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**AN ANALYTICAL RE-ASSESSMENT OF INTRODUCTORY DESIGN IN
ARCHITECTURAL EDUCATION**

A THESIS

**SUBMITTED TO THE INSTITUTE OF
ECONOMICS AND SOCIAL SCIENCES OF
BİLKENT UNIVERSITY**

**IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY IN
ART, DESIGN AND ARCHITECTURE**

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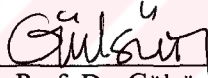
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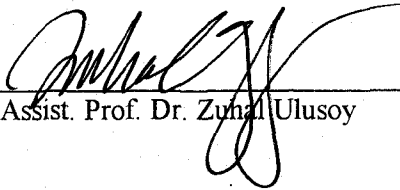
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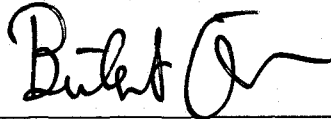
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ABSTRACT

An Analytical Re-Assessment of Introductory Design in Architectural Education

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February 1998

Introductory design, as the initial step in architectural education, is of crucial importance. In this course students are supposed to acquire values, knowledges and skills which create a basis for further levels of their professional education. A holistic, human-centered approach to introductory design education aims at providing students with an insight into the context and complexities of architectural design, and their future responsibilities in the very beginning of architectural education. This thesis creates a framework for the assessment of such an introductory design education. A study of different dimensions of this education and a critical analysis of current approaches, creates a basis for proposing a framework for a holistic, human-centered approach. In this critical analysis, the objectives, objects, methods and management of introductory design education are considered in relation to its ideological, sociological, epistemological and pedagogical dimensions.

Keywords: Introductory Design, Architectural Education, Basic Design.

ÖZET

Mimarlık Eğitiminde Tasarıma Girişin Çözümsel Değerlendirmesi

Guita Farivarsadri (Aviral)

Sanat, Tasarım ve Mimarlık Doktora Programı

Danışman: Prof. Dr. Mustafa Pultar

Şubat 1998

Mimarlık eğitimine ilk adım olarak mimarlık tasarımına giriş dersi ayrı bir önem taşımaktadır. Bu derste öğrencilerin, meslek eğitiminin daha ileri aşamalarına temel olacak değerleri, bilgileri ve becerileri edinmeleri bekleniyor. Tasarıma giriş eğitiminde bütüncül, insan-merkezli bir yaklaşım öğrencilerin, mimarlık eğitiminin başlangıcında, mimarlık tasarımın kapsamı ve karmaşıklığı, ve gelecekteki sorumlulukları hakkında bir görüş edinmelerini sağlamaya amaçlıyor. Bu tez, böyle bir tasarıma giriş eğitimi değerlendirmek için kullanılabilecek bir çerçeve geliştirmektedir. Bu eğitimin farklı yönlerini kapsayan bir araştırma, ve var olan yaklaşımların eleştirel çözümlemesi, bütüncül ve insan-merkezli bir yaklaşım için teklif edilecek çerçevenin temeli olacaktır. Bu eleştirel çözümlemede, tasarıma girişin, amaçları, nesneleri, metodları ve idaresi ideolojik, sosyolojik, epistemolojik ve pedagojik yönleri açısından irdelenmektedir.

Anahtar Kelimeler: Tasarıma Giriş, Mimarlık Eğitimi, Temel Tasarım.

ACKNOWLEDGEMENT

I would like to forward many of my thanks to my supervisor Prof. Dr. Mustafa Pultar for his kind collaboration in preparing this thesis.

My special thanks to all my friends without whom this work would never be possible.

I would like to appreciate the encouragement and advice given by Mr. Türel Saranlı in selecting this subject.

The greatest of my gratitude and love to my parents.

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1. INTRODUCTION

1.1. The Problem of Introducing Design

Introductory design as the first step in architectural education has an important place in this education. There are many debates on how architectural design education should begin. Furthermore, many diverse methods of introductory design education coexist together. No other level of architectural education is discussed so much. Yet, in the basis of many of the suggested methods there exist some assumptions about the nature of architectural education and what is fundamental in architecture. To be able to formulate an appropriate introductory design education, these assumptions should be discussed objectively and different dimensions of this education should be considered carefully.

The special role of the first year design studio in architectural education is due to several reasons. First, it is the initial contact of students with their future careers. As Konyk (1994, 58) also mentions, it is an in-between condition: a dramatic departure in thought and approaches for students. In this studio students develop a set of values and attitudes which will last during their educational practice and even in their whole professional life. Moreover, the subjects handled in this studio are expected to construct a basis for the education in upper classes. This means that students are supposed to learn in this year what is assumed to be fundamental in architectural design. In this respect the definition of what is fundamental in architectural design and which subjects should be dealt with in the first year, are the subjects of many debates about first year design education. Another

major set of discussions about introductory design education concerns the methods that should be used. One aspect that makes the organization of first year design studio even more special and more difficult is the characteristics of beginning students. The beginning students may not have sufficient information about the context of architecture and the future roles they are going to undertake, may have none of the skills necessary to design and to present it, and may have no information about how they should approach design. Besides, secondary education, in no way, prepares students for a field such as architecture in which independent, creative and visually sensitive people are needed. Denel (1979) has stated that:

there is almost no room for the quick minded visually sensitive young man in the system (secondary education). The system denies the independent, courageous, original, sensitive, temperamental, ego-centric mind a chance to survive. ...Yet it should be obvious that the future of the profession depends immensely upon the contributions that such men can make (4).

It can easily be said that in the years that have passed since 1979 the situation has become no better than what Denel has described. On the other hand, our world is going with rapid steps towards globalization in terms of accumulation and distribution of knowledge; so do architectural profession and its education. Accessing sources of information in different fields, following the latest scientific and technological developments, and using the latest materials and technologies are easier now than ever. As well, people working in different fields related to architecture are no longer bounded by the physical borders of their own society. Architectural education should prepare students as multidimensional, global persons ready for accepting their future roles in such a society. From this point of view, the first year design education, as the foundation year, has a responsibility in not only helping students in learning some basic skills and developing their own method of

designing but also in helping them in developing their personality as independent, sensitive, critical persons with their own set of values. In introductory design education setting the objectives carefully is necessary before deciding about the teaching method. These objectives should be set keeping in mind the objectives of the whole of university and architectural education.

In light of argument above, clear definitions of university education and of the differences between skill-oriented “training” and “education” for the profession should be attempted. The objectives of any course within a university education should fulfill the requirements of general education and the college education and then the specific objectives of the related discipline. Alfred North Whitehead (qtd. in Wall and Daniel 1993) defines education as follows:

The guidance of the individual towards a comprehension of the art of life: and by the art of life I mean the complete achievement of the varied activity expressing the potentialities of that living creature in the face of its actual environment (97).

In the same context, Taylor (qtd. in Bayındır 1994) defines education as “a process of showing a desired change in the individual’s behavior by means of his own way of living”

(1). Bayındır (1994) states that

The aim in education is to yield the individual useful knowledge and let him gain the ability to make use of this knowledge in the best way for his future life. Learning last over the life time. Each new information is taken into memory as a useful value. The process of learning is dependent on the previous knowledge and also prepare for the next (5).

Bouwsama gives a more detailed description of the historical purposes of education. These are as follows:

1) preparation for achievement, 2) formation of the practical, intellectual person, 3) civilizing and socializing, 4) personal self-cultivation, 5) bringing individuals into harmony with nature, 6) shaping the human personality in accordance with its predetermined ends, and 7) preparation for research (qtd. in Bunch 1993, 51).

Bunch states that these purposes are still valid today and have been used to formulate the National Architectural Accrediting Board and The National Council of Architectural Registration Boards (NAAB/NCARB) educational nexus. From these general definitions it is possible to say that the purpose of education goes much further than the mechanical transfer of the knowledge and aims to implement change in students' patterns of behavior (Bunch 1993).

On the other hand, as Teymur (1981) has also mentioned, the education for professions is seen, in broad terms, as the activity of training future members of particular groups which are characterized by their 'actions'. So this kind of education is seen as where people acquire certain kinds of skills and skill-related abilities. Although this is one of the aims of the education of professions in general and architecture in particular, it is not the only one. The objectives of university education and any discipline within it goes much further than this. Lasada and Hines (1993), in setting the objectives of their first year studio, explain this duality of architectural education quite clearly:

While we recognize our responsibility to the practice and the profession of architecture, we felt that the university's primary mission was to provide experiences addressing the whole person. We felt that only someone confident in the knowledge of themselves as a human being and in their capacity to act, is qualified to make places for other beings (312).

Thus, it is important to define the objectives of architectural education, and any related course, including the introductory design course, not as mere training people for serving a profession, but as a first step in a life-long learning process with a much broader perspective. To this end Dressel (qtd. in Bunch 1993) summarizes six important competencies that a good college education should provide. These are as follows:

1. The student should know how to acquire knowledge and how to use it. ... 2. The student should have a high level of mastery of the skills of communication. ... 3. The student should be aware of his own values and value commitments and should be aware that other individuals and cultures hold different values that should be understood and to some extent accepted for purpose of interaction. ... 4. Students should be able to cooperate with others in formulating solutions to problems and acting on them. ... 5. The student should have a sense of responsibility for contemporary events, problems and issues. ... 6. The student should view the total college experience as coherent and unified by development of broad competencies already indicated above and by realization that these competencies are relevant to their development in a democratic society (56).

