the Beaux Arts model developed relatively late in the era. The University of Oregon in 1920 attempted a non-competitive approach to design, and in 1925 the University of Cincinnati established a co-operative program.

Most other schools, during this time, conducted design studios in the manner similar to the first three case studies presented in Chapter 3. The studies were oriented toward teaching the student how to produce designs according to the standards in good currency at the time. This was done through a series of studios each with the same "how to" approach but with increasingly more complex designs to produce. The studios focused on problem solution and the production of designs. The

capabilities considered necessary included the ability to synthesize components into a design according to the design studios, the ability to simulate designs in two and sometimes three dimensions and the ability to graphically communicate the designs. "The elaboration of multi-axially symmetrical plan patterns of abstract but unfunctional elegance" was the basis of the standards by which designs could be generated and tested. These standards reflected the theories of Julien Guadet and Auguste Choisy, and the practices of the Ecole des Beaux Arts in Paris and the Beaux Arts Institute of Design in New York.

During the past 40-50 years the shift toward the concerns of the modern movement has brought another set of relatively clear design standards. These dealt with simplicity of form, standardization, industrial production, expression of function and the refuting of the concerns of the Beaux Arts. The axes and orders of the Beaux Arts were replaced with the functionalism and geometric expression of the international style.

Capabilities which were developed at this time focused on the production of designs according to the standards of modern design. These capabilities included the ability to synthesize various components of a design, ability to simulate in two and three dimensions, ability to visualize in three dimensions, and the ability to communicate graphically. During this period (to early 1969's) the objectives of the studio and curriculum were relatively focused on teaching the students how to produce designs according to the standards of the day.

Today there are very few design standards as such. Those that are accepted as standards tend to focus on "objective," testable, and

quantifiable concerns; codes, costs, performance specifications, (turn-
ing radii, exit requirements, beam depth, etc.).

As design standards have decreased in number, professional roles,
career options, approaches to design and interests of students and teach-
ers have increased and become more broad and diversified. For example,
the asking and answering of "how to" questions is now but one approach
to design. The questions of "who," "why," and "where" have gained equal
status as approaches to design. With these approaches has come the need
for new capabilities in the areas of problem recognition, problem formula-
tion, situational analysis, interactive skills, use of information from
other disciplines, critical evaluation, etc. These are in addition to
the capability to synthesize.

Today the design studio reflects the exponential rate of change that
has taken place throughout the world in the past 15-20 years. Looking
at the ideas in good currency in the architecture schools in recent years,
one sees the pattern of an increasing rate of change. Design methods,
environmental psychology, computer applications, advocacy architecture,
user needs, adaptive use, programming, energy conservation, and preser-
vation have all come into good currency at an increasingly faster rate
and usually for a shorter period of time.

The architectural profession has experienced an equally rapid change
in the areas of methods, materials, and procedures. Change has been so
widespread that recently the Museum of Modern Art, once the showplace of
artifacts of the Modern Movement held an extensive exhibition of Beaux
Arts designs.

People like Donald Schon and John McHale have described the increasing rate of change as one of the few constants within our society.

Change and the capability to deal with it are factors which affect any attempt to define objectives for design studios and architectural curricula in the near future.

Objectives which concentrate heavily on the transfer of information risk antiquation as change continues and new methods, theories and approaches emerge. But objectives which concentrate on the patterns and processes of operation can prepare the individual to be self-actualizing in changing situations. To do this the student needs to learn a pattern of learning applicable to a new problem or situation, contexts, etc. In the process the student can develop the self-confidence that he can operate effectively in a new context. The need for collaborative and interaction skills will continue to increase as the problem areas increase in scope and the areas of expertise decrease in scale. More professionals, each with an area of expertise, will be called upon to solve collaboratively the problems facing the environment. Edgar Schein in his research on Professional Education[2] has already identified this increased need.

The issue of teaching a student to colloborate is not an easy task, and it seems to be particularly difficult in design curricula. Design studios have consistently emphasized the development of the individuals' design capabilities, through individually designed projects. This allows for, among other things, the relatively clear monitoring of a student's efforts. When teams have been formed to design a project, difficulties arise in resolution of design decisions (each student wanting his design

to take precedence), getting people to work on another's design, and evaluation of the efforts of the team members.

Of the students interviewed, most would not choose to work in teams if it were their decision. They felt the competitiveness that arose among team members to implement individual design ideas and approaches was too problematical. If there was no choice most students would elect to work on a team where there was a relatively clear division of tasks. For example, in data collection or in the design of components of a larger project, or as in case study number 6, where each student had a specific task within a collaborative effort.

Another issue basic to teaching the design studio is the breadth, complexity and variety of concerns available for study in a studio or a curriculum. It is clear that it is impossible to address every issue of design in the course of a person's formal education.

To form a coordinated experience for the student, there should be a structure within which all studios operate. This structure would allow each studio to concentrate fully on the issues it had selected to study, knowing that other studios would be addressing other issues not covered by this studio.

The last and possibly most interesting issue about teaching design is raised in Robert Ornstein's book, Psychology of Consciousness.[3] In this book he presents a model of the brain which has distinct functions, skills, and operations placed in one or the other of the lobes. According to this model, one lobe deals with the acquisition and maintenance of skills which include verbal and analytic capabilities. The other lobe

deals (among other things) with spatial, emotional and holistic issues. This raises the question of whether design (a function of the spatial lobe) can even be taught, especially in schools that operate almost solely in the domain of the other lobe (verbal and written). There are no answers to this question at this point in time as research is only beginning. But if it were true that design is the function of one lobe and as such, relatively unaffected by techniques associated with the other lobe, what an impact it would have on design studio teaching. In the interim I propose the following method of teaching the design studio.

Summary

The preceding is a range of issues which I see as basic to design studio teaching. Depending upon an individual's perception, these issues embody a number of merits and liabilities of the studio experience. For me, some of the positive aspects include individualized instruction, teaching-learning potential of student interaction, breadth of concerns, available for study, and the studio offers one of the few educational experiences which emphasizes synthesis.

Some of the aspects of studio teaching which could be problematic if not addressed include diversity of students' interests and capabilities, destructive competition, students' identification with their designs, overload caused by breadth and complexity of issues for study, fit between the teacher's and students' objectives for the studio and the potential for underdeveloped interaction skills of students.

In the next chapter I propose a method of teaching the design studio which attempts to maximize the positive aspects of studio teaching and minimize the liabilities. In developing this method I focused on the breadth of concerns and diversity of students' interest is an issue raised by the expanding concerns of the profession of architecture and the role changes that have developed in recent years.

Competition has been an issue in the design studio from the beginning. The nature of designing, with each student usually preparing an individual solution to a given problem seems to stimulate competitiveness.

Interaction skills and the development of cooperation are attributes which many people see as necessary for professionals to have but have been little addressed in the studio.

Traditionally, the studio has been centered around the instructor and his objectives. The needs and objectives of the students should be given a greater importance in determining a studio method.

In addition to focusing on these issues, there are a number of ideas in education and the studio experience worth developing in a method of teaching the design studio. These include the desirability of students becoming self-actualizing and party to decisions which affect their education (Rogers) the benefit of learning through discovery (Brunner), the merits of a student pursuing an area of interest (Holt), and the potential learning--teaching benefit to be gained from student interaction.

Footnotes – Chapter V

1. Reyner Banham, <u>Theory and Design in the First Machine Age</u>, (New York: Fredrick A. Praeger, 1960), p. 19.

2. Edgar Schein, <u>Professional Education</u>, (New York: McGraw Hill Book Company, 1972).

3. Robert Ornstein, <u>Psychology of Consciousness</u>, (San Francisco: W. H. Freeman & Co., 1972).

CHAPTER VI

PROPOSED METHOD OF TEACHING DESIGN

In conclusion, I propose the following method of teaching design. This method is generated from the findings and the experience of this study. It attempts to incorporate the strengths and to eliminate some of the liabilities of teaching design.

To start, a few prerequisites are necessary concerning the context within which this course or experience should be offered. I propose four conditions for the design experience. First, that the instructor be considered a resource person and not a studio critic, and that the idea of the studio with the implications of apprentice and master be dropped in favor of a concept that is less charged and more neutral. For example, tutorial, workshop, a study unit, etc. Second, that all students maintain a portfolio of all their work. Third, that the offerings in the design courses be structured so as to offer a coordinated series of options.

Each design experience would be determined by the teacher and negotiated with the other design teachers to provide a coordinated, non-duplicated series of experiences. Each teacher would devise the design experience based upon his interest and capability to operate as a resource person for the material. Each design experience would clearly define the issues, concerns and approaches that are to be addressed by the experience. For example one instructor may be interested in the design of typical architectural projects in unique settings (office buildings, apartment buildings) with the emphasis on technical

considerations. Another teacher might be interested in the design of
projects which combine contradictory uses, functions or contexts with
an emphasis on experiential considerations. Another might be interested
in community development with emphasis on activity issues.

The fourth condition is that the student have access to information
about the various design experience options available to him. This informa-
tion would include written descriptions of each experience, feedback from
students who had previously gone through the experience, interviews and
discussions with the instructors of the various offerings about the
options.

The students are then free to select the design experience which
best suits their needs as they perceive them. Finalization of the
student's selection will depend upon the design teacher's concurrence
that that design experience is what is needed by the student at that
point in time. This determination will be achieved by one-to-one negoti-
ating between student and teacher, upon review of the student's portfolio.

This process sees the student as an individual capable of assessing
his needs and making intelligent decisions which directly affect his life.
In communicating these expectations to the student, it offers the oppor-
tunity for the student to perform according to the expectations. (Re:
Pygmalion in the Classroom. Rosenthal and Jacobson, 1968.) (Skinner, 1972).

This begins to reduce the models of a student as a child that must
be told what to do and that of the student as the victim of chance
assigned to a class by a computer. This process also allows for the

monitoring of the options offered. If one instructor has very few stud-

ents interested in his or her offering then some sort of reassessment

and readjustment is in order. If the corollary is true that one instruc-

is oversubscribed, then provision can be made for the option to be

offered more frequently, for other instructors to follow the lead and

modify their offerings, or for students not admitted to the class because

of quotas to be given first priority the next time the option is offered.

Selection of a design experience in this manner provides the best

opportunity for the student to team with a resource person with whom he

or she can work.

Selection of a theme area allows the student the opportunity to

explore his or her specific interest. Compared with the usual case where

all students in a studio are given the same problem independent of needs

or interests, this is an important consideration, for it contributes to

the level of motivation, depth of commitment, willingness to make the

necessary efforts, etc. (John Holt, Carl Rogers, Maria Montessori,

Jerome Bruner, A. S. Neill have addressed this issue at length--that the

individual's growth and development take place within the context of

exploring his or her interests and that a person's interest in freely

chosen projects will lead to the efforts to complete them.)

Each theme area provides the students working in it with a frame

of reference that allows for the sharing of information and for learning

about the breadth of the issue. The sharing can take place when one

student, in the course of exploring his project finds material useful

for another. The students learn of the breadth of the issue area and

approaches to it through interaction with other students working in the

same theme area.

The common focus of the theme provides enough of a common interest to facilitate communication and exchange without the destructive aspects that result from competition when all students work on the same project. (Re. Schein, 1972 - need for professionals to work together as team.)

Once in a design option all students assemble on the first day (of classes, or experience, or semester) and are asked to execute a very short exercise. The exercise can be in any form--written, sketch, performance, etc. This exercise has two major purposes; first, it is to be a diagnostic exercise that allows for demonstration of the student's strengths and weaknesses relative to the skills, processes, ideas, etc., considered important to the instructor. Consequently, it should be carefully designed by the instructor. Second, the exercise gets the students into an active rather than a passive mode as quickly as possible. This helps to set the tone of the experience, as being one in which the students are to be actively involved with their education, in exploring their areas of interest (Bruner, 1960), and not passively sitting back waiting to be fed and entertained.

Immediately following the sketch exercise, the students are asked to individually prepare a "contract" for their work in the design experience. The contract should include at least the student's intentions, objectives, needs as he perceives them and his expectations. The contract would include a brief description of the exploration the student wants to conduct and a needs statement which focuses on those attributes, abilities and skills which the student considers underdeveloped and which would be addressed in the course working in the design option. The expectations would include what the student expects of himself as well as what

the students expects of the instructor and the design experience. The

expectations would also include issues of performance in terms of the

nature of the relationship between the student and instructor. For

example, one student might expect frequent input from the instructor

where another would expect a monitoring of his or her process with only

occasional feedback. Or one student wants to be evaluated according

to certain criteria while another would expect access to specific re-

sources.

The intention in asking the students to prepare this sort of contract

is to have the students think actively and seriously about what they

expect to gain from the design experience. It makes the student state

explicitly what it is that he is going to do and what he wants and needs

in the process. It allows the student the opportunity of actively con-

tributing to the experience in that the contract should set the tone and

the direction of the student's work. This reinforces the view of the

student as a person capable of making decisions relative to issues which

affect his or her education and indirectly his or her professional

growth. (Re: Rosenthal and Jacobson, 1968; Skinner, 1972).

When the student has completed the contract, he or she establishes

a time for a lengthy, in-depth interview with the instructor. To the

interview, the faculty member brings a working knowledge of the student's

expectations and skills, as presented in the contract and the first

exercise. The student will bring his or her portfolio of all past work

related to design and his or her design education. This will also include

work done outside of the university as it relates to design. The outside

material can be from any source; employment, self-interest, etc.

Through review, discussion and negotiation, the instructor and the
student collectively identify specifics within the interest area, which
have not been explored or developed by the student. These undevel-
oped components will be of at least two types. One will be skills; e.g.,
analysis, graphics, methods, etc. The other will be emphasis; e.g.,
research practice, methods, etc.

A team of students may work on one exploration provided all students
involved can benefit from the experience.

Through negotiation agreement is reached on the emphasis and the
skills needed for the student's further development as well as what the
student is to do and the method of evaluation. The student then begins
to work on his project from the emphasis established with the instructor.
The student has previously selected a problem from within the theme
issue areas. For example, if a student chooses to work in a theme area
of recycling and selects a specific building to rehabilitate, then depend-
ing upon the emphasis decided upon with the instructor the design work
could result in a number of different products. If the emphasis
is placed on processes and activities useful in an office (a practice
emphasis), then the result may be a set of design and design develop-
ment drawings for rehabilitation. If the emphasis is placed on research,
then the result may be the development of preservation criteria for the
building. If the emphasis is on technical method, then the result may
be an exploration of construction techniques used in rehabilitation.

The skill areas are addressed through the formation of learning
co-ops or units by the instructor. These co-ops consist of three or four
students assembled according to their skill strengths and weaknesses;
the skill areas identified for development for each student. Thus, a
learning unit may be composed of a person with good graphic and weak

writing skills; another with good writing and weak analytic skills; and
a third with good analytic and weak graphic skills.

The co-ops are formed for periods of time up to a semester in
length. Each co-op determines the time frame it needs and the material
that will be covered. The finite time frame serves two purposes; it
allows for the work to be addressed within the academic time frame of
semesters (or quarters, or trimesters) and it provides a focus for the
students to determine what can be achieved in a specified amount of time.
Ideally, the limited time frame will allow work to begin in earnest from
the beginning.

The learning co-ops are devised to provide a mutually supportive,
sharing environment where one student learns directly from another in
turn for teaching another. The advantages of this arrangement are the
interdependence the students have within the unit which makes them
operate as part of a group rather than as isolated individuals (Re:
Shein, 1972). It facilitates exchanges among the students in that each
has something that another person seeks. It provides the opportunity
for the students, in the roles of teachers of a skill, to review the
skill, think clearly about it in order to communicate about it to another,
and in the process internalize it for themselves. And it puts the stud-
ents in a position of responsibility relative to a part of their develop-
ment and someone else's. Responsibility as a component of motivation
makes this important.

The charge to the learning units is that they are responsible for
the mutual skill development of all people in the unit. As part of this,
they are to evaluate each other's efforts throughout the experience, to

provide feedback and suggestions for improvement, and to record the evalua-

tion, feedback and suggestions in some form for future reference.

Given that each student has a project within a theme issue area,

has an emphasis for the project, and is in a learning unit, the students

are then asked to keep a journal of the process they are about to begin,

in as much detail as they can manage.

At the start of their design exercise the students are asked to

design their schedules given all that they know about the project at

that point in time. The schedule will be an initial attempt to structure

the exercise and identify needs. It will include completion dates for

various phases of the project, appointment times for contact with rele-

vant resources, review dates, etc. The schedule will be modified and

updated regularly throughout the design exercise. It is intended to

give the student some sense of the whole project. This is to help the

student pace his or her efforts, as opposed to a situation where one

phase of the design is terminated prematurely or not started because

excessive time was spent in another phase. It allows the student to

identify needs and to make arrangements with sufficient lead time.

Generation of the project schedule starts the student thinking about

the specific project in detail.

When the schedules are finished, the students begin to execute the

deisgn exercises. This will consist of a broad range of activities, many

of which will necessitate the inputs from people and sources outside the

university. Some of the activities would include data collection,

exploration of comparable situations, time budgeting, problem defini-

tion, generation of alternative solutions, etc.

Concurrently, the instructor begins to monitor the processes of the students while operating as a resource person for them. As a resource person, the instructor provides information useful to the students, facilitates their efforts where needed (phone calls, contacts, literature, etc.), and actively pursues new information, contacts and resources where necessary. Through this type of directed research, the instructor takes an active part in each exploration. It allows the teacher to grow and learn with the student. It requires that the instructor go beyond the routinized behavior of reacting to a student's design on an ad hoc basis.

The monitoring of the students' work is to be in the form of a written journal. The instructor is to record, briefly, what transpires in each interaction with each student. It should include the major issues addressed, suggestions, resources given, directions taken, etc., along with the date. It should essentially be described observation.

The reason for the journal is to retain in a more accurate and organized way the plethora of data that is generated on the day-to-day basis in student-teacher interactions and to provide a base for evaluation. This allows for future monitoring and the detection of patterns which would be lost when only committed to memory. The students are to have complete access to the instructor's journal as another input to their processes. This provides the students with a test of what they are doing. Is what is observed and recorded what the student intended to do or say?

This process continues until the exercise is completed. Intermittently throughout the exercise and at termination, the student in negotiation with the instructor determines the methods of evaluation and review, the material to be presented and evaluated, and the people to do the evaluation. Again, this puts the responsibility of making decisions

about his or her education on the student. In the course of repeated decision making and responsibility taking, the student builds confidence that he can make decisions and assume responsibility. This goes toward building a strong self-image which is an integral component of a person's effectiveness (Erikson, 1968).

Students will finish their projects at different times due to their abilities, work habits, scope of project, etc. It may take some longer to traverse the same distance. This should be allowed and not penalized. Piaget's concept of stages or levels through which all children pass at varying rates is applicable here (Richard I. Evans, Jean Piaget: The Man and His Ideas, 1973).

To accommodate an academic time frame projects which allow for varying degrees of involvement (time, energy, etc.) may be needed so as to allow all students a common termination point at the end of a semester.

By going through a process which necessitates using resources outside of oneself and the instructor, the student operates as one of a group of people addressed to solving a problem. This gives the student the model where working together to solve problems is more important than one person trying to operate along (Schein, 1972). At the same time there is the opportunity for the student to be responsible for making decisions which affect his education.

This method tries to establish a balance between the student learning to be an effective member of a team and the development of the indivudal (self-confidence, skills, etc.) that allows for effective, positive interaction with others in a group situation.

The level of experience of the students may necessitate instructor intervention at the project selection phase of this method. For

beginning students without developed interests in specific projects, the instructor may provide a list of projects (within the theme area) from which the students select. At the graduate level real projects (within theme areas) may be provided or developed as part of the experience.

This method of teaching design necessitates instructors who are mature, resolved individuals, capable of and interested in relating well to others, particularly students. They must be people who have a broad range of experiences within their frames of interest (theme areas), are willing to share information about the interests, and who are continuing to develop in those areas. They must see students as individuals with different abilities, needs, expectations, etc. This method necessitates people who care about the growth and development of their students, who are willing to continue to learn and grow in the role of resource person, and who are patient to allow the student the time necessary for the development. It necessitates people who are willing to accept the increased work involved with being a resource for _many_ projects, with varied emphases compared with a resource for one project (where all students work on the same project).

These attributes are independent of a person's capacities (and reputation) in other fields (practice, research, or publication) and, as such, must be sought out independently of the achievements made in the other fields. Because a person is a fine architect or has published a dozen books does not mean he or she is a priori, a fine educator. When the two exist in the same person it is a rare amenity.

