INQUIRING INTO ARCHITECTURAL TEXTS:

Towards an Interpretation of
Architectural Knowledge

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ABSTRACT

An investigation was carried out on the contents of
the architectural texts in order to illuminate written ar-
chitectural knowledge. The thesis takes as its case study
the required reading list for Introduction to Architecture
course at Yale College, Yale University, a mandatory course
for undergraduate students majoring in architecture. This
course, given at a school with a liberal arts education
program, lists more readings than do any other similar
courses given at other schools surveyed for this thesis. In
this undergraduate course, the texts are used as background
information for the students to draw upon in order to do
their assignments.

The texts used for the course range widely, from a
first-century treatise to articles published in the
eighties. They represent a continuous development of ar-
chitectural thought throughout the history of architecture.
Yet the reading list exclude several major theoretical
works of architecture. The examination of the texts shows
that they are primarily theoretical, and expose different
properties and principles of architecture and attitudes
towards architects and architecture. Some of the texts con-
tradicts with each other, others are in agreement. Very few
of the texts are concerned with the practical knowledge of
architecture. Humanistic, populist approaches, as ex-
emplified by several texts written by previous faculty mem-
bers of the school, seem to dominate the themes of the
readings. The list does not attempt to include classical
works written by non-architect authors.

Thesis Supervisor: Julian Beinart
Title: Professor of Architecture
PREFACE

My interest in studying about architectural knowledge began several years ago when I was an instructor at the Institut Teknologi Bandung. One time, the Deputy President for Research Affairs of the Institute, himself an engineer, questioned the scientific base of the school of architecture. None of the faculty of the school could answer to his satisfaction what some of them considered to be an unthinkable question.

My study in a post-professional program in the Department of Architecture at M.I.T. has opened a way of inquiry into the realm of architectural knowledge. In the Method of Inquiry course taught by Edward Robbins, I learned how to view and to question architecture as an outsider. From Stanford Anderson's history, theory and criticism classes I learned the theory and methodology of architectural study. Don Schon taught me about the nature of design knowledge. In Julian Beinart's Theory of City Form class, I learned another possibility of formulating and presenting theories in architecture. In fact, while writing this thesis I have gained some new insight which will be useful for my career in teaching architecture after finishing my study.

I must thank Julian Beinart, my thesis supervisor, for his guidance and his invaluable advice concerning architectural education. Don Schon for his insightful suggestions and for holding me to my study goal, and Francesco Passanti for his helpful theoretical thinking. My thanks to Stanford Anderson who directed me with his profound knowledge on the subject, to Bill Porter for his advice at the beginning of my inquiry, and to Larry Vale for his helpful criticism of my first draft. In addition, I thank Alexander Purves, the instructor of the Introduction to Architecture course at Yale University for providing me with information about the course and its reading list, which I use as the case study of this thesis. I am indebted to the staff of the Writing Center of M.I.T. for their help in editing my drafts into a more readable English. My wife Ani and my daughter Tantri have encouraged me through long distance calls while they are away from me and from our home country.

My studies at M.I.T. and my stay in the United States have been made possible through a Fulbright Scholarship which is administered by the Institute of International Education.
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INTRODUCTION

For myself, I prefer to utilize (rather than comment on) the writers I like. The only valid tribute to thought such as Nietzsche's is precisely to use it, to deform it, to make it groan and protest. And if the commentator says that I am unfaithful to Nietzsche, that is of absolutely of no interest.

[Michel Foucault, "Entretien sur le prison: le livre et sa methode" (with J.J.Brochier), as quoted by Patricia O'Brien, 1989, p. 25.]

This thesis is a part of an ambitious effort to answer the intriguing question of what architectural texts provide to architectural knowledge. The question surfaces because of the role of texts in architectural education and because of the increasing number of architectural publications. Such a question may be raised by participants in the discipline of architecture as well as by observers of the discipline.

The question can be seen as part of a larger question concerning architectural knowledge in general as it is addressed by architectural educators. In the Jubilee issue of the Journal of Architectural Education, there is a statement sent by the editor of the journal inviting many
authors--architects, educators, observers--to contribute to the Jubilee edition and to respond to the statement:

We continue to acknowledge as architects and architectural educators that many of our concern lie within a domain of inquiry which we call our discipline. Yet, we are perhaps becoming less clear on the precise constitution of this discipline why and how we would define it in distinction to others. Certainly we can recognize it as different from physics, literature, sociology and other disciplines, but the diversity of concerns in architecture are great because it must deal directly, in theory and practice, with both natural and cultural forces.

Does this condition initiate against any kind of determinant of supposed "architectural" concerns from those of other disciplines? Out of the super abundance of knowledge constituting our world? Then, even if we can accept some clarity of disciplinary definition for architecture, how does this stand in relation to the practice? And how do both discipline and practice stand in relation to the profession?

The above statement asks the kinds of questions some of which this thesis tries to address.

Many authors show that textual knowledge has an independent existence separated from other forms of knowledge. Ward and Reed (1987) argue that written knowledge that belongs to a society or to a discipline is distinguishable from other forms of knowledge of that society or discipline, namely, spoken knowledge, knowledge-in-use and knowledge-in-general. By "knowledge-in-use" they mean "the knowledge of individuals that guides their understanding and behavior", and "knowledge-in-general" means "knowledge that is accepted by a discipline, profession, or society"
(p. 5). Written knowledge of a profession can be seen as an espoused theory of action which, according to Argyris and Schon (1974) is a statement for communication. This theory of action could be different from theory-in-use which really governs the action. Landau (1982) exhibits that there is a tendency for people, including architects, to write what they do not really practice and that they practice what they do not write. What they write and what they actually do are independent to each other.

Several studies reveal different kinds of knowledge in architectural education and profession. Rauh and Wright's study (1975) on beginning courses at twenty schools of architecture in Western Europe shows a kind of knowledge that is programmed to be taught. During the study they registered written programs of beginning courses of the schools and the lists of books which were used for the courses. The Architecture Education Study carried out by Porter et al. (1981) shows architectural knowledge which is actually taught in architectural design studios which were considered to be the core of architectural teaching. Porter study was done at three schools of architecture in the United States. It illuminates the spoken knowledge that was revealed during discussions and criticism sessions in the three studios by the instructors, visiting critics, and the students. Jordan's study on Introductory Design Education
at 30 schools of architecture in North America collected written syllabi and samples of exercises of the introductory courses and studios of the schools (1977). Knowledge held by practicing architects was shown by studies carried out by Blau et al. (1984). They surveyed more than a hundred architectural firms and more than four hundreds architects practicing in New York. The studies exhibit general knowledge claimed by the architects. So far, no report of any study identifies the nature of written architectural knowledge to which members of architectural community, particularly the youngest ones, are exposed.

The main intention of this thesis is to investigate the contents of architectural texts to find out what these texts consider to be architectural knowledge. It will examine a set of texts that are used in teaching an introductory architectural course in a school of architecture in the United States. The selection of these texts is based on the assumption that they are selected by instructors of the course as relevant knowledge that beginning students should know in preparation for further study in architecture. In an effort to institutionalize this case study, the selection was limited to texts from one particular institution, rather than other texts in other circumstances.
It is necessary to note that the scope of this thesis is comprised of what these texts claim to architectural knowledge. It is not about what knowledge the authors may possess and believe which they do not claim in these texts. Yet this thesis will critically analyze what they really want to express with their writing. This thesis does not attempt to discuss which parts of the texts are really read by their audiences, adopted by them as their knowledge, and used by them in practicing architecture.

In inquiring into architectural knowledge, this thesis questions what an insider considers the matter-of-fact of architecture. It takes a position of not interpreting the knowledge as 'sacred,' in the tradition of a true believer. Instead, it takes a position of interpreting the knowledge as 'suspect,' trying to uncover the unspoken (Kipnis, 1987). It can be said that the effort here is in line with what Berger and Luckman (1967) term "sociology of knowledge", i.e., the study of "socio-historical selection of ideational contents" of a knowledge. Furthermore, Berger points out that sociology of knowledge represents what Nietzsche calls the "art of mistrust." Borrowing from linguistic and anthropological terms, this thesis concerns with an "etic" analysis rather than with an "emic" one. Perhaps it can be put in the psychoanalyst Heinz Kohut's concept of "experience-distant", i.e., "one that special-
ists of one sort or another--an analyst, an experimenter, an ethnographer ... or an ideologist--employ to forward their scientific, philosophical, or practical aims" (Geertz, 1983, p.57).

To examine the texts, this thesis uses a basic presupposition that architecture is a cultural production. The strategy here is to make separate discussions about the products and the producers of architecture. It is realized that in some cases one cannot make a clear distinction between the two. This approach is an interpretation of R. Landau’s response to the aforementioned statement by the editor of *Journal of Architectural Education*. In his response, Landau proposed an inquiry into architectural knowledge by analyzing four interrelated ideas of "architecture," "architect," "discipline," and "culture".