Thus, the aim of university education is to address the whole person, and to help creating positive changes in patterns of behavior of students in different dimensions. These objectives become even more important in architectural education when one thinks about the nature of architectural design and the responsibility of the designer towards individual people, society and environment. An architectural student should not only learn the skills necessary to do his/her career but also should develop awareness about many diverse subjects related to environmental design. Introductory design education as the first step in this education has even a bigger importance. The observations of Harman, stated in a lecture given in the early 1980's shows the importance of the first year education clearly: he declared that new students, in the first five weeks of their education learn values and

attitudes that last them through the rest of their undergraduate careers (cited in McGinty 1993, 4). Thus, it is important to set the objectives of introductory design education very clearly, considering different dimensions of this education. Only then it is possible to obtain satisfactory results.

Benjamin Bloom (cited in Sprinthall and Sprinthall 1979, and in Wallschlaeger and Busic-Snyder 1992) has developed a taxonomy of educational objectives. According to this taxonomy, instructional objectives can be set in three learning domains called the 'Cognitive', 'Affective', and 'Psychomotor' domains. As will be discussed in the following chapters in more detail, the cognitive domain includes objectives in making up understanding and concept formation, the affective domain includes those objectives that deal with creating some modes of behavior in the individual, and psychomotor domain includes objectives concerning motor skill performance. So the problem of deciding about objectives of introductory design can be summarized as to which concepts and knowledge should be taught, which set of behaviors, attitudes and values should be gained by students, and which skills should be improved.

Once having set the objectives of this education, the proper method to achieve them can then be determined. Currently, different approaches to introductory design education exist. In a review of the proceedings of two main conferences on beginning design education (Beginnings in Architectural Education, Prague, 1993, and the 10th Annual National Conference on Teaching the Beginning Design Student, Tulane, 1993) and a collection of beginning design projects (Cappleman and Jordan 1993), it can easily be noticed that there is no consensus about the way architectural education should begin. Lökçe (1997) also has stressed the same point at the Prague conference. She states that it

is clear that today we are in a process of restructuring our knowledge, and in this restructuring, literature, science, and psychology are of vital importance. Moreover, she has noticed that the methodological approaches change with every educator. This variety in the way this course is organized can be related to three main factors: the educational policy of the institution and the organization of curriculum; the interests, world view and beliefs of the instructors, and the nature of students. Thus, in different situations, different methods of beginning design education may be used. However, to be able to create a basis for the whole architectural education and to prevent wrong preconceptions about the role and responsibilities of architects, it is suggested in this thesis that a holistic, inclusivist introductory design education is necessary which aims at bringing up students as persons aware of different dimensions of architectural design and their social responsibilities.

1.2. The Aim and Scope of the Study

A holistic introductory design education aims at giving an overall insight to students on what architecture is all about as early as possible in the beginning year of architectural education. The approach to introductory design education, which is still very influential in Turkey (Bayındır 1994), emphasizes the visual aspects of architectural design and aims at teaching the fundamentals of visual organization, shared by all fields working in the visual domain including architecture. It has various merits but can be enhanced by giving students an insight about the complexity of architectural design and factors which influence decisions about forms to the students. The basis of this statement is the belief that the basics of architectural design are not the same with those of other disciplines working in the visual field, such as painting and sculpture, since their nature is quite different. Architectural design is a social activity, and there are many extrinsic factors which affect

the decisions of the designer, rather than the formal relationships and his/her wishes. The concerns of architecture go much further than the mere organization of shapes and forms. The main difference between architecture and the above mentioned fields originates from the existence of human factor in architecture. As Zevi (1957) states:

... the specific property of architecture - the feature distinguishing it from all other forms of art- consists in its working with a three-dimensional vocabulary which includes man. Painting functions in two dimensions, even if it can suggest three or four. Sculpture works in three dimensions, but man remains apart, looking on from the outside. Architecture, however, is like a great hollowed-out sculpture which man enters and apprehends by moving within it (22).

Architects use basic visual elements and arrange them according to complex formulae. In this respect they have a common conceptual base with those working in other fields of visual organization. However, this base would mean little if it did not serve a significant human purpose, for the human who exists in a social sphere. Thus, a holistic and inclusivist introductory design education would aim at underlining the human factor in space design and to emphasize the social role of architectural design, hence, would be human-centered.

Furthermore, to be able to decide on an appropriate approach to introductory design education, an awareness of the different dimensions of the subject is necessary. Yet, in a review of available literature on the subject, the lack of studies which cover all dimensions of introductory design education becomes apparent. Thus the aim of this thesis is to analyze different dimensions of introductory architectural design education and to propose a framework for the assessment of a human-centered holistic approach to the subject. Introductory design education can be studied from different points of view. It can

be investigated in relation to its components: the aim in formulating the course, the content of it, the methods that are used in its instruction and the management of these. It is also possible to study the subject in relation to its different dimensions. Any method of introductory design education is formulated according to an ideological view. Thus the ideological dimension of the subject and the way the ideological view affects the organization of this course can be one subject of research. Furthermore, introductory design education can be studied in relation to its sociological dimension because first, it is about education in a profession which has a strong social dimension and second because the social dimension of studio teaching is an important issue in this education. Moreover, any subject related to educational practice has also an epistemological dimension as the way knowledge is produced and used constitutes an important place in discussions about these practices. Introductory design education can also be studied from this point of view. Finally, introductory design education can be investigated in respect to its pedagogical dimension, concerning the way the process of learning and teaching takes place in this education. This dimension of introductory design education is of crucial importance due to the special characteristics of students of first year and the large number of possibilities in formulating this education. Thus, in this thesis, the subject of introductory design education is studied taking into consideration its objectives (why), objects (what), methods (how) and management (by who and for whom), with respect to its ideological, sociological, epistemological and pedagogical dimensions, in reference to a framework suggested by Teymur (1993, 1995, 1997b) in discussing the matters related to educational practice.

A critical review of the current introductory design education approaches, particularly the approach which is based on beginning architectural design education with abstract formal

organizational aspects, rooted in the teachings of the Bauhaus school, will form the basis for proposing a framework and a set of criteria for the assessment of a holistic approach to this education. The intention behind choosing the Bauhaus-based approach is not only that it is still very influential as a system of beginning design education but also because many of the systems suggested later have been developed as a result of evolution of that system or its criticism.

In this study, although the main criteria for a human-centered holistic introductory architectural design education will be put forward for consideration, suggestion of a single method is outside the scope of this study since it is believed that not a single method of introductory design education will fit all situations, and the relevant method should be formulated for any particular case accordingly.

1.3. The Method of the Study

The frame suggested by Teymur (1993, 1995, 1997b) for studying architectural education and the related matters is utilized as a foundation in this thesis in order to investigate and evaluate the current approaches to the introductory design education, and to develop a proposal as to why and how this course should be organized to obtain certain goals. To be able to suggest a framework for introductory design education, assumptions about architectural education and its beginning should be defined and discussed so that a more systematic way of teaching the subject can be developed. In general, if any subject is going to be studied systematically, it is essential to explain the problem and the dimensions to be studied clearly. Teymur (1995) stresses the importance of a systematic approach to problems related to architectural education as follows:

The pre-condition for discussions carried on the architectural education to be useful (and to be sufficient) is that these discussions should be systematic, and the definitions used and the evaluation criteria should be explicit. In a period that architectural education has been institutionalized, spread, and to a degree internationalized, this condition, is also a necessity for our profession's seriousness and importance (Teymur 1995, 207. My translation).

In order to develop a systematic approach to the subject, several dimensions should be considered on; this is where the frame suggested by Teymur can be used. According to his approach a twofold theoretical framework is proposed to study subjects related to architectural education:

1. An analytical framework according to which architectural education can be seen in terms of its: i) Objectives, ii) Objects, iii) Methodology, and iv) Management.
2. A disciplinary framework, according to which architectural education can be defined as the objects of : i) Sociology, ii) Ideology, iii) Epistemology, and iv) Pedagogy.

Teymur (1993) expands these basic dimensions as follows:

Objectives of architectural education refers to the questions of why and with which purpose and aims do these practices operate.

Objects of architectural education refers to the question of what is studied and taught.

Methodology (and the medium) of architectural education refers to the question of how the objects are studied, taught, researched and in what mediums they express themselves.

Management of architectural education refers to the question of who administrates the research or teaching activities, hence who controls the courses, framework decisions and knowledge?(9)

Regarding the disciplinary framework, he explains:

Sociology of architectural education refers to social organization and the constitution of these practices.

Ideology of architectural education refers to the way these practices see and present themselves to themselves.

Epistemology of architectural education refers to the process and the products of knowledge production in and about the practices.

Pedagogy refers to the process by which they are taught and learned (8).

These two dimensions of the framework might be used separately, as well as the rows and columns of a matrix in which objectives, objects, methods and management of architectural education, or any related subject can be analyzed one by one as the subject of the sociology, ideology, epistemology or pedagogy. Figure 1.1 shows this matrix.

	SOCIOLOGY	IDEOLOGY	EPISTEMOLOG	PEDAGOGY
OBJECTIVES				
OBJECTS				
METHODS				
MANAGEMENT				

Figure 1.1. The matrix suggested by Teymur as a theoretical framework

In this thesis, a critical and comparative analysis conducted through a literature-survey forms a basis for proposing a framework for the assessment of a holistic approach to introductory design education. The framework suggested by Teymur is utilized as a base

to investigate different dimensions of introductory design education but to be able to have a more systematic approach, each domain stated in the disciplinary framework is separated and aspects related to the objectives, objects, methods and management of the introductory design education in that domain is analyzed.

1.4. The Structure of the Thesis

In the second chapter of the thesis, a brief history of introductory architectural education is given in order to clarify the roots of current approaches and methods.

The third chapter discusses different aspects related to the ideological dimension of introductory design education. In that chapter, the ideological bases of different approaches to introductory design education are studied and the role of this education in the creation of a set of values and images about the role of architect and architecture in the society in the students' minds is discussed.