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APPENDICES

Appendix A: Courses Offered, by Decade

Subjects offered by the department in 1870:

    Architectural Design (2 courses)
    Construction (1 course)
    Drawing (4 courses)
    Applied Mechanics (2 courses)
    Descriptive Geometry (2 courses)
    Professional Practice (1 course)
    Engineering (1 course)
    Warming, Lighting, Ventilating, Acoustics (1 course)
    Building Materials (1 course)

Subjects offered by the department in 1880:

    Greek and Roman Architectural History (1 course)
    The Orders and Their Applications (1 course)
    Drawing (2 courses)
    Tracing and Sketching (1 course)
    Medieval Architectural History (1 course)
    Perspective (1 course)
    Blackboard Drawing (2 courses)
    Sketching (5 courses)
    Theory of Decoration; Color, Form and Proportions; Convertionali-
        zation; Symbolism (1 course)
    Original Design (4 courses)
    Specifications (4 courses)
    Modern Architectural History (1 course)
    The Decorative Arts; Stained Glass, Fresco Painting, Tiles, Terra
        Cotta, etc. (1 course)
    Strength of Materials (1 course)
    The History of Ornament (1 course)

Subjects offered by the department in 1890:

    Architectural History (2 courses)
    Orders (1 course)
    Shades, Shadows and Perspective (1 course)
    Materials (1 course)
    Specifications and Working Drawings (1 course)
    Iron Construction (1 course)
    Stereotomy (1 course)
    Business Relations, Contracts, etc. (1 course)
    History of Construction (1 course)
    History of Ornament (1 course)
    Design (2 courses)
    Advanced Design (1 course)
    Pen and Ink (2 courses)
    Free-Hand Drawing (2 courses)
    Water Color (2 courses
    History of Painting and Sculpture (1 course)
    Graphical Statics (1 course)

Subjects offered by the department in 1900:

        Design (4 courses)
        Shades and Shadows (1 course)
        Materials (1 course)
        Materials (1 course)
        Perspective (1 course)
        Stereotomy (1 course)
        Architectural History (1 course)
        Specifications and Working Drawings (1 course)
        Pen and Ink (2 courses)
        Structural Design (2 courses)
        Landscape Design (2 courses)
        History of Construction (1 course)
        History of Ornament (1 course)
        Constructive Design (1 course)
        Water Color (1 course)
        Life Class (1 course)
        Landscape Architecture (1 course)
        Specifications and Working Drawings; Landscape Gardening (1 course)
        Business Relations, Contracts, etc. (1 course)
        Modeling (1 course)
        Building Construction (1 course)

Subjects offered in the department in 1910:

        Elementary Design, Elements of Architecture (1 course)
        Architectural History (4 courses)
        Specifications and Working Drawings (1 class)
        Freehand Drawing (4 courses)
        Perspective (1 course)
        Water Color (2 courses)
        Design and Theory of Architecture (1 course)
        Building Stones (1 course)
        History of Ornament (1 course)
        Design (3 courses)
        European Civilization and Art (4 courses)
        Heating and Ventilation (1 course)
        Applied Mechanics (2 courses)
        Pen and Pencil (3 courses)
        Special Lectures (1 course)
        Constructive Design (2 courses)
        Life Class (2 courses)
        Influence of Materials on Architecture (1 course)
        Color (1 course)
        Acoustics (1 course)
        Design: Thesis (1 course)
        Business Relations
        Modeling (1 course)

Subjects offered in the department in 1920:

    Perspective (4 courses)
    Shades and Shadows (1 course)
    Office Practice (1 course)
    Professional Relations (1 course)
    History of Ornament (1 course)
    Architectural History (2 courses)
    European Civilization and Art (2 courses)
    Philosophy of Architecture (1 course)
    Water Color (1 course)
    Design (3 courses)
    Building Construction (1 course)
    Constructive Design (2 courses)
    Structural Drawing (1 course)
    Structural Design (2 courses)
    Freehand Drawing (2 courses)
    Life Class and Decorative Design (1 course)

Subjects offered in the department in 1930:

    Freehand Drawing (6 courses)
    Freehand Drawing and Decorative Design (2 courses)
    Graphics (1 course)
    Modeling (2 courses)
    Color, Theory and Exercise (2 courses)
    Color, Design and Application (2 courses)
    Shades and Shadows (1 course)
    Perspective (2 courses)
    Office Practice (4 courses)
    Professional Relations (2 courses)
    Estimating (1 course)
    Theory of Architecture (8 courses)
    Architectural History (8 courses)
    European Civilization and Art (5 courses)
    History of Renaissance Art (1 course)
    Philosophy of Architecture (1 course)
    Town Planning (1 course)
    Design (9 courses)
    Planning Principles (1 course)

Subjects offered by the department in 1940:

    European Civilization and Art (8 courses)
    Housing Seminar (2 courses)
    Principles of City Planning (1 course)
    Architectural Practice (2 courses)
    Architectural Design (10 courses)
    Construction (2 courses)
    General Science (2 courses)
    Freehand Drawing (10 courses)

Subjects offered by the department in 1940 (continued):

    Graphics (1 course)
    Modeling (2 courses)
    Color, Composition, Theory and Application (4 courses)
    Shades and Shadows (1 course)
    Perspective (1 course)
    Abstract Design (1 course)
    Architectural History (3 courses)

Subjects offered by the department in 1950:

    Visual Fundamentals (2 courses)
    Light and Color (2 courses)
    Graphic Presentation (2 courses)
    Painting (2 courses)
    Shop (1 course)
    Urban Sociology (1 course)
    Land Economics (2 courses)
    History of Architecture (2 courses)
    Site Planning and Construction (1 course)
    City Planning, Principles (1 course)
    Architectural Design (10 courses)
    Structural Analysis (2 courses)
    Architectural Acoustics, Special Problems

Subjects offered by the department in 1960:

    Visual Design (7 courses)
    Architectural Design (8 courses)
    Architectural Design, Special Problems (1 course)
    Collaborative Design (1 course)
    Architectural Form and Structure (1 course)
    Structural Analysis (4 courses)
    Architectural Acoustics (2 courses)
    Industrialized House (1 course)
    Site Planning (1 course)
    Architecture of Cities (2 courses)
    History, Theory and Criticism (4 courses)

Subjects offered by the department in 1970:

    Visual Design (20 courses)
    Photography (9 courses)
    Undergraduate Research in Architecture (1 course)
    Film Making (7 courses)
    Architectural and Environmental Design (16 courses)
    Systems and Industrialization (2 courses)
    Computer Aided Design (6 courses)
    Built Form Observation (1 course)
    Special Topics in Design Aids (2 courses)

Subjects offered by the department in 1970 (continued):

Structures (9 courses)
Building Process (1 course)
Materials (1 course)
Environmental Controls (4 courses)
Building Construction and Management (5 courses)
History, Theory and Criticism (26 courses)
User and Community Involvement in Housing (1 course)
Introduction to City Design and Environmental Policy (1 course)
Issues in Architectural Education (1 course)

Appendix B: Definition of a Professional Course
in Architecture

The Standard of Minimum requirements for a course in Architecture,
as defined by the Executive Committee for its guidance in reporting to
the Association on applications for admission to membership, adopted at
the annual meeting of 1914, revised at the annual meeting December 5,
1916, and adopted as here further revised at the annual meeting May 19
and 20, 1924.

The course considered herein is the normal one of four years dura-
tion, in which provision is made for general and professional education.
Courses extending over a longer period, combination and graduate courses,
should easily fulfill and exceed the proposed requirements.

Standing of Institution

1. This is to be of "collegiate rank" as defined by the Carnegie
   Foundation for the Advancement of Teaching.

2. Entrance. The standard of admission to the course in architec-
   ture must not be less than fourteen (14) standard high school
   units. The following are desirable:

	Units
English	3
Algebra through Quadratics	$1\frac{1}{2}$
Geometry (Plane, Solid or Spherical)	$1\frac{1}{2}$
Physics	1
History	1
One foreign language	2
Other subjects specified or elective	4
	14

3. In the college course a course in general chemistry is recommended
   if not offered for admission.

General Nature of Course and Length of Time Established. The cur-
riculum should show a satisfactory scheme of instruction, the success of
which has been demonstrated over a period of four years.

General Requirement. A course should cover not less than 120 credit hours, one credit hour being three hours of actual time (one hour of lecture or recitation and attendant preparation, or three hours of drawing or laboratory work) per week for one semester of fifteen weeks. Thus each credit hour is equivalent to forty-five actual hours and the four-year course of 120 credit hours should cover 5,400 actual hours.

Detailed Requirements. The table below shows the minimum requirements in each division of work.

General or academic subjects are in addition to subjects required for admission (specified under "2"). If they are also offered for entrance, substitution of cultural or technical electives might be made, the cultural substitutes to be preferred.

In the professional or technical subjects not less than the credit hours shown must be provided in the subjects named.

Minimum Requirements:

Subject	Credit hours	Actual hours
1. General or academic subjects:		
English	4	180
Foreign language	4	180
Mathematics	4	180
Science	4	180
Additional	8	360
Total "1"	24	1,080
2. Professional or Technical subjects:		
Design	30	1,350
Construction	16	720
History	8	360
Drawing	16	720
Additional	16	720
Total "2"	86	3,870

Total "1" and "2" prescribed subjects	110	4,950
3. Additional in above or related subjects	10	450
Grand totals	120	5,400

Detailed Statement of the Technical Requirements:

1. Architectural Design. This must be taught on the basis of prob-
lems requiring a solution, development and presentation by the student
under criticism, accompanied by short problems to be carried out with no
criticism until after the problems are turned in. As a condition prece-
dent to receiving a degree the student must be able to solve satisfactorily
problems of the first class, that is, single buildings or groups of build-
ings of importance or other problems in composition of equal difficulty.

Under architectural design may be included courses in the theory or
elements of design or architecture, taught by means of lectures or drawing.
In addition to architectural design as above there may, with advantage, be
added courses in allied arts, and decorative, landscape or civic design.

2. Construction. This must comprise theory of stresses, structural
design, masonry, carpentry, working drawings, etc.

In this group there may also be included courses in heating and venti-
lation, fireproofing, specifications, illumination, sanitation, etc.

3. History. This must comprise lectures in the historical develop-
ment of architecture with research work and drawing, and may also include
the history of ornament, painting, sculpture or civilization.

4. Drawing. This must comprise for Table I the following: (1) pure freehand drawing in various media from objects and nature (12 credit or 540 actual hours) and (2) descriptive geometry, shades and shadows and perspective (4 credit or 180 actual hours). Drawing from life should be included and some instruction in modeling is desirable.

5. Other subjects. Every course should treat of professional practice with especial emphasis upon ethics.

Equipment. An adequate equipment is essential since without fair facilities, such as a good library, an adequate collection of lantern slides, casts, etc., the instruction, particularly in design, history and drawing, would suffer. It would therefore be necessary to have information in regard to the equipment of a school which is a candidate for membership.

Staff and Administration. The character of the staff as to its members, and their professional training and ability, technical equipment and general education, the spirit and nature of the institution and its form of control of the professional school of architecture are vital considerations.

Degree. The degree offered should not be less than a baccalaureate degree (B.Arch., B.S. in Arc., etc.).

Appendix C. Techniques Used in Teaching Design Studios

A range of methods used in teaching a design studio are presented in this appendix. These methods were identified in the interviews of teachers and students which were used in the preparation of the case studies. One of the questions I asked in each interview was the individual to identify any additional teaching methods he might be familiar with or have heard of. The information from this question plus the material from the case studies was condensed to form this inventory.

Other than as a point of interest this appendix can offer a design studio teacher a range of methods which may be more effective in addressing a specific issue than the method(s) he has used, or is using.

Set Limits and Demands. (Refer to all of the case studies.) The
limits were set by each instructor in the form of the project statement,
which was written or verbal.

Limits are set and demands are made of students in some form in all
design studios. They are usually in the form of project type (what is to
be done), time schedule, and presentation requirements (product), but can
be more elaborate if the teacher so requires. This technique was an impor-
tant component of the teaching methods of the Beaux Arts-trained teachers
in that their design projects usually began with a sketch parti executed
by the student individually in a specific amount of time. The teachers'
demands for a parti at a specific time was enough to have the students
working long and hard without any direction from the teachers. The
students would then spend six or more weeks developing the scheme they
prepared alone in a few hours or days. Studios since the 1940's have
relied less on the individually prepared parti, but all have set some
form of demands, usually with a project statement that included the
product expected and a time schedule.

Recently, one studio teacher has attempted to minimize the effects
of this technique by allowing the students the flexibility to determine
what they are going to produce and when. But even this studio is affected
by the fact that they operate in the semester framework of a university,
and some limits must be set accordingly.

Currently this technique is but one of many that any one design teach-
er will use in the course of teaching his studio. The thesis project

incorporates this technique to a greater degree than others by its very nature. Students usually try to finish their thesis designs in the allotted semester, which sets the demand on them to work.

Probe/Question. (Refer to Case No. 3.) This technique, the Socratic method, is the mainstay of current studio teaching. It consists of the teacher asking the student, usually on a one-to-one basis, a series of questions which are designed to clarify the students' thinking about their design or some aspect of it, and/or to lead or direct the student toward "discovering" a solution for himself. This technique tends to recognize the students' experiences prior to the studio, as potential sources for design solutions. Logical reasoning and clarity of thought tend to be the basis or goals for this technique, rather than a specific, aesthetic style or approach.

This technique has become increasingly more popular and widely used since the 1940's when "prescribed" designs and methods of d gning began to dissolve in favor of rational, functional and individual solutions.

Probing and questioning are not limited only to the student-teacher exchange. Student-to-student probing also takes place but not as frequently as from the teacher, and in some cases, students are capable of successfully posing their own questions as part of their method of designing. Many of the recent graduates spoke of having internalized the questioning technique of a few teachers so that when they are designing they have access to the built-in "test mechanicsm" instilled in them by the teachers and their Socratic methods.

Coach. (Refer to Cases No. 2 and No. 5.) This technique consists of the student presenting his work usually in the form of drawings to the

teacher who then locates problem areas. The teacher then suggests a few ways the problem may be solved, and leaves it to the student to select one or to try each solution and decide on one. Implicit in this technique is a "prescribed" solution(s) to the problem. The known, prescribed or recommended quality of the solutions was a function of the Beaux Arts era in architectural education. The designs generated at that time (into the late 1930's) had the prescribed rules of design to follow and as such could be coached. These centered on the generation of axes, the formal gardens, beauty of the plan (drawings), etc. When the "known" rules were discarded with the advent of contemporary design, the techniques of coaching shifted to those areas where there are prescribed measures. For example, into the areas of structural systems, mechanical systems, codes, etc., where the student's design can be tested as fulfilling the requirements set by these areas or not. If not, then various suggestions could be made which would correct the situations. This technique is still prevalent in the studios of some teachers. Its use is a function of the type of design project given and the intentions of the design teacher in giving the project. (Does he want to simulate real world experience, stimulate creative thought, explore some specific area in depth, etc.). Coaching is usually done at board crits on a one-to-one basis, but it is not limited to only that.

As the name implies, there is a similarity between using this technique to teach design and the coaching that takes place, for example, for an athletic event. There are known ways to do something, run, throw, etc. The student performs the action he or she is learning while the

coach looks on. The coach then highlights the problem areas and suggests solutions.

Present Materials. (refer to Cases No. 3, No. 4, and No. 5) This is a broad area, which includes everything from lecture to slide shows to field trips. It is common to all design studios, as it is to most, if not all, education. The material can be anything; it usually is related to the projects and tasks at hand, but need not always be. Presentation techniques are equally varied, with the most common form being the lecture and slide show with related printed materials. Design studios have traditionally relied on the individual board crit as the predominant teaching mode. But in recent years (last ± 20) teachers have used the presentation of materials more regularly to supplement the board crits. Partially this can be attributed to the widening concerns and focii of the field and the related increase in material to be presented in the time allotted for studios.

Some studios in the past few years have sought to bring in experts (professionals who have concentrated and focused their expertise) to make short presentations (mini-courses) on their specialty. These mini-courses are usually directly related to the design problem that the students are involved with.

Demonstrate. (Refer to Cases No. 2 and No. 6.) A specific type of presentation is a demonstration, where the teacher shows the student a way or method of doing something. This too can vary considerably from demonstrating a drawing technique to the way to use a crow-bar or how to mix cement. The use of this technique depends upon the material to be taught and learned. It focuses on the physical and tangible, "how to"

aspects of the design situation. For example, it is not possible to demonstrate to someone "how to" think. The demonstrator can be anyone, but has usually been the design teacher. Pre-1940's, this technique was used predominantly in the studio and focused on drawing and presentations. Since then as the focii of the studios have changed the demonstrations have included such things as building and research techniques to be implemented in the field and on the site.

Give Analogies/Metaphors. (Refer to Case No. 5.) This is a specific type of material presentation which has been used in some current studios. It consists of the teacher presenting to the class as individuals or a group, a series of ideas and examples which are analogous to any issues or situations which the teacher wishes to address. The analogues are not limited to focusing on the problems at hand. Analogies are viewed as a useful technique for stimulating creative thinking in that they can offer insights and connections which are not easily available through other means. The use of analogies and metaphors can allow a person new to a given situation or problem insights based on the previous knowledge of another different example or situation.

Expose Students to Opposing Views. (Refer to Cases 1 to 5, where juries or reviews took place.) Inherent in the profession of architecture is the fact that there is no one replicable rule or formula of design. Indeed, the individual, unique solution has been the desired product. As a result of or part of the diversity of individuals in the design profession, there are an equally diverse number of values, attitudes, views and opinions as to what is and what is not good design (if

good design can even be defined for one individual). Exposing students to opposing views, though it can create the anxieties of uncertainty, offers the students a choice from which they can generate, test, and solidify their own attitudes and values about design.

The jury system has traditionally been the forum for the expression of a variety of views. Before the 1940's, students learned of the variety of opinions through the report of the jury. Since the 40's the students have been present for and party to the discussions of viewpoints.

The negative component of this technique, namely the generation of uncertainty and the related anxiety, is not to be taken lightly or under-estimated. Many students objected to the destructive quality of juries when a juror(s) would criticize the student's work after it had been "approved" and in some cases assisted by the design teacher. The result-ing confusion is difficult to resolve especially for the younger, less experienced, less mature student. The grading system in part can exacer-bate the problem when there are perceived discrepancies between comments in a jury and the project grade.

Set Example, Be Model. (Refer to Cases No. 5 and 6; other cases offer indirect examples.) A few of the recent studios are concerned with students behaving in certain ways as a necessary precondition for designing. One studio focuses on the students' feeling comfortable and supported enough to communicate their perceptions to the whole class. Another studio is concerned with the students operating as advocate archi-tects to help build an environment for a group of people who would other-wise be unable to afford an architect.

In both cases the teachers are the models for the new, desired be-
havior. They are the ones who by projecting their views and being advo-
cates are offering their behavior as a model for the students to emulate
and follow.

Before the time of such studios, the teachers offered the students
the model of being a design teacher. Through the process of teaching
their studios the teachers exhibited the behavior of being a design
studio teacher. This example (their own teacher) has traditionally been
the only model available to students who are interested in being educators.

Criticism. (Refer to Cases 1, 2, 3, and 4.) Criticism is by defi-
nition to find faults, errors, or demerits. In the design studio this is
used by the instructor to outline the weaknesses of the students' solu-
tions.

It has been the single most used method of teaching in the design
studio. It has been used steadily from the beginning of architectural
education in this country to the present day. In the earlier years the
students' work was criticized in front of the class. Over the years it
has evolved to more tempered, less direct and potentially destructive
form, whereby the instructor criticizes the students' work through a
series of questions which are intended to lead the student to the weak-
nesses of his or her design.

Give a Student a Solution to Develop. (Refer to Case No. 2.) This
technique has been a relatively recent development in design studio teach-
ing. It has developed with the change in the teacher-student relationship
and the manner in which design problems were administered. Before the
mid-1930's, a student was expected to generate a design solution

independent of the instructor's help and then spend a period of time developing the scheme under the teacher's direction. If the student generated a weak initial scheme, then he or she developed the same. The design solution was judged (in part) relative to how closely the final scheme developed from the initial proposal.

Since the 1940's the technique of giving a student a solution to develop has been used in a number of ways, primarily when a student has had difficulty generating a solution to the problem which is of a quality to warrant development. Some teachers feel that a weak solution which is allowed to go through development may offer a legitimacy to the solution and the student's ability to design which may have far-reaching effects.

Given a situation where a student is capable of generating an acceptable solution but only after a longer period of time, a solution may be given to him or her which allows him or her to proceed through the remainder of the design process. This solution may possibly be generated from the student's initial considerations. Some faculty feel that if a student is weak at generating designs, then he or she needs more work at that skill than he or she does at progressing through the design process. These teachers feel that without the skill and ability to generate an adequate solution, the development is a moot issue. Other faculty feel that design is a function of the individual's time frame in the LeCorbusier sense of "creation is a patient search." And that the gestation period needed for any one person may be different from others and thus should be considered and respected.

One adaptation of the technique of giving the student a solution is to have the student research one specific designer relative to their

methods, attitudes and approaches to design and then to design a project

from that base. For this exercise the students selected one design to

study from a pre-selected list generated by the instructor. This list

usually included the various architects with national and international

reputations and extensive coverage in the publications. This technique

addressed the issues of research more adequately than anything else.

The method risks the students' emulating the designers they study in

future designs. It also risks the students gaining an incomplete or

insufficient knowledge of the designer and then attempting to design.

Frustration of trying to perform as someone else may also be a consider-

ation.

Generate Student-to-Student Interaction. (Refer to Cases No. 4 and

5.) All of the students interviewed felt they had learned a good deal

from their fellow students. Most thought they had learned equally from

classmates as from the teacher. Some felt their peers had taught them

much, much more than the instructors. A few of the design teachers ex-

pressed a realization that the student-to-student exchange accounts for a

considerable amount of the teaching and learning that takes place in a

studio and as such should be encouraged. Learning takes place usually

through the exposure to varied points of view, approaches and solutions

to similar problems. Unfortunately there are no easy, formulated ways

of stimulating the exchange and dialogue among students. Some of the

devices which seem to have helped to encourage the communication are

(1) a requirement that all design work was to take place in the studio

during the hours the class is scheduled and (2) applying pressures on the

students to produce a quantity of quality work. Both of these methods encourage the students to come together in the studio where the best environment for exchange exists. Other methods include the teacher through example as a model, encouraging the students to take the risks necessary to express their personal views and attitudes (to project) to the others in the class for them to learn from. Student interaction has also been promoted by the informal bringing together of the students for activities outside the studio which range from parties and dinners, to camping trips to team events (sports, chess, etc.). Anything or reason which brings the class together offers a good chance of generating the interaction. The studio structure has for a long time been the main generator of the students' interaction. The Beaux Arts model had the younger students working in an atelier under the direction of older students. The older students had much more contact with the young people by the very nature of the professional demands on the studio master and the fact that there were many more students (older and younger) than there were teachers. Consequently the older students were able to fulfill the role of assistant studio master. The U. S. adaptation of that model was not as direct, and consequently the exchange between older and younger students was left to informal means. Recently there have been attempts at offering "vertical studios" where students at various levels of their education are brought together in one studio to either work on the same project, to work on different aspects of the same project or in some cases to work on separate problems but in a common studio. The mixing of levels has usually manifested itself in team or group efforts where people with different levels of experience are grouped as a unit.