The body of this thesis consists of three chapters and a conclusion. The first chapter exhibits the list of texts selected in the case study of this thesis and the intellectual setting in which the texts are used. The second chapter analyzes the texts’ claims to knowledge about the products of architecture. This chapter consists of four sections discussing different topics, i.e. the corpus of architecture as defined by what the texts exemplify, knowledge about the elements of architecture, about the princi-
amples of architecture and claims to functions of architecture. The third chapter analyzes the texts' claim to knowledge about settings that influence the production of architecture. The sections of this chapter discuss the roles in the producers of architecture, the discipline of architecture, and the culture of architecture. The fourth chapter is the conclusion.
Chapter I

THE OBJECTS OF INQUIRY

The set of texts used as the case of this thesis is selected from a number of reading lists available through a survey conducted for this thesis. At first, a literature survey was conducted to identify prospective introductory courses in several schools of architecture in the United States. The criteria for selecting a course were that they should be required for beginning undergraduate students of architecture. The required reading lists were requested with letters sent to the chairmen of the schools or to the instructors of the courses. As a result, six sets of reading lists for introductory courses have been collected for this thesis. However, the results show that most of the introductory courses either emphasize graphics skill--as suggested by the fact that most of the readings on their lists are about architectural graphics--or that they require very limited readings. Neither of these types of courses could be a rich object of inquiry for this thesis.

Limited by the results of the survey, this thesis takes the reading list of just one course as its object of inquiry. This course "Introduction to Architecture", given at Yale College, Yale University. The course has the most comprehensive reading list of those collected during the
survey. The list includes a wide variety of subjects and topics of architectural knowledge. This thesis focuses only on the required texts, omitting the list of recommended texts.

The educational program of Yale College, is described by the bulletin of the school as follows:

The purpose of the undergraduate standard major in Architecture at Yale is to include the study of architecture within the broader context of a liberal arts education. It treats architecture as a branch of the humanities, and thus as an open field of studies for students inquiring into the nature of architecture as well as its technique.

It is a concern of the major that building should reflect the values of the persons for whom they are built and the culture they exemplify. An examination, therefore, of the theories and design an architect employs as well as the influence architecture may have on individuals and on a community is critical for an understanding of the humanist thread in architecture. For these purpose course work has been developed in which the creative (studio), reflective (theory/history), and the process (planning/development) approaches to architecture are studied together.

To graduate as a Yale college major in Architecture, a student must complete the following sixteen terms of work:

1. A core of eight required courses in architecture (Introduction to Architecture courses, Methods and Forms in Architecture courses, Landscape and Philosophy of Architecture courses, Senior Studio, and Senior Project.)

2. Two term courses of basic sciences: Mathematics...and Physics...or (Introduction to Structure course)

3. One urban studies course from among the following (Introduction to Housing, Introduction to City Planning, Neighborhood Planning) or any other urban studies approved...

4. One urban studies course from among the following or any other urban studies approved...

5. Two terms of Studio Art, one of which must be either drawing or sculpture.
6. Two terms of art history courses: History of Art, (Modern Architecture suggested) (pp. 43-44).

The contexts of a liberal art education can be an explanation why this course has the most comprehensive reading list of those surveyed.

The course on which this inquiry is centered is described in the bulletin as follows:

151a. Introduction to Architecture. Lectures and readings in the language of architecture. Assignments investigate architectural vocabulary, elements, functions, and ideals. Notebook and individual projects are required (p.45).

The instructor of the course reports that the primary emphasis of the course lies in weekly sketch book assignments. He also assigns two papers. Reading materials are used as resources and background information to support the assignments and discussions in class. It is assumed that the students read the required readings. There is no effort to check whether they really read the texts.

It is necessary to note again that this thesis is concerned mainly with the texts' representation of architectural knowledge. Moreover, it should be acknowledged that other than the aforementioned information regarding the reading list, class work and course description, this thesis
uses no further information on architectural knowledge taught by the faculty, what is actually learned by the students, nor and information on how the readings are used in the course.

The required texts used in this course, listed according to the weekly schedule, are as follows:

Mainstone, R., "Intuition and the Spring of Structural Invention"
Ruskin, John, *The Stones of Venice.*
Bragdon, Claude, "The Language of Form."
Klee, Paul, *The Pedagogical Sketchbook*
Le Corbusier, *Towards A New Architecture*
Moore, C. and Allen, G., *Dimensions.*
Summerson, John, "The Case for a Theory of Modern Architecture."
Wright, F.L., "The Logic of the Plan."
Curtius, E.R., "The Ideal Landscape."
Jackson, J.B., "The Order of a Landscape."
Bacon, E., *Design of Cities.*
Lynch, K., *The Image of the City.*
Garvin, A., "We Can Solve Urban Problems."
Boyle, B., "Architectural Practice in America, 1865-1965,"
Vitruvius, *The Ten Books on Architecture*
Alberti, L.B., *Ten Books on Architecture*

The list of recommended texts is presented in the bibliography. From this point on, unless otherwise noted, any mention of the word "the texts" refers to the required texts in the above list.
The reading list for the course shows many varieties in the nature and subjects of the texts as well as the periods of the writings. The two oldest texts, written by Vitruvius in the first-century, and by Alberti in the fifteenth-century are ancient architectural treatises. There are two texts written in the nineteenth-century by Pugin and by Ruskin. The rest were written in this century, with the more recent texts written in the seventies, such as those of Bloomer, Moore, Venturi, and in the eighties such as those of Lewis and Watson. Three texts of Lewis, Ching, and Rasmussen are intended for beginners, Moore, Allen, and Lyndon’s book is for non-architects; whereas the rest is mostly for members in the discipline of architecture. The subjects of most of the texts are by and large buildings; few of them are about particular aspects of buildings, or about landscape and cities. This thesis examines mainly texts which discuss buildings,
Chapter II
THE PRODUCTS OF ARCHITECTURE

Although the texts consider other ideas, architecture as product constitutes the majority of the contents. This chapter discusses the texts' contents about architectural products.

The Corpus of Architecture

Before depicting the claims about the products of architecture, it is necessary to delineate the corpus of architecture as established by the readings. In doing so this section will examine the range of examples of architecture presented in the readings. The examples may illuminate what is the presupposition of architecture which underlie any explicit statements about it.

The readings cover a very wide range of examples in term of scale, usage, location, and period; and they show no strong pattern of examples of architectural works. In terms of scale the texts offer examples ranging from small building elements, such as columns--which are explained extensively in Vitruvius' treatise--to large architectural artifacts, as large as a town--which is exemplified by Bloomer et al. In terms of usage, domestic buildings seem
dominate the examples, particularly in Moore, Allen, and Lyndon's book, followed by religious buildings, particularly in Pugin's book. Although most examples are architecture from Europe and North America, architecture from other parts of the world also appear in many of the texts. In fact, the oldest text, written by Vitruvius, mentions examples as far as Indus and Egypt. Alberti claims that architecture began in Asia, flowered in Greece, and was brought to perfection in Italy. Most of the texts include not only examples of architecture of their periods, but also architecture from earlier periods as well. The Vitruvius' treatise exemplifies many Greek buildings from an earlier period. Most of the examples are built projects. There are only a few examples of unbuilt projects; most of them are of Le Corbusier. His book is an exception in that it exhibits his and Garnier's vision of the architecture of the future. There are architecture of the high culture and as well as of the low culture within the same texts.

There is some commonality among the examples presented by the texts. Most of the texts exhibit architectural products which have religious or cultural significance, or which were designed by prominent architects, or commissioned and inhabited by a distinguished figure. Ancient Greek temples seem to appear most frequently in many dif-
ferent texts, in the oldest texts as well as the most recent ones. They appear in Le Corbusier's book to justify his modern, visionary architecture. Among the authors who discuss architecture in general, only Ruskin and Pugin did not discuss Greek temples directly.

The least common examples are ordinary, mundane, contemporary buildings which are located in the immediate surrounding of the authors, designed by unrecognized architects or builders. This attitude towards the architecture of the day is best described by what Moore, Allen, and Lyndon write in their Foreword.

We begin with the premise that houses built today are mostly careless and terrible, that they have been built well in the past ... (p. viii).