In the fourth chapter on the sociological dimension of introductory design education, sociological objectives of this education in socializing students in a special culture, and in recognition of the social role of the architect are examined. The sociological aspects of architectural design as concerns of introductory design education, different methods that can be used to increase the notion of team work, student-instructor and student-student interactions as means of education, and the management of social relationships in this course are also investigated.

Chapter five considers the epistemological dimension of introductory design education.

The relation of introductory design education to theoretical knowledge and objectives in organization of the course from this point of view are studied. Types and fields of knowledge used in this education are topics which are discussed in relation to epistemological objects of this education. Different approaches to the production of knowledge in design process and their implications on introductory design education are other subjects dealt with in that chapter.

The considerations of the next chapter centered around the pedagogical dimension of introductory design education. Ideas of people working in the field of education create a basis for the discussion on the pedagogical objectives of this education. This subject is divided to two parts considering the course content and its instruction. In relation to pedagogical objects of introductory design education, different subjects that are handled in this education, different kinds of problems given and their formulation are analyzed. Methods of instruction in relation to different approaches to design process, studio critiques as the main way of instruction in studio, jury as a method of assessment, pedagogical concerns in the relationship of introductory design education and other courses in the curriculum and physical condition necessary to have an efficient introductory design education are also discussed in that chapter.

The concluding chapter summarizes the main points of analytical research, and the main lines of the framework for formulating a holistic, human-centered introductory design education.

2. HISTORY OF INTRODUCTORY DESIGN EDUCATION

At the root of all systems of introductory design education which are now used in the world can be found the ideas, theories and systems developed in the past about the subject. New systems are either reactions to or evolutions of previous systems. In any case, there is a body of cumulative experience and knowledge behind the proposed methods. Thus, to be able to fully understand the new approaches to introductory design education a review of the history of the subject is necessary. As a full review of the subject is beyond the concern of this thesis, emphasis will be placed on those main schools of architecture that have had a deep influence on the development of systems of architectural education in general and on introductory design education in particular. These schools are i) the Beaux-Arts school which was established in France in the 19th century and whose system of education continued to affect many schools of architecture in the world until mid-twentieth century, ii) the Bauhaus school which developed a new system of beginning education for designers and architects which still is influentially effective in many of the schools of architecture all around the world, and iii) the Hochschule für Gestaltung, Ulm, which tried to overcome the problems faced by the system of education in the Bauhaus and tried to create a more scientific basis for beginning design education with more emphasis on social responsibilities.

A brief history of architectural education in Turkey will be added to understand the way this education has been developed in this country and to trace the effects of previously mentioned systems of education on organization of architectural education in the country.

2.1. History of Introductory Design Education in the Western World

Until the 16th century, the education of architects in the west was effected in independent workshops within a guild system, and has based on a master-apprentice relationship. The person who wanted to become an architect used to go through a long and thorough training in the studio of an acknowledged master, where he was taught to use a formal language and the practical methods serving its realization (Louw 1995). The Art Academies established in 16th century in Italy were the first schools which tended to educate architects. The French perfected this system from 17th century onwards. In 1671, the Academie Royale d'Architecture was established by Louis XIV's great minister, Colbert. Blondel (qtd. in Egbert 1980) explains the aim and the organization of this school as follows:

In this academy, His Majesty has wished that the most exact and correct rules of architecture be publicly taught two days each week, so that there can be formed a seminary, so to speak, of young architects. And to give them more courage and passion for this art (23).

Blondel also speaks about the wish of the king about teaching other sciences (in addition to architecture), such as geometry, arithmetic, mechanics, hydraulics, gnomonics, the architecture of fortifications, perspective, stereotomy, and various other kinds of mathematics. As Egbert (1980) declares, the basic work of the students in the Academy was to consist only of lectures and the greatest part of student's training, including training in design, was to be achieved while working under an architect as a kind of apprentice outside the school. There were two sets of lectures offered in the Academy, an elementary six month course for amateurs and beginners, and a two year course in theory for serious

artists. The theory course consisted of three main parts, the first part dealing with decoration, the second part with the layout (distribution) of building in relation to facades and the third with construction.

2.1.1. The Beaux-Arts School

Later in 1819 the Royal Academy was rearranged and continued to work under the name of Ecole des Beaux-Arts (hereafter referred to as the Beaux-Arts). Students were admitted to this school after training in an atelier of a master and passing the entrance exam which tested mathematics, descriptive geometry, history, drawing, and most importantly, architectural design (Cappleman and Jordan 1993). After a reform of the Beaux-Arts in 1863 ateliers with patrons appointed by the government were also established within the Ecole itself while external ateliers continued to exist. Besides these ateliers mathematics, descriptive geometry, perspective, building science, geology, physics, chemistry and history were dealt with in the lectures as the theoretical part of the education (Balamir 1985). There were monthly competitions organized in the Beaux-Arts and every pupil in the first and the second class was required to enter at least two of these competitions every academic year. The subject of these competitions varied according to class. For the second class (the lower level), the subjects were simpler: primary schools, small town halls and libraries, or provincial theaters. First class (upper level) subjects were more complex and related to larger towns and provincial capitals (Jacques 1982). To go to an upper class, one had to take a certain limit of points from the courses and the competitions. These competitions were important events in the life of the Beaux-Arts. The most important competition in the Beaux-Arts was the Grand Prix. The subjects of this competition were generally related to the capital city or some national enterprise, consequently the submitted

projects were bigger in size and with more details. Egbert (1980) mentions that this system of competitions and atelier working had many advantages, the big size of the problems brought about the system of negres, the beginner students helped those preparing for the competitions and learned a great deal by working under talented advanced students, the whole system was completely dependent upon high atelier morale. Moreover, the large size of the required drawings made competitors gain valuable experience in producing designs under pressure, as architects often have to do.

The Beaux-Arts system emphasized the study of historical architecture as a pattern for future architecture, and dealt with preserving and enhancing the authority of historically proven forms. Study of historical examples was used to refine what was considered to be the 'rules' of design that underlie classical architecture. Such notions as symmetry, axiality, and proportion were accepted as the principles of beauty. Egbert (1980) states that these principles of beauty in design were to be based on good taste, "which was regarded as good everywhere and for all time, and thus more important than any particularities, whether utilitarian requirements, materials, time and place, or the idiosyncratic genius of architect" (99).

The system of education developed in the Beaux-Arts became dominant in architectural education throughout Europe and the United States during the course of the 19th century (Louw 1995). This dominance began to decline in the 1920's and 1930's. In the last years of the 19th century and at the beginning of the 20th century, the Beaux-Arts tradition was criticized for facades which were decorated with the motives taken from historical buildings, two dimensional and symmetric compositions, elitist and aristocratic approach and its "paper architecture" which had no respect for function and economy (Balamir

1985), but the ideas ultimately stemming from this school continue to play an important role in architectural education (Egbert 1980).

Egbert (1980) states that since the 17th century architecture has been approached from four different points of view. "That of the academic architect, the craftsman-builder, the civil engineer and other technological experts, and ... the social scientist" (3). According to these different views, different kinds of training for architect have developed. Egbert goes on to state that the Beaux-Arts constitutes an expression of one of these approaches, that of the academic architect. He explains this point of view as follows:

From the academic point of view ... architecture is regarded essentially as a fine art in which principles of formal composition stemming from the classical tradition are considered of first importance (3).

In an educational system based on this approach, the emphasis is placed on the "study of compositional theory and traditional principles of formal design, as the most important aspect of the architect's training" (Egbert 1980, 3). Louw(1995) claims that this system of education resulted in the separation between the design and construction processes. The most important influence of the Beaux-Arts on architectural education has been this stress on formal compositions and in accepting universal principles in design. These ideas remained constant in many later approaches to design education although the classical tradition was believed to be no more the source of these principles. In addition some other influences of the system of education in the Beaux-Arts still remain in almost all of the schools of architecture. The studio system as the core of architectural education, around which all other courses in the curriculum are organized, is a heritage of this method. Although the system of ateliers in the Beaux-Arts was quite different from the system of

studio which now is used in architectural education, accepting to work in the atelier as a part of the education of architect lead to later tradition of studio work. The student works in a studio under supervision of a master, with a direct contact and communication which can rarely be seen in other university disciplines. Another major contribution of the Beaux-Arts to architectural education was the jury system. The jury system as the way of assessment of the projects was first developed in this school. The nature of the juries in the Beaux-Arts was different from what we have today in that those juries were not open to the students and the results were later announced to them. Instead of the student, it was the master who defended the project in the jury.

2.1.2. The Bauhaus School

During the 19th century and at the beginning of the 20th century, Europe witnessed radical changes in all aspects of social life. New technologies were invented and machines did not only change the mode of production, but all aspects of the man-made environment. The 20th century overwhelmed man with its inventions, new materials, new ways of construction, and new sciences. In architecture, new problems came to scene and these required more precise knowledge, greater control of relations and more flexibility than the rigid schemes of tradition permitted (Moholy-Nagy 1947). The new needs and forms of life brought forth by industrialization, could not be satisfied by traditional building types, and the miserable conditions in the large cities demanded a complete revision of the human environment. In such a condition, the role of the architect and the attitude toward the architecture had to be reformulated again.

A factor which played an important role in the development of a new attitude to architecture was the new technical possibilities. Materials like cast iron, steel, reinforced concrete and glass, led to the development of skeleton construction which allowed for the realization of enormous continuous spaces and tall buildings. The facades of the buildings were transformed into transparent, weightless skins. Denel (1981, vii) states that in the days before the Industrial Revolution, the forces that shaped the architect's intellectual, physical and visual world changed at a low enough speed to allow for a time tested 'stylistic' progress, whereas in modern time the need for a large variety of new solutions in a very short time was ever pressing. In this changing intellectual, social and physical world and with new needs and demands, a fresh and creative approach in design was required.