Stimulation of interaction among students from more than one studio or school for that matter can offer comparable benefits to the studio interaction. Some of the vehicles for this type of exchange are competitions, exhibits, conferences, meetings, etc.

Generate Discussions. (Refer to Cases No. 3, 4, and 5). This technique quite simply entails the discussion by the class or smaller groups of the issues they are addressing. Discussions have been a component of studio teaching for a long while, but they have been structured differently over time. In the Beaux Arts era of the design studio, the major or significant discussion was done by the jury members in any of the design juries. These juries were closed to the students, and would be attended by the studio teacher(s) and invited faculty and practitioners. In the process of judging the students' work, various members would select schemes they considered to be outstanding, and then would present their reasons to the other jury members. Intense discussion would follow the presentations with each juror contributing his own views. The students would learn of the results through the report of the jury which was delivered to them by their studio teacher.

During this time (Beaux Arts era), there were rarely any group discussions involving the students and the teacher. The bulk of the teaching was done through individual board crits. Group discussions have since the 1940's become more widely used as a teaching technique in the design studios. It was in the early 1940's that students were allowed to attend the juries. They presented their schemes and then were able to at least hear the resulting discussion if not take part in it. Interim reviews began to increase as did general group meetings

which focused on particular issues. Today group discussions in the form of reviews have replaced the more formal jury as a method of exposing students to many solutions and considerations. Group reviews are now very common at the termination of a project and at intervals during the designing.

Provide a Charged, Committed Environment. In the academic environment, this is the rarest of all of the methods and as such comes from conversations and deductions rather than from observation.

Briefly described, this is the situation whereby a student works on a project (assigned or self-selected) in a location where the teacher is also working on a project to which he or she is deeply committed. The teacher's dedication, discipline and commitment can serve as models for the students to emulate. This technique requires a particular dynamic between the student and teacher whereby the student is inspired, at least motivated, to pursue his or her work in the same manner as the teacher is pursuing his (with enthusiasm, dedication, etc., not necessarily following the same steps). In order to have the dynamic of respect and maturation work, it is usually necessary for the student to be more mature and capable of self-directed work. The student and teacher discuss the student's work periodically. Ideally there would be a mutual exchange where the teacher's work is also discussed. Here the teacher can use his or her work as an example of how to work, what to do, how to do it, why do it so, etc. The situation in some of the Beaux Arts ateliers and in some of the offices where students have apprenticed has approached this technique method. But again, the rarity of it as a successful method points to the enormous importance of the individuals in the situation and the resultant dynamic that grows from their interaction.

Simulation. (Refer to Cases No. 2, 3, 4, and 5). The use of simulation as a teaching and learning device includes many components, most of which differ from one another but can be grouped broadly under this heading.

Simulation is an attractive device to be incorporated into the studio because it allows for the generation of data, conditions and impacts which otherwise would be difficult if not impossible to obtain. It also allows for the condensation of time frames which can allow for prediction and evaluation of design proposals and issues to take place in a part of the studio time and as such the designs can be revised accordingly. It also minimizes the risks of time and money and talent involved in testing designs by fully constructing them.

Some variations of simulation which are used in teaching design include role playing, gaming and modeling (computer, graphic and three dimensional). Simulation techniques are useful for teaching and learning certain stages of the design process, particularly at the input (research, programming), prediction of impacts and consequences and evaluation levels.

Among other uses, role playing can be used to generate attitudes, values and needs to be incorporated into the design. It can also address the impact issues of how a design will be used and how it might affect an area or community.

Gaming allows for the consideration and manipulation of specific focus issues within condensed time frames. The focus can vary widely from effects of pollution to land development patterns to the generation of spatial sequence.

Modeling includes the theoretical area of mental models, all of the computer concerns of description, prediction, evaluation and the different forms this can take (graphic printout, lists, isopleths, etc.). Modeling also includes the graphic arena of photographs, video tape, perspectives, sketches, diagrams and three dimensional models.

Allow Student to Teach. (Refer to Cases 5 and 6). When a person is given the responsibility of preparing to teach something to others, the material is viewed and approached differently than if the person were learning the material for self use and interest.

The issues of communication, clarity, logic, etc., can allow the individual the opportunity to examine and work with the material in such a way as to stimulate new learning for that person.

The time frame for having a student teach can be anything from one lecture to assuming a full class on a semester or year basis and anything in between.

Many considerations are necessary when this technique is employed, including the qualifications of the student to teach (experience, abilities, motivation, interests, etc.), the structure within which the student will teach, the relationship to the faculty relative to the teaching, etc.

A common vehicle that allows for students to teach is the teaching assistant program that exists in many universities whereby students (usually graduate students) assist faculty in the preparation, delivery and evaluation (grades) of classes. In the design studio the student usually works as an assistant to the instructor. In a few cases, students have been assigned full responsibility for teaching a studio. In addition

to the learning from teaching that accompanies this technique, students are also given exposure to the processes of teaching which may serve them later in their lives if they should elect teaching as a profession.

Self-Criticism or Evaluation. (Refer to Case 5.). This technique is implemented when the teacher asks the student to review the work he or she has generated. The form can vary from a written evaluation to a presentation to the class or a jury. The intent behind this method is to develop in the student the confidence and capabilities of evaluating their work. It takes into consideration the reality that usually the instructor will not be present to assist with and provide critiques of the students' work once the student is out of school and making decisions unassisted.

Rather than commenting on the design solution or the process the instructor focuses on the student's critique of the solution or process, and points out inconsistencies, difficulties, areas of concern that were not addressed, etc.

This method implies a certain level of experience and knowledge on the part of the students to know the strengths and weaknesses of their schemes. As such, it seems to be limited to use with more advanced students rather than those who are just beginning.

This method addresses the students' critical processes as they apply to their designs. If the student needs work in this area, it can be developed while still in school and under the direction of instructors. It also helps to build the students' confidence that they are able to critically evaluate designs and as such to know the strength and weaknesses of their schemes which in turn allows them the potential to develop their schemes into better designs.

Frustration can develop if this technique is used on students who are not experienced enough to implement it. The students in this case feel that they are in the studio to learn what is right and wrong, and that if they knew what was strong and weak about their solutions they probably would not be in or need the studio.

Encourage Participation at Conferences, Workshops, Seminars, Continuing Education Courses. Conferences, workshops and specific focus courses offer many attractive features for supplementing the teaching of the design studio. They tend to offer concentrated specific focus material which need not take an entire semester or academic year to cover. Possibly the focus is so specific that there is not enough material for a full course, or the material is of such a nature that it is addressed in a selective manner in a short period of time. For example, a conference or seminar on the law and the design profession - it is material that is interesting, and vital to the practice, but not essential to the education of the architect other than in a support or ancillary manner. For to delve into the matter in its depth would probably require the training in law. Another feature of the conference or workshop is that it offers the economics of scale on a number of levels. First, the conference mode allows access to experts, specialists and their material who may not be on the same faculty or in the same location, region or country. It also provides the potential for drawing from a larger population for support, in terms of interest and funding.

The conference or workshop also offers the potential for presentation of state of the art material. This is particularly important when new areas of interest or specialization develop.

The design studios have usually made use of this technique in the form of the mini-course, whereby specific information is presented in a concentrated manner as part of the whole studio experience.

A sub-set of the conference, seminar and workshop technique which is readily available in universities is the lectures series presented throughout the year by various individuals in and related to the profession.

Provide and Encourage Actual Real World Experience. Actual real world experience can include any work that relates to the profession whether it be in an office or field or as a researcher or advocate or organizer. Up through the 1930's many students were employed in architects' offices who would take classes on a part-time basis. Since the 1940's the students have had to use their summers to gain any practical experience whether it be in an office or with a contractor in the field. Recently, however, some studios have given design projects which have real clients, and some form of a real problem in an attempt to offer a real situation to the students. The difficulties with this have been one, that the time frame of a real on-going problem is different from the 15-week semester, and results in accelerated time schedules, lack of a sense of the whole process or project, half finished solutions, etc. A second problem is that a real situation can have clients whose purposes offer foci, demands and constraints which might not coincide with the objectives of the teacher and the studio.

Some schools have incorporated the real project experience directly into their curricula by requiring a full year of office experience before graduation. This is usually done in the latter part of a student's

studies, where they will have at least one year of studies to complete

after the office experience. Internship programs usually operate in this

manner.

Case Studies. This involves the in-depth exploration of generic

solutions to problems comparable to those being addressed by the students.

The range of material for a case study can vary considerably depend-

ing upon the problem. It can include very specific issues, such as build-

ing details or equipment requirements or more general considerations of

methods of design or approaches to problem definition. The case study

has been a major technique used in schools of law and business. In these

schools, the case study has usually been an in-depth look at a particular

situation (company, process, law, etc.). The material usually presented

in case studies tends to focus on or center on bounded phenomena which

can be examined as separate entities. In the architectural studio the

case study approach could be applied to the research phase of the design

process on any given problem. For example, if the students are involved

in the design of an elementary school, they could each present a case

study of one elementary school that they research. Or the students could

each review a series of cases that are prepared for them. A potential

shortcoming of the use of case studies in the teaching of design studios

is that the information is more useful as input into how others have

solved comparable problems and what has been generated in so doing rather

than in gaining experience in design for the individual student. The

case study, if it is detailed and gets at the breadth of necessary material

on process as well as product, can expose a student to the way others have

approached similar problems, thus can be an asset and a liability; an

asset for people who have no particular approach of their own, for what-

ever reason; and a liability in that seeing other solutions can poten-

tially affect one's own approach or solution, by setting into motion a

particular perspective of the problem at hand and the way to solve it.

Encourage/Require Out of Studio Research. (Refer to Case No. 3.).

The architectural library has long been a major source for research

materials related to any issue of a design project ranging from the codes

and restrictions on a design to the solutions of others for comparable

problems. They have included not only the books but such items as slides,

photographs, drawings, prints, plaster casts, models, previous design

projects, etc. A second major source of research material is the built

environment and the people who use it. Many design studio teachers

regularly refer students to the examples of other designers to be found

in the environment, if it is available, or the library if not. The

design programs given before 1940 frequently stipulated that "the library

was not to be consulted" and the initial designs were to be original,

individual work. Since then research has become an increasingly important

tool for teaching design. In some cases an entire studio is organized

around some research effort. It is not uncommon today for a design studio

to devote the first few weeks of a project to researching material related

to the problem, such items as site, codes, standards, previous solutions,

etc.

Structured, Self-Paced Learning. (Packaged learning.) This method

usually involves the transfer of information to the student at a pace

that is set by the student's rate of learning, motivation and interest.

The information is usually organized in a manner which facilitates the

process, and is contained in some storage device. These can vary from computer programs to workbooks. There is usually some feedback mechanism which allows the user to monitor his progress.

The information is usually structured in a manner in which the material presented increases in complexity, difficulty, or depth and which builds on the material previously covered.

By the nature of the feedback and monitoring requirement of structured, self-paced learning, certain types of infomation are better transmitted through its use. Information which is subjective or open to interpretation is much more difficult to transmit in this fashion. Consequently, certain components of the design studio pedagoyy are better served with this method than are others.

Appendix D. Design Programs

3rd AND 4th YEAR DESIGN

A Casino
A Fountain in a Public Park
A Flower Stand (sketch)
A Fish Market Building
The Proscenium Boxes of a Grand Opera House
A Monumental Fountain
A Summer Pavilion upon a Bridge
A Children's Hospital
A Small Studio (sketch)
A Theatre
An Academic School
A City House
A Grand Staircase
A Memorial Library
A Casino for Baths

1888-89

3rd AND 4th YEAR DESIGN

A Building for the Study and Drawing of Botannical Specimens
A Billiard Room and Exedra
A Monumental Bridge
A Panorama Building
A School of Vocal Music
A Campanile
The Treatment of a Round Corner
An Art College in a City Park

3rd AND 4th YEAR DESIGN

An Arched Entrance with Balcony Above, Designed for a Public Building
A Loggia Erected as a Memorial to a Sculptor
A Crematory
A Monument to Joan of Arc
A Pavilion in a City Square to Contain an Heroic Statue of Zeus
A Design for a Park Entrance
A Campanile
A Public Exchange Corresponding with the Greek Stoa and Roman Basilica

1905-06

3rd YEAR DESIGN

An Exhibition Building or Museum for Special Machinery
A Public Bath Establishment for a Town of Ten Thousand
A Lawyers' Club
The Architectural Treatment of the End of the Large Story Room of the Lawyers'
    Club
A Public Library Building

4th YEAR DESIGN

The End Wall of the "Cage" of a Grand Staircase
La Salle Principale Pour le Tribunal d'Arbitrage de la Paix
Frontispiece
A Kiosque for Music in a Public Garden
A Monumental Chimney Piece for One of the Principal Halls of the Hague
    Palace
An Assembly Hall for a University

1906-07

3rd YEAR DESIGN

A Memorial Chapel on the Grounds of a University
A Detail of the Front Door of the Chapel
A Registry of Deeds and Probate Court for a County Centre
The Building and Gallery for the Coply Society of Boston
A Retaining Wall with Staircases and a Summer House
A Triumphal Arch
An Exposition Building to Commemorate the Five Hundredth Anniversary of
    a State
A Medical Library

4th YEAR DESIGN

A Triumphal Arch
A School of Decorative and Industrial Arts
A Studio for a Sculptor
A Concert Hall of "Odeon" in the Public Garden of a Southern Town of
    Certain Importance
A Residence of a Certain Importance in the Residential Quarter of a Town,
    The Back Bay of Boston, for Example.
The Monumental Entrance of an American Embassy in a European Capital
A Garage of Moderate Size Pertaining to a Large Hotel of a Summer Resort
A City Hall for a City of 50,000
A Tribune for Musicians in the Dining Hall of a Large Hotel
A Special Museum of Sculpture
The Entrance to a Special Museum of Sculpture

1907-08

3rd YEAR DESIGN

A Loggia
A Savings Bank for a Suburban Town
The Entrance Gate to a University Dormitory
A Bridge over a Small Stream on a Private Estate
The Main Entrance to the Principal Room of the Master Builders Exchange
A Little Building to be Used as a Loggia or Tea Room in a Garden
A Gymnasium and Swimming Pool in a Large Suburban Town
A Water Tower for an Estate in the Country
The Principal Entrance to a Great Athletic Field

4th YEAR DESIGN

A Monumental Fountain in a City of Importance
A School of Architecture
An Exedra
A Country Residence of Moderate Importance Inspired by the Trianons at
    Versailles
A Bay Window
A Monumental Column in an Important Avenue at Washington
The Private Chapel of a Large Country Residence

3rd AND 4th YEAR DESIGN

A State Automobile Club
A Museum of Industrial Arts
A Music Hall
Design for Entrance to an American Embassy
A Pantheon and Home for Soldiers and Sailors
A Terminal Railway Station
A School of Architecture
A Monumental Fountain
The Entrance Gate to a University Dormitory

1908-09

3rd YEAR DESIGN

A Memorial Hall for a College
A City Street Stand
A Government Postoffice for a City of 50,000
A Subway Entrance Which Shall Combine an Advertising Tower
A Master Artist's (painter's) Studio
A Bridge
A Small Zoo
A Florist's Shop in a Large City
A Law Library
A State Armory for a Single Company

4th YEAR DESIGN

The Monumental Gate of a Chateau or Large Residence
A Pavilion for the Propaganda of the Discovery of the Lumiere Brothers
The Entrance Gate to a Special Public Park
A City Hall for a Small City
The Main Entrance Gate of a Navy Yard
A Special Residence at a Fashionable Watering Place
A Summer Pavilion
A Monumental Illuminated Clock on a Department Store Facade
An Altar
An Episcopal Church of Moderate Size
A Summer Hotel on the Banks of a Lake

1908-09

3rd AND 4th YEAR DESIGN

The Building of Honor of a University
A Bay Window
A Private Chapel of a Large Country Residence
A Master Builder's Exchange
A Gothic Church
A Clock Tower
American Academy in Rome
A Temporary Triumphal Arch to Celebrate the Return of the U.S. Fleet to America
A Modern Bathing Establishment
The Study of an Important Door in Wood
Entrance Gate to a Navy Yard
A Residence at a Fashionable Watering Place
Monumental Gate of a Chateau
A Navy Yard Gate
A City Hall for a Small City
Tablet for the Wachusett Dam
A College Memorial Hall
A Post Office for a City

1909-10

3rd YEAR DESIGN

A Swimming Pool and Pavilion on a Gentleman's Estate
An Exedra at the Base of the Swimming Pool
A Pavilion in a Park for Orchestral Concerts
A Small Museum
A Bridge over a Dam
The Interior Design of a Monumental Window at the End of the Large Waiting
    Room of a Great Railroad Terminal
The General Offices of the Electric Lighting Corporation for Boston and
    Suburbs
A Recessed Fountain between Two Flights of Steps Connecting Two Street Levels
A Frontispiece composed of Architectural Details and Fragments
A Tablet on the Interior Wall of a Public Building to Commemorate Its
    Erection

4th YEAR DESIGN

A Museum of the Most Recent Models of Aeroplanes and Dirigible
A Pavilion de Repos on the Edge of a Terrace in a Public Park
A Concert Hall in a City of Importance
The Decoration of a Wall of an Open Interior Court of a Museum of Fine Arts
An Important Residence in a Quarter Like That of the Back Bay
A Decorative Column in a Public Garden
A Railroad Station of Moderate Importance
Gate of Entrance to a Country Estate of a Certain Importance
A Forest Inn
The Decorative Treatment of the Main Room of a Large Hotel in the Mountains
A Group of College Dormitories with a Centre of Reunion

1910-11

3rd YEAR DESIGN

An Aquarium at City Point
The Entrance Gate to a University Dormitory
A Monumental Structure in a Park or Civic Centre for Open Air Meetings
A Memorial Drinking Fountain for General Use in a Village
A Triumphal Arch
A Police Station and Court in a Small City
The Entrance Door to a Stock Exchange Room
A Gymnasium and Swimming Pool in a Large Suburban Town
A Painter's Studio in the Country
The Commercial Headquarters of a Great Jewelry Corporation
A Small Library at a Summer Resort
A Group of Three Buildings for an Athletic Field

4th YEAR DESIGN

A Gallery of Comparative Sculpture
A Stand for an Orchestra in the Open Air
A Large Market with a Hall for Public Meetings
A Porte Cochere
A Study in Domestic Architecture, An Apartment House
A Store Front in a Large American City
A Park of Moderate Size including a Small Museum and Six or Seven Cottages
The Entrance to a Subway
A Church Organ with Singers' Gallery
A Municipal Tower
The Entrance with the Balcony and Loggia of the Municipal Tower
A Tribune for Musicians in the Dining Hall of a Large Hotel
A Gentleman's Country Estate
A Swimming Pool and Recreation Building for a Large University
A Monumental Fireplace in the Trophy Room of an American University

1911-12

3rd YEAR DESIGN

A Summer House or Pavilion at the End of a Garden
A Colonial Museum
A News-stand in the Concourse of a Train Shed
A Bath for a Town of 10,000 Inhabitants
A Porte Cochere to a Large City House
A Rostrum in a Public Building
A Town House for a Small Suburban Town
A Country Day School for Boys
A Riding School in the Country
A First Class Hotel in a Large City

4th YEAR DESIGN

The Administration Building of an Important Medical School
One Metal Staircase, Academy of Medicine
A Residence for a Foreign Legation at Washington
A Memorial Band Stand to be Erected in a Public Park
A Ball Room in a Foreign Minister's House in Washington
A Modern Bank Building
The Ceiling of a Bank of the First Importance
The Principal Interior Entrance to the Gallery of Paintings of a Large
    Museum
A Hospital for Animals in Connection with a Large University
A Museum of Applied Science
A Studio and Music Room for a Musician
The Private Chapel for a Large Country Residence
A Ticket Booth for a Theatre Entrance

1912-13

3rd YEAR DESIGN

A Swimming Pool
A Memorial Hall for a College
Sketch for an Urn, a Pedestal and a Balustrade
A Town Library
A Ticket Booth in a Street Railway Station
An Electrolier or Lamp Post
A Small Loggia
A Keystone for the Arch of the Loggia
A Historical Building
A Skating Arena
A College Library
A Bridge
A Municipal Building
A House for President Maclaurin in the Neighborhood of the New Tech

4th YEAR DESIGN

A Kennel Club
A Small Museum of Local Antiquities
A Restaurant in the Country
A Horse Exchange
A Theatre for a Small Town
A Chapel Screen
A Small Theatre
The Study of the Separative and Decorative Closure between Two Properties
A Swimming Club
A Private Boarding School Group
A Museum of Art
A Small Church
A Chateau D'Eau and Surrounding Gardens to be Designed in Style of Louis XIV
A Park Bridge
A Promenade Gallery with Shops

5th YEAR DESIGN

A Naval School
A Private Boarding School Group
A Museum of Art
The Court of Honor of an Exposition
A Hall for Popular Concerts
A Grand Staircase for a Baseball Field
A Large Hippodrome