These neglected examples appear as objects of comparison instead of as subjects of discussion in themselves. In some cases, these underprivileged examples are taken from foreign lands rather than from the author's immediate environment. Le Corbusier includes American grain elevators as examples of ideal geometric forms. It is arguable whether he shows them less because they have pure geometric form, and more because they are exotic. Bloomer and Moore, and Moore et al. present several examples of vernacular domestic architecture from different regions of the North America. But most of these were built in the earlier period. Venturi et al. exemplify contemporary vernacular commercial architec-
ture, such as that on Main Street, which is omitted in the other texts. The inclusion of these neglected examples suggests that there is no intention in the texts to make Pevsner's famous distinction between "a piece of architecture" and "a building,"

There is a bias that may hinder using the examples to define what the texts claim about the corpus of architecture. Le Corbusier uses several projects of his own to illustrate the kind of architecture he discusses in his text. But there is hardly any connection between his and the other examples that appear within the same book. In fact, the textual contents of his book do not support the illustrations of his work, and vice versa. Out of six examples, Bloomer and Moore offer two Moore's works to embody what they consider memorable places. Similarly, Moore, Allen and Lyndon in their book—which suggests that lay people can design their own house—present a number of their own design works to illuminate their notion of "what can be done when the owners are willing to make that extra investment of energy and care." Again, there is hardly any obvious similarity between the authors' works as examples and other examples within the same book, even though these two groups of examples are intended to illuminate the same concept. Therefore, the examples represent the authors' claims to architecture as well as their hidden agenda.
The other problem with assuming the examples as the suggested corpus of architecture is that the examples are presented with different connotations. Some of them are presented to illuminate ideas with which the authors agree, and other examples with which they do not agree. The validity of the examples are determined by the personal preferences of the authors.

The Elements of Architecture

The notion of elements of architecture is described by the brochure of the course as one of those ideas being investigated. It is found that none of the texts offers a systematic description of elements of architecture and that most of the texts have different claims to what elements constitute architecture. There are two main tendencies in the depiction of the elements of architecture. The two ancient treatises and the nineteenth-century books tend to refer to them as elements of construction, whereas the texts which are written in this century tend to discuss how people experience or should experience architecture.

Vitruvius and Alberti display that the elements of architecture are consensual components of construction. In his treatise Vitruvius includes elements of floors, gates, doorways, colonnades, and walls. Every element is not
treated equally in his treatise. He explains more about columns than about any other building elements. His discussion about columns can be found in several sections about temples. His elaboration on the columns of temples shows how important columns were to the state of architecture in his time. It also exhibits structural elements of foundation and substructure and presents a quite detailed discussion about building materials, such as, brick, sand, lime, pozzolana, and stone. In fact, his treatise emphasizes how to design and to build.

Alberti presents the description of elements of architecture more systematically than Vitruvius.

... the whole Art of Building consists in six Things, which are these: The Region, the seat or Platform, the Compartment, the Walling, the Covering and the Apertures; and if these Principles are first thoroughly conceived, that which is to follow will be the more easily understood (p. 2).

Furthermore, he writes elaborate explanations of each element of architecture in a special chapter concerning with the aesthetics of the element.

Ornament and decoration are illustrated in Vitruvius' treatise, while a strong emphasis ornaments is in the texts of Alberti's. Vitruvius devotes only few passages to this issue.

... I think it is not out of place to speak ... about the ornaments, showing how these arose and from what original elements they were devised ....
So it was that some ancient carpenters ... closed up the space between the beams, and above them ornamented the coronae and gables with carpentry work of beauty greater than usual ... (p. 107)

The decoration of the polished surfaces of the walls ought to be treated with due regard to propriety, so as to adapted to their situations ... In winter rooms, neither paintings on grand subjects nor delicacy of decoration in the cornice work of the vaulting is a serviceable kind of design ... (pp. 209-210).

The issue of ornamentation is discussed extensively in Alberti's Ten Books on Architecture. In his treatise almost every discussion of the element, type, and property of buildings and cities involves a discussion of ornamentation. This reveals his explicit concern about the importance of ornaments.

Architects always appear to have consulted Necessity and Convenience in the first Place, even tho' at the very same time his principal Core has been ornament. If he can make a handsome Mixture of the noble Orders of the Ancients, with any of the new Inventions of the Moderns, he may deserves a Commendation (p. 206).

Now the Rules which give the ornaments themselves their main Excellence, are as follows. First all your ornament must be exactly regular, and perfectly distinct, and without Confusion ...(p.203).

The nineteenth-century writings of Ruskin and of Pugin's, like the ancient treatises, observe architecture as composed of physical elements. Ruskin's notions of the constituents of architecture are related to his proposition of one of the practical functions of buildings, protection.
Protective architecture has to do one or all of the three things: to wall a space, to roof it, and to give access to it, of person, light, and air; and it is therefore to be considered under the three division of walls, roofs, and apertures (p. 40-41).

In his book, he elaborates on some of the design and construction principles of these three elements and two construction systems of his preference: the arch and the buttress. For him, architecture is basically combinations of these elements depending on purpose, climate, soil, and national customs.

Ruskin gives special attention to decorations in architecture. For him, decoration means beauty. The issues he addresses in the text are how to choose ornaments to decorate architecture. Furthermore, he asserts that ornament has religious meaning.

... all noble ornamentation is the expression of man’s delight in God’s work (p. 37).

... the function of ornament is to make you happy ...
... in looking at God; watching what He does; what He is; and obeying his law; and yielding yourself to His will (p. 101).

Unlike the ancient treatises and the nineteenth-century texts which consider architecture as composed of building elements, the architectural texts which were written in this century are less interested in discussing the physical elements of architecture. Instead, they tend to discuss more how people conceive or should conceive ar-
architecture, with the elements of architecture depicted by these texts are the abstraction of people's perception of architecture. This tendency to abstract is parallel to the emergence of Gestalt psychology as described by Bloomer and Moore, and the abstraction of art as depicted in the works of Paul Klee.

The most commonly mentioned elements of architecture by these contemporary texts are mass and space. Mass and space, according to Bacon, are "the basic ingredients of architectural design." His idea of architecture includes buildings as well as city blocks. He observes that there are differences in how different cultures compose the two elements of mass and space. According to him, the Western culture is preoccupied with mass, and while many Western designers are "space blind," his definition of architecture is preoccupied with space.

... architecture is the articulation of space so as to produce in the participator a definite space experience in relation to previous and anticipated space experience (p. 21).

His preoccupation with architectural space shows what Venturi et al. suggest the obsession of the Modern movement with space

Mass, surface, and plan are the "Three Reminders to Architects" that Le Corbusier prescribes as the way to observe architecture. His proposition about mass is related
to his interest in primary geometric forms. For him, cubes, cones, spheres, cylinders and pyramids are "the most beautiful forms." He claims that everybody, "the child, the savage, and the metaphysician," agrees with this preference, because "it is of the very nature of the plastic arts" (p. 31). The importance of his reminder about "surface" is that it is the "cloth" that maintains the appearance of pure geometry of masses of architecture. His notion of surface is limited to smooth surfaces. He is against surfaces which are "parasitical, eating up the mass and absorbing it," as commonly occurred in the architecture of his period (p. 37). Unlike the other two reminders, his by "plan" is not an element. It is an arrangement of mass, surface, and space which is based on how a spectator actually experiences them in reality.

The consequence of his preference is that Le Corbusier rejects the elements of ornament and decoration, and also of color. He legitimizes his stance against decoration by referring to some historical figures.

The Greeks, the Romans, the Grand Siecle, Pascal and Descartes, wrongly adduced as witness in favour of the decorative arts, have enlightened our judgment, and we now find ourselves immersed in architecture; architecture which is everything—but this is not the "decorative arts" (p. 85).

Le Corbusier's dislike of ornament and color is not only a result of the inherent quality of these elements, but also of social and cultural connotations.
Decoration is of a sensorial and elementary order, as is color, and is suited to simple races, peasants and savages (p. 133).

It is interesting to note that as a painter, Le Corbusier worked with colors, and utilized them in his later architectural works. The problem he addresses is not in decoration and color as such, but in the selection of conventions which were prevalent at the time of his writing.

Rasmussen who wrote his book three decades after Le Corbusier, proposes that architecture be experienced as an embodiment of solid and cavity, which are just other words for mass and space. The influence of Gestalt psychology can be seen in his explanation of solids and cavities with the concept of figure and ground illustrated by the famous drawing of a black vase over a white background. Similar to Bacon's observation, he maintains that there are different preferences: some architectural periods works primarily with solids, while others with cavities. In a less of a rhetorical expression than Le Corbusier, he denounces the importance of the small detail characteristics of historical styles.

But details tell nothing essential about architecture, simply because the object of all good architecture is to create integral whole (p. 33).
Among the contemporary texts there are three texts, written in the seventies which have interests in traditional building elements. Moore, Allen, and Lyndon claim that their book was inspired by pattern books of the nineteenth century which guided American home builders. In their book, the authors explain these traditional elements, windows, path, entries, doors, and porches, not in terms of how to build them, but of how these building elements are experienced as phenomena by the occupants. They illustrate how these elements, as familiar objects, are important in helping the occupants to establish orientation and to describe the overall structure of a place. The authors resist using the abstract term space, and explain that houses are composed of something that people call living rooms, parlors, dining rooms, bedrooms, and so on. For them, the elements of ornament and color are the extension of the qualities of a place. Buildings are also composed of what the authors designate as "the order of machines," i.e., the utilitarian components of a house. The comprehensiveness of coverage and the simplicity of explanation of this book is designed for the non-architect readers.