In the beginning of the 20th century, the designers of the "Modern Movement" began to question the elitism of the 19th century designs. As a reaction to 19th century eclecticism, these designers rejected all kinds of ornamentation and the usage of historical forms and symbols in design. They believed that design should have a universal language which could emerge from an objective understanding of modern society and modern technology (Crimson and Lubbock 1994) and claimed that the important thing which determines the quality of any design is not the aesthetic value of it but the way it answers to the physical needs, that is how it functions and the way it uses the material and technology. The concepts of standardization, modularity, and design for mass production appeared in this period. Moholy-Nagy (1947) described the importance of standardization as follows:

Not the single piece of work, nor the highest individual attainment must be emphasized, but instead the creation of the commonly usable type, development toward "standards". To attain this goal, scattered individual efforts proved insufficient. There had to be a general concept; instead of solutions in detail there had to be a serious quest for the essential, for the basic and common procedure of all creative work (20).

This interest in standardization actually comes from the requirements of machine production as well as the idea that all men are the same and have the same needs. One of the leading personalities of the Modern Movement, Le Corbusier, claims that

a standard is necessary for order in human effort. A standard is established on sure bases, not capriciously but with the surety of something intentional and of a logic controlled by analysis and experiment. All men have the same organism, the same functions. All men have the same needs (qtd. in Broadbent 1988, 76).

Another aspect which was directly related to the concept of standardization was rationality in design. This means that the designers of this movement were much concerned with the abstract, self-consistent geometry of their buildings.

In education the same objectives became dominant and the Bauhaus school was established with these ideas. This school is generally seen as the representative of the modern design education. It was founded by Walter Gropius in 1919, in Germany. Although the Bauhaus was not only a school of architecture but all branches of design were considered and its educational program included a wide range of interests, architecture was seen as an activity which reconciled separate disciplines and united them in a common task. In the Bauhaus manifesto 'building' is mentioned as "the ultimate aim of all creative activity" (Droste 1990, p. 22). The school became the focal point of new forces accepting the challenge of technical progress with its recognition of social responsibility. It became the experimental shop, the laboratory of the new movement.

In the first years of its establishment, the program of the Bauhaus changed several times, but in 1923 took its final form. The main objective in the organization of the curriculum was to unite the craft with industry (Cappleman and Jordan 1993). The Bauhaus education program included two parts. The workshop and the theoretical part. Gropius, the first director of the Bauhaus (qtd. in Moholy-Nagy 1947) pointed out the great educational value of craftsmanship. In his words: "The machine cannot be used as a short cut to escape the necessity for organic experience "(20). He believed that the students should learn while working in the workshops. The reason for this was the belief in that experiment is the healthiest way to gain knowledge and a student may learn only while engaging in a real production process with a trial and error method. In the technically simple level of handwork, students in the Bauhaus could watch a product grow from beginning to end. Everyone was responsible for the production of his or her product as well as for its function. The workshops were also supplemented with the basic machines of various industries which enabled mass production. The practical and theoretical courses were coordinated through common tasks. Works were done collectively, the need for co-operation was emphasized and the individual was taught to understand his problems as a part of a wider context.

In the first year, a preliminary course (Vorkurs) was required of all the students. Itten, a Swiss painter, was the first person responsible for the program of Vorkurs in the Bauhaus. Frampton (1992) states that the method used by Itten was derived from Cizek, who had developed a unique system of instruction based on stimulating individual creativity through the making of collages of different materials and textures. Cizek had been impressed by new theories of education about "learning-through-doing". Itten's program consisted of three elements: i) a detailed study of nature, consisting of both representation of materials

and experiments with them, ii) compositional and textural studies with various materials, and iii) analysis of "old master" paintings (Bayer, H., et.al. qtd. in Cappleman and Jordan, 1993, 7). This program can be summarized in a pair of opposites, "intuition and method" or "subjective experience and objective recognition" (Droste 1990, 25). The duration of this preliminary course was six months. As Crinson and Lubbock (1994, 93) state "Itten regarded the Vorkurs as a spiritual rebirth". The Vorkurs was the place where the students should free themselves from the preconceptions and come to child-like state from which their innate abilities could be developed. This approach of neglecting past experience and emphasis on creativity was a radical shift in architectural education which affected design education for many years.

After Itten's resignation in 1923, a new philosophy of teaching, based on the creation of new products to suit industrial requirements rather than centered upon individual personality and with less role for handicrafts and handmade products became dominant in the Bauhaus. Eventually the Vorkurs was extended to one year. Itten's successors Albers and Moholy-Nagy were to retain the basic principles of Itten's Vorkurs teaching although they dropped those aspects relating to individual personality development (Droste 1990). In this new phase of the Bauhaus, design discussions were dominated by the concepts of type and function and the confrontation with technology and industry. In the Vorkurs Albers's teaching aimed at creative and economic handling of materials and Moholy-Nagy concentrated his exercises called 'design studies' on the organization in space. The emphasis of this new program was more on formal compositions and abstract experiments in balance, tension, compression and transparency. Moholy-Nagy (1947) explains the goals of this first year as follows:

The first year training is directed toward sensory experiences, toward the enrichment of emotional values, and toward the development of thought. The emphasis is laid, not so much on the differences between the individual, as on the integration of their common biological features, and on objective scientific and technological facts. This allows a free, unprejudiced approach to every task (19).

In the Bauhaus, the shift towards answering the needs of industrial production and away from artistic intentions accelerated after Gropius left the Bauhaus in 1926. The argument was that when it came to designing forms for industry, the creative artist was superfluous. "The form process started not from the elementary forms and primary colors investigated by the artists, but from the working of the machine" (Muche, qtd. in Droste 1990, p.161). Under the directorship of Meyer, the second director of the Bauhaus, new social intentions were reinforced in this school. The Bauhaus was to develop designs which suited the needs of the people or the "popular necessities" before elitist luxuries. For this reason, standardization and suitability for mass-production became even more emphasized. Droste (1990) summarizes the ideas of Meyer about architecture as follows:

For Meyer, building was an 'elementary process' which reflected biological, intellectual, spiritual and physical needs and thereby made 'living' possible. It was thus necessary to take into consideration the entire totality of human existence. The aim of such architecture was the welfare of the people. Architecture was to bring the requirements of both individual and community into mutual harmony (190).

In Meyer's period, social and scientific criteria were treated as equally important in the design process. In the workshops, activities were no more based on elementary forms and primary colors but on concepts such as utility, economy and social target group. "Solutions in the spirit of an aesthetic constructivism disappeared, products became necessary, correct and thus as neutral ... as can possibly be conceived" (Droste, 1990,

196). Under Mies Van der Rohe, the last director of the Bauhaus, this social orientation, characteristic of the Bauhaus in Meyer's period disappeared. Another important change in this period was that the role of practice in education, a very important feature of the Bauhaus education, was decreased. Instead theory was triumphed as architecture was art, a confrontation with space, proportion and material for Van der Rohe.

In general, the biggest difference between the Bauhaus approach and that of the Beaux-Arts was that in the Bauhaus the aim was to free students from any convention and to develop their creativity and personal expression and to teach a way of approach to problems rather than to gain some skill and ability. For this reason, in its program, drawing and history courses were very marginal. History courses were offered as electives which could be taken from the third year on, whereas in the Beaux-Arts approach, the assimilation of absolute ideas of beauty based on historic precedents was the purpose of education.

The most important influence of the Bauhaus on design education was in the development of what is generally called the "basic design" course. This system of beginning design education by studying the abstract relationships of elementary forms is still valid in many of the design schools all around the world. As Norberg-Schulz (1988b) claims, the Bauhaus cleared the way for an adequate education by abandoning obsolete principles and by indicating basic new problems. Moreover, it is possible to say that this school laid the foundation for a new "International Style".

When the school was closed by the Nazi authorities in 1933, several of its leading members emigrated to the United States, where they went on working with the same

goals. Walter Gropius joined the faculty of Harvard, Albers went to Yale, Moholy-Nagy to the New Bauhaus in Chicago and Mies Van der Rohe to the Armour Institute in Chicago. After the second world war, Bauhaus ideas were introduced in several countries. At the same time, however, critical voices began to be heard. The Bauhaus influence on design education began to decrease in the 1960s as in these years, belief in modernism and enthusiasm about what it brought to the lives of people diminished. In the same years, the relation of basic design to architecture as was developed in the Bauhaus was questioned and alternative methods for teaching design fundamentals came to be suggested. Cappelman and Jordan (1993) describe these reactions to basic design courses as follows:

Through the course of this often difficult period, the regard formerly given to beginning studies- “basic design”- declined steadily in the face of mounting pressures from the public, from the profession, and from within the university. The relevance of beginning studies based on “spots and dots” was widely questioned, both by teachers, the majority of whom were products of the method, and by students, who often could not relate beginning studies to more advanced, building-focused work (10).

2.1.3. The Ulm School

One of the new approaches that criticized the approach of Bauhaus, was that of new Hochschule für Gestaltung, founded in Ulm in 1947. Lindinger (1990) explains the aims of establishment of this school as follows:

The original intention was to found a Hochschule -a specialized university-level institute- for sociopolitical questions, as a contribution to a new, democratic education ... In the end it was decided to concentrate on the design problems of the industrial society of the future (10).