1913-14

3rd YEAR DESIGN

A Horticultural Hall
A Private Pavilion Beside a Lake
A Locker Building for an Athletic Field
A Staircase Connecting Two Terraces in a Garden
A Monumental Entrance to a Park
The Governor's Reviewing Stand on the Street in Front of the State House
The Entrance Gate to a University Dormitory
A Suburban Railway Station
A Subway Station Entrance to Combine Entrance and Exit and Surmounted by
   an Advertising Tower
A Museum of Armour
A Loggia
A Mounmental Entrance to a Park

4th YEAR DESIGN

A City Hall for a City of 50,000 Inhabitants
A Small Exposition Building
A Building for a Trust Company
A Public Market and Assembly Hall
A Pavilion Shelter for a Mineral Spring
A Memorial Chapel at a Historic Spot
An Entrance to a Park with a Keeper's Lodge
A Chimney
A Perspective Sketch of the Chapel Taken from the Water
A Monumental Chimney-piece for the Principal Hall of an Army and Navy Club
   Building
The Central Motif of an Orangery
A Public Library
A Shelter at a Transfer Station
A Doorway for a Public Library
An American Commenorative Monument in the Ecole des Beaux Arts in Paris
A Yacht Club
A Studio for a Sculptor
A Woman's Industrial School
A Small Commemorative Fountain
A Small Equestrian School
A Stair Treatment at the Approach to a Short Street

1913-14

5th YEAR DESIGN

A Triumphal Arch for the San Francisco Exposition
A Home for Retired Employees
A Pantheon
A River Boat Station
A Sarcophagus and Monument to a Military Hero
An Athletic Centre
A Perspective Sketch
A Gentleman's Estate on a Small Island
A Botanic Garden
A Stair Hall for an Important Academy of Music
A Conservatory of Music for a City of Importance
A Subway Entrance
The Arrangement of a Public Square in Front of an Important Railroad Station
An American Commemorative Monument in the Ecole des Beaux Arts
An Automobile Center in a Great City
A Large Bathing Establishment
An American Embassy in Rome

1914-15

2nd YEAR DESIGN

An Artists Villa on the Sea Coast
An Aquarium Building

3rd YEAR DESIGN

A Peristyle Vestibule and Portico
A Small Theatre in a Park
An Exterior Entrance Lobby
A Canoe Shelter on a Forest Lake
A Hunting Lodge
A Pavilion
A Triumphal Arch
A Pavilion on a Large Estate
A Commemorative Column to be Placed in a National Battlefield Park
A Museum of Archaeology
A Shop Front
A Military Memorial
A Fountain Against the Wall
A Monumental Lobby in a State Capitol
A Decorative Fountain

4th YEAR DESIGN

A City Police Station
A Stock Exchange
A Lighthouse on an Island
A Public Bath and Playground
An Army-Navy Club at Washington
A Fish Market Wharf
A Farm Group and Wayside Inn
A Memorial Door in Bronze
School of Dramatic Arts in a Large Suburb of a Rich City
A National School of Research
A Memorial Monument to a Great Playwright
The Drop Curtain for a Toy Theatre
A Monumental Staircase
A Memorial Building
A Stand for an Orchestra in the Open Air
A Rendered Study of the Present Problem
A Railway Station
An Exterior Staircase

1914-15

5th YEAR DESIGN

A Frontier Ridge
A Suburban Railway Station
A Recreation Group for an Island
The Decorative Scheme for the End of a Reception Room
A City Hall
A Clock Tower
A Memorial Door in Bronze
A Monastery Refuge in the Mountains
A Government Military Academy
An Entrance to a Bank
A Parish Church in a Small City
A Small Domain for Collections of Fine Arts
A Great Gymnasium and Bathing Establishment
A Terminal for a New York and Boston Steamship Line
A Home for Retired Employees
A Laboratory for Research
A Chateau D'Eau
A Public Square in a Capital City in the United States
A Hotel at a Winter Resort
A Garden Staircase

1915-16

2nd YEAR DESIGN

Entrance to a Large City Park
A College Club House
A Tea House on a Large Estate (sketch)
A Memorial to a Statesman (sketch)
A Small Library for a Town of 10,000 Inhabitants
Entrance Pavilion to an Embassy
An Embassy Salon (sketch)
Perspective of Library
A Library
A Fireplace
A Sarcophagus (sketch)
The Principal Entrance to a Museum of Art
An Iron Grill Forming the Entrance Door to a Public Building (sketch)
A Government Post Office for a City of 100,000
A Small City Hall
A Cafe in the Park
A Pavilion for the United States in a Foreign Exposition
A Covered Entrance to a Hotel of Importance (sketch)

3rd YEAR DESIGN

An Artist's Villa on the Sea Coast
An Aquarium Building
Entrance to a Large City Park
A College Club House
A Tea House on a Large Estate
A Memorial to a Statesman
A Small Library for a town of 10,000 Inhabitants
Entrance Pavilion to an Embassy
An Embassy Salon
Perspective of Library
A Library
A Fireplace
A Sarcophagus
The Principal Entrance to a Museum of Art
An Iron Grille Forming the Entrance Door to a Public Building
A Government Post Office for a City of 100,000
A Memorial Bridge
A Small City Hall
A Cafe in a Park
A Pavilion for the United States in a Foreign Exposition

1915-16

4th YEAR DESIGN

A Monumental Entrance to a Court of Honor
The Facade of a Theatre
A Monumental Arena in the Public Gardens of a City
An Athletic Department
An Orangery
The Entrance Building to a Chateau in the Style of Francis 1st
A Museum
A Pavilion for Automobiles
A Union for Learned Societies
The Principal Hall of a Bathing Establishment
An Ornamental Clock
A Covered Passage Over a Street
A Memorial Chapel
An Aquarium for a Large City
A Southern Villa in the Style of the Italian Renaissance
A Perspective of the Garden Court of the Present Problem, A School of
    Architecture
A School of Architecture
The Vestibule and Staircase of a Municipal Museum
A Boat House with Tower
A State Bedroom in an Embassy (on the outskirts of a large city)
An Establishment Combining a Public Restaurant with a Dairy Farm
A Reception Suite
The Pavilion Treatment of a Courthouse Ring
The Study of a Small Ceiling
A Water Entrance to a Botannical Garden
A Club House on a Lake
A Pumping Station
A Gate House for a Municipal Pumping Station
A Fireplace in the Proposed Students' Common Room, Rogers Building
A City Church in the Middle of a Block
The High Altar of a City Church

5th YEAR DESIGN

A Conference Hall
An Observation and Rest Pavilion
A Theatre .
A Tomb Over an Entrance
A Restaurant by the Sea
A Public Garden and a City Gate
A Post Office
A Bridge Pylon
A Monumental Hot House -
An Automobile Factory
The End of a Chapel
A Church
A Ferry House

1915-16

5th YEAR DESIGN (cont'd.)

A Covered Bridge
A Tuberculosis Infirmary
A Hotel and Thermal Establishment
A Former Legation in Washington

1916-17

2nd YEAR DESIGN

A Memorial Bridge
Vestibule of a Large Auditorium
A Traffic Problem Requiring Two Levels -- An Electric Car Entrance to a
    City
A Wall Fountain (sketch)
A Dining Hall for a Large University
A Chimney Piece in a University Dining Hall (sketch)
Entrance to an Astronomical Observatory
A Chapel
A Commemorative Tablet (sketch)
Entrance Portal to an Astronomical Observatory (sketch)
A Catholic Chapel Alter
A Bridge Head - A Traffic Problem Involving Two Levels
Problem in Vertical Circulation
A Pavilion at a Medicinal Springs Operated and Owned by the National Government
A Museum of Ornithology
Access to the Cage for Live Birds in the Previous Problem   (sketch)
A Fireplace in the Proposed Students' Common Room, Rogers Building (sketch)
A Reading Room
The Library Building

3rd YEAR DESIGN

A Covered Entrance to a Hotel of Importance
Vestibule of a Large Auditorium
An Electric Car Line Entrance to a City
A Wall Fountain
A Dining Hall for a Large University
A Chimney Piece in a University Dining Hall
An Entrance to an Astronomical Observatory
A Chapel
A Commemorative Tablet
Entrance Portal to an Astronomical Observatory
A Catholic Chapel Alter
A Bridge Head
A Problem in Vertical Circulation
A Pavilion at a Medicinal Springs Operated and Owned by the National Government
A Study of the Location of the Pavilion of the Present Problem
A Museum of Ornithology
The Access to the Cage for Live Birds in the Current Problem
A Fireplace in the Proposed Students' Common Room, Rogers Building

1916-17

5th YEAR DESIGN

An Assembly Building
A Window Comprised in an Order
A Faculty of the Sciences at Washington
A Central Bridge Pier
A Commemorative Fountain
Exterior Stairs
A County Fair Grounds
The Study of a Small Ceiling
The Pool
A Harbor Entrance
A State Capitol
An Industrial Problem
A Perspective Study of the Monastery Problem
A Fireplace in the Proposed Students Common Room, Rogers Building
A Permanent Group in the Court of Honor in an Exposition Program

1917-18

2nd YEAR DESIGN

An Exterior Vestibule and Access
An Artesian Well Fountain (sketch)
A Private Museum and Library
The Elements of Entrance and Reception in an Important Scientific School
A Sketch Drawn to Scale (sketch)
An Industrial School for Crippled and Deformed Children
A Court and Gallery for the Display of Merchandise
A Garden Bridge (sketch)
A Window and Balcony (sketch)
A Garden Entrance on a River (sketch)
An Explorers Society (sketch)
A School of Music
An Establishment for the Study and Manufacture of Mosaics, Colored Glass,
    Wall Veneers, etc.
The Exhibition Galleries of a Central School of Fine Art
A Doorway to a Senate Chamber

3rd YEAR DESIGN

A Reading Room
The Library Building
An Exterior Vestibule and Access
An Artesian Well Foundation
A Private Museum and Library
The Elements of Entrance and Reception in an Important Scientific School
The Balcony Door, State St. front, Old State House
An Industrial School for Crippled and Deformed Children
A Court and Gallery for the Display of Merchandise
A Garden Bridge
A Court and Gallery for the Display of Merchandise: Detail of the
    Entrance to the Special Salesroom
A Window and Balcony
A Garden Entrance on a River
An Employers Society
A School of Music
An Establishment for the Study and Manufacture of Mosaics, Colored Glass,
    Wall Veneers
The Exhibition Galleries of a Central School of Fine Arts
A Doorway to a Senate Chamber
A Residence in the Country

1917-18

4th YEAR DESIGN

The Rear Elevation of a City Church
A Concert Hall in a National Conservatory of Music
The Ensemble Plan of the Conservatory of Music
A Covered Driveway
An Institution for Chemical Research
A Wayside Pulpit
A Citadel of Peace
A Mountain Railway Station
A Private Boarding School
A Chateau D'Eau at the Source of a River
An International Rostrum in a Facade
A Porte-Cochere
A Cupola or Belfry
A Small Novitiate of "House of Studies" for a Male Religious Order, in
    the Neighborhood of a College
The Refectory in the Current Problem
A Cross Section through the Small Chapel of the Blessed Sacrament
A Building for the Supreme Court of State
A Fountain

5th YEAR DESIGN

A Citadel of Peace
A Government Shipbuilding Year
An Observatory and Institute for Scientific Research in Southern California
A Wayside Pulpit
A Monument to Commemorate the Completion of a Municipal Water Supply
A National Institution for the Conservation of Foods
A Chateau D'Eau at the Source of a River
A Public Stadium
A Court of International Justice
An Entrance to a Botanical Conservatory
A Central School of Liberal and Mechanical Arts
An Open Air Theatre
A Gallery End of a Museum of Fine Arts
A Civic Association in a Town of Twenty Thousand Inhabitants

1918-19

<center>1st YEAR DESIGN</center>

A Study of Walls: A Garden Entrance
A Wall Fountain
An Orangery
The Wall Treatment of an Athaeneum
A Suburban Railroad Station

<center>2nd YEAR DESIGN</center>

A Reception Room in a State Department
An Outdoor Theatre for Children
The Exterior Wall Treatment of a Reception Room in a State Department
    (sketch)
A Building for an Arts and Crafts Society
A Chapel Screen (sketch)
Main Entrance Gate of a Navy Yard (sketch)
The Chapel for a Private School for Boys
A Residence in the Country
A War Shrine
A Cemetary, Gate and Chapel
A Study in Sgraffitto
A Building for a Literary Society at a University
The Architectural Treatment of the End of an Important Room of a
    Lawyers' Court (sketch)
A Shop Front (sketch)
A Town Hall for a Small Suburban Town
A Memorial Tower (sketch)
An Entrance to a Town Hall
A Painter's Studio at the Sea Shore
A Mausoleum
A Wall Tomb in a Mortuary Chapel

<center>3rd YEAR DESIGN</center>

A War Shrine
A Cemetary, Gate and Chapels
A Building for the National Archives of the War
A Ticket Booth for a Theatre Entrance (sketch)
An Architectural Setting for a Bronze Statue (sketch)
A Study in Sgraffitto
A Building for a Literary Society at a University
The Architectural Treatment of the End of an Important Room of a Lawyers'
    Club
A Shop Front
A Town Hall for a Small Suburban Town
A Memorial Tower
An Entrance to a Town Hall
A Painter's Studio at the Seashore
A Mausoleum

1918-19

3rd YEAR DESIGN (cont'd.)

A Wall Tomb in a Mortuary Chapel
A Reception Room in a State Department
An Outdoor Theatre for Children
The Exterior Wall Treatment of a Reception Room in a State Department
A Building for an Arts and Crafts Society
A Chapel Screen
The Main Entrance Gate of a Navy Yard
The Chapel for a Private School for Boys
A Ticket Booth for a Theatre Entrance (sketch)
An Architectural Setting for a Bronze Statue (sketch)
An Entrance to a City House
A City Residence
The Governor's Reviewing Stand on the Street in Front of the State House
    (sketch)
A State Trade School
The Exterior Wall Treatment of a Reception Room in the State Department
    (sketch)
A Chapel Added to a Roman Catholic or Episcopal Church
A Public Forum as a Boston War Memorial (sketch)

4th YEAR DESIGN

A Summer School of Architecture
A City Residence
An Entrance to a City House
A Building for the National Archives of the War
A Ticket Booth for a Theatre Entrance (sketch)
An Architectural Setting for a Bronze Statue
A Study of the Memorial Hall in the Building for the National Archives
    of the War (sketch)
A Reception Room in a State Department
The Governor's Reviewing Stand on the Street in Front of the State House
    (sketch)
The Exterior Wall Treatment of a Reception Room in a State Department
A Public Forum as a Boston War Memorial
A State Trade School
Main Entrance Gate of a Navy Yard (sketch)
A Chapel Added to a Roman Catholic or Episcopal Church

1919-20

1st YEAR DESIGN

A Study of Superposed Orders

2nd YEAR DESIGN

A Monumental Entrance to a Garden for Public Receptions (sketch)
A Porte-Cochere Vestibule
A Garden Entrance in Rome
A Loggia in a Garden
The Garden of a City Summer Club
Pilaster Capital in Polychrome Terra Cotta
Detail of the Garden of a City Summer Club
A Natatorium
A Semi-circular Pergola
The Wall Treatment of the End of a Waiting Room in a Railroad Station

3rd YEAR DESIGN

A Staircase (sketch)
A Monumental Staircase (sketch)
An Industrial School Summer Camp (sketch)
The Door to a Conference Chamber
An American Spa
The Reception Elements of a Country House
A Commercial Building
A Pilaster Capital in Polychrome Terra Cotta (sketch)
The Drop Curtain for a Toy Theatre (sketch)
A Semi-circular Pergola (sketch)
A Shop Front (sketch)

5th YEAR DESIGN

The Underside of a Staircase (sketch)
A Bank
An Industrial School - Summer Camp
The Door to a Conference Chamber
An American Spa
A Classroom for Teaching Medicine and Surgery
A Concert Hall
A National Faculty of Sciences and Letters
An Institute for Public Lecturers

1920-21

1st YEAR DESIGN

A Study of Vaulting - The Intersection of Two Vaulted Passages
A Building for the Winter Storage of Ornamental Shrubs
A Study of the Ionic Order - A Small Savings Bank
A Study of the Corinthian Order

2nd YEAR DESIGN

A Library Bay Treatment
A College Gymnasium
A Post Office
A High School
A Wall Fountain
A Municipal Bath House
An Outdoor Theatre for Children
A Moving Picture Theatre
A Public Library
A Book Plate (sketch)
A Design for the Cover of a Technology Publication (sketch)

3rd YEAR DESIGN

A Court House
A Perspective View of the Vestibule of a Court House (sketch)
A Memorial Park Pavilion (sketch)
A Monumental Staircase
A Stairway Ramp in Metal (sketch)
A Private Sanitarium (sketch)
A Printing Establishment
An Athletic Training Centre (sketch)
The Vestibule Ceiling of the Printing Establishment (sketch)
A Pulpit
The Foyer of a Theatre (sketch)
A Moving Picture Theatre
A Ferry House (sketch)

5th YEAR DESIGN

A Clock in a Stock Exchange
A Terminal Railway Station
A Class Memorial Gateway
A Zoological Garden
A Perspective View of the Waiting Room of a Terminal Railway Station (sketch)
An Elevator Grille (sketch)
A Ticket Booth for a Moving Picture Theatre (sketch)
An Aviary and Bird House (sketch)

1920-21

5th YEAR DESIGN (cont'd.)

A Bridge Plaza
A Mountain Observatory (sketch)
A Memorial Museum
A Pulpit
A Trade School
A Book Plate for a School of Architecture (sketch)
A Jewelry Showcase (sketch)
A Horticultural Centre

1921-22

1st YEAR DESIGN

The Entrance to a Police Station
A Study of the Corinthian Order – A Ballroom Connected with a City
    House
An Indoor Public Swimming Bath
Exterior Elevations of a Dining Room
A Prison Doorway
A Study of the Ionic Order – A Small Savings Bank
An Entrance to an Arsenal

2nd YEAR DESIGN

The Entrance and Vestibule of a Town Hall
A Public Market
The Central Exhibition Galleries of a Group of Fine Arts Schools
A Recessed Fountain between Two Flights of Steps Connecting Two Different
    Street Levels
A Suburban Railway Station
A Skating Arena
A Monumental Straight Staircase
A Skating Arena
The Store of a Food Product Cooperative Society
The Architectural Treatment of the River Embankment in Front of the
    Technology Building (sketch)
A Constabulary Post

3rd YEAR DESIGN

A Tower Clock
A Penitentiary
A Tea Room in a Garden (Pavilion)
The Plan of the Garden of an Important Residence
An Artist's Villa on the Sea Coast
A Corner Pavilion in a Public Building
A Town Hall
A County Fair Grounds (sketch)
A Storage Warehouse in Brick
A Tomb over an Entrance
The Grand Staircase of an Opera House
A School for Crippled and Deformed Children
A Bachelor's City Residence
The Entrance to a Department of Classical Art in the Museum of Fine Arts
The Main Building of a Riding School
A Small Fountain in a Courtyard
A Monumental Masterpiece in a Traveler's Club

1921-22

3rd YEAR DESIGN (cont'd.)

A Pavilion at a Medicinal Spring
A Sailors' YMCA at Manila
A Private Library
A Tower Clock
A Casino on a Sea Shore

4th YEAR DESIGN

A Town Hall
A County Fair Grounds (sketch)
A Storage Warehouse in Brick
A Tomb over an Entrance (sketch)
The Grand Staircase of an Opera House
A School for Crippled and Deformed Children (sketch)
A Bachelor's City Residence
The Entrance to a Department of Classical Art in the Museum of Fine
    Arts (sketch)
A Riding School
A Wall Fountain in a Courtyard (sketch)
A Monumental Mantlepiece in a Travelers' Club
A Pavilion at a Medicinal Spring (sketch)
A Sailors' YMCA at Manila
A Private Library (sketch)
A Tower Clock (sketch)
Archaeology Problem – Periclese Period
A Casino on a Sea Shore

5th YEAR DESIGN

A Museum of Fine Arts
A Dove Cote
A Home for Disabled Soldiers and Sailors
A Theatre Curtain (sketch)
A Spanish Doorway – Special Archaeology Problem
A Public Library for a Large City
A Covered Bridge above a Public Street
A Gallery for Musicians in the Dining Hall of a Large Hotel
A Riding School
A Wall Fountain in a Courtyard
A Pavilion at a Medicinal Spring (sketch)
A Sailors' YMCA at Manila
A Private Library
A Building for the People (Club House)
A Casino in a Summer Resort
An Elevation with Sgraffitto Work
A Decorative Bell Turret for a Town Hall
A Special Military University
A Vacation Center

1922-23

1st YEAR DESIGN

Studies for a Retaining Wall with Details
A Retaining Wall with Staircases and a Small Pavilion
Door, Window, and Niche Motives (Study)
The French Ionic Order
A Study of the Corinthian Order
A Shelter Under a Terrace (sketch)
The Facade of a Club House
The Pavilion at the Extremity of the Wing of a Chateau (sketch)
A Hexastyle Peristyle with the Ionic Order (sketch)
An Art Museum
A Large Vaulted Passage on a Public Street (sketch)
A Post Office

2nd YEAR DESIGN

A Decorative Motive in Copley Square
A Parish House (sketch)
A Memorial Museum
Entrance Gate to a Public Park (sketch)
A Covered Passageway
A Riding School (sketch)
A Library for a Small City
A State Dining Room (sketch)
A Restaurant in a Summer Resort
A Garage or Station for an Important Taxi Company (sketch)
BAID - A Building for the BAID
The Base of a Flag Staff (sketch)

3rd YEAR DESIGN

A Vaulted Passageway
A Riding School
A Library for a Small City
State Dining Room
A Restaurant in a Summer Resort
A Garage or Station for an Important Taxi Company
Building for the B.A.I.D.
A Base of a Flag Staff
A Monumental Fountain
A Private Boarding School
A Law School
A Loggia
A Boat House
A Club for Winter Sports
A Ceiling for a Reception Hall

3rd YEAR DESIGN (cont'd.)