In later book, Moore and Allen exhibit examples of traditional elements taken from some pattern books of the last century: illustrations of bases of the five orders of columns, Ionic capitals, a 'classic doorways,' a double
hung window, and a Doric column. There is no explanatory
texts accompanying the illustration. They seem to il-
istrate the general concepts of dimension, shape, and
scale that the book writes.

Another book, written by Bloomer and Moore, recog-
nizes traditional notions of elements as a means of giving
meaning to architecture. It describes building elements
which humankind has invested with meaning:

... columns, walls, and the roofs between them;
porches and arcades formed by columns; towers to
which they stretch up; rooms and hearths which the
wall enclose; and doors and windows which relate an
inside to the rest of the world (p. 77).

Lynch holds similar position in emphasizing the impor-
tance of the observers, instead of the objects or any
preexisting claims about the objects of architecture.
Whereas the three books are more interested with
phenomenological meaning of building elements, Lynch is
concerned with the images that people hold about their
physical environment. In his book, he explains the ele-
ments of images of cities which are held by their citizens.

Venturi, Scott-Brown, and Izenour propose to
reconsider the importance of decoration in architecture.
They show that decoration in architecture has symbolical
function, "for architecture as shelter with symbols on it" (p. 90). For them, ornaments, billboards, the facades of a cathedral, and of a pallazzo, are of similar nature--they are the symbols of the buildings.

The Principles of Architecture

This section will examine the statements in the texts concerning which qualities the products of architecture should possess and how should they should be designed.

Vitruvius was the first architect to lay out universal principles of architecture. He states that the fundamental principles of architecture depend on "Order, Arrangement, Eurythmy, Symmetry, Propriety, and Economy." (p. 13) Order "gives due measure to the arrangement to the proportions of the whole." In his discussion of Orders as conventional styles of column he suggests that the selection of column style determines the design of other elements of building, especially of temples. Eurythmy means "beauty and fitness in the adjustment of the members." According to him this is achieved by correct proportion of height, length, and breadth of building elements. By symmetry he means--unlike contemporary notion of the word--"proper agreement between the members of the works itself, and relation between the different parts and the whole general scheme, in accordance
to a certain part selected as standard." He asserts that in the human body there is a "symmetrical harmony" that can be a model for building elements. By Propriety he means "perfection of styles which come when a work is authoritatively constructed on approved principles." He suggests that this principle is an appropriation of the authorized principles mentioned before in accordance with usage and with physical circumstances. The principle of Economy concerns the economy of construction. His explanation of this principle differs from that of other principles in that this is the only principle that he illustrates with mundane buildings rather than with temples and it seems to indicate that his primary concern is with the aesthetics of sacred buildings. Additional proof of this premise lies in his concept of typology, a convention of principles of the elements and the spatial arrangement of buildings for particular usages. Here, again, he elaborates more on the typology of temple buildings than on other building typology, i.e., forum, basilica, treasury, prison, senate house, theater, bath house, palaestra, farm house, and Greek house. In fact, the typology of temple buildings is mainly determined by the arrangement of the columns.

Vitruvius's influence on Alberti is evident. In his treatise Alberti writes about the principles of architectural design:
The whole Force and Rule of the Design, consist in a right and exact adapting and joining together the Lines and Angles which compose and form the Face of the Building. It is the Property and Business of the Design to appoint to the Edifice and all its Parts their proper Places, determinate Number, just Proportion and beautiful Order; so that the whole Form of the Structure be proportionable (p. 1).

... there are three things principally in which the Whole of what we are looking into consist: the Number, and that which I called the finishing, and the Collocation. But there are still something else besides, which arises from the conjunction and Connection of these other Parts, and give the Beauty and Grace to the whole (p. 195).

He goes on to explain his principle in terms of what errors architects should avoid. His explanation suggests that architects should choose the right and healthy location; define the right, moderate dimensions of buildings and of elements; mix together the elements in "Number, Size, and Situation equal to each other ... with greatest Care and Accuracy"; provide a space for embellishments; and not to integrate ornaments into the structural process rather than apply them later at the end. Although he emphasizes his principles on the aesthetics of buildings, he also gives advice on the process of designing.

Before you begin your Work, thoroughly consider the Whole Design yourself, and take the Advice of Men of Skill upon it; be sure to have a compleat Model of the whole, by which examine every minute Parts (p. 203).

Besides these principles, he also presents the typology of buildings possessing certain functions, such as palaces, public houses, and public baths.
The two nineteenth-century books seem to suggest that there were two competing architectural styles embodying two different architectural principles. Both Pugin and Ruskin, who represented the architectural thought of the last century, insist upon the superiority of Gothic architecture and downplay the prevailing Renaissance architecture. Ruskin writes:

There is such a school, chiefly degraded classic and Renaissance, in which the ornament is composed of imitations of things made by man ... we had better get rid of all this imitation of man's, and be quite sure we do not like that (p. 100).

Gothic is not only the best, but the only rational architecture, as being that which can fit itself most easily to all services, vulgar or noble. ... Gothic architecture has external forms and internal elements. Its elements are certain mental tendencies of the builders, legibly expressed in it; as fancifulness, love of variety, love of richness, and such others. Its external forms are pointed arches, vaulted roofs, etc. (p. 168)

For him, the aesthetic of a building is largely determined by the ornamentation and the ornaments are ruled by God.

[Ornaments are] not copies of your own handiwork ... not King's arm ... but God's arm, seen in his work. Not manifestation of your delight in your own laws, or your own liberties, or your own inventions; but in divine laws, constant, daily, common laws; not Composite laws, nor Doric laws, nor laws of the five orders, but of the Ten Commandments (p. 101).

Pugin shows that one of the different principles between Gothic or "pointed architecture" and the Renaissance
style is that the first beautifies the complex details of structures, while the latter tries to conceal and regularize these details. He argues that different climates are reflected in different architectural manifestations; an example of this is found in the design of colonnade and the shape of roof. It is for this reason that he rejects the adoption of Italian (Renaissance) architecture in England.

Bragdon's principles are more closely allied to Pugin and Ruskin than to Vitruvius and Alberti. He implies that there are criteria of everyday common sense that can avoid confusion in architecture; first of all, for example, architectural forms and features should be utilized in agreement with practical needs and with climatic and environmental conditions. Second, architectural ornaments should have meaningful contemporary characters instead of ancient attributes. Finally, he suggests that architecture should exploit the splendor and the beauty of different materials.

He believes that the history of architecture depicts the "inevitable duality" made evident by the two competing styles of the last century. It is this duality of the "organic" and the "arranged" architecture which represents Gothic and Renaissance architecture respectively. The former follows "the law of natural organism," in which the form changes as function or the determinant, changes. It is
an architecture which creates an intimate relationship be-
 tween "the interior arrangement" and "the exterior expres-
sion." The latter, on the contrary, is an architecture in
which function adapts to form arranged according to an
ideal, such as grandeur, symmetry, proportion, which is
"often only a mask."

In the opinion of Le Corbusier, architecture should be
based on geometry for it is this order that humankind has
used since the dawn of the history.

The Greek, the Egyptian, Michelangelo or Blondel
employed regulating lines in order to correct their
work and for the satisfaction of their artist's
sense and of their mathematical thought (p. 70).

The regulating line is a satisfaction of a
spiritual order which lead to the pursuit of in-
genious and harmonious relations. It confers on the
work the quality of rhythm. The regulating line
brings in this tangible form of mathematics which
gives the reassuring perception of order. The
choice of a regulating line fixes the fundamental
geometry of the work; it fixes therefore one of the
"fundamental characters." The choice of the
regulating line is one of the decisive moments of
aspiration, it is one of the vital operations of
architecture (p. 71).

Gothic architecture is not, fundamentally, based on
spheres, cones and cylinders ... It is for this
reason that a cathedral is not very beautiful ...
(p. 32).

Le Corbusier rejects to any notion of style.

[The styles] intervene in the surface decoration of
the facades and of drawing-room; this is the de-
generation of "style," the old clothes of a past
age;...It is a lie; for in the "great periods" fa-
cades were smooth ... (p. 88-89).
Le Corbusier's third reminder to architects is what he terms the plan. This is an architectural principle that he claims had been lost for centuries. This principle states that architecture should be designed with an observer in mind so that he or she will be able to experience the visual composition of mass, surface, and space. It is this principle which Bacon utilizes in writing his book on urban design.

The more recent texts recognize the existence of architectural styles in the past centuries, but they do not recommend the adoption of any of them. Venturi et al. indicate that different architectural styles were used in the nineteenth century to express different building functions. Moore and Allen write that in the nineteenth-century, American builders used pattern books to learn the principles of architectural styles, such as Swiss, Gothic, Tudor, Tuscan, etc. and that in America there was hardly any convention of what style to build for particular functions. The explain the origin of building typology according to the patterns of room arrangement. These were formerly determined by climatic conditions, and only later selected by people in different region as a matter of choice. The authors' notion of "the order of dreams" suggests that it was the individual desires of the people that decided the styles and patterns of room arrangement.
In proposing their principle of what a house should be, Moore, Allen, and Lyndon oppose the abstract geometry of modern architecture such as that of Le Corbusier.