After the second world war, this school was established as a new Bauhaus, but soon it became evident that the Bauhaus method no longer led to the desired results. Maldonado, the spokesman for the school, emphasized that the workshop of the Bauhaus, which was the backbone of the Bauhaus tradition, had generally shown itself unable to adapt the individual to the real object world of our society, and may rather lead to a new formalism (qtd. in Norberg-Schulz 1988b). Instead Maldonado suggested an education founded on the principles of scientific operationalism. He proposed a replacement of intuitive attitude by an exact analysis of the problems and the means to their solution. Thus, the philosophy of the Ulm school was against art and architecture, when these are understood as taste and arbitrary invention. It advocated instead a planning based on a knowledge of man and society. The first manifestation of the Ulm model was formed between 1956-58. This school suggested a model of training that aimed at redefining the role of designers.

As design was now to concern itself with more complex things than chairs and lamps, the designer could no longer regard himself, within the industrial and aesthetic process in which he operated, as an artist, a superior being. He must now aim to work as part of a team, involving scientists, research departments, sales people, and technicians, in order to realize his own vision of a socially responsible - Gestaltung - of the environment (Lindinger 1990, p.11).

In this school, too, there was a basic course given in the first year. This basic course was first influenced by the presence of former Bauhaus instructors such as Albers and Itten, but the sense-based teaching soon met with resistance from the students (Lindinger 1990). Later, under Maldonado and Aicher, the educational system in this school witnessed a radical shift away from the fundamentally craft-based Bauhaus tradition towards science and modern mass production technologies. The curriculum of the basic course in this school contained almost equal proportions of practical and theoretical subjects. One of the

major differences between the approaches of Ulm to the basic course and that of the Bauhaus was that the students in this course were trained to approach every task with an open mind and to carry it out in accordance with the demands of its function, its social consequences, and its cultural significance. Lindinger (1990) explains the general structure of this course as follows:

The Basic Course consists of: Elementary design theory; work with color, form, and light. Elementary expressive exercises; work with different materials. Confrontation with the political, social, cultural, and scientific issues of the day; criticism and debate, participation in general discussions and expressions of opinion (34).

All students in different departments of the school used to attend a common basic course until 1962. In that year, this common course was replaced by first-year courses specific to the individual departments. This system remained until 1968, when the school was closed.

2.2. The Education of Architects in Turkey

In Turkey until the 19th century, the formal education of architects had a central and military nature. In the Enderun, which was a school organized within the Sultan's palace, architects were trained in building technology, ornamentation and climatology matters (Pamir cited in Uluoğlu 1990). Although there had been guilds of builders in Anatolia, and they too, trained architects at the same time, all matters related to the building construction used to be controlled by central authority (Erdenen 1966). In this period architects used to be trained in the Hassa Mimarlar Ocağı which was an organization within the Ottoman palace. The Mühendishane-i-Bahr-i Hümayun (Royal School of Naval Engineers) opened in 1773, and the Mühendishane-i Berr-i Hümayun (Royal School of Army Engineers)

established in 1795-96, were the first institutions organized for the education of engineers and architects. In 1833, the first Turkish architectural school was opened with a program suggested by Hoca Seyid Abdulhalim Efendi, and the permission of Sultan Mahmut. In this program five basic qualities of architects were listed as follows:

- 1) Ability to paint and draw;
- 2) Knowledge of mathematics;
- 3) Knowledge of geometry;
- 4) Knowledge of measuring site and construction;
- 5) Knowledge of materials used in the construction, their qualities, strength, etc. (Bora 1978).

The first independent school of architecture, with a civil character in western terms, was the Mekteb-i Sanayi-i Nefise (School of Fine Arts), established in 1882. In 1926 the name of this school later was changed to Güzel Sanatlar Mektebi (School of Fine Arts) and later in 1982 it became a faculty in Mimar Sinan University.

After the foundation of the Republic, new universities in western terms began to be established in Turkey. The aim of these new universities was to do research in different fields of knowledge, to spread out the national culture and to educate matured and qualified individuals for country's needs (Sağlam and Onur, 1995). In these years, many new departments of architecture also began to be established within these universities. To give some examples, İstanbul Technical University's (İTÜ) architecture department was opened in 1941, and Yıldız University's architecture department was established in 1943. Middle East Technical University (METU) was also established in 1956 with the architecture department as the first department.

In the programs of these schools of architecture, the influences of different methods developed in Europe can be seen easily. For example in the Sanayi-i Nefise, education was based on the Beaux-Arts model. In the first class students used to make drawings of buildings of classical style and their decoration elements and design buildings with simple functions. In 1967 as a result of a reform in this school, a common basic course was started for all of the students in fine arts and architecture in the first year (Bayındır 1994). The influence of the Bauhaus system can be seen in this course clearly. The aim of this course was to teach the students the common basic elements and principles of visual arts. The ideas developed in the Bauhaus affected the programs of the other departments of architecture and especially the programs of their first year education as well. Güngör (1966), Zeren (1966), Özer (1966) and Kuran (1969) discuss the influences of the Bauhaus method in METU and İTÜ and the way its new approach to basic design has been used in formulation of basic design courses in these universities. Still the traces of this system can be seen in many of the basic design courses in different universities and attempts in formulating new methods of introductory design education are very recent (Ertürk et.al. 1995, Tasarım Stüdyosu I Grubu 1994).

In general, two systems of formulating introductory design education can be seen in the universities in Turkey. The first system is constituted of an architectural (or related field) design studio supported by a studio course on “basic design”. İTÜ, Haccettepe University (Department of Interior Architecture), Dokuz Eylül University are some of the universities which use this system. In these universities, the aim of the “basic design” course can be summarized as developing student’s sensitivity in terms of observing the environment and to teach them formal aspects of design. In these courses, generally, abstract exercises

concerning design elements and principles, perception and visual communication are used (Bayındır 1994). In the architectural design studio on the other hand, projects of a more concrete nature are handled. In the second system of introductory design education, there is only one studio course related to design in each semester and its program can change from purely abstract exercises to more concrete ones considering different aspects of architectural design. METU and Bilkent University (Interior Architecture and Landscape Architecture Departments) are two of the universities which use this system.



3. IDEOLOGICAL DIMENSION OF INTRODUCTORY DESIGN EDUCATION

To be able to discuss the ideological dimension of introductory design education, first a definition of ideology is necessary. The Oxford Advanced Dictionary of Current English (1974) defines ideology as “manner of thinking, ideas, characteristic of a person, group, etc.” Ackerman (qtd. In Malnar and Vodvarka 1992) gives a more confined definition as “... a largely unconsciously acquired structure, a pattern of thought and action ingrained in the individual by a culture; it is not a particular philosophy or faith that one elects or rejects but rather a state of mind” (6). Malnar and Vodvarka complete this definition by stating that “the result of this ‘state of mind’ is an inclination in people to accept a particular image of, and role in, their society” (6). Thus, the ideological basis of the introductory design education is related to the ideas, and thoughts which underlie the organization of this education, and this basis results in the acceptance of an image of and role in their society by the students.

From this discussion, it is seen that matters related to ideological dimension of introductory design education can be studied from two different (but closely related) points of view. The first view may concern the role of different ideological perspectives on the organization of the introductory design education. The other point of view may consider the role of this education, in turn, in creating a state of mind, a world view, a set of values, hence an ideological basis for the students of architecture. The latter is a direct consequence of the former. Thus, to be able to investigate the effects of beginning design

education on creating a world view for students, firstly, it is necessary to analyze the different ideological bases underlying different approaches to this education.

At the basis of any approach to architectural education, there exists a statement about what architecture is all about and what the role of architect in society is. Egbert (1980, 6) defines the major factors differentiating different theories of architecture as their respective presuppositions about the nature and value of change, about the natural world, and about both the individual and society. Balamir (1995) elucidating on Egbert's points out that questions of how the relation between history and future, nature and culture, society and individual should be established and which has the priority are questions that have occupied the minds of architects in the modern age (356). This problem of setting priorities is the core of debates in different theories of architecture developed according to different ideological bases. In a field as complex as architecture, where many factors affect design decisions, the importance of a theoretical basis which describes, directs, and appraises the products (Aravot 1993) cannot be overlooked. Lang (1987) states that, in architecture, based on an ideological position on what the world, good architecture, landscapes, and urban design should be, theories such as 'design principles', 'standards' and 'manifestoes' are developed (13). These theories have been derived in several ways. Malnar and Vodvarka (1992) explain three major ways as follows:

First, through an extraction of design principles based on historical type; second, through a commitment to satisfying the practical needs (functionalism) of people (usually in disregard of historical precedent), and third, through an integrative process that uses a broad spectrum of information from such recent sources as the environmental sciences and semiotics (8).

A theory of architecture helps one to make judgments in the process of design and provides a basis for assessment of the final product. In architectural education, this dual role of theory is obvious as well. On the other hand, to be able to develop a holistic approach to design requires the ability to distinguish "know-how" from "know-why". Brady (1996) explains the way this ability can develop as follows:

The key to developing this ability is found in the root word of education, *educere*, which means "to bring out, elicit, develop, from a condition of latent, rudimentary, or merely potential existence". It is important not only to understand the relationship of the parts to the whole, but also to understand the implications: from different contexts _ the process of "what if" that is integral to holistic design (40).

3.1. Ideological Aspects in Setting the Objectives of Introductory Design Education

Different ideologies in the field of architecture affect the way architectural education is organized in different institutions. The way the whole curriculum and specially the first year design education is formulated in a school is directly related to the ideology held by that school. On the other hand, for students to be able to understand the complexity of the built form and to be able to fully understand the context of architecture, developing a world view is essential. This point has been emphasized in the Conference on Beginnings in Architectural Education, held in Prague in 1993. Kalogeras and Malecha, commenting about this conference, state that:

Context and complexity are fundamental aspects of learning. Theoretical understanding can not be derived without a world view. Specifically, many aspects affect how architecture is studied. Economics, environment (the landscape), psychology and a return to ethical concerns all have profound influence upon how form and meaning are derived. The process of learning to design is a process of editing and abstracting information to derive the language of design (29).