A Dormer Window in the Francis I Style
A Public Bath and Playground
A Reviewing Stand
A Study of a Tapestry
A Player's Entrance to a Stadium
A Legation of a Foreign Country in Washington
The Chapel of a Residence
A Hall for a Museum

4th YEAR DESIGN

The Central Part or Tribune of Honor of a Grandstand for an Aerodome
A Bank Screen
A Hotel on an Island
The End of a Concert Hall (sketch)
A Concert Hall
A Professional School for Apprentices (sketch)
A Curative Drinking and Bathing Establishment
An Orchestra Pavilion
A Stock Exchange
A Marquise (sketch)
A Reviewing Stand
A Players' Entrance to a Stadium

1923-24

1st YEAR DESIGN

Three Doors in an Octagonal Wall (sketch)
A Shelter Under a Terrace (sketch)
A Building Sheltering A Mineral Spring
Study of Vaulting - The Reentrant Angle and a Bay of a Court in an
    Embassy (sketch)
A Peristyle With Porch and Porticos (sketch)
·An Archway in a Retaining Wall (sketch)
A Small Building for Horticultural Lectures
The End Motif of a Portico (sketch)
A Fountain in a Garden (sketch)
A Circular Projecting Room
The Facade of a Club House
A Cupola
The Entrance Vestibule of a Museum of Fine Arts

3rd YEAR DESIGN

A Triumphal Arch
A Building Sheltering a Mineral Spring (sketch)
Stable Buildings and a Riding School (sketch)
A Loggia (sketch)
A Building for Learned Societies
A Door Knocker (sketch)
A Special Library (sketch)
A Music Pavilion in a Public Park (sketch)
A Tomb in a Hillside (sketch)
A Public Market
The Decoration of a City Garden
A College Club House
The Interior of a Private Theatre
A Memorial Staircase in a Special Library
A Clock Tower (sketch)
The Decoration of the Source of a River
A Commemorative Tablet
A Building for Labor Unions
The Chapel of a Residence
A Marriage Chapel
A Swimming Pool (sketch)
The Decoration of a Semi-circular Wall in a Pantheon (sketch)

4th YEAR DESIGN

The Vestibule and Staircase of a Municipal Museum
A Triumphal Arch
Stairway of a Museum (sketch)
A Building for the People (Club House)
A Ceiling of a Reading Room in a Public Library
A Group for a Naval Academy
A Perspective Sketch of Naval Academy (sketch)
A Coast Lighting Station
Monumental Entrance to a Thoroughfare
The Pavilion and Official Stand of a Hippodrome
A Poster for the Fete Charette
A Theatre for a Small City
Archaeology Problem
A College Memorial Gateway
A Ceiling in a Court Room
A Memorial Bridge
The Architectural Treatment of the Technology Court
The Entrance of a Court Room
The Branch Office of a Large Bank
A Hundred Dollar Bank Note (sketch)
An Automobile Branch Plant

5th YEAR DESIGN

A County Court House
An Entrance Motif to a Crypt (sketch)
A Fountain in a Garden (sketch)
A Commomorative Tablet on the Campus of an Important University (sketch)
A Monument on the Frontier between U.S. and Canada
A Public Library
A Naval School
A Perspective Sketch (sketch)
Monumental Entrance to a Thoroughfare
The Concourse of a Railroad Station
An Invitation Card (sketch)
A Poster for the Fete Charette (sketch)
A Publishing House
Archaeology Problem
A Ceiling in a Court Room
The Architectural Treatment of the Technology Court (sketch)
A Four Family House (sketch)
A Study in Sgraffito
An Office Building (Time of Trib. Competition)
A Building for a State Historical Society (sketch)
A Monument to the American Army on One of its Burial Grounds in France

1924-25

2nd YEAR DESIGN

A Window with a Balcony (sketch)
A Memorial Seat (sketch)
A Logge Belvedere
A Hexastyle, Peristyle with the Ionic Order
The Principal Entrance to a Cemetary
A Small Circular Structure
A Wall Fountain (sketch)
An Exterior Stairway (sketch)
The Reentrant Angle and Bay of a Court in an Embassy (sketch)
Study of the Bay of the Exterior of a Roman Bath (sketch)
The Inner Entrance to a Department of Classical Art in a Museum (sketch)
A Garden Gate
A Cupola
A Side Entrance to a Small Church in the Colonial Style (sketch)
A Small Museum
A Covered Passage over a Street (sketch)
A Window and Balcony (sketch)

3rd YEAR DESIGN

A Small Bridge between Two States
Access to a Subway Station
The Decoration of a Private Swimming Pool
A Public Pergola
A Music Pavilion in a Public Park
A Town Hall for a Small Suburban Town
A Wall Fountain
A Porte of Cochere
A Loggia between Two Gardens at Different Levels
A Baptismal Font
The End of a Wing in a Court of Law
A Clock Tower
A Baptistry in the Byzantine Style
A Porte-Cochere Vestibule (sketch)
A Monumental Chimney Piece in the Main Dining Room of a Large Hotel
The Interior Treatment of the End of a Large Waiting Room in an Important
    Railroad Station
A Beach Club
A Flower Market
The Facade of a Small Building for a Navigation Company
A Public Market
A Commemorative Tablet
A Dormer Window in the Francis I Style (sketch)

1924-25

4th YEAR DESIGN

A Court of Honor
Entrance Gates with Guardian Lodges
A Shop Front for a Company of Interior Decorators (sketch)
A Church for a Small Town
Illustrations for the 1925 Technique (sketch)
A Restaurant on a Lake
The Entrance to a Movie Theatre
Monumental Entrance to a Thoroughfare
The Main Entrance Gates to an International Exhibition of Decorative Arts
A Commemorative Monument
Plan of Lay-out of University Site
A Residence on the Sea Shore (Greek Style)
A Circular or Polygonal Chapel
Illustrations for the 1925 Technique (sketch)
A Center for the Exhibition of Building Materials
A Decorative Fountain in a Public Garden
The Garden Facade of a City House (sketch)
The Entrance to an Assembly Hall for a University
An Assembly Hall for a University
A Small Open Air Theatre (sketch)
A Small Sun Dial, A Study in Sgraffitto (sketch)
A Small Tomb in a Mortuary Chapel

5th YEAR DESIGN

A Municipal Market
A Gasoline Station (sketch)
A Clock Tower for a Station (sketch)
A Crematory
A Crematory Chamber (sketch)
The Entrance to a Movie Theatre (sketch)
The Main Entrance Gates to an International Exhibition of Decorative
    Arts (sketch)
Plan of Lay-out of University Site
A Commemorative Monument
A Water Gate
Elevator Enclosure (sketch)
A Loge in a Theatre
A Polo Establishment (sketch)
An Entrance to a Botannical Garden (sketch)
The Staircase and Hall of a Municipal Museum (sketch)
A Center for the Exhibition of Building Materials
A Studio for a Painter
A School of Music and Singing

1925-26

2nd YEAR DESIGN

An Orangery (study in Stone Vaulting)
The Decorative Treatment of the End of a Public Square (sketch)
A Tomb Arranged like Napoleon's
A Composition with Eight Antique Columns
A Portico Entrance to a Concert Hall (sketch)
A Pavilion in a Park (sketch)
A Memorial Staircase in a Library (sketch)
A Sculptor's Studio and Museum
The Circular Entrance to a Branch Bank
The Architectural Enhancement of an Outdoor Statue
A Shelter at a Street Railway Transfer Station
A Loggia at the Top of a House
A Porte-Cochere Vestibule
A Palladian Window

3rd YEAR DESIGN

An Athletic Club
A Study in Vaulting (sketch)
A Pavilion on a Bridge
The End of a Large Reception and Banquet Hall
An Entrance Motive to a Small City Hall
A Sun Parlor
A Tennis Court Building
A Patio (sketch)
A Mausoleum in the Byzantine Style
A Staircase in a Public Building
An Industrial School for Crippled and Deformed Children
Main Entrance Gate to a Navy Yard
A Town Hall for a Small Suburban Town
A Chapel Screen

4th YEAR DESIGN

A Hall for Entertainments
A Jeweller's Storefront (sketch)
A Stone Lucarne (Dormer Window) (sketch)
Tech Show Scenery (Too Many Brothers) (sketch)
Design for the Diploma of a School of Fine Arts (sketch)
A Memorial Monument
A Pedestal for an Equestrian Statue (sketch)
A Commemorative Monument on a Bridge (sketch)
A Foot Bridge
A Municipal Carillion Tower
The Entrance to a Small Exposition

1925-26

4th YEAR DESIGN (cont'd.)

A Small Apartment House with Artists' Studios
A Museum for the U.S. Navy (sketch)
An Isolated Studio for a Composer (sketch)
A Banking Screen
A Country Residence of the Small French Chateau Type

5th YEAR DESIGN

An Open Air Pool for a Beach Club (sketch)
A Light House on Cape Cod (sketch)
A Synagogue
Poster for the Tech Show (sketch)
Main Facade of a Synagogue (sketch)
A Florist's Shop (sketch)
Inner Entrance to a Crypt in a Pantheon (sketch)
A Concert Hall (sketch)
The Entrance to a Tea Room at the End of a Large Exhibition Hall (sketch)
A Monumental Fireplace
The Main Floor of a Hotel
A Municipal Carillion Tower
The Entrance to a Small Exposition
A Temporary Pavilion for a Exhibition
A Railway Station
An Entrance to an Aquarium (sketch)
A Theatre Curtain
A Deluxe Commercial Center
A State Capitol

1926-27

2nd YEAR DESIGN

A Wall Fountain
An Entrance to a School of Architecture
The End Pavilion of a City Hall
A Coffered Ceiling
A Small Pavilion (sketch)
A Shelter under a Terrace
A Pavilion in a Park
Decorative Use of Four Ionic Greek Columns (sketch)
Study of the Arcade Motive in a Cloister of the Romanesque or Byzantine
    Period
A Decorative Column
A Study in Vaulting
A Guardian's Loggia
A Cupola
A Bridge Gallery Connecting Two Buildings
An Entrance Gate Through a Terrace Wall
A Monumental Staircase in the Concourse of a Railroad Station
A Semi-circular Perzola
A Ticket Booth for a Motion Picture Theatre

3rd YEAR DESIGN

A Bridge over a Street
A Garage on a Private Street
A Tomb in a Hillside
A Study in Sgraffitto - a Sun Dial
The Entrance Motive for the Salesrooms and Music Hall of an Important
    Manufacturer of Pianos
The Access from a Park to a Rose Garden
A Town Hall
A Fountain in a Byzantine Cloister
A Monumental Arch Dedicated to the Glory of Art
A Staircase in an Oval Pavilion
The Entrance to a Court Room
A Loggia Entrance to a Museum of Sculpture
A Lighthouse on an Island
A Church Porch
A Mausoleum
A Municipal Memorial Tower
A Maritime Museum
A School Administration Building

1926-27

4th YEAR DESIGN

A Private Chapel in a Family Estate (sketch)
A Subway Entrance (sketch)
A Waiting Room for a Great Architectural Firm (sketch)
A College Club House (sketch)
An Academy of Dance and Plastic Culture
A School for Cabinet Making and Textile Design
A Loggia in the Facade of a Residence (sketch)
The End of a Theatre Lobby
A Monumental Fireplace (sketch)
A Monumental Vase (sketch)
A Gateway Motive in the Wall of a Garden (sketch)
A Proscenium Arch and Curtain (sketch)
A Summer School of Fine Arts
A Memorial to a President in a Park
A Seaside Resort (sketch)
A Small Bank

5th YEAR DESIGN

A Library (sketch)
A Vaudeville Theatre
A Monumental Grille (sketch)
Monumental Treatment of the Junction of a Side Street with an Esplanade
    (sketch)
Tech Show Scenery (sketch)
A Circus Group
Poster for the Combined Musical Clubs at M.I.T. (sketch)
Tech Show Poster
A Country Inn
A Commemorative Stele to an Artist (sketch)
A Main Hall and Lobby for a Steamship Company's Office Building
A Moving Picture Producing Centre
An Artist's Gate to Central Square
An Embassy
A Monumental Fireplace
A Ball Room
The Decorative Treatment of a Monumental Niche (sketch)
The Composition of a Carpet (sketch)
A Summer School of Fine Arts
A Radio Broadcasting Station
A Municipal Observatory
An Entrance to a Dining Hall (sketch)
A Ceiling Decoration (sketch)
A Ballroom

1927-28

4th YEAR DESIGN

An Artist's Villa on the Sea Coast (sketch)
An Entrance to a Dance Hall (sketch)
A Tourists Office in a Summer Resort
A Tea House (sketch)
A Dining Room in a Large Residence of Classical Style (sketch)
A Home for Artistic Students in an Artistic Centre (sketch)
An Entrance and Advertising Features of a Garage of Multiform Type (sketch)
A Gate Lodge of a Large Country Estate
Town Planning Design Problem
A Decorative Fountain in a Park (sketch)
The House and studio for a Painter (sketch)
An Entrance to a Kindergarten (sketch)
The Entrance Motive of an Office Building (sketch)
An Office Building
A Small Crematory
The Entrance Lobby of a Building Devoted to the Expression of Music in
    All its Forms (sketch)
A Pavilion for the Entertainment of Guests in a Residence (sketch)
An Aquarium

5th YEAR DESIGN

An Elevation with Sgraffitto Work (sketch)
A Group of Buildings for a Boys Boarding School (sketch)
An Institute of Archaeology
An Exposition Building (sketch)
A Museum of Fine Arts
The Enclosure of an Exhibition Hall in a Large Museum (sketch)
Tech Show Scenery Competition (sketch)
Tech Show Poster (sketch)
The Lobby of an Opera House with a Monumental Staircase (sketch)
Composition and Indication of Decorative Motives in Sculpture, Free-
    Standing Figures and Low Relief
A Proscenium Arch
A Protestant Church
A Memorial Chapel
The Architectural Treatment and Decoration of a Porch for a Residence
A Private Bathroom with Small Pool
An Office Building
A Patio in a School of Fine Arts (sketch)
A Storefront for a First Class Automobile Concern (sketch)
An Air Transport Terminal
A Lattice Pavilion
A Roof Garden Apartment

1927-28

2nd YEAR DESIGN

A Permanent Reviewing Stand
A Pompeian House
The End Motif of a Portico
An Exhibition Loom for Architectural Fragments
A Shelter for a Steamboad Landing
A Memorial Monument to a Great Playwright
A Portico of a Church
An Office Building Lobby
An Entrance to an Arsenal
The Entrance Gate to a Large Estate
The Main Entrance Motif to a Bank
A Shelter Under a Terrace in a Public Park
A Memorial Museum for a Private Collection of Decorative Arts, Painting
    and Sculpture
The End Motif of the Facade of a Public Library
A Village Church
A Triumphal Arch

3rd YEAR DESIGN

An Oval Room Projecting on a Facade
A Country Inn
A College Administration Building
A Consolidated Ticket Office
The End of a Large Reception-Banquet Hall
A Flower Market
A Stone Bridge
A Spring House
A State Dining Room
A Constabulary Post
The Interior of a Private Theatre
The Entrance to a Stadium
A Riding School
A Small Railroad Station
A Triumphal Arch
A Church Pulpit
A Small Church of Byzantine or Romanesque Period
A City Hall Tower
A Vaulted Passageway in a State

1928-29

2nd YEAR DESIGN

A Wall Fountain
A Covered Passage over a Street
A Small Building for Horticultural Lectures
A Small Savings Bank
An Art Museum
A Railroad Station
A Stairway
A Stone Tea House in a Private Park
A Vase
A Commemorative Tablet
An Entrance Gate Through a Terrace Wall
A Study of Vaulting
A Greek Ionic Temple
The Angle of a Courtyard in a Museum Perspective Study
An Entrance to a Museum
Treatment of the Approaches and Pylons Flanking the Entrance of a Memorial
    Bridge
The End Pavilion of a New Bridge
A Park Shelter in a Terrace Wall
A Portico With a Pediment

3rd YEAR DESIGN

A Garden Gate
A Tomb in a Hillside
A Private Library
A Loggia Entrance to a Museum of Sculpture
A Florist's Shop in a Large City
A Summer Camp
A Public Foyer in a Theatre
A Double Half Circular Stair in a Garden
Access to a Subway Station
A Fire House
A Facade Treatment of a Small Ventian House
A Dove Cote
A Memorial Staircase in a Special Library
A Pavilion on a Bridge
The Chapel of a Residence in Southern California
The Decorative Base of a Flag Staff
A Public Market
A Proscenium Arch and Curtain
A Tower in an Exposition of Modern Decorative Arts
An Art Museum (sketch)
The Wall Treatment of the End of the Waiting Room in a Railroad Station
    (sketch)
A Town Hall
A Sculptor's Studio

1928-29

4th YEAR DESIGN

The Crypt of a National Shrine
A Monument in a National Shrine
An Entrance to a Commerical Arcade
The Facade Treatment of an Architectural Club
A Masonic Temple
A Residence on the Seashore (sketch)
A Steamship Terminal Pier
A Canopy Above the Entrance of a Movie House (sketch)
A Chemistry and Physics Department for a University (sketch)
A Country Inn
An Outdoor Dancing Floor (sketch)
A Public Market (sketch)
A Stone Lucarne (dormer) (sketch)
A Private Library
A Presidential Inauguration Platform (sketch)
A Case for Flowers in a Hotel Lobby (sketch)
A Restaurant in a Summer Resort (sketch)
A Shelter House in the Mountains (sketch)

5th YEAR DESIGN

A Summer Residence for the Mayor of a Metropolis
A Bridge (sketch)
A Monumental Vase (sketch)
A Group of Buildings for a Boy's Boarding School (sketch)
A Small Theatre (sketch)
A Department Store
A Corner Entrance to a Department Store (sketch)
The Interior Treatment of the Rotunda of a National Pantheon (sketch)
A Restaurant in the Air
An Industrial Town
A Masonic Temple
The Treatment of the Top of a Skyscraper (sketch)
An Organ Screen in a Theatre (sketch)
A Memorial
A Municipal Employment Bureau

1929-30

2nd YEAR DESIGN

The Entrance Gate to a Public Park
A Fireplace in a Director's Room of a Bank
A Circular Projecting Room
Doorway to an Architects' Building
The Inner Angle of a Court
Connecting Stairs between a Road and a Path
Exercise of Drawing and Rendering in Perspective
The Treatment of a Terrace Wall
An Entrance Lobby to a Museum
A Memorial Arch
A Private Chapel
A Fireplace
A Colonnade Around a Swimming Pool
An Indoor Tomb
A Private Chapel
A Decorative Niche in a Retaining Wall
Treatment of the Bay of a Gallery
A Coffered Ceiling
A Monumental Stair Hall
The Wall Treatment of the End of the Waiting Room in a Railroad Station
    (sketch)
A Loggia (sketch)

3rd YEAR DESIGN

A Garage or Station for an Important Taxi Company
A Chapel Screen (sketch)
A Lighthouse
The Interior of a Private Theatre
A Small Bridge Between Two Nations
The Decoration of a Private Swimming Pool
A Monumental Staircase in a Garden
A Building for Labor Unions
A Memorial Chapel
A Restaurant on the Water
A Free-standing Fountain
A Memorial Staircase in a Special Library
A Trap-Shooting Stand
A Grille Gateway to an Aquarium
A Farm Group
The Decorative Base of a Flag Staff
The Facade of an Office Building for a Brick and Tile Company
A Small Bank
Design for a Modern Stage Setting "The Golden Doom"
A Town House
A Golf Club
A Garden Entrance in Rome (sketch)
An Outdoor Theatre for Children

1929-30

4th YEAR DESIGN

A High School
An Architectural Setting for a Bronze Statue (sketch)
An Exhibition Building for the Automotive Industry
A Pier Supporting a Dome (sketch)
An Amusement Center on the Seashore (sketch)
The Entrance Motif to a Funerary Ensemble (sketch)
The Vestibule in a Large Public Building (sketch)
Entrance to a Courtyard of a Large Banking Institution
A Suburban Cooperative Apartment House
A Five Family House (sketch)
A Roof Garden Restaurant (sketch)
A Center of Physical Culture (sketch)
The Proscenium End of an Auditorium (sketch)
The Main Floor Treatment of a Small Store
An Entrance to a Circus (sketch)
The Hall of Fame of a National Capitol Building
A Cemetary Gateway (sketch)
A Real Estate Office in the Country (sketch)

5th YEAR DESIGN

A Horticultural Society Building
Entrance to a Horticultural Hall (sketch)
Entrance to a Summer Embassy on an Island (sketch)
An Arena in a Large City
A Salon for a Modern Liner (sketch)
An Office Building
An Entrance Motive of an Architects' Building (sketch)
A Peace Memorial (sketch)
A Suburban Co-operative Apartment House
An International Exhibition of Electrical Machinery (sketch)
An Open Air Amphitheatre for Fashion Shows in Florida (sketch)
The Choir End of a Church of Secondary Importance (sketch)
A Zoological Laboratory (sketch)
Competition for a Cover Design (sketch)
A Monumental Lobby in a Modern Building (sketch)
An Elevated (Express) Highway (sketch)
A Water Gate to a World Fair