Every house has to be "like" something in order to mean something to its inhabitants and to give them pleasure (p. 67).

They claim that the range of possibilities a house might look like is determined by what images one knows and by what the society permits. This does not mean that the authors would agree with every possible personal choice. They suggest that the least acceptable choices are "those which sacrifice individual response to mindless repetition and stereotype" (p. 271).

The quality of being like something, according to Bloomer and Moore, is being like the "human body." Their anthropomorphism is different, though, from the idea of borrowing the harmonic proportions of the human body as was the case in the Vitruvius' and Alberti's treatises. The architecture that they mean is

architecture which includes the "general function of extending human self and order," admits the body as a "divine" organizing principle in architecture ... [that] requires the existence of a centerplace ... [and] the importance of human body movement or suggestion of it (p. 15).

Their proposition is easily understandable if one compares it with those other architectures they define as "organized around specific function, or a more mechanical organization" (p. 15).
Similar to Bloomer and Moore, Venturi, Scott-Brown, and Izenour emphasize the importance of perception, past experience, and symbolization. They write that symbolic elements may often contradict to the form, space, and function of the same building. This contradiction is reflected in two extreme architectural manifestations. First, what they call "the duck," is where the form, space, and the program of buildings are distorted by an overall symbolic form. The other, what they call "the decorated shed" is the conventional shelter which space and structure fulfill the building's function and is applied with independent ornament. They assert that both two manifestations are valid. The two manifestations seem parallel with Bragdon's distinction between "the arranged," which is less extreme than "the duck"; and "the organic"--except that this does not imply the application of ornamentation.

F.L. Wright acknowledges that architecture is a product of, among any other things, the human factor. Besides a matter of logic, there is a matter of 'expression and style."

... there is the important human equation at work in every move that is made. The architects weaves into it all his sense of the whole. He articulates --emphasizes what he loves. So every true building is of the quality of some man's soul, his sense of harmony and "fitness," which is another kind of harmony ... (p. 57).
Moore and Allen's suggestion on the measures of architecture can be attributed to the other author's statement on architectural principles. They discuss that there are three measures: archetypal, cultural and personal. The first one, archetypal, is a group of shapes that all people share. The second includes those shapes that people share within a culture. By personal they mean shapes that are a product of one's own memories. They imply that the three Orders and architectural styles in general are cultural preferences. The notion that the perfection of the proportion of the human body can be the model for the proportion of building elements and the reliance on geometry as the tool for universal proportion are both archetypal claims. On the other hand, the idea of "the order of dreams," and the architect's articulation of what he loves, as Wright puts it, represent the personal measure of architectural principles.

So far, this section has discussed principles related to formal aspects of architecture. In the texts, there are statements about principles of architecture which are concerned with non formal aspects of architecture. In his texts on the history of architectural practice, Boyle points out that Gropius was concerned with a rational basis of design. It should be based on scientific experimentation
and should be independent from subjective factors. Boyle quotes Gropius:

Basic order in design needs first of all a denominator common to all, derived from facts ... today, a new language of vision is slowly replacing individualistic terms like "taste" and "feeling" with the terms of objective validity. Based on biological facts--both physical and psychological--it seeks to represent the impersonal cumulative experience of successive generations (p. 322).

For Gropius, there should be a single approach to design validated by scientific experiments. To perform design, therefore, he demanded integration of diverse skills and cooperation of diverse individuals.

Principles concerning technical aspects of buildings are barely discussed by the texts. Pugin explains the principles of stone construction characteristic of Gothic architecture. Wright points out that materials and methods of construction determine the logic of the plan, which are "the prophetic soul of the building." Building materials affect the scale as well as the expression of lightness and massiveness. On the other hand, Le Corbusier, in his book, envisions mass-produced houses that will respond to contemporary demands. These houses would employ new economical materials to shorten construction time. They should be well built, economical and use standardized components, in a mass production system like car production. He illustrates these houses with several projects of the author who explores many possibilities of reinforced concrete as a new
material which results in thinner walls which do not carry weight; and a new aesthetics of architecture, such as flat roof and horizontal windows.

The Functions of Architecture

This section examines the statements in the texts concerning the tasks which architecture should perform.

Alberti in his treatise emphasizes the physical functions of architecture. He states that architecture should provide:

... safe and pleasant Places, where we may shelter ourselves from the Heat of the Sun, from Cold and Tempest, (though this is no small Benefit) ... besides [architecture should contrived] many other Things, both of a Private and Publick Nature of the highest Use and Convenience to the Life of Man (p. ix).

Ruskin adds another set of dimension to what architecture should do. According to him, there are two qualities in what he calls "goodness" of architecture. The first one is "practical duty." It consists of "acting, so as to defend us from weather or violence". In other words, it is the physical function of architecture which is in agreement with Alberti. The other quality is what the ancient treatises had never disclosed before, which is "talking ... to record facts and express feelings ... or as books of
history, to tell ... history clearly and forcibly" (p. 31). He adds that architecture should "be graceful and pleasing in doing [its duty]." It has been discussed in the previous section that according to Ruskin the function of ornaments is the symbolic expression of God.

Le Corbusier claims that architecture should fulfill personal as well as physical functions. He urges that architecture should be a solution to well stated problems. A house, for example, should be:

a shelter against heat, cold, rain, thieves and the inquisitive. A receptacle for light and sun. A certain number of cells appropriated to cooking, work, and personal life (p. 106).

In another passages he urges that architecture should respond to 'a mass of demands', which include:

need of sun, of warmth, of pure air and clean floor ... [of] intellectual diversion, relaxation for ... [the] body, and the physical culture to recuperate ... after the tension of muscle or brain ... (pp. 257-58).

It seems that the recent texts discussed here are not interested in making statement about what architecture should do. There are discussions on the function of the different elements of architecture and building units in Bloomer and Moore's and in Moore et al.'s books, but there is no discussion of the function of architecture in general. One could make many presumptions as to why recent texts decline to discuss the function of architecture. One of the most important reasons might be that the notion of function
has been associated with Modern movement in architecture and the authors do not agree with the movement. Another reason may be that the function of architecture is a matter of course which needs no explanation.

Upon reading the texts, one may conclude that they exhibit pluralistic claims to architecture. There are many different claims from many different vantage points. Some of the claims are complementary, others are in disagreement. Some claims represent consensual opinions, rules, and norms that constitute a body of architectural knowledge of a society. Others represent personal opinions of what architecture should do.

On the issues of elements, principles, and functions of architecture, it may be concluded that the claims to the principles are, in most cases, interrelated to the statements about the elements, whereas the issue of the function is very often separated from the other two issues.
Chapter III

THE PRODUCERS OF ARCHITECTURE

The discussion of architecture as a cultural product entails the depiction of the role of individual producer as well as that of the professional community in which a producer is a member. This chapter analyzes the description about the producer of architecture according to the texts: what roles do they play in the production and what interactions take place among the members of architectural community. It is realized that in some cases the statement of the products cannot easily be separated from the description of the producer. This chapter is organized into three sections. The first section illuminates the different roles involved in the production of architecture. The second explores the range and variety of knowledge within the discipline of architecture. The last section discusses the interaction of ideas which form the culture of architecture among the members of the architectural community.

The Roles of the Producer of Architecture

The texts that there are recognize different roles in the process of production of architecture, as illustrated in the course of the history of the profession.
The role of builders in the production of architecture is barely depicted by any of the texts. No text tries to define who the builders are. Moore, Allen and Lyndon who discuss American builder's guide books and pattern books of the last centuries give little information about the builders themselves. In the texts examined, the work of these builders can be distinguished from the work of the architects by the absence of their names in the captions appended to the illustrations. This is not the case with that of architects, regardless of the scale of the work. Some works of these builders are exhibited and praised as good pieces of architecture by Moore et al., and also by Bloomer and Moore, but their own roles are ignored. Disneyland appearance in Moore and Allen's book, for example, suggests that it is the work of builders instead of architects, although it is regarded by the authors as "the most important single piece of construction in the West in the past several decades" (p. 116). In their argument about symbolism in contemporary architecture Venturi et al. present examples of many commercial buildings, and yet, there is no record of the men who build these structures.

Vitruvius' treatise which was written in the first century shows the existence of architecture as a profession. But it reveals little more than a list of qualifications. An architect, he writes, "ought to be naturally
gifted and amenable to instruction to make the perfect artist (p. 5). But it was Alberti, who was the first to assert that an architect is someone special.