There is no doubt that any introductory design course has an ideological basis, reflects a world view and a definition of the role of the designer. Most of the time this ideology is transmitted implicitly and unquestioningly and students develop a set of values regarding architecture according to this philosophy. It is possible to discuss the major trends in introductory design education according to their ideological bases. The school that had the most profound influence in formulation of beginning design education was the Bauhaus school. The method of education in this school was based on the ideas of the Modern Movement. The core of beliefs of this movement has been summarized as follows:

An antagonism to ornament and style, yet a love of abstract forms; a theoretical adherence to industrial imagery, industrial means of production and new materials (including the ideal of a technologically controlled environment) and thus a relative disinterest in the executant's skill; a fascination with what were considered the peculiar conditions of modernity, particularly the flux of change; a dislike of the patterns, physical or conceptual, of custom and tradition and instead an appeal to the natural, to the new, and to universalism; an approach to design that believed every problem was best solved anew using rational principles rather than empirically or by the use of formal precedents; and finally a desire to use architecture actively to change and redeem society, an ambition which was associated both with capitalist and socialist tendencies (Crinson and Lubbock 1994, 91).

The ideological basis of this method of education was a positivist philosophy. Mazumdar (1993) describes this philosophy as follows:

Regarding ontology (the nature of reality of the phenomenon) positivism adopts the position of realism, involving the view that objects of sense perception exist independent of the observer's mind. That is, reality is believed to be "out there", objective and available for observation by everyone. With respect to epistemology, or how one might acquire and convey knowledge about a phenomenon, the positivist view is that knowledge is objective, independent of the observer and objectively verifiable. Positivists believe that the best way to learn about the world and its various phenomena is through the discovery of laws and general or universal principles (230).

According to this philosophy, a building is seen as an objective reality with the fact that everybody can observe and agree on it. Underlying this is the emphasis on the universal, general, and common properties, general principles, and laws. In this view, many of the social and contextual factors such as cultural relationships (religion, tradition, family structure, etc.) are often neglected. Mazumdar goes on to describe the way this philosophy looks at human beings as follows:

Humans (are) seen as akin to natural objects, following predictable patterns of behavior and having generalized properties and architectural preferences that could be gauged from general information in design projects on sex, age, profession, and family size (235).

Positivism was primarily developed in the fields related to natural sciences and the success of natural scientists in this realm became an important factor in an attempt to formulate design education according to this approach. About these ideas Colquhoun (1972) states that:

Underlying this doctrine was an implied belief in bio-technical determination. And it is from this theory that the current belief in the supreme importance of scientific methods of analysis and classification derives. The essence of functional doctrine of the modern movement was not that beauty or order or meaning was unnecessary, but that it could no longer be found in the deliberate search for final forms. ... Form was merely the result of a logical process by which the operational needs and the operational techniques were brought together (398).

However, science and design have little in common. Willen (qtd. in Julta 1996) mentions some of these differences as follows:

The objective of design is to take action; it aims at a solution and is not concerned with producing knowledge. Science is concerned with a search for truth and seeks to create knowledge through observation and experimentation. Design is concerned with how things ought to be whereas science is interested in how things are. Design starts with a problem whereas science starts with observation. Design is concerned with the creation of new forms while science investigates existing forms and is concerned with natural phenomena. To arrive a solution, design uses modeling and drawing as tools for synthesis while science uses methods of controlled experimentation, classification and analysis. Design deals with practicality, appropriateness and specificity while science is concerned with objectivity and truthfulness (2306).

Julta (1996) completes this explanation by noting that science is based on rationality whereas in design, intuitiveness and cultural dimensions play important roles. Design is qualitative and prescriptive while science is quantitative and substantive. Design is also intentional. The results of design do not always create an aesthetically pleasing solution and are not always successful (2306). This may be the reason why in the Bauhaus method we see emphasis on two different (seemingly contradictory) aspects of design: on the one hand, the bio-technical determinism (Colquhoun's term) and on the other hand free expression. In other words, although they confess that not all parameters of design can be determined rationally, and there are always choices for a designer to make, "in modern architectural theory this choice has been generally conceived of as based on intuition working in a cultural vacuum" (Colquhoun 1972, 401). This is the reason why the basic design method developed in the Bauhaus was based on freeing students from all their preconceptions and aimed at making them return to a child-like state. On the other hand, it was believed that the best way to learn about the world and its various phenomena was through discovery of laws and general or universal principles. Therefore, universal principles were sought to be applied in architecture and cultural differences were neglected as a factor affecting the formation and perception of the environment. Norberg-Schulz (1988 b) explains this duality in the Bauhaus approach stating that "the program of

the Bauhaus surely contained a basic contradiction, in wanting to free the 'self-expression' and to create a new common formal language" (222).

The system of basic design education developed in the Bauhaus and based on mentioned ideas with its emphasis on formalist aspects of design was later criticized for its insufficiency in reflecting the complexity of architectural design. Norberg-Schulz (1988b) explains this point as follows:

Today we may say that the Bauhaus initiated a cleaning process which freed us from the blind copying of obsolete forms. But we also realize that the Bauhaus method ought to be supplemented and developed on the basis of a better understanding of psychological and social factors. Education in this field should above all be founded upon an understanding of the nature of the architectural totality, and it may be doubted if the free experiments and 'artistic' activities of the Bauhaus will retain their importance in future (19).

However, the ideas of the Modern Movement and their implications in design education have continued to be influential until today. This approach to architecture has led to a rejection of traditions, a search for creative formal compositions and an emphasis on originality in architectural education. These ideas continue to have the major influence in the organization of introductory design education in many schools of architecture all around the world and in Turkey. The studies of Bayındır (1994) about the contents of beginning design courses in major universities of Turkey show that these ideas are still dominant in organization of these courses.

The values which are formed in the beginning year of architectural education and the image of the role of architect become a basis for design education in the upper classes and many times in the whole of professional life. The student trained in this system begins to

see design problems as problems merely of formal composition. Stanton (1993) discusses the relation of this method of basic design education and the later approaches to design as follows:

The nature and intent of these exercises is evident. They are unrepentantly compositional and their inventors seem either to believe or to ignore that they make the armature for later architectural pursuits for which the ideology is put in place in the first years of education, that the making of buildings continues to be a sculptural activity, that object predominates over field. Several other beginning approaches, however, seem to make different arguments while in fact encouraging the same conclusion (216).

Despite variety in the kind of problems (abstract or architectural) given, most of the available methods used in introductory design education are formulated according to positivist ideology. Even most of those methods that are developed as a rejection of the Bauhaus method of using abstract compositions, and which begin with a "real" architectural problem, or problems emphasizing only one aspect of architecture such as structure, share the same ideological basis with that of the Bauhaus.

Groat (1993) explains two major perspectives which have been dominant in architecture and its education from 19th century on as the rationalist position and the empiricist perspectives:

The rationalist perspective tends to promote a view whereby architecture is conceived of as subjective expression and therefore irrelevant to broader and more pressing societal concerns. The empiricist perspective on the other hand, tends to conceive of architecture as an instrumental consequence of other more powerful, physical, social, or economic forces (3).

She states that these two theoretical perspectives led to the creation of two models of an architect: architect-as-artist and architect-as-technician and these two models of the architect which are still the dominant models in architectural education. Downing and Gribou (1994) based on a taxonomy of different philosophical and epistemological world views add three more approaches, namely structuralism, pragmatism and phenomenology. They state that all these doctrines exist as theoretical background in today's architectural debates as well as in architectural education. Numbers (1994) also states that until recently empiricism and rationalism have been the dominant models in design pedagogy. Occasionally, as well, studio assignments based on various interpretations of pragmatism and structuralism could be seen. He adds that today there exists a growing trend towards the use of a pedagogical approach based on knowledge as a sensual cognition, and the ability to act spontaneously on the synthesis, of the external world.

This paradigmatic shift is embodied in the use of experientially-based, phenomenologically-grounded student design projects which confront the student with the immediacy of their primary senses and intuitive values. This shift toward the use of and/or reference to literal text and materiality is embedded in the notion that architecture is ultimately manifested and encountered in corporeal and sensual terms (73).

It seems that the phenomenological perspective is very close to what Mazumdar calls anti-positivism. In this philosophy the existence of universal essences that exist independently of human minds is not accepted.

The belief is that reality exists and is meaningful only in the way that is perceived by individuals and social groups. Epistemologically, antipositivism involves the position that knowledge is based in the observer and that individuals and groups gain different knowledge about a phenomenon. ... Individual and group differences are treated as valid and important, not to be dismissed or suppressed simply because they do not fit general trends. Social, cultural, individual, and physical contexts are seen as extremely important (Mazumdar 1993, 231).

In this view it is accepted that a building may have different meanings to different people or different cultures and all of these are valid. So, according to this philosophy, environmental design should serve individual and group values and preferences and should fulfill social and individual experiences in a particularistic way.