1930-31

2nd YEAR DESIGN

A Doorway at the End of a Hall
A College Memorial Gateway
A Footbridge
A Circular Mausoleum
An Embassy
An Entrance to a Science Building
A Freestanding Fountain
A Railroad Station Near a Stadium
A Shrine to a Saint (sketch)
A Museum in a Manufactory of Porcelains
The Doorway to a Public Library (sketch)
The Ceiling of a Director's Room
The Entrance Vestibule of a Museum
A Festival Hall
A Public Library
A Belvidere (sketch)
A Memorial to Piranesi
A Botannical Studio in a Garden
A Post Office
Composition of Architectural Fragments (sketch)

3rd YEAR DESIGN

A Rustic Bridge
A Pulpit
The Facade of an Office Building
A Public Locker House for Sea Bathing
A Colonial Government House
A Fountain Against a Wall
A Small Theological Seminary
A Romanesque Doorway
The Interior Decoration of a Door on Pendentines
A Meteorological Station
A Recital Hall for a Choral Society
A Study in Sgraffito – A Sun Dial
An Information Stand in a Railway Station
An Outdoor Swimming Pool
A Formal Garden
Facade of a Power Sub-Station
A Squash Court Building
An Underground Station
Design for a Stage Setting – Julius Caesar
A Marionette Theatre
A Market Square for Farmer's Produce

1930-31

4th YEAR DESIGN

A Spring House (sketch)
A Battalion Armory (sketch)
A Building for Learned Societies
A Building for the National Archives of the War (sketch)
A Church
A Patio in a Large Residence
A Restaurant on an Island (sketch)
A Tomb for a Great Musician
A Garage for an Hotel in the Country (sketch)
A Speaker's Platform for Technology Graduation Exercises (sketch)
A Private Banking House
A Main Entrance Gate to a Botannical and Zoological Garden
A Moving Picture Theatre
An Entrance to a Court (sketch)
A Post Office
An Artist's Studio in the Country (sketch)
A Music Pavilion in a Public Park (sketch)

5th YEAR DESIGN

A Court Room for the United States Supreme Court (sketch)
A Reviewing Stand (sketch)
A Monastery in the Rocky Mountains
The Composition of a Tapestry (sketch)
Design for a Sign for the Library (sketch)
A Concert Hall
The Entrance Motif of the Main Dining Room in a Large Hotel (sketch)
A Shrine for the Declaration of Independence
Competition for the Tech Show Posert (sketch)
A University Club
A Tomb for a Great Musician (sketch)
A Fountain (sketch)
A Dormitory (sketch)
A Municipal Swimming Pool (sketch)
A Private Banking House
Poster Contest for Open House (sketch)
A Restaurant on a Lake (sketch)
A Savant's Private Study Center and Residence (sketch)
An Island Prison
A Temporary Building for a Boat Show (sketch)
A Modern Residence on a Seashore
A Roadside Lunch Room and Filling Station

1931-32

2nd YEAR DESIGN

A Doorway with a Balcony
A Dispensary (or Clinic) Administration Building
An Arcade Street
A Covered Bridge Passage
The Decoration of a Vaulted Ceiling
The Portico of a Pantheon
A Composition of Architectural Fragments (sketch)
Two Pylons at the Entrance to a Bridge
A Stairway Connecting Two Street Levels
An Entrance Gate (sketch)
A Building over a Spring
An Interior Stairway
A Station for Busses from a City to an Aviation Field
A Niche and Vase (sketch)
A Garden on a Roof
A Marine Museum
The End Pavilion of a Court House

3rd YEAR DESIGN

A Home for Ancient Mariners
A Ceiling for a Reception Room
A Fur Storage Warehouse
A Frontier Customs House
Stables for a String of Polo Ponies
The Entrance to a Toll Tunnel
A Viaduct
A Library Interior
A Shop Front
An Atelier for a Wrought Iron Craftsman
A Monument to the Heros of a Great Flood
A Flower Market
A Constabulary Post
A Foot Bridge in the Boston Public Garden
A Museum for a War College
An Elevator Lobby in an Office Building
An Elementary School
A Tower in an Exposition of Modern Decorative Arts

4th YEAR DESIGN

A War Memorial
A Natatorium in a Park
A Clock in the Central Window of a Railway Station (sketch)
A Stage Curtain (sketch)
A Poster for the Combined Musical Clubs (sketch)

4th YEAR DESIGN (cont'd.)

A Civic Club for Men
Interior of a Lounge in a Traveller's Club (sketch)
A Boat House (sketch)
A School for Deformed Children (sketch)
A Sanitorium
A Rostrum in a Facade
A Building for Arts and Crafts
A Decorative Fountain for an International Exposition (sketch)
A Sculptor's Residence and Studio (sketch)
A Small Church and Sunday School
An Open Air Pulpit (sketch)

5th YEAR DESIGN

The Central Hall of an Architectural School
An Art and Architectural School
The Entrance of an Airport (sketch)
A Tennis Club (sketch)
An Aquarium
A Poster for the Combined Musical Clubs (sketch)
A Playwright's Cottage (sketch)
A Suburban Bank
A Subway Terminal (sketch)
A Winter Garden in a Hotel (sketch)
A Memorial to Thomas A. Edison (sketch)
The Headquarters and Club of an Architectural Association
An Automatic Bar in a Sports Center (sketch)
An Armory for an Anti-Aircraft Regiment
A Small Railway Station (sketch)
The Front of a Small Building for a Beauty Establishment (sketch)
A Trophy Room in a National Army and Navy Club (sketch)
A Fountain in a Patio of an Art Center (sketch)
An Art Center
An Art Loggia (sketch)

GRADUATE DESIGN

A Tower in a Modern Technical School
A Building to House an Exhibition of Industrial Progress
An Outdoor Theatre (sketch)
The Entrance to a Concert Hall (sketch)
An Architectural Terra Cotta Plant
A Poster for the Combined Musical Clubs (sketch)
An Outside Stairway (sketch)
A Memorial to Thomas Alva Edison
A People's Palace
A Winter Garden in a Hotel

GRADUATE DESIGN (cont'd.)

A Display Collection of the Art of the Middle Ages in a Museum of Art
An Armory for an Anti-Air Craft Regiment
An Institute of Geography (sketch)
A Community Center
A Small Typical House in a Suburban Development (sketch)
A School for Applied Arts and Handicraft
A Seaside Recreation Center
Treatment and Furnishing of a Dining Room
An Entrance Arch to a Modern Church (sketch)

GRADE LEVEL UNKNOWN

A Music Pavilion (sketch)

1932-33

2nd YEAR DESIGN

A Swimming Pool on a Country Estate
The Entrance to an Architectural School
A Market for Flowers and Vegetables
An Exercise in Perspective
An Architectural Frontpiece
A Vestibule in a Court House
A Post Office
A Memorial Arch
A Memorial Staircase in a Library
An Entrance Gateway through a Terrace Wall
A Memorial Shaft
A Small Library
A Foot Bridge
An End Pavilion of an Opera House
A Band Stand
An Entrance to a Museum
A Small Bank
A Porte-Cachere

3rd YEAR DESIGN

A Memorial Rotudna in a Public Library
A Bridge Supporting a Canal
A Northex
A Cinema for News
Residence for a Small Family
A Garden for a Governor's Summer Residence
A Suburban Railway Station
A Museum of Natural History
A Wall Monument
A Stadium for Championship Tennis
The Decorative Base of a Flagstaff
A Market Square
A Private Dining Room
A Nursery School
A Lighthouse on Cape Cod
A Cafeteria
A Children's Movie House in the Suburbs
An Unemployment Relief Center
A Crematory

4th YEAR DESIGN

An Office for the Executive of American Airways, Inc.
A Farm
A Gas Station
A Pavilion in a Garden (sketch)
A Private Chapel on a Family Estate
A Country Fairground (sketch)
A Presidential Inauguration Platform
A Moving Picture Theatre
Facade of a Moving Picture Theatre (sketch)
A Patio in a School of Fine Arts
A Subway Entrance
A Monumental Band Stand
An American Academy in Florence
A Pavilion in a Garden (sketch)
An Architectural Club Building (sketch)
A Monumental Setting for Plymouth Rock
A Circus Building (Ampitheatre)
A Restaurant on the Wharf
A Covered Passage over a Street (sketch)
A Tomb for a Great Musician

5th YEAR DESIGN

A Building for a State Historical Society
The Green Room of an Opera House (sketch)
A Synagogue
A Botannical School (sketch)
A Non-Sectarian Community Mausoleum
A City Residence
An Entrance Motif to an Exhibition of Forestry and Wood Products (sketch)
The Main Facade of a Zoological Museum (sketch)
A High School
A Patio in a School of Fine Arts
A Monumental Band Stand
A Hotel for Tourists and Small Museum for Exhibition of American Indian
    Art
An Entrance to a Smart Night Club (sketch)
A Pavilion of the City of New York at the World's Fair (sketch)
A Small Church (sketch)
A Small Museum in Aboriginal American Architecture (sketch)
An American Academy in Florence
An Episcopal Church
A Monument to Johann Sebastian Bach

1932-33

5th YEAR DESIGN (cont'd.)

A Town Hall
A Commemorative Monument to Johann Sebastian Bach (sketch)
The Lobby of an Opera House with a Monumental Staircase

GRADUATE DESIGN

A Tourist Camp
An Executive Mansion
A Center for an Agricultural Exhibition (sketch)
A Social Center for Workmen
A Cremation Chamber (sketch)
A Monumental Clock
A Thermal Establishment with Hotel and Casino (sketch)
A State Capitol
A Winter Sports Club
Am Amphitheatre for an Institute of Art (sketch)
General Waiting Room of a Railroad Station
A Wall Fountain (sketch)
A Monumental Band Stand
A Home for Retired Employees (sketch)
An American Academy in Florence
A Courtyard in the Florentine Spirit
A Drive-in Public Market Centre
The Stage of an Open Air Theatre (sketch)
A Sarcophagus in a Rotunda (sketch)
An Observatory and Institute for a Scientific Colony in Southern California
    (sketch)
A Department Store
A Memorial to a Captain of Industry (sketch)
A Small Typical House in a Suburban Development (sketch)
The Entrance Door to a National Academy of Science (sketch)

1933-34

2nd YEAR DESIGN

A Loggia (sketch)
A Memorial to Piranesi
A Sculptor's Studio
A Tomb Arranged Like Napoleon's (sketch)
The Main Entrance to a State Prison
A Study of the Connection Between Two Means of Circulation (sketch)
A Planetarium
A Niche and Vase
A Monumental Staircase in the Concourse of a Railroad Station
A Tomb Arranged Like Napoleon's
A Marine Museum
A Consolidated Ticket Office
A Balnedre (sketch)
The Main Entrance Motif to a Bank (sketch)
A College Club House

3rd YEAR DESIGN

A Painter's Studio at the Seashore
A Study in Presentation
An Entrance to a Navy Yard
An Outdoor Theatre for Children
A Crematory and Columbarium
Perspective Study (sketch)
An Aquarium
An Entrance to a Public Garden (sketch)
A Banking Screen
The Entrance to a Safety Deposit Department
A Wall Fountain
A Garage on a Private Estate
The Decoration of a Private Swimming Pool
A Fire Station
A Baptistry
An Exterior Stairway
A Shelter for a Statue of Alexander Hamilton
A Patio
A Swimming Pool
A Recital Hall for a Choral Society
A Squash Court Building
The Decorative Base of a Flagstaff
A Grille Gateway to an Aquarium
A Riding School
An Observatory for a Naval Academy
A Small Country Court House

1933-34

4th YEAR DESIGN

An Institute of Archaeology (sketch)
A Court Room and Lobby
An Entrance to a Dance Hall (sketch)
A Cosmetics Shop
An Entrance to an Airport (sketch)
A Theatre and Studio Apartment Building
Interior Treatment of a Modern Living Room
Entrance Hall to an Apartment Building (sketch)
An Ampitheatre for Outdoor Performances in Music and the Drama (sketch)
A Gymnasium
A Monument to the Preservation of Peace
A Monumental Beacon and Lighthouse
A Wine Cellar and Tap for a Metropolitan Club
A Tea House
A Hospice in the Rocky Mountains (sketch)
A Model Tourist Camp
A Beer Garden

5th YEAR DESIGN

A Brewery
An Automobile Agency and Garage
A Museum of Ornithology
A Sculptor's Studio
A Small Country Court House
A Bridge (sketch)
A Mountain Resort
A Bus Stop Shelter (sketch)
A United States Consulate in a Foreign City
A Monumental Beacon and Lighthouse
A Wine Cellar and Tap for a Metropolitan Club
An Ensemble of Horticultural Shows (sketch)
A Floating Boathouse and Dock (sketch)
An Airport Station
A School for Cabinet Making and Textile Design
A City History Museum
A Catholic Chapel in a Small and Poor Community
Secondary Entrance to Exposition Grounds (sketch)

1933-34

GRADUATE DESIGN

A Building for the People
A Sculptor's Studio
A Newspaper Publishing Plant
A Sanitarium Group (sketch)
A New Thousand Dollar Bill
An International Exhibition of Electrical Machinery (sketch)
A Temporary Entrance to an Exhibition of Architecture and Decorative Art
    (sketch)
A Small Moving Picture Theatre
An Industrial City
A Monumental Beacon and Lighthouse
A Wine Cellar and Tap for a Metropolitan Club (sketch)
A Private Garden (sketch)
A School of Music
A Setting for a Presidential Review (sketch)
A Catholic Chapel in a Small and Poor Community
A City History Museum
Secondary Entrance to Exposition Grounds (sketch)
A Bus Station (sketch)
An Athletic Club

1934-35

2nd YEAR DESIGN

A Company Fire Station
A Library Facade (sketch)
A Small Library
A Footbridge
A Shelter for a Steamboat Landing (sketch)
An Exhibition Room for Architectural Fragments (sketch)
A Chapel Facade (sketch)
A School Chapel
A Museum for Porcelains
A Small Bank
An Observatory
A Fireplace (sketch)
A Lion House
A Boat Club
A Judges' Pavilion at a Race Course (sketch)
An Airport Administration Building

3rd YEAR DESIGN

A Riverside Cafeteria
A Cemetary Chapel
A Museum of Natural History
A Masonry Bridge
A Store for a Society of Arts and Crafts
An Interior Entrance in the National Archives Building (sketch)
A Tower in an Exposition of Modern Decorative Arts (sketch)
The Facade of a Tomb (sketch)
A Railway Station for a Town
The Facade of an Office Building for a Brick and Tile Co.
The Proscenium Elevation of a Marionette Theatre
A Kioskue for Newspapers (sketch)
A Farm Group
A Chapel Screen
A Formal Garden (sketch)
Residence for a Small Family
A Cemetary Gateway (sketch)
An Open Air Theatre (sketch)
An Elementary School
An Wall Fountain (sketch)
A Study in Sgrafitto (sketch)
Ceiling Decoration (sketch)
A Monumental Staircase in a Public Garden (sketch)
A Hall for Symphonic Concerts

1934-35

4th YEAR DESIGN

A Boat House
The Entrance to a Court House
The Study of a Tapestry (sketch)
A Reviewing Stand (sketch)
A Law School
A Fireplace
A Rural Inn
A Dairy Restaurant
A Planetarium
A Foyer in a Building Dedicated to Music
Interior of a Green Room
A Book Plate (sketch)
A Municipal Auditorium
A Parking Garage
A Perspective of a Villa on an Island (sketch)
An Island Villa
An Old People's Home (sketch)
A Gymnasium

5th YEAR DESIGN

A Constabulary Post
Furniture for a Modern Private Office
Residence and Studio for a Sculptor (sketch)
Entrance to a National Cemetary
A Post Office
A Club House
Entrance to an American Ambassador's Residence in Moscow (sketch)
An American Embassy in Russia
A Planetarium
A Foyer in a Building Dedicated to Music
A Mural for an Exhibition Building (sketch)
A Bookplate (sketch)
A Tourist Hotel in the West Indies
Monument to a Former Mayor of Chicago (sketch)
A Private School (sketch)
A Parish Church
Front of a Small Building for a Florist (sketch)
A Piano Plant

GRADUATE DESIGN

A Roadside Lunch Room and Filling Station
A Kindergarten
A Company Union Building (sketch)
Apartment House Development
A Monument Dedicated to the World War (sketch)
A Week-end House (sketch)
A Shop Front
A Civic Auditorium and Exhibition Building
A Great Shipyard
A Tomb of a Missionary (sketch)
A Planetarium
A Foyer in a Building Dedicated to Music
A Town Hall (sketch)
A Book Plate (sketch)
A School of Industrial Design
A Research Hospital
A Town House (sketch)
A Salvation Army Shelter
A Customs House (sketch)
A Water Purification Plant

1935-36

2nd YEAR DESIGN

A Loggia
The Main Entrance Motif to a Bank
A Mortuary Chapel
A Stairway Connecting Two Street Levels (sketch)
An Entrance Gate Through a Garden Wall (sketch)
A Marine Museum
The Building for an Outdoor Skating Club
A Highway Bridge
A Station for Busses from a City to an Aviation Field
A Small Waterfront Park (sketch)
A Battalion Armory (sketch)
A Railroad Station Near a Stadium
A Stairway (sketch)
A Community Building

3rd YEAR DESIGN

A Flower Market
An Outdoor Pulpit (sketch)
A Gate Lodge of a Large Country Estate (sketch)
A Film Exchange
The Entrance Motif of an Office Building
A Clock Tower on a College Campus (sketch)
An Orangery (sketch)
A Memorial Town Hall
Store for a Food Product Cooperative Society
A Public Foyer in a Tehatre
A College Fraternity House
A Restaurant
A Wall Tomb
A Jeweller's Store Front
An Aquarium
A Small Waterfront Park
A Battalion Armory
A Museum of Modern Art
An Office Building

4th YEAR DESIGN

A Camp (sketch)
A Patio in a Large Residence
Illuminated Fountain Display (sketch)
A Tourist's Agency Building
A Riding School (sketch)
An Architect's Office and Residence
A Cocktail Room and Bar

1935-36

4th YEAR DESIGN (cont'd.)

A Church
The Entrance to a Marine Exhibit for the 1939 Fair
A Wall Tomb (sketch)
A Jeweler's Store Front (sketch)
A Library
A Subway Entrance (sketch)
A Library Living Room (sketch)
A Memorial (sketch)
A Civic Center for the Enjoyment of Music
Two Low-Cost Houses

5th YEAR DESIGN

A Pavilion for Electrocutions (sketch)
A Federal Bureau of Standards Building
An Outdoor Pulpit (sketch)
An Apartment House
A Decorative Wall Treatment to Symbolize Aviation (sketch)
A Recreation Center in National Park
An Air, Rail, and Bus Station
A Field House in a Park (sketch)
The Entrance to a Marine Exhibit for the 1939 Fair
A Shop for the Display and Sale of Fine Glasswork
A Non-Sectarian Multi-Crypt Mausoleum and Chapel (sketch)
The Entrance to a Prison (sketch)
A Catafalque (sketch)
A School of Art
A Business Building (sketch)
An Automobile Exhibition Building (sketch)
A Small Country Court House
Bus Station and Hotel

GRADUATE DESIGN

A Library of Films and Photography
Annex for the Children's Department of a Large Department Store (sketch)
Administration Building for the New York Exposition of 1939
A Water Approach to a Large Public Park
A Post Office
Duplex Apartment for a Traveler and Collector (sketch)
Entrance to an Important Building
A Building for Mexico at the World's Fair of 1939 in New York
A Biological Institute on Top of an Office Building (sketch)
A Shop for the Display and Sale of Fine Glassware

1935-36

GRADUATE DESIGN (cont'd.)