Doubtless Architecture is a very noble Science, not fit for every head. He ought to be a Man of a Genius, of a great Application, of the best Education, of thorough Experience, and especially of strong Sense and found Judgment, that presumes to declare himself an Architect ... For indeed his Invention must be owing to his Wit, his Knowledge, to Experience, his Choice to Judgment, his Composition to Study, and the completion of his Work to his Perfection in his Art; of all which Qualifications I take the Foundation to be Prudence and mature Deliberation. He should also have an Ambition to produce something admirable, which may be entirely of his own Invention ... (p. 205).

Moore et al. present more modest descriptions of the roles of architects of the last century. They point out that before the existence of architectural schools in the United States, "almost every architect in America had been either a gentlemen amateur like Thomas Jefferson, or a particularly talented craftsman, or a formally trained foreigner" (p. 125). By early in this century, architects were those who were formally trained in a "sophisticated repertoire of the styles of past civilizations" (p. 125).

Boyle explains that since the end of the last century architects had taken on, in addition to the role of designer, other related activities. He shows, as an example, that at the beginning, the three principles of the office
of McKim, Mead, and White had shared all responsibilities in executing design works. Later McKim focused his attention on large planning projects and on client relationships, whereas Mead took responsibility for management and production, and White for detailed design. Another example is the office of D.H. Burnham in Chicago which achieved great success in the last decade of the nineteenth century. Burnham, who lacked formal professional education, promoted the success of his firm by his promotional and managerial skills. He assigned one of his three senior associates to take responsibility for design, production, and supervision, and concentrated himself on client relationships. This last example exhibits how success in architectural enterprise is often reached by those who have more business skill than artistic capability. This fact contradicts the traditional myth commonly held in the early twentieth century of architect as the individual artist-practitioner.

In his text on the history of the profession, Boyle shows Gropius' proposition that the special role of the architect is to be a "co-ordinator." In this role, he or she will "unify the many social, technical, economic and artistic problems" and bring developed social consciences and a mission of service to society (p. 324). The architect will still involve in designing architecture, but more than that, he or she must coordinate, compromise, negotiate and
balance competing demands and needs of other professionals with his or her own personal preferences. According to Gropius, this role is not a new phenomenon, for "the historical mission of the architect has always been to achieve the complete co-ordination of all efforts in building up man's physical surrounding and "in all great creative periods, architecture in its highest embodiment has been the dominating mother of all arts, has been a social art." (p. 324)

There were obvious connections between Gropius's principles and Owings' description of the program in his own office of Skidmore, Owings, and Merrill. He claimed that his office had a prime mission of affecting and transforming the social and physical condition of society. To accomplish the mission of the office, they used what they define as "the master builder system based on the anonymous Gothic builders of the Middle Ages" (p. 325). Boyle, on the other hand, sees no similarity between the practice of Gothic builders and that of the modern construction industry. He suggests that the idea which Owings expressed may be understood as "anonymity, teamwork, and the social motivation of architecture". Otherwise, the statement should be explained by another statement of the office program, in which they pledge "to offer a multi-disciplined service competent to design and build the multiplicity of shelters needed for man's habitat" (p. 326).
The role of architects in contemporary society is explained by Lewis in his book which is addressed especially for young readers who consider going into architecture.

The conventionally defined role of architects in society appears to be well understood. They are both technologists and artists whose design talents yield buildings with beauty, dignity, drama, utility, and, it is hoped, cost-effectiveness. Architects' functional and legal responsibility is to prepare drawings and specifications accurately showing what to construct, to assist clients in getting project designs approved by all concerned parties, and to mediate and provide guidance during the construction of projects... the successful architect must have extensive technical and engineering knowledge, organizational and management ability, sociological and political sensitivity, legal acumen, selling and marketing skills, economic and accounting know-how, social and business connections, and some financial resources, not to mention design talent and a commitment to hard work (p. 150).

Generally speaking, the texts examined expose a wide variety of roles in the production of architecture in the course of history. It is not surprising that the texts focus their discussion on the role of professional architects in designing instead of the other parties involved in construction affair.

The description of the roles embraces the discussion of the architects' image according to the authors and to the society. In his treatise Alberti suggests that architecture is a special profession and architects are special persons, whereas Pugin implies that in the production
of Gothic architecture there is no special role for special persons. Gropius emphasizes the coordinating roles of architects in the spirit of teamwork but not stresses on their special image. Le Corbusier's writing projects his role as an avant-garde architect, an agent of social and cultural changes. While Moore et al. demystify the professional role of architects.

The depiction of the roles of architects in the production of architecture centers on the architect practitioners in the professional institution. Discussion about the builders, therefore, seems irrelevant in this context. Recognition of contemporary architecture without architect does not necessarily mean recognition of the role of the builders who produced them. Also irrelevant is the discussion of other roles of architects outside this institution; for instance, architects' role as visionary artists, like Le Corbusier and Piranesi, whose visionary works appear in some of the texts; and architects as social activists.

The discipline of architecture

This section will investigate the range of knowledge an architect should acquire and the range of knowledge that he actually does acquire as defined in the texts under review. It will also discuss the notion of architectural theory.
In his treatise Vitruvius indicates that there are many branches of knowledge which an architect should command.

The architect should be equipped with knowledge of many branches of study and varied kinds of learning ... This knowledge is the child of practice and theory. Let him be educated, skillful with the pencil, instructed in geometry, know much history, have followed the philosophers with attention, understand music, have some knowledge of medicine, know the opinions of the jurists, and be acquainted with astronomy and the theory of the heavens (pp. 5-6).

His treatise contains the knowledge that he indicates though it should not be taken literally. It seems that what he means by knowledge of medicine is the sanitary aspect of a building, and where one has to follow the philosophers is into building physics. What is implicit in his statement is that knowledge about what the elements of architecture are and knowledge about how they can be arranged them together for particular purposes are not considered a body of knowledge.

Alberti suggests that in some opinions architects should become musicians, lawyers, etc. but to his mind painting and mathematics are two knowledge which are really useful and absolutely necessary.

Painting and Mathematics are what he can no more be without ... it may serve his purposes if he is a thorough Master of those Elements of Painting .... and if he is skilled in so much practical Mathematics, and is such a knowledge of mixed Lines, Angles, and Numbers (p. 206).
In the modern era, the breadth of the scope of an architect is illustrated by Boyle with a quotation from Gropius.

The architect's scope must be broad, for design and planning are of vast complexity. They embrace civilized life in all its major aspects, the destiny of the land, the cities and the countryside, the knowledge of man through biology, sociology and psychology, law, government and economics, art, architecture and engineering. All are interdependent; we cannot consider them separately in compartments (p. 335).

Looking through various statements by the authors of the texts about architecture, one can see that the essential requirement as revealed in their arguments is a knowledge of architecture of the past. This emphasizes the importance of the history of architecture. The history of architecture provides patterns and styles which builders and architects of the nineteenth century choose from for their design, as shown by Moore et al., and by Boyle. For other authors, such as Le Corbusier, Bacon, Bloomer and Moore, the architectural history is a source of legitimization.

Architectural knowledge gained through experience is considered important by several texts. In his book, Rasmussen describes his personal experiences in explaining how to observe architecture to readers who may have no architectural background. Bacon emphasizes the importance of personal experience in movement through space in the design of
cities. Bloomer and Moore suggest the importance of introducing architecture to beginning students "from the standpoint of how buildings are experienced, before worrying about how they are built" (p. ix). They propose what they term "Body image theory" which speculates on human "psycho-physical properties." This theory is developed from the works of environment psychologists--mainly James Gibson, who invented the concepts of 'basic orientating' and 'haptic system,' and from phenomenologists, such as Gaston Bachelard. They also borrow from anthropologists. In another book, Moore, Allen, and Lyndon strike a similar note in presenting a popular theory of designing houses. Unlike these authors who speculate on architectural experience, Gropius, as discussed by Boyle, emphasizes the importance of psychology because of its scientific approaches.

The aforementioned statement of Bloomer and Moore may explain why the introductory course, the subject of this case study, places less emphasis on the technical aspects of architecture. Mainstone's text, which is about building structure, is more concerned with how knowledge generates intuition which plays a considerable role in structural inventions. His explanation of the relationship between structural members of buildings and intuition is similar to the relationship between architectural objects and people's experience about the objects in Bloomer and
Moore's body image theory. They both involve phenomenological experiences. Mainstone writes that "basic intuitions of physical actions within and between structural members stem from our direct awareness of our own muscular actions and reactions (p.56). Unlike what these authors write, Watson discusses one technical aspect of buildings. In his text he implies that designers should take the issue of energy under consideration.