Another alternative ideology to dominant perspectives in architecture and education based thereon is suggested by Groat (1993). She believes that both of the rationalist and empiricist perspectives are subjectivist in that they are just dependent on the contents of the individual human mind or consciousness. Instead she suggests an alternative model which she calls the "culturalist" perspective referring to the philosopher Lawrence Cahoone. Cahoone defines culture as: "the totality of a social group's interpretive products, created or inherited, by which the group understands itself and its world" (cited in Groat 1993, 6). He identifies the three most significant characteristics of culture as: its a priori existence relative to subject/object domains; its communal and communicative nature, and its role as a cumulative and pluralistic product. In this view cultural products would not be what they are without their *meanings*. Its statement is not simply that the study of architecture should be more responsive to cultural factors but it demands that we reconceptualize the fundamental nature of the architectural object. In the design studio this view suggests that the aesthetic choices made in studio should not be considered apart from the meanings that these artifacts have within a given culture or cultures. On the other hand, Cahoone insists that culture is a collective inheritance, created by past individuals and continuously reinterpreted and reconstructed by others. Thus culture constitutes the medium by which all individual humans are nurtured into their own individuality. This

theory holds that human individuals establish their existential integrity out of a context of relations with other people and things, a context which, although in continual transformation, remains the backdrop for the individual's integrity (Groat 1993). The last attribute of culture is that it is the cumulative product of vast interlocking groups of individuals. There are four points embedded in this definition: that culture is *created*; that any culture or cultural artifact is *contingent* on particular, changing historical conditions; that it is in the sense that it builds on an inheritance of previous cultural acts and artifacts; and finally, that it is always *pluralistic* and *diverse*, with each artifact or event entailing multiple meanings undergoing continuous reinterpretation (Groat 1993).

These cultural theories are important for the formulation of introductory design education and for deciding about the priorities and fundamentals of architectural design, hence, the ideological objectives. As Lawrence (1992) states, these theories

... stress the diversity of meaning, behavior and architectural forms, and encourage greater acceptance of the plurality of socio-cultural phenomena in a rapidly homogenizing world. Cultural analyses emphasize the power of collective forms in society, ones that often have no apparent specific source but operate "unconsciously" or tacitly behind the scenes (36).

The need for reconsideration of ideological bases of current systems of introductory design education with their emphasis on universal values, and treatment of human beings as a homogeneous mass towards a more pluralistic education which respects individual and cultural differences in perceiving and forming the environment, is now declared by many of the people working in this field. In this context Ruedi (1994) states that

we must cry out against the so called neutral and objective authority of universal knowledge (knowledge as linear development of a natural human condition) and assert the consciously ideological act of reconstructing knowledge (79).

And Wilkins (1993) explains almost the same idea as follows:

The basis of a pluralistic understanding of the aesthetic requires one to comprehend the world in which we live and design in its entirety and to appreciate the people and cultures that surround us (p.173) ... Instituting an intracultural system of education and measurement within the field of architecture is no longer subject to debate. Setting the standard of the aesthetic to some abstract ideas of eurocentric values is simply obsolete. The world, and its concerns, are much larger than that (175).

Understanding alternative theories about architecture and its role in the society is important in proposing a holistic approach to introductory design education which aims at educating students as persons more aware of their social responsibilities and with a more humanistic approach towards environmental problems. As Norberg-Schulz (1988a) states, many of our human and environmental shortcomings have educational roots and “an improvement can only be obtained through a change in our educational outlook. In other words, we have to improve man if we want to make the world better” (11). A holistic approach to introductory design education should provide students not only with an understanding of how parts should come to form a whole (know-how) but also to understand the implications (know-why) from different points of view. The definition of the purpose of architectural design by Rapoport (1984) can constitute a base for a holistic approach to its education:

To provide setting appropriate to the bio-social, psychological, cultural and other characteristics and needs of the different people for whom design is being done. This means that the most important decision is *what* to do and *why* to do rather

than how it is to be done (which comes later), with which design has traditionally been more concerned (100).

To be able to give an insight to students about what architecture is and what the role of architect in the society is in the beginning year of their education as architects needs a shift in interest of introductory design education from visual compositional aspects existing in a vacuum of external factors towards an understanding of different dimensions of architecture and human-environment relationships. The aim of architectural design is to create an order in the man-made environment. The basic intention in the formulation of most of introductory design courses has been to teach elements of form and to improve the ability to grasp underlying relationships of these forms to create an orderly environment. However, the point is that these would mean little if they are done in absence of the other factors determinant in deciding about forms of environment. The meanings that these organizations have differs according to culture, historical experience, religion, value judgments etc. Thus, a holistic introductory design education may emphasize this humane side of formal organization rather than focus on organization of forms in a closed system with its own rules and based on unchanging universal values. The objectives of education and the previously mentioned criteria that a good college education should have, also demand that the student be educated in a way that not only makes him/her aware of his/her own values and value commitments but also aware that other individuals and cultures hold different values that should be understood and to some extent accepted for purpose of interaction.

3.2. Ideological Aspects of Objects of Introductory Design Education

The content of any introductory design course is directly related to the view held about what architecture and the role of architect, thus what the fundamentals of design are. Thiel (1981) states that there are two misconceptions held by many beginning design students as well as many educators and professionals about design. He described these as follows:

The first is that design is essentially a matter of "intuition", or merely the materialization of a form following a tête-à-tête with one's muse. ... That this attitude also eliminates the troublesome task of becoming informed about a problem makes it all the more attractive. The second sad misconception is the notion that the chief characteristic of a good design is its "originality", or lack of an apparent precedent. In this case novelty is confused with creative insight, and mannerism is substituted for social and ecological responsibility (272).

It can be claimed that these attitudes are a legacy of the influence of the competitive educational system practiced at the Beaux-Arts (Thiel, 1981). The Bauhaus system of education also preserved these notions in its approach to design education. This emphasis on originality could be sound when the main task of education was to prepare future architects for designing monuments and buildings of significant importance, but in modern times the architects do not design only buildings with special social functions or monuments. Today the range of architectural works is much wider than this. Architects have to design many "ordinary" built environments, such as housing units and industrial buildings which in their design originality is not a prior criteria. Louw (1995) describes this fact as follows:

(with) the rise of professionalism in architecture, we have come to associate architecture with something special / with the extraordinary. That caused no

problems as long as architects served only the rich and powerful and created monuments. The modernist revolutions in the name of democracy, appropriated all forms of building for the architect. However, at the same time they did not relinquish their attachment to artist-inspired ideologies which had adopted originality as a principal objective (24).

This has caused a dilemma which still exists in architectural education. The methods of introductory design education which represent this view of design, primarily focus on the formal composition as means to release the intuitive creativity in students, and accept geometric forms and principles in organizing them as the fundamentals of architecture. For example, Friedman (1989) proposing a method of beginning design education using kits-of-parts as means to teach organizational principles to the students claims the fundamentals of architecture to be, as follows:

Fundamentals are found at the beginning, at the base of something. The basis of making architecture is the order of form in space ... First the architect must learn how to think in terms of space and communicate spatial ideas. Then the complexities of materials, site, structure, program, codes and so on may be mastered ... The foundation of architecture is the set of ideas that order the formal play of creation in space (19).

In this approach the aim of beginning design education is seen as developing the ability of students in producing formal compositions, using geometrical shapes, within a closed system with its own rules. Although this kind of problems provide a clear learning sequence from basic principles to enriched compositions and let students improve their skills in drawing and model making, “many of us will also agree that the abstraction to most design kits denies architecture’s essential complexity, and offers too limited an introduction to the design context our students should experience” (Bing 1994, 35). It reduces the subject of form in architecture to a play with geometric shapes, whereas, it is a

much more complex subject. The features related to site, material, human concerns etc. can not be separated from the formal organizations. These are not matters to be added later but determinant factors in the decisions about forms. Teymur (1994) states the following about this method:

As a great deal of educational theories seem to be based on the development of the infant, so do the theories of architectural form start with consideration of 'basic geometric forms'. Cubes, cylinders and sphere are assumed to be the basic ingredients of architecture and the city. As complex architectural forms are assumed to have been derived from such pure and basic forms, interpreting and learning the former in terms of the latter becomes a seemingly logical step. Yet, like many architectural statements, such ideas are more a matter of belief than analytical knowledge (2).

He goes on to mention that treating formal compositions as purely intuitive processes without any social and epistemological content should be unacceptable, because "these are very much to do with mathematics, geometry, psychology of perception, cultural meaning, industrial production which in their turn, are historically and locally determined" (3).

This emphasis on compositional qualities of architecture can still be present when a vocabulary of architectural elements, walls, windows, doors, etc. enter to the compositions as design elements. In these approaches to introductory design education, design is accepted as a formal organization and originality, and intuitive creativity is seen to be the most important factors in design. Stanton (1993) describes the effect of this view in the basic design education as follows:

The bias toward formal exercises as device to begin architectural education derives from an heroic view of design genius, a view that has to be seriously in doubt today. The student is homunculus. In his or her tiny form is the curled creative force, whole, and waiting to be released. Opening, flowering - these are the goals of these formal lessons (217).

That creativity is important in architectural design may be held as non-discussible. Yet, the problem is in the definition of creativity or the kind of creativity which is necessary.

Antoniades (1990) states that:

Most theories of imagination and creativity are either mostly scientific or mostly artistic, they tend to focus on one aspect, tend to be concerned at one level, and tend to support ideas of “instantaneity”, “a particular spark”, divine inspiration”, and “individuality”, as opposed to “inclusion” and “comprehensivity” group work, and a studious attitude and involvement (15).

Koberg and Bagnall (1974) define creativity as “both the art and the science of thinking and behaving with subjectivity and objectivity” (8). Therefore, subjectivity, or feelings are important in creative design, but are not sufficient. It should be based also on what one knows, thus the role of knowledge cannot be ignored. The type of creativity which is the subject of many of basic design methods ignores the role of external knowledge in creativity. Teymur (1994) mentions that the “first year is seen as the place to instill and promote 'creativity' with little critical understanding of the complex contexts of any creation”. He adds that

creativity need not be confined to the visual, formal or craft production. It can and should be seen as an indispensable feature, of say, structural design, functional problem-solving or project management just as much as architectural design. Moreover, creativity must be a tool not simply of performing given tasks 'better', but of challenging received wisdom (9).

In the same context, Stanton (1993) explains the necessary condition for creativity as follows:

The rich process of interpretation and invention that constitutes the creative act cannot occur in a vacuum. There must be material, and the gathering of that material is largely a process of inquiry, of learning in the most ordinary of senses occurring simultaneously with the most extraordinary of critical actions, combining as the design act (218).

Thus, without knowledge, it is not possible to talk about a productive creativity and consequently those methods of introductory design education which try to release the “intuitive creativity” of students using highly sculptural projects which neglect the influence of external factors in creation of form in architecture are not sufficient in developing the type of creativity which is necessary in architectural design. A holistic introductory design education, however, can be based on the idea that “design can succeed to the degree that is based on an intimate understanding of the many categories of context that affect social signification, and on an extensive knowledge of the many factors which qualify ends and means” (Thiel 1981, 272). In such an education, rather than emphasizing formal compositions as the main (and only) concern of architecture, the cumulative nature of architecture can be emphasized and design activity can be enriched by information from many other fields. There is no doubt that in order to make student gain mastery in formal and spatial composition, learning the language of design remains as a basic part of the content of introductory design education; but the student can also be informed about the role of external factors such as cultural, social, technical ones on the form of the built environment as well as the impact of the design on the lives of the users. The student should understand architecture as a component of culture which both forms and serves it, and accept that form in architecture is in fact more than just form. In this regard in the terminology of design taught in introductory design the subjects related to man and built environment interaction, with its different dimensions can also be incorporated in order for

the students to gain information about the main context of architecture, and in this way, to become creative.

3.3. Ideological Dimension of the Methods of Introductory Design Education

The general attitude in architectural schools is to teach skills related to design and the only goal is to prepare students as designers. But not all graduates of the architectural schools can work in traditional design and drafting activities. Gutman (1996) is concerned that

... this concentration on design skill leads to immense frustration among young architects. There are just not that many opportunities to do design work in the average firm. Several studies have shown that only 10 percent of an architecture firm's time is spent on this function in the building process (88).

Thus, the emphasis of educational systems on design attitude as supreme might be questioned. There are several other fields in which graduates of architectural departments can engage. Participating in the making of decisions about physical environment through working in local and governmental positions, or in the development of researches about behaviors of users of buildings, participating in academic work, and teaching specialized subjects as computer graphics are some examples. Schön (1985) states that:

Leading practitioners and educators have long since begun to wonder whether traditional architectural education _ specially the sort that as one former student put it, "tends to make us all into little Le Corbusiers" _ can equip students for effective participation in these emergent roles (3).

In such a situation, and in a period of rapid social, economic, and cultural change, the architectural profession as well as its education should be much more flexible and

adaptable. This means it should be able to remake itself. This is also the essence of education and what makes it different from training. Kroloff (1996) explains the need for an education based on broader bases than mere training in architectural skills, as follows:

Well-trained people are immediately useful for specific, limited tasks. And when those tasks change ... that person's training becomes obsolete and they must begin again. Someone who is well educated, by contrast, can adapt to new circumstances. ... That means architecture education can not be predicated on a set of task-oriented skills. It must instead concentrate on developing a rigorous intellectual foundation (92).

Similarly Saranlı (1990) points out that to be able to cope with the rapid changes occurring in the theoretical understanding of and the technological accomplishments in the human environment necessitates a dynamic capacity from the graduates of professional education showing comprehensive, united and adaptable response to the ever-changing environmental problems. He goes on to say that this can only be developed on very sound and reinforced foundations of human understanding and comprehension which must embody the fundamental aspects of life covering the whole spectrum of human endeavor from theoretical thinking to empirical realization through technological innovations.

This diversity is also very important in introductory design education. The classical approaches to basic design, emphasizing formal compositions or a professionalist approach which tries to teach students from the beginning only the skills necessary to design buildings are not capable of preparing students with a sufficient intellectual basis. The definition of the role of architect, as a mere form-giver to the built environment, should be revised. Along this vein more comprehensive definition of architecture can be what has been suggested by Adams et.al. :

Far beyond the making of buildings architecture stands for and shapes a way of comprehending humankind and the world humankind inhabits, a way that, if embraced, if fully engaged, offers a view of that world filled with particular clarity and brilliance. Education has no higher goal than the forming of that view (8).

Thus, the basic design method used may direct students to encounter the complexities of architectural design simultaneously, with the aim that the architects of the future, have the flexibility and ability to adapt new conditions as required by the profession.

3.4. The Ideological Factors in the Management of Introductory Design Education

The ideological management of introductory design education is shaped to a great extent by the ideology of the institution and its approach to the role of architect and architecture, and to the nature of architectural education. Furthermore, the ideological approach of the instructors, their world view, their experiences and beliefs about education and architecture and their backgrounds have major influences in the ideological management of the course. Dinham (qtd. in Bunch 1993) states:

Teachers bring to their teaching a lifetime of perceptions, beliefs, expectations and experiences that influence their work with students in the studio. Psychologists use the term 'conceptual frame' to describe the totality of these influences. That totality can include the teacher's views of the world and the place of design in the world, teacher's view of design and the design process, and teachers beliefs about the learning process. These, and many other subtle influences, together in combination shape the teacher's conception of design teaching (35).

These influences become even more important in deciding about the ideological approach of the course in a field such as introductory design education where many diverse and

even contradictory ideas co-exist, in a range from the definition of architecture and the role of architect, hence the definition of the fundamentals in architecture, to different methods of beginning design education. Many times the background of the instructors of introductory design courses and the kind of education they have passed through become the basis of the education system carried on without a critical judgment about their validity. These are not always sufficient in formulating an efficient introductory design course. Introductory design instructors should be open to changes and should search about different approaches, and also should be aware of the ideological implications of the method they apply. Of course the ideological basis of introductory design should be what instructor really 'believes' in. Otherwise, it is impossible to convey that to the students but on the basis of that belief should lie knowledge and insight, not only preconceptions. Furthermore, in order to manage an efficient introductory design education which can act as a real basis for the upper levels of design education, the main policy of the institution and its approach towards architectural education have to initially be clarified. Only then can the instructors of introductory design formulate their program in a way that fits within that frame. This general frame helps also in managing all the courses, including the studios in a logical relationship.

Another concern related to ideological management of introductory design (and also the whole architectural education) is that discussed by Özer (1969) and others (Kuban 1969; Mazumdar 1993). Since the emphasis of architectural education is generally based on universal values and all the sources referred to (such as written materials and even the buildings used as examples in discussions) are taken from western sources, in Turkey, the student never really learns the realities of his own society and ways of dealing with them. Often, the given projects do not include a specific situation and specific users with specific

needs; they are supposed to be designs that can be applied in any social condition. Özer suggests using projects which encourage students to analyze and to understand the realities of the society they will work in. In a human-centered introductory design course this can be a very important point. The problems given to students and the sources used can be managed in a way that include both universal values and knowledge and also the information reflecting the richness of different cultures as well as the real conditions and problems existing in the environment in which the student lives.



4. SOCIOLOGICAL DIMENSION OF INTRODUCTORY DESIGN

EDUCATION

The sociological dimension of introductory design education on the one hand, is related to the social organization of teaching in this education, and on the other hand, the way social aspects of architectural design is handled, hence, the place of the human being and his/her interaction with the built-environment in the content of introductory design education. Studio teaching is the main method of design education in almost all universities in the world. Although there are some criticisms about the inefficiency of this system of design education (Rapoport 1984) due to existence of subjectivity and lack of objective criteria in teaching, emphasis on personality as it is based on a master-apprentice model and being too time-consuming both for the instructors and the students, it is still the dominant form of design education. These inefficiencies are partly a matter of organization of design courses. Moreover, the description of design process as a process based on reflection-in-action, developed by Schön (1984, 1985) justifies that this method is efficient in teaching design since design includes both subjective and objective matters and particularly the subjective part of design can best be learned through a reflection-in-action process provided by studio teaching. These ideas will be discussed in more detail later but in the following section the sociological aspects of this kind of design education will be discussed.

4.1. Sociological Objectives of Introductory Design Education

The role of studios in architectural education goes much further than just a place where students learn to design and solve design-related problems. It is also a special social environment. As Groat and Ahrentzen (1996) point out:

The studio environment is a relatively unique learning and *social* environment compared to those in other disciplines and professional fields. Not only does it provide students with a designated work environment, it places them in extended one-on-one contact with faculty and in daily (and nightly) contact with a cohort of student peers (167).

This social dimension of the studio is even more important in the first year as it is where students begin to develop an impression of their profession and their future career roles. The sociological objectives of beginning design education are discussed under two different headings. The first one considers socializing in a special culture and the second discusses the role of this education in recognition of the social role of the architect.

4.1.1. Socializing in a Special Culture

All sorts of education not only transmit knowledge and skills, they also socialize students into some sort of ethos and culture (Stevens 1995). This is not different for architectural education, but this side of design education has not been noticed and studied to a great extent. Bourdieu's theory about sociology of culture, helps to enlighten this side of architectural education and can be used to describe the sociological dimension of studio more clearly. The starting point of this theory is the assumption that all societies are distinguished by competition between groups to further their interests. There is struggle

between individuals, groups and classes to control the resources and to keep this control and this control of resources both requires and gives power (Stevens 1995). There are different sorts of power. The first sort of power is physical force. The second form of power is economic. Bourdieu defines a third type of power, the symbolic power:

Symbolic power involves the wielding of symbols and concepts, ideas and beliefs, to achieve end. It is much easier to control resources if a group can simply convince competitors that it *should* control them (Stevens 1995, 106).

According to Bourdieu, this symbolic power has three important aspects