A Bull Ring
A Living-Dining Room (sketch)
A Mail Order Store
A Public Swimming Establishment (sketch)
An Athletic Group for a University
A Patio (sketch)
A University Stadium
A Dormitory and Athletic Group for a University
A Gymnasium for a University
A Program for the Restudy of the University Athletic Group (sketch)
A Decorative Fountain (sketch)

1936-37

2nd YEAR DESIGN

The Main Entrance Motif to a Bank (sketch)
A Sculptor's Studio and Museum (sketch)
A Memorial Staircase in a Library
A Lighthouse
A Post Office
The Front and Side Elevation of a Post Office (sketch)
A Fireplace (sketch)
A Winter Sports Club
The Entrance to a Science Building
A Tennis Court Building
An Aquarium
A Bridge (sketch)
A Town Hall
An Entrance to a Museum of Fine Arts (sketch)
A Composition of Architectural Fragments (sketch)

3rd YEAR DESIGN

A Shop for an Architectural Sculptor
A Meteorological Station
A Tourist Camp (sketch)
A Club House of a Riding Club
Theatre and Workshop for a College
A Union Bus Terminal
A Memorial to a Statesman (sketch)
The Lobby of an Office Building
A Restaurant in a Zoological Park
A Store Building
A Neighborhood Shopping Center
A Country Hotel
A Bathing Establishment
A Trade School for Boys

4th YEAR DESIGN

A Permanent Structure for the Inauguration of the President of the
    United States
A Permanent Over-Night Camp in the Mountains (sketch)
A Nursery School
A Tea House (sketch)
A Farm Group
A Union Bus Terminal (sketch)
A Memorial to a Statesman (sketch)
A Small Bank
Cover for Technique (sketch)
A Building for a Pageant of American History
A City Club for Men
A Decorative Fountain in a Park (sketch)
A High School
An Entrance to a Dance Hall (sketch)
A Banquet Hall

1936-37

5th YEAR DESIGN

A City Milk Plant
A Toll Station at the Entrance to a Tunnel (sketch)
A Rowing Club (sketch)
An Apartment House Group
Housing Project
A Living Room (sketch)
A Monument Commemorating the Completion of a Waterway (sketch)
A Stairway (sketch)
Cover for Technique (sketch)
A Smoking Lounge for an Ocean Liner
A Building for a Pageant of American History
A Memorial Museum to a Great Aviator
An Emergency Relief Depot (sketch)
A Residence
A School of Art (sketch)
A Port of Missing Men - A Morgue
An Exposition Building for the Display of Building Materials

GRADUATE DESIGN

A Combined Railroad Terminal and Retail Market
Decoration of a Gymnasium
A National School of Drama
A Pyrotechnic Display (Fireworks)
A Public Garden for Refreshments and Music
A Smoking Lounge for an Ocean Liner
Cover for Technique (sketch)
A Building for a Pageant of American History
The Tomb of an Archaeologist in Constantinople (sketch)
A Municipal Library--Anderson
A Central Station for the Animal Rescue League (sketch)
A Catholic Home for Aged Women (sketch)
A House on Beacon Street
A Set of Sectional Living Room Furniture (sketch)
A State Agricultural College in the Southwest

1937-38

2nd YEAR DESIGN

A Tourist Information Building
A Sculptor's Studio
A Tennis Club
A Summer House
A Planetarium
A Small Library
A Community Building
A Fire House
A School Infirmary
An Airport Building for a National Airline
The Main Entrance to a State Prison
A College Club House

3rd YEAR DESIGN

A Suburban Railroad Station
A Special Museum
Entrance to an Aquarium
A Small Flower Market
A Garage and Dwelling House for a Private Estate
A Study in Brick and Tile/Exhibition and Office Building for a Manufacturer
    of Brick and Tile
A Patio
A Mountain House
A School of Music
A Branch Library
A Church Group
A Memorial
A Small Housing Group
A Warm Springs Group
A Food Market (sketch)

4th YEAR DESIGN

A Municipal Library
The Entrance to a Moving Picture Theatre (sketch)
A Recreation Center
A Commons Room for the New School of Architecture
A Railroad Station
The Entrance to a Tunnel (sketch)
Cover for Technique (sketch)
An Exposition Pavilion for M.I.T.
A Memorial Hall to Commemorate the Traditions of the Supreme Court
    of the United States

4th YEAR DESIGN (cont'd.)

A School for the Diplomatic Service
A Mortuary Chapel (sketch)
A Town Hall (sketch)
A Building for a Fraternal Society
A Public Recreation Park (sketch)
A School for Small Children (sketch)
A Lounge (sketch)
A Book Publisher's Establishment

5th YEAR DESIGN

Entrance and Approach to an Aquarium (sketch)
An Aquarium for the World's Fair
A Commons Room for the New School of Architecture (sketch)
A Music Hall
A Private Residence (sketch)
A Shop for an Interior Decorator
Cover for the Technique (sketch)
A Memorial Hall to Commemorate the Traditions of the Supreme Court of the
    United States
Concourse at an Airport at the New York World's Fair
A Trailer Camp (sketch)
An Exposition Building for a Cement Company (sketch)
A Health and Welfare Unit for Central Cambridge
A Private Office of a Publisher
A State Temporary Home for Children
An Art Center (sketch)
An Observation Room Overlooking a Quarry (sketch)
An Apartment House

GRADUATE DESIGN

A Base for a Hiking Club
A Catholic Parish Group
A Development in the Back Bay District
A Tribune
A Commons Room for the New School of Architecture (sketch)
Cover for Technique (sketch)
A Police Headquarters (sketch)
A Memorial Hall to Commemorate the Traditions of the Supreme Court of the
    United States
Concourse at an Airport at the New York World's Fair
A Trailer Camp (sketch)
Permanent Winter Quarters for a Circus
A Capitol Building for a Western State

GRADUATE DESIGN (cont'd.)

A Children's Zoo
A Residence
A Music Store
Development of Unit for Mr. A's Residence
An Observation Room Overlooking a Quarry (sketch)
A Summer Camp for Boys

1938-39

2nd YEAR DESIGN

An Observatory
A Railroad Station Near a Stadium
A Foot Bridge
A Sports Building
An Entrance to a Museum
A Small Bank
A Newsreel Theatre
A Small Clinic
A Memorial to Amelia Earhart
A School Chapel
A Summer House
A Nursery School
A Police Station

3rd YEAR DESIGN

An Aquarium
A Clock Tower on a College Campus
A Recital Hall for a Choral Society
Store for a Food Produce Cooperative Society
A Family Recreational Center (sketch)
A Memorial to the Pilgrim Fathers
A Chapel
A Parking Garage
A Community Shopping Center
A Small Office Building
A Small House and Plot
An Out-of-doors Theatre in a Garden
A Farm Group

4th YEAR DESIGN

A Small Hospital
A Children's Museum of Natural History
A Community Playhouse
An Observation Platform at the Boundary of Two States (sketch)
An Apartment Building
A Summer Restaurant (sketch)
A Trade School
A Wrought Iron Grille (sketch)
A Skating Club
An Entrance to a Large Public Park
A Museum for a Spanish Collection
An Exhibition Building for a Food Products Company (sketch)
Decoration of a Dining Room (sketch)
A Horticultural Building (sketch)
A Park Entrance (sketch)

1938-39

5th YEAR DESIGN

A Science Group for a Small College
A Dormitory Unit (sketch)
A Bus Stop Shelter (sketch)
A Study for Roadside Parks (sketch)
An Indoor Tennis Building
A Group of Four Homasote Houses
An Aerial Restaurant (sketch)
A Dance Pavilion in a Municipal Park
An Entrance to a Large Public Park (sketch)
A School Administration Building
A Shop Front
A Customs House (sketch)
A Central Station for the Animal Rescue League
A Criminal Court Room (sketch)
A Police Station (sketch)
An Exterior Clock (sketch)
Architectural Elements for a Planned Community

GRADUATE DESIGN

A Settlement House
A Faculty Club for MIT (sketch)
A Grandstand (sketch)
Fireplace Accessories for the William Emerson Room (sketch)
Cover of Technique (sketch)
A Progressive School
An Entrance Gateway and Inclosure to a Museum
An Entrance to a Large Public Park
A Dance Pavilion in a Municipal Park
An Island Spa
A Small Architectural Office (sketch)
A Police Station (sketch)
A Set of Dining Room Furniture (sketch)
A Small Hospital for Chronic Diseases

1939-40

2nd YEAR DESIGN

A Planetarium
An Automobile Salesroom and Service Garage
A Tourist Information Building
A College Club House
A Picnic Spot (sketch)
A Bus Station
A Fire House
A Town Hall
A Museum Facade
Dental Offices
A Summer House (sketch)
A Plan to Develop Recreational Facilities in the Town of Wellesley
A System of Community Recreation Units for Wellesley

3rd YEAR DESIGN

A Roadside Restaurant
A Shop for an Architectural Sculptor
A Public Bathing Establishment
A Public Library
A Yacht Club (sketch)
A Fountain in a Public Park
A Municipal Memorial Tower
A Golf Club
A Hotel
Two Low-Cost Houses
A Florist's Shop
A Constabulary Post

4th YEAR DESIGN

An Open Air Theatre (sketch)
A Vacation Shelter (sketch)
A Branch Museum of Fine Arts
Administration Building for a Large Town
A Concession Building in a Park (sketch)
An Airport Marker (sketch)
An Airport Building
A Seaman's Rest Home (sketch)
A Chapel in a Fishing Village
A Skater's Meeting Place (shelter for skaters) (sketch)
A Cooperative Sales Room for a Farming Community (sketch)
A Covered Outdoor Assembly Space (sketch)
A Summer Residence
A Guest House (sketch)
An Office Building and Display Room
A Suburban Shopping Center

1939-40

5th YEAR DESIGN

A Bachelor's Cottage
A Beauty Salon (sketch)
A Center of Research for Creative Art
A Bedroom Suite for Twins (sketch)
The Decoration of a Lounge (sketch)
A Chapel in the City
The Design of an Armory
A Study for the Arrangement of Miss Hodge's Office (sketch)
A Chapel in the City - Study #2
Member's Room of the Institute of Modern Art, Boston
Comparison of Two Sites for a House (sketch)
A Tourist Center at a Dam (sketch)
A Fish Pier
Dining Equipment for an Outdoor Pool (sketch)
A Catholic Chapel in a Small and Poor Community (sketch)
Headquarters for a Society of Civil Engineers (sketch)
Two Low Rental Housing Projects

GRADUATE DESIGN

A Bachelor's Cottage (sketch)
A Flower and Plant Arrangement Scheme for Emerson Room (sketch)
An Explorers' Club
Undergraduate Dormitory for M.I.T.
A NEWSPORT
The Decoration of a Lounge (sketch)
A Symbol for MIT "Open House" (sketch)
A Photographer's Studio
Members' Room of the Institute of Modern Art, Boston
A Bus Station (sketch)
A Hotel (sketch)
A Stairway (sketch)
Quarters for a Motion Picture Company on Location
A Newspaper Plant
Diving Equipment for an Outdoor Pool (sketch)
Headquarters for a Society of Civil Engineers (sketch)
A Residential Development in Winchester

1940-41

2nd YEAR DESIGN

A Building for Tennis and Badminton
A Small Airport Administration Building
A Lighthouse (sketch)
A Tennis Stadium (sketch)
A Small Hospital
A Winter Sports Club
A Small Church or Chapel
An Automobile Service Station (sketch)
An Establishment for the Manufacture and Sale of Ice Cream
A House for Two Professors
A Memorial to an Historic Town (sketch)
The Study of Elementary Schools

3rd YEAR DESIGN

A Craftsman's Shop (stain glass) (sketch)
A Store Building
A Children's Museum
A Flower Market (sketch)
A Small Waterfront Park
A Meteorological Station
An Architectural Club
An Exterior Stairway (sketch)
A Branch Library
A Restaurant in a Zoological Park
A Federal Building
A Church Group (sketch)
A Family Recreational Center (sketch)
A Small Restaurant in a Park
A Plan for an Industrial Park and Housing Development

4th YEAR DESIGN

An Out of Doors Stairway (sketch)
A Summer Restaurant (sketch)
A Building for the Building Industry
A City Residence
A Group of Vacation Cabins (sketch)
A Red Cross Display (sketch)
An Open Air Dance F.oor (sketch)
A Marine Museum
A Preparatory School for Boys
An Architect's Room in a Club Building (sketch)

4th YEAR DESIGN (cont'd.)

The Entrance to a Tunnel (sketch)
A Physical Education Building for a Woman's College
Individual Programs, Development of a Small Village (students prepare program)
A Service Station and Tea Room in a Park
A Women's Shop for a Summer Resort
A Small Chapel in a Park (sketch)
(Individual Problem) - A Model for Scene Design for the Ballet "Don Quixote"
(Individual Problem) - A Model for Scene Design for "Tristan and Isolde"
(Individual Problem) - A Hunting and Fishing Lodge
A Study in Rehabilitation

5th YEAR DESIGN

A Boys Dormitory Unit
A Hotel Bedroom
A Master's Suite
A Labor Union Center
The Front Portion of a Store
Design Competition in Many Categories
A Screened Pavilion
A Composer's Studio
A Pedestrian Entrance (sketch)
A Patio (sketch)
A House
A Mail Order Store (sketch)
An Apartment House Group
A Semi-detached House (sketch)
An Infirmary for M.I.T.

GRADUATE DESIGN

A Strip Kitchen
A Diner
A Dining Hall
A Building for the Department of Biology and Public Health
Furniture Competition
A Pedestrian Entrance (sketch)
A Squash Court Building (sketch)
The East Cambridge Waterfront
A Small Bank
A Shoe Store
A Semi-detached House
An Infirmary for M.I.T.

1941-42

2nd YEAR DESIGN

A Fire Stair (sketch)
An Athletic Building
A Tobacconist's Shop
A Boat House
A State Department of Motor Vehicles
A Railroad Station
A Study of Lettering (sketch)
A Public Library
Outdoor Sports Facility for a Group (sketch)
A School Chapel (sketch)
Training Centers
A Florist's Shop
A Beach House

3rd YEAR DESIGN

A Fire Stair (sketch)
Recreation Facilities for Ordnance Plant Workers
A Package Store
A Small California House
A Bridge
A District Health Center
A Wood-working Shop
A Study of Lettering (sketch)
A Control Window (sketch)
A Sports Building (sketch)
A Light Iron Strap

4th YEAR DESIGN

Automobile Circulation for a Residence
A Metropolitan Garage
A Recreation Center
A Package Store
A Clothes Storage Unit (sketch)
A Solarium (sketch)
Research Laboratory Building
A Vacation House (sketch)
A Wood-working Shop
A Cyclist's Stopover
A Vacation House (sketch)
A Bicycle Center (sketch)
A Children's Hospital

1941-42

5th YEAR DESIGN

A Residential Stair Hall (sketch)
A Trade School
A School of Applied Design
A Series of Stores
A Solarium (sketch)
A Sub-division
A Summer School Camp
A Gas and Electric Company Building
A Restaurant in a Sylvan Setting
Home for the Aged
A Children's Playground
A Commercial Center
A Furniture Project
Housing in a Frontier Community

GRADUATE DESIGN

Approach to a Museum
A Dining Room Storage Unit (sketch)
An MIT Library
Three Specialized Audience Rooms
A House
A Station on the Trans-Canada Highway to Alaska
A Handrail (sketch)
A Firewatcher's Station (sketch)
A Zoological Building

1942-43

2nd YEAR DESIGN

An Aircraft Warning Station
Framing Diagram for Aircraft Warning Station
A Small Restaurant
A Sports Building
A Nursery School
A Small Clinic
A Living Room (sketch)
A Shelter at an Excursion Boat Landing (sketch)
A College Club House
A Summer Community
A Foot Bridge (sketch)

3rd YEAR DESIGN

An Exhibition Kiosk
An Aeroplane Exhibition and Salesroom
An Exhibition Pavilion
A Dining Hall in a Boys Camp
Furniture for a Dining Hall in a Boys Camp (sketch)
A Cabin for a Boys Summer Camp (sketch)
A House Heated with a Solar Heat Collector
A Small Garden
A Community Elementary School
A Semi-detached House
Dining Equipment for an Outdoor Pool (sketch)
A Market
A Medical Community

4th YEAR DESIGN

A Municipal Office Building
A Book Stand in a Station Concourse (sketch)
A Neighborhood Movie Theatre
A Union Passenger Terminal
A Shelter for Skaters (sketch)
A School of Public Service
Bowling Alleys
A Community Elementary School
An Aircraft Warning Station (sketch)
A House for Mrs. Kennedy (sketch)

5th YEAR DESIGN

A College Playhouse
A Convention Registration Center for M.I.T. (sketch)
Approach to a Museum (sketch)

1942-43

GRADUATE DESIGN

An Office Building Bay
An Intown Airport
A Small Sports Building (sketch)
A Radio Studio's Building for Greater Boston
Bicycle Parking Facilities (sketch)
A Business Super Block
A Display (sketch)
A House
A Small Country Courthouse (sketch)

1943-44

2nd YEAR DESIGN

A Winter Sports Lodge
A "Young Man's Christian Association"
A Dental Office

3rd YEAR DESIGN

A Remodeled Study
A Medical Community
An Elementary School for Medical Community
A Shoe Store
A Home for Aged Women
Night Shelter for Tourists
A House in Lincoln
A High School

4th YEAR DESIGN

A School Administration Building
A Crematory
A Major League Baseball Park
A Screened Pavilion (sketch)
A Gas and Electric Company Building
A Farm Implement Building
A Strip Kitchen

5th YEAR DESIGN

Housing Problems in Venezuela
A Town Hall for Carara, Venezuela

1944-45

2nd YEAR DESIGN

A Neighborhood Recreational Center
Analysis of a Living Room
A Small Town Variety Store

3rd YEAR DESIGN

A Clock Tower on a College Campus
A Private Outdoor Swimming Pool
An Administration Building for a Housing Project (sketch)
A Class III Airport
A Monument to Citizens of Cambridge, Massachusetts Killed in World War II
    1941 to 194-
A Park Shelter
A Doctor's House in Lexington, Massachusetts
A Clothes Closet
A Community Shopping Center
A Faculty Club for Technology

4th YEAR DESIGN

Pantry Cabinet Work
An Office Building for the Regional Representatives of Certain Federal
    Agencies

5th YEAR DESIGN

The Home Office of a Mutual Life Insurance Company
Hagerty Company Project
Store Front Study (sketch)
A Plan for the George McQuesten Lumber Company
A Double Bedroom
A Housing Project for Instructors and Graduate Students at MIT

1945-46

2nd YEAR DESIGN

A House for a Professor
A Small Bank
A Public Bathing Establishment
A Small Subdivision in Cambridge

3rd YEAR DESIGN

A Stairway
A Hotel
An Elementary School
A Small Clinic

4th YEAR DESIGN

A Master's Suite
A Hotel
An Elementary School
A House for a Doctor with His Office Attached
A Summer Club

5th YEAR DESIGN

A Diner
A Hotel

GRADUATE DESIGN

A Public Hearing Room for Congressional Committees
A Florist's Kiosk
A Comparative Study of Buildings for Assembly
An Emerson Room (sketch)
A Suburban House

1946-47

2nd YEAR DESIGN

A House for a Professor
Automobile Parking
A Three Car Garage
A Small Bank
A Public Bathing Establishment
A Residential Site Plan
A Small Roadside Restaurant
A House for a Building Contractor
A Small Town Variety Store
A Public Recreation Area
A Subdivision
House, Wayside Store and Filling Station
A Motor Camp
A Living Room
A Residential Site Plan
Alterations for Dewey Library

3rd YEAR DESIGN

A House
A Nursery School
Written Report on Architect (sketch)
Small Building Inside Horticultural Hall (sketch)
Bar and Grille
Architect's Office with Living Unit
Faculty Club for M.I.T.
A Kitchen
Study of Zoning Laws
Housing Problem
A Bedroom
A Poster
A Motor Camp
A Living Room
A Consolidated Country School

4th YEAR DESIGN

Written Essay on Architect assigned (sketch)
A Group Exhibit (Furniture) (sketch)
A Food Market (sketch)
A Small California House
An American Youth Hostel
Town Hall/Public Library for Marblehead, Massachusetts
Furniture for a Lounge Bar (sketch)
Community House for Sunnyside Gardens, New York (sketch)
A Motor Camp
A Poster (sketch)
Architect's Offices
A Single Family House Group

1946-47

4th YEAR DESIGN (cont'd.)

Materials and Structure Study
A School of Music
An Arena in a Large City
Boston Building Code Regulations Study
Study of Heating and Ventilation
Study of Acoustics in the Municipal Auditorium and Civic Center Building
House, Wayside Store and Filling Station
A Living Room
A Grade School for the City of Attleboro, Massachusetts

5th YEAR DESIGN

A Museum of Science for Boston
A Drama Shop Theatre
A Small Health Center
A Poster (sketch)
A House, Wayside Store and Filling Station (sketch)
A Sports Building
Architect's Office and Rental Space
A Redevelopment Plan for Jeffries Point in East Boston
House, Wayside Store and Filling Station
Living Room
Grade School for the City of Attleboro, Massachusetts

GRADUATE DESIGN

A Town House
Center for Household Furnishings
A Health Center
A Development of the North Cambridge Industrial Area
Architectural Offices and Rental Office
An Elevator Apartment
An Experimental Theatre
A Poster (sketch)
A Development Plan for the Jefferies Point Area of East Boston
House, Wayside Store and Filling Station

1947-48

2nd YEAR DESIGN

A Bedroom
A Kitchen Dining Room
A Land Survey
Study of Solar Orientation
A Poster (sketch)
A House
Study of Circulation
A House
A Structural Section
House Elevations
Perspective of House
A Bar and Grille
An Exhibitor's Building
A Filling Station
A Social Hall for a Summer Camp
A Chapel
A Bedroom
A Kitchen Dining Room
A Land Survey
A House
An Exhibitors Building
House, Wayside Store, and Filling Station
A Summer Camp
A Tourist Camp
A Community Building for Westgate

3rd YEAR DESIGN

A College Club House
The Sharon Clinic
A Caretaker's Cottage
A Poster (sketch)
A Swimming Pool for a Church Parish House
Athletic Facilities
An Island Recreation Center, in Boston Harbor
A Mountain Cabin for Research Workers
An Automobile Sales and Repair Establishment
A Tourist Camp Unit
Remodeled Town House

1947-48

4th YEAR DESIGN

A College Club House
Development of Lounge and/or Dining Room of College Club House
A Poster (sketch)
A Solar House
American Legion Shrine
A Hotel
A Small Sports Building
A Unitarian Church
A Radio Broadcasting Station
A College Library
A Tourist Camp Unit
A New Building for K.E.L.