There are two articles about landscape which involve other disciplines than architecture. One of them was written by Jackson who demonstrates how beliefs have shaped man-made landscape. In his text, "The Order of a Landscape" he proposes that the discovery of science can inspire the changing of the cosmology of a society, and, in turn, the changing of that society's physical environment. He asserts that Newtonian law, together with a religious movement which emerged in the New World, indirectly changed the compact, homogeneous, centripetal, hierarchical towns and villages, into an abstract environmental order divided by grid systems and composed of isolated, independent objects. The other article is Curtius's text, "The Ideal Landscape," which comes from the discipline of literature. It seems to suggest that the ancient ideal of landscape can inspire the present day landscape.
Whereas most other texts in the list recommend explicitly the knowledge architects should acquire or suggest by implication qualities that the author architects possess, Lewis' book explain knowledge which is actually taught to students at schools of architecture throughout the United States. Three broad areas commonly offered in every program: design, history, and technology. Design courses are the primary, unifying elements that bring together diverse supporting disciplines in architecture. Included in the design courses are fundamental principles and techniques of architectural representation. History courses are concerned not only with the past but also with the present and the future. Knowledge of technology covers principles and methods of construction and environmental control. Besides the three core areas of architectural curricula, there are usually electives courses that may offer urban planning, landscape architecture, social sciences, art, sociology, psychology, etc.

Summerson's text is the only one among the texts examined in this thesis which discusses explicitly about the development of architectural theories. According to him the writings about architectural theory manifest themselves in one of the followings four forms.

[1] Theory of architecture may be .... purely encyclopaedic, without any explicit philosophical orientation at all.
It may be ... a series of discursive studies of types and elements, in lecture form, within a closed tradition whose validity is taken for granted.

It may be ... [a] book in which a list of interesting words ... (scale, vitality, restraint, refinement, etc.) ... [each word provides] the title for a short essay which gives it a glow of meaning, without ever reaching down to fundamental concepts at all.

... something less extensive and more profound than these—-a statement of related ideas resting on a philosophical conception of the nature of architecture—in short, principia (p. 307).

Upon learning Summerson's categorization of architectural theories, it seems that Vitruvius' treatise, which covers almost any knowledge about or related to architecture, from the education of the architect to some principles of design, from temples buildings to farm houses, from practical knowledge about building materials to astronomy, illustrates the first form of Summerson's category.

None of the readings in the list examined here exemplifies the discursive studies of architectural types and elements as in Summerson's second category. One may say that the educational program of the school, the subject of this case study, is not within the architectural tradition of types and elements.

Moore and Allen's book can exemplify Summerson's third theoretical orientation. Their book starts by discussing
four basic ideas: dimensions, space, shape, and scale. It then reviews several buildings from different times and different places, it also discusses some architectural issues, (e.g., regionality, housing, and public spaces) and some prominent architects (such as, Esherick, Richardson, and Schindler).

The fourth manifestation, as Summerson has pointed out, is what generally thought of as architectural theory. This kind of theoretical writing can be found in an encyclopedic work, or in an introduction to a course of lectures, or in independent polemical essays. Summerson cites as example Book IX of Alberti's Ten Books on Architecture. Architectural principles that have been written over the last five hundreds years, have, according to him, developed "phase by phase" into the theories' "own dialectic." The development of these principles have been independent of the development of architectural styles, and vice-versa. Summerson goes on to describe the history of the evolvement of the architectural principles:

[The development] is an historical process with a life of its own in its own medium of words and that there is no question either of principles being abstracted wholly from practice or of practice being necessarily a reflection of theory. (p. 307)

One may say that many of the texts in this case study can be considered as theoretical writings of this kind;
excel-lent examples are provided by the texts of Ruskin, Pugin, Bragdon, Le Corbusier, Bloomer and Moore, and by Venturi et al.

The development of these principia is discussed further in the section that follows.

THE CULTURE OF ARCHITECTURE

The community of architectural practitioners, scholars, and theoreticians is a framework of a cultural system with particular patterns of interactions among the participants. This section examines such interactions in the form of architectural discourses. Two main themes of the discourses among the texts will be examined here; the first is what Summerson terms the principia, and the other is the boundary of the culture of architecture.

In a simplified, caricatural version, Summerson describes how discourse about architectural principles in the French rational tradition has evolved since the eighteenth century, from Perrault's criticism of Vitruvius until the early twentieth century, when Le Corbusier joined the discourse:

Perrault said antiquity is the thing and look how rational; Lodoli seems to have said rational is the thing, down with antiquity; Laugier said up with primitive antiquity, [the] only source of the
rational; Durand said down with Laugier, rationalization means economics; Pugin said down with antiquity, up with Gothic and look how rational; Viollet-le-Duc said up with Gothic, prototype of the rational. Eventually a voice is heard saying down with all the styles and if it's rationalism you want, up with grain elevators and look, how beautiful! (p. 308).

According to Summerson, at the core of it all is "the axiom that architecture is an affair of simple geometric form--regular solids and their elementary divisions." Besides that, there is also the issue of antiquity and the challenge to its domination by the discourses.

Whereas the source of unity among the writers of the eighteenth and nineteenth centuries was antiquity, something that they tended to exclude as the ultimate authority, Summerson goes on to say that the unity of modern architecture is the architect's programme, "the description of the spatial dimension, spatial relationships and other physical conditions required for the convenient performance of specific functions." He demonstrates how the programme had evolved historically:

First, the rationalist attack on the authority of the antique; then the displacement of the classical antique by the mediaeval; then the introduction into mediaevalist authority of purely social factors (Ruskin); then the evaluation of purely vernacular architecture because of their social realism (Morris); and finally the concentration of interest on the social factors themselves and the conception of architect's programme as the source of unity--the source not precisely of forms but of adumbrations of forms of undeniable validity (p. 309).
Several authors of the texts discussed in this case study participate in the architectural discourse. Summerson includes Pugin and Le Corbusier as two participants. Certain other authors of the texts continue the discourse. It is not by accident that these authors share some similarities: at the time of publication of their books in the seventies, they were Yale faculty members. They aim their criticisms at the same target, which is Modernism. The themes of their discourse are mainly formal.

Venturi et al. attack Modern architects for their focus on space, abandonment of iconology, and shunning symbolism.

During the last 40 years, theorists of Modern architecture (Wright and Le Corbusier sometimes excepted) have focused on space as the essential ingredient that separates architecture from painting, sculpture, and literature ... sculptural or pictorial architecture is unacceptable because Space is sacred.

Modern architect abandoned a tradition of iconology in which painting, sculpture, and graphics were combined with architecture ... [orthodox Modern architects] shunned symbolism of form as an expression or reinforcement of content: meaning was to be communicated ... through the inherent, physiognomic characteristics of form. The creation of architectural form was to be logical process, free from images of past experience, determined solely by program and structure, with an occasional assist ... from intuition (pp. 7-8).

Bloomer and Moore criticize the severely "rational" architecture of what they call the "modern academies" and its abstract quality by "transmitting their message in a
private code meaningless to most of the inhabitants of their buildings" (p. 131).

Moore, Allen, and Lyndon criticize orthodox modern architecture for its singularity of approach and for its rejection of eclecticism. In their book, they write:

... orthodoxies, each usually associated with one great architect's name, ... have given birth to the incorrect notion that there is just one way of approaching any problem at hand, a way deemed correct and readily distinguishable in the zealot's mind from all other ways.

... Another notion of orthodox modern architecture which we are anxious to contradict is that eclecticism is the ultimate evil, and that collecting physical details or wistful images from the past times or distant places, is deplorable. This scorn is nonsense, and the banishment of eclecticism contrary to human nature (pp. 66-67).

In another book, Moore and Allen criticize the Modern movement's obsession with newness and its disruption of the history of architecture.

The teachings of the Modern movement represented an intentional attempt to sever what had gone before, and to create a new style--independent of history, based on logic, reflective of the technological civilization of the modern age and capable of achieving honesty of thought and feeling. The effort was not intended to accommodate the needs and visions of the present in some comfortable continuum of history ... (p. 103).

High-style twentieth-century architectural theory ... has made a considerable point of trying to find essential and pure forms to express a building's function, and to separate them out from superficial and distinctive details. (p. 133).
The different conceptions of these authors towards Modern architecture lead to different propositions mainly concerned with formal aspects of architecture. Venturi et al. propose reconsideration of symbolism and ornamentation in architecture by learning from the commonplace. Bloomer and Moore postulate an architecture based on meaningful human experiences. Moore, Allen and Lyndon suggest an architecture inspired by human desire, whereas in another book, Moore and Allen recommend a pluralistic architecture as a counterproposal for the orthodox modernists.

Another theme of discourse among the texts is the issue of elitism versus egalitarianism that defines the boundary of the culture of architecture. The subjects of this discourse are the attitudes of architects towards non-architects and the architecture of the non-architects.

Alberti renders this issue in his advice that architects should be selective in choosing the clients to whom they propose to give architectural service.

... you should not immediately run and offer your Service to every man that gives out he is going to build .... concern yourself for none but Persons of the highest Rank and Quality, and those too such as are truly Lovers of these Art ... (p. 207).

Le Corbusier delineates his critical, elitist attitude towards the backdrop of contemporary architectural culture
shared by architects and clients.

Architects work in "style" or discuss question of structure in and out of season; their clients, the public, still think in terms of conventional appearance, and reason on the foundations of an insufficient education.

... We are well aware that a great part of the present evil state of architecture is due to the client to the man who gives the order, who makes his choices and alters it and who pays ... (pp. 21-22).

Bragdon suggests a populist and egalitarian attitude towards architecture and a denial of the predominance of institutional authority in the art of architecture.

You who have dreamed are forced to follow your dream ...
Do not conceive beauty in any narrow way, as limited to mere aesthetics. Seek out the things that thrill you and be sure that there is beauty in them, for the test of beauty is the measure of joy it bring. ... not alone in art galleries and concert halls, but in a face in a crowd ... (p. 366).

Rasmussen also implies an egalitarian attitude towards architecture.

Architecture is produced by ordinary people, for ordinary people; therefore it should be easily comprehensible to all. It is based on a number of human instincts, on discoveries and experiences common to all of us ... (pp. 14-15).

Yet, within the same book, he presents architecture of ordinary people as well as the monumental works of ancient masters as well as of Modern masters.
Moore, Allen, and Lyndon imply also that their book, which is aimed at non-architect readers, adopts an egalitarian attitude towards architecture.

The main premise of this book is that anyone who cares enough can create a house of great worth—no anointment is required. If you care enough you just do it ... You have no need to be told whether your taste is good or not ....

... You become expert by caring and working, not by the receipt of any gift from on high... We discuss things we know about in order that you may augment your expertise and gain confidence in your own observations and experience as a suitable basis for creating a house that is your own (pp. vii–viii).

Venturi et al. recommend that architects reconsider the commonplace as a legitimate architectural sources; however, they do not mean to suggest a populist architectural position.

... learning from popular culture does not remove the architects from his or her status in high culture. But it may alter high culture to make it more sympathetic to current needs and issues (p. 161).

Upon reading the statements of the texts, one can say that there is a tendency for the more recent texts to become more open towards the aspiration of the laymen.
Chapter IV

CONCLUSION

This last chapter includes four issues discussed in four sections. First section presents some comments on the reading list for the Introduction to Architecture course given at Yale College, Yale University. Second section delineates a conceptual map of architectural knowledge as a representation of the contents of the texts. Third one discusses the issues of using architectural textbooks in teaching introductory courses. The last section presents some recommendations for further study on architectural texts.

Comments on the Reading List

This section comments on what could be the primary themes of the course suggested by reading list.

Upon reading the most recent texts and identifying the authors of these books, one could deduce the primary orientation of the introductory course which uses this reading list. The fact that the list includes four books written by previous faculty of Yale University—one of the books was written especially for this course—more than suggests that these books represent the main theme of the course. They
are characterized by concern towards people. Their emphasis on the experience of the inhabitants of architecture are similar to those of other books within the same list, e.g., the works of Bacon and Rasmussen. If this is really the case, then one can conclude that other texts of some prominent figures from different periods are included not because of their relevance to present day architecture, but because of their historic significance as classic texts.

The embodiment of some conflicting and complementary ideas in the readings list, on the other hand, suggests that the list is intended to introduce the beginning students to a more pluralistic approach to architecture. It is contrary to the common belief that the first year students should be given a single concept before they are confronted with contradictory concepts. Despite the plurality in the readings, important historical periods and influential figures are missing.

The list is concerned more with theoretical concepts dealing with explanations of what it is and what should be, rather than operational concepts to explain how to do. Few texts discuss technical knowledge. A critical examination of the texts suggests that certain major theoretical concepts are left out or are insufficiently covered by the readings. These missing concepts can be identified through
the discussion of particular texts which utilize them merely as contrasting background. For example, Renaissance architecture and its derivative, prevalent in the nineteenth century are brought up by Pugin and Ruskin as something to contrast to their own Gothic architecture. Another missing major concept is Modern architecture, as in the work of Mies van der Rohe and of those who stress abstract space, and also theoretical works of Giedeon, to which Moore and Venturi aim their criticisms. In fact, the list does not attempt to include theoretical works which bridge the gap between theoretical and practical knowledge, such as the work of Choisy, which is based on construction. The list also includes no architectural concept which is concerned with process of design, such as the commonly acclaimed works of Christopher Alexander and others on design methods.

The missing concepts mentioned above are the works from inner circle of architecture. Although the list includes the aspirations of ordinary people, it does not include knowledge from other disciplines, such as sociology, psychology, and anthropology, exemplified by what are now considered classical works of anthropologists like Amos Rapoport and Edward T. Hall, and sociologist Herbert Gans, to mention a few.
Despite the lack of the aforementioned concepts, the list seems to be more concerned with providing the students with a repertory of architectural thoughts than with a repertory of masterpieces of architectural works. Buildings, which are necessarily not those of the master architects, are presented by the texts to illustrate concepts rather than state of the art architectural works. This fact can be related to the populist approach of the books by previous Yale faculty and their criticism of the predominance of prevailing Modern architecture. One could conclude that the educational purpose of this reading list does not intend to produce followers of any one master’s teachings to which other members of the architectural community are still loyal.

Conceptual Map of Architectural Knowledge

This section presents a conceptual map of architecture to conclude the examination of the texts. The map represents the contents of architectural knowledge and the relationships among the concepts presented in the texts. The contents of these texts consist primarily of architectural principles, properties of architectural products, and attitudes regarding architecture and architects. In the map, these properties, principles, and attitudes towards architecture are clustered around the respective authors with similar architectural positions. Others are clustered
around an architectural style, for example Renaissance architecture prevailing in the nineteenth century, and around a figure, i.e., Walter Gropius, which are discussed in some of the texts. Such clusters constitute the nodes of the maps. The map shows the relationships among the contents of some clusters, as well as between the cluster with knowledge from other disciplines, shown at the outer edge of the map, which contribute to the development of architectural knowledge. For simplification, the map shows only positive relationships among the contents of knowledge—although it is realized that such conflicts illuminate the development of architectural knowledge.

This conceptual map of architectural knowledge from the reading list of an introductory course, is intended to serve as a kind of key map upon which a bigger, more comprehensive map could be constructed by incorporating other readings from other courses of the same school. Such a map may illustrate the teaching philosophy of the architecture school.
Conceptual Map of Architectural Knowledge
According to the Contents of the Texts

Legend:
**BOLD CAPITAL** letters indicate name of authors, architects, or styles.
[ ] signifies what is discussed by outsiders
— significant connection, .... less apparent connection
—• boundary between architecture and other disciplines
On Introductory Architectural Textbooks

Upon investigating the texts used in teaching architecture to beginning students raises the question of using introductory textbooks for introductory architectural courses.

The kind of introductory textbook depends very much on the kind of educational programs which use the textbooks. In a liberal arts program which emphasizes cultural rather than technical, such as in the Yale program, an introductory textbook might be useful in introducing the evolution of architectural ideas. However, there might be many arguments against any textbook which if it is intended to replace the classic architectural texts. Such an introductory textbook is too limited and does not the convey their aura of the classic works, and diminish the spirit of the time.

For some schools which have a certain tradition of architectural principles, a basic textbook could be written and very useful for teaching. For example, a school which belong to the tradition of building types and elements, described by Summerson in his discussion about architectural theories, could use a textbook on this specific subject such as Julien Guadet's Elements et Theories de
L'Architecture, or the more recent work by Rob Krier, *Elements of Architecture*.

For schools which stress the educational principles of learning-by-doing and student's self discovery, no introductory textbook is needed. Bauhaus which originated modern school with this approach did not produce any textbook. Later, after the school closed, some of its instructors' works, not intended for textbooks, were published as textbooks. An extreme argument might insist that textbooks should be omitted from such a school for fear that they could contaminate the students' fresh ideas.

Mainstream schools, such as those described by Lewis, book, might use one or more textbooks for every core area of teaching, i.e., design, history, and technology, and for one or more elective course. Few comprehensive architectural textbooks were published in the seventies, yet there is hardly any evidence that these textbooks are used in schools other than the author's institution. There are fewer architectural design textbooks for teaching design course than textbooks for teaching history and architectural technology. These few design textbooks are generally concerned with a particular aspect of architectural design, such as architectural representation and design process. Unpopularity of any architectural design textbooks might be
related to the absence of any predominant author-architect, architectural tradition, and institutions as existed before in previous centuries. The scarcity of architectural design textbooks might also be due to the nature of design knowledge which is not easily transferred through books.

**Recommendations**

It is recommended that this examination of architectural texts used for teaching and learning architecture be followed up by investigating how the texts are really used. Such study will hopefully illuminate the role of texts in influencing a student’s perspective of architecture. This study can be executed by comparing a conceptual map of architectural knowledge according to the contents of the texts and a conceptual map of architecture that the student has in his or her mind after using the texts.

Further study on purely textual knowledge of architecture could be executed by making comparison of reading lists, including the lists of recommended readings, of similar courses from different schools of architecture. Another possibility of textual study is to make a comparison among the contents of books which are written specifically as introductory architectural textbooks.
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