5th YEAR DESIGN

Night Shelter for Automobile Tourists
A Business Superblock
A Publishing House
A Poster (sketch)
A Lecture Hall
A College Library
A Tourist Camp Unit

GRADUATE DESIGN

A Business Superblock
A Poster (sketch)
Educational and Research Buildings for M.I.T.
American Legion Shrine (sketch)
A Small Museum in a Central Park of a Small Country Town
A National Chain of Roadside Stands
Model Community with City Planners
A Lecture Hall
Modernization of a Business Block
New Building and Recreational Facilities for Cambridge High and Latin
    School, Cambridge, Massachusetts

1948-49

2nd YEAR DESIGN

A Living Room
A Kitchen-Dining Room
Study of Solar Effects on Environment - Insulation
A Land Survey
A House
Study of Circulation
A Structural Section
Elevations of a House
Perspective of a House
A Summer Camp
Team Project - A House (sketch)
A House, Wayside Store and Filling Station
Summer Theatre
A Bar and Grille
Exhibitors Building (sketch)
Recreational Facilities for Charles River Basin
Caretakers House for Recreational Area
A Small Clinic
A Fire House

3rd YEAR DESIGN

A Physical Master Plan for the University of Minnesota, Duluth Branch
A Youth Center
Office Building and Movie Theatre
A Swimming Float (sketch)
A Public Nursery School
A Studio Apartment
An Office Building
A Roadside Market (sketch)
Policeman's Shelter for M.I.T. Parking Lot
Recreational Facilities for Charles River Basin
Caretakers House for Recreation Area
A Small Clinic
A Fire House

4th YEAR DESIGN

A Physical Master Plan for the University of Minnesota, Duluth Branch
A Hotel
A New Town Center
Arkansas State Capitol
Small Concert Auditorium
An Airline Ticket Office (sketch)
A House in the Desert
A Public Elementary School
A Florists' Kiosk
A Theatre Seat

5th YEAR DESIGN

A Physical Master Plan for the University of Minnesota, Duluth Branch
A Plan for the "Round Hills Center."
A Commuting Railroad Station
Redevelopment of Central Square
A Developers House Type
A House in the Desert
A Public Elementary School
A Florist's Kiosk
A Festival Centre
A Theatre Seat

GRADUATE DESIGN

Air Force Electronic Research Labs
A Small Museum (sketch)
A Physics Lecture Room in a College (sketch)
A Group of Suburban Houses
Interior of a Bar
Small Mission Church
A Zoological Exhibit (sketch)
A Children's Playground (sketch)

1949-50

2nd YEAR DESIGN

A House
A Bridge
A Temporary Exhibition "Architecture 1950"
An Office Building for the N.H. State Highway Department

3rd YEAR DESIGN

A Tourist Information Building
An Athletic Building
A Roadside Tavern
Space Design
Hillside School, Marlborough, Massachusetts

4th YEAR DESIGN

A Building Center
A Concert Hall for Winter and Summer Use
New Living Areas in Manhattan's East Side
Bank Remodelling

5th YEAR DESIGN

An Architect's Office
A Private Rental Housing Project

GRADUATE DESIGN

Small Multi-Family Apartments
The Industrialized House – A Basis for Good Living?
Development of West Campus, M.I.T.

1950-51

2nd YEAR DESIGN

A Measured Drawing
A House
A Bedroom
Study of Circulation
A Living Room
A Kitchen Living-Dining Combination
A Land Survey
A Site Plan
Solar Study
A Structural Section
An Elevation Study
A Perspective Study
A Stairway
A Small Roadside Restaurant
A Wading Poll and Shelter for the Charles River Esplanade
A Subdivision
An Army Chapel

3rd YEAR DESIGN

Harvard Square Kiosk
A Loose Housing Dairy, Cattle and Sheep Barn
A Stairway
An Alternate Design Study for the New Sloan Metals Processing Laboratory
A School of Design
A Small Museum for American Sculpture

4th YEAR DESIGN

A Studio
The Industrialized House
Cooperative Housing Development
Study of Acoustics and Lighting
Public School Education Study
A Stairway
Architecture of a Public Square

5th YEAR DESIGN

A Studio

1950-51

GRADUATE DESIGN

A Studio
The Industrialized House
Cooperative Housing Development
A Fine Arts Building for Grinnell College
An Elementary School (Anderson)
A Stairway
An Investigation of the Relation of a Building Material to Building Form
Lamp Design of Non-Critical Materials

1951-52

2nd YEAR DESIGN

Study of House Planning - Kitchen Dining Functions
A Mountain Lookout Tower
A Chapel
Setting for Three Objects of Oriental Art
A Small Roadside Restaurant
Organization of Exterior Space

3rd YEAR DESIGN

A Summer House and Studio
Athletic Facilities
A Small Clinic
A Rest House for Skiers
A House for A Bachelor Librarian
A Library for Lincoln, Massachusetts

4th YEAR DESIGN

Instruction Space for Basic Curriculum at M.I.T.
M.I.T. Undergraduate Development
A Home Economics Practice House for Wilmington College
A Perspective Rendering (sketch)
Housing Survey
Dorchester Bay Development Plan

5th YEAR DESIGN

A Summer House and Studio
A Small Museum
Mass-produced Sanitary Fixtures
An Architectural Research Center for M.I.T.
Free-standing Stair as Sculpture
A Direction Sign for School of ARchitecture Elevator (sketch)

GRADUATE DESIGN

An Information and Exhibition Center for Architecture, Planning and the
    Building Trades
A Summer House and Studio
Mass-produced Housing
Construction in a Court
An Auditorium
A Church for All Faiths
A World Headquarters for UNESCO

1952-53

2nd YEAR DESIGN

Redesign Drafting Room
Topographic Exercise
A Freehand Drawing
A Land Survey
A Small Subdivision
Study of Solar Orientation
A House
Study of Circulation
Land Analysis Diagram
Preliminary Plan – Study House
A Community House for "Five Fields"
A Chapel
A Drafting Table (sketch)

3rd YEAR DESIGN

A Summer Art Center
A Chapel (sketch)
A Clubhouse in the Mountains
A Special Library
A Picnic Area (sketch)
An Office Building for a State Highway Department
The Treatment of Masonry Materials in Multiple Use Areas (sketch)
A Multi-Purpose Shed
A Churchyard

4th YEAR DESIGN

A Vacation House
A Regional High School
Drinking Fountain
A House for Jacksonville, Florida

5th YEAR DESIGN

Design of a 28 Floor Skyscraper
Design of a Reinforced Concrete Slab (sketch)

GRADUATE DESIGN

A Summer Art Center
Write on the Role of the Architect in Low-Cost Housing
Housing Development
Folding Tent – Inflatable or Collapsible Housing Unit
A Multi-Family Housing Unit
A Shopping Center
Crane – Ideas Competition for Baths, Kitchens, etc.
Redevelopment in South End

1953-54

2nd YEAR DESIGN

A Museum Garden
Roadside Produce Market for the Cape
A New Pillar House Restaurant
Record Cover for Benny Goodman Recording (sketch)
A Mail Box
Topographic Exercises
Kitchen Dinining Functions – House Planning Study
Study of Solar Orientation
House Planning Study – Bedroom and Bath
Study of Circulation
A Small Subdivision
A House
An Automobile Exhibition Shelter for an Industrial Fair

3rd YEAR DESIGN

A Small Clinic
A Library
Play Sculpture
A Ski-Club
An Experimental Art Center
An Elementary School for Brookline, Massachusetts

4th YEAR DESIGN

A Standard Custom House (sketch)
An Apartment House in Harvard Square
Poster for "New England Textile Week" (sketch)
An Elementary School
Textile Mill for New England

5th YEAR DESIGN

An Architect's Office
Long-range Planning for Smith College
An Outdoor Chapel (sketch)
An Apartment Balcony (sketch)
Manufacturer's Showrooms and Offices
Manhattan Redevelopment Problem

GRADUATE DESIGN

Redesign of Central Square

1954-55

2nd YEAR DESIGN

Study of Solar Orientation (sketch)
A Bedroom
Beacon Hill Apartment for MG. and Owner (sketch)
Topographic Study
A Small Subdivision
Program for a House
A Motel
A Summer Dance Pavilion

3rd YEAR DESIGN

A Club House
An Architect's Office
A Cultural Center
A Landing Dock
An Indoor Swimming Pool
A New North Court for M.I.T.
24 Hour Gas Station/Lunch Bar
Design a "Free Standing Stair to Rise 12' as a 'Sculpture'" (sketch)
A Summer Chapel

4th YEAR DESIGN

A New Town Meeting House for Lincoln, Massachusetts
A Footbridge in a Public Garden (sketch)
A Master Plan and Proposed Building for the De Cordova Museum and Dana
    Park, Lincoln, Massachusetts
Ferris Wheel (sketch)
A Grouping of Studios (sketch)
Ideas for Displaying Office Furniture and Equipment (sketch)
A Nursery and Plant Sales
A Children's Zoo (sketch)
A Municipal Health Center
An Artist's Studio
U.S. Coast Guard Station
A Music Center

5th YEAR DESIGN

Apartment Balcony (sketch)
Manufacturer's Showroom and Offices (sketch)
Manhattan Redevelopment Project

1954-55

GRADUATE DESIGN

A Cloister (sketch)
Fenway - Redevelopment Plan for Back Bay Fens of Boston
A Church
A Summer House and Studio
Completion of the Cathedral of St. John the Divine

GRADE LEVEL UNKNOWN

Study of the Fenway
Play Mural as Featured Element in Children's Play Room
A Poster for the Care Program at M.I.T. (sketch)

1955-56

2nd YEAR DESIGN

A Do-It-Yourself Shelter
Study of Solar Orientation
Park Sitting Area
A House for an Architect
House Planning Study - Kitchen Dining Studies
Climactic House in Local Material
Residence for the Lynches

3rd YEAR DESIGN

A Beach House
A Small Clinic
A Boy's Camp
A Summoning Device (sketch)
A Gasoline Filling Station
A Bookcase
A Park Bench
The Morton Arboretum Small House

4th YEAR DESIGN

Factory for Building Panels
A Basic Architectural Problem - Covering for M.I.T. Skating Rink
Housing
Lower and Middle School for Browne and Nichols
A Rain House (sketch)
Information Stand (sketch)
A Siting Exercise - Site a Community College (sketch)
Courtyard and Sculpture for the Compton Labs (sketch)

5th YEAR DESIGN

Redevelopment of Manhattan
Redevelopment Plan for Symphone Hall Area

GRADUATE DESIGN

A Civic Open Space
A College
A Travel Poster
U.S. Embassy Office Building, Oslo, Norway
Temporary Shelter for the Arctic
A Community Center

1955-56

GRADE LEVEL UNKNOWN

A Summoning Device at a Summer Camp
A House
Study of Solar Movements
Building by a Dam Site

1956-57

2nd YEAR DESIGN

A Pleasant Sitting Place on an Old Pier
Permanent Exhibition Facilities in the Boston Public Garden for the
    Arts Festival
Resolution of Equipment Clutter at Street Corner
A Small Restaurant
Air Terminal Building for Provincetown Airport
A Camp Shelter
Maximum Camp Shelter
Perceptual Record of an Architectural Experience
Vassar Street Redevelopment
Structural Research
Dining Commons, West Campus

3rd YEAR DESIGN

An Automobile Exhibition Shelter for an Industrial Fair
Reception Facilities
Indoor Tennis and Badminton Facilities
A Critical Analysis of Louisburg Square
A Fresh Approach to Gasoline Station Design (sketch)
Beacon Hill Housing Research
A Siting Exercise - A Community College
A House Boat
An Elementary School for Wilmington, Massachusetts

4th YEAR DESIGN

A New General Hospital in Chelsea, Massachusetts
Building Infill in Back Bay
A Motel and Restaurant in Framingham
Replan Drafting Room (sketch)
Administration and Quarters - Military Base
Housing for Married Civilian Personnel
A Recreation Building and Terrace
A Memorial Chapel for Three Faiths
Married Student Housing

5th YEAR DESIGN

Study of a Saddle as a Structure
A New Community for Dorchester Bay
A Structural Problem (sketch)

1956-57

GRADUATE DESIGN

Reception Facilities
Harvard Fair and Square
The Good Earth
A Summer House and Studio
Redesign of a Liner
Auditorium; Civic Center Around a Bay
500 Room Hotel

GRADE LEVEL UNKNOWN

A Pleasant Sitting Place on an Old Pier
Permanent Exhibition Facilities in the Boston Garden for the Arts Festival
Air Terminal Building for Provincetown Airport
Restaurant at Provincetown Airport
A Camp Shelter
Perceptual Record of an Architectural Experience
Structural Research
Preliminary Site Plan for Beacon Hill Housing
Elementary School
Summer School Poster Design
A File of Renderings and Sketches
Married Student Housing
House Boat
A Recreation Building and Terrace
A Memorial Chapel for Three Faiths
Military Administration Building
Housing for Married Civilian Personnel
Reception Facilities
Replan Drafting Room
Civic Center Around a Bay
Harvard Square Study and Design
The Good Earth (Land Form Design)
A Summer House and Studio
Redesign of a Liner

1957-58

2nd YEAR DESIGN

A Gate House
Site Planning for Dormitory Housing
Sitting Area at Crossroads of Two Paths on Campus (sketch)
Outdoor Living Room
Fire Station
A Restaurant
Alumni Pool Court (sketch)
Belmont Hill Housing

3rd YEAR DESIGN

A Bachelor's Weekend House for Cape Cod
A "Toy" House for Children (sketch)
Town Government Building for Wellesley, Massachusetts
A Small Restaurant and Outdoor Sculpture Gallery
A New Concept in Shoe Packaging (sketch)
East Campus Rumpus Room (sketch)
An Educational TV, Radio and Film Center

4th YEAR DESIGN

A Cooperative Apartment Building
A Temple in Baltimore, Maryland
An Exhibition Building for the "Triennale of Milan"
Extension of Boston Public Library

GRADUATE DESIGN

A Conference Shelter
A Civic Center
Cambridgeport Redevelopment
New Campus for a University
United States Travelling Pavilion
Study of Curved Surfaces

GRADE LEVEL UNKNOWN

Outdoor Sitting Area at Crossroads of Two Paths
A Gate House
Site Planning for Dormitory Housing
An Outdoor Living Room/Pavilion
Ski Hut
Restaurant Sign
Belmont Hill Housing
A Fire Station

1957-58

GRADE LEVEL UNKNOWN (cont'd.)

A Bachelor's Weekend House for Cape Cod
East Campus Rumpus Room (sketch)
An Educational Television, Radio and Film Center
Boston Public Library Extension
An Exhibition Building for the "Triennale of Milan"
A Temple in Baltimore, Maryland
Three Elementary Schools for Ulester
A Cooperative Apartment Building
A Civic Center
A Museum
Housing for City Living

1958-59

2nd YEAR DESIGN

Medford Boat Club
Bank Building on Newbury Street Site
Summer Guest House
Play Area for Children (sketch)
Count House

3rd YEAR DESIGN

The Growing House (expandable)
Toy House for Children (sketch)
Railroad Station, Shopping Center, and Industrial Park at Route 128
A Chapel, Abbot Academy, Andover, Massachusetts
River View Housing
Sketch of River View Housing (sketch)

4th YEAR DESIGN

Society Hill Redevelopment
An Open Air Theater in Lincoln, Massachusetts
An Apartment
Footbridge in New Hampshire (sketch)
An Exhibition Park for Boston
An Elementary School
A House on a Hill (sketch)
Aviary for the Waterfront Development in Philadelphia (sketch)

5th YEAR DESIGN

New Campus for a University
Student Union
A Dormitory for Married Students

GRADUATE DESIGN

A Garden Pavilion
A High Density Community
A Hunting Lodge or a Grave Proposal
A Subsidiary School of Architecture
Civil Center Around a Bay
A Bridge and an Island in Charles River (sketch)
An Exposition Pavilion
Lighting a Library
IGY Exposition in U.S.A.

1959-60

2nd YEAR DESIGN

Beston House
Burton House Entry (sketch)
Harvard Square Island Shelter
Holiday House Pavilions
Shell Service Station

3rd YEAR DESIGN

Farmer's Produce Market
An Arts and Crafts Center for the de Cordova Museum
The Quincy Patriot Ledger: New Plant Facilities
A Youth Center
The Morton Arboretum Small House

4th YEAR DESIGN

3 Elementary School Units
A Fine Restaurant
A Garden
The Institute of Contemporary Art
Town House
City of Cambridge Reservoir
A Coffee Restaurant
Redevelopment of Brownstone House

5th YEAR DESIGN

A House in the Waterscape
New Community on the Sea

GRADUATE DESIGN

Campus for a University
A House in the Waterscape
Design of Two Academic Buildings for a University
A Center for Science and Man
Fifth Floor Addition to Brownstone (sketch)
Emerson Room Competition (sketch)

1960-61

2nd YEAR DESIGN

Year Round Timber Dwelling

3rd YEAR DESIGN

A Control Tower
Prototype Study for Settlement House Design (neighborhood center)
Expandable House
Airport Site Study

4th YEAR DESIGN

A Hotel in the Caribbean
A Nursery School
A Small House in the Tropics for a Teacher (sketch)
Sketch Design for Laborer's House in Dry Tropics (sketch)
Secondary School in Ahmedebad, India
The Friends' Center (sketch)
House in Iran
Fountain for Government Center

5th YEAR DESIGN

A Moveable Theatre
Concord Center Redevelopment
A Coffee-Restaurant (sketch)
A Shopping Center

GRADUATE DESIGN

Offices on a Bridge (sketch)
Free Exercise in Architectural Space and Structure (sketch)
A New Community
The Boston Produce Market and Its Environs
Boston Waterfront Development
A Bus Shelter (sketch)
A Residential Group (CATALANO)
Building for MIT School of Architecture
A Theatre

1960-61

GRADE LEVEL UNKNOWN

Cooperative Apartments
Boston Waterfront Redevelopment
A Fun House at Revere Beach Amusement
An Express-Emporium
Secondary School
A Small Teacher's House in the Humid Tropics
The Institute of Contemporary Art
A Hotel in the Caribbean
A Garden
Concord Center Redevelopment

1961-62

5th YEAR DESIGN

Community Center - Team Project
Center City Chicago
A Private Chapel
Residential Development on Parker Hill - Teams
Central Square Bank

GRADE LEVEL UNKNOWN

City Design for Santo Tome
New Settlement - An Adaptable Urban Structure in the Changing New England
   Landscape
A Building for a School of Architecture and Planning
A New Elementary School for Beacon Hill
A Peaceful Place (sketch)
A Field House for a Boy's Camp
24 Hour Gas Station-Lunch Bar
A Building for the Exposition of the Architectural Process
Home Quarters for a Bank
A Restaurant
A Summer Camp
An Information Pavilion

1962-63

3rd YEAR DESIGN

A Tennis Court Shelter for the Longword Te-nis Club
A Warming Hut for Skaters
A Special Space Toy
An Office Building Prototype
A Book Store
A Conference Center

5th YEAR DESIGN

Tennis Court Structure (Roof)

GRADE LEVEL UNKNOWN

Pedestrian Perspective of Housing Group
A Community of 5000 People in an Undeveloped Country
An American Health Organization Headquarters Building
Town Hall - City Hall
Work Center for Emeritus Professor

1963-64

GRADE LEVEL UNKNOWN

Buildings as Systems to House Academic Research Facilities
A New Urban Center in Cambridge
An Urban University
Middle Density Housing
Study of Ex terin Space
Campus for a University
Building for the School of Architecture and Planning
Study of a Structural Bay
A Summer School for Chamber Music
The Industrialized House
A Tennis Structure
An Outdoor Living Space
Low Rise Town Houses
Restaurant Study for De Cordova Museum
Museum Restaurant
Remodel a Wooden Coal Barge into Restaurant

1964-65

GRADE LEVEL UNKNOWN

Hockey Rink Enclosure
Retirement House on a Lake
Undergraduate Male Dormitory for MIT
Elementary School
Places of Interchange in the Northeast Corridor Transportation System

1965-66

GRADE LEVEL UNKNOWN

Building As a System for New Common Building for School of Architecture
    and Planning
Harvard Square - Mixed Use Urban Development
Investigation of a Long Span Enclosure
Dormitory for 300
Middle Density Housing
Satellite Town for Washington, D.C.
Study for Community Development in Latin America - Including Low-Cost Housing
Study and Development of Constructional System for Low-Cost Housing
An Urban Community in Santo Tome de Guayana
Office Building
A Science and Engineering Library at MIT
The Design of a Highway Resaturant (Structural Problem)

1966-67

GRADE LEVEL UNKNOWN

Habitation in Cambridge
Study of Columbia Point
Housing for the Middle Ages
A Sculpture Exhibit
A New Museum of Fine Arts for Boston
A Filling Station
A Student House in Amsterdam
Environmental Approach to Low-Cost Housing
Housing and Community Design in Developing Countries
Community for 4000-5000 Families
Design of Structures (term long project)

1967-68

GRADE LEVEL UNKNOWN

V/STOL Interdepartmental Research Project
Condensed Study from a City Planning Scheme to its Architectural Components
    (Students Develop Programs)
Housing in Lower Roxbury
Design of Structures

1968-69

GRADE LEVEL UNKNOWN

Exploration of Civil Art
Environmental Workshop - Use and Form of Local Environment
An Experimental Environment for Learning About Architecture
Industrialized Building Systems
Columbia Point Study
A Day Care Center for Model Cities Program on Sites in Roxbury and Boston
Suburban Elementary School
Suburban Shopping Center
Remodelling Existing Spaces
Small Play Parks for an American Indian Town
Short Term Housing
Design for Lincoln Sudbury "Liberated Zone"
Housing Complex for Columbia, Maryland

1969-70

GRADE LEVEL UNKNOWN

Document Present Ecological Disasters
Water Purification Devices as Civil Art Form
Analysis of Urban Environment
Designs for Living in Given Contexts
Introduction to an Additive Vocabulary of Space
South End Housing/Design and Construction
Rehabilitation of Two Buildings in South End
Prototype Housing for Infill Sites
Youth Center for Street Gang in South Boston
Self-help Housing Design
Study of Urban Environment
Form and Use of Local Environment - Neighborhood Commons

1970-71

GRADE LEVEL UNKNOWN

A Study of Political Posters
The Mobile Home Industry: A Case Study in Industrialization
Low Income Housing
Study of Growth of Multi-use Portion of City
Growth of an Urban University
Study of Psycho-social concepts and Their Relationship to the Physical
    Environment
User and Community Involvement in Housing
Industrialized Building Seminar
Design/Construction of Housing in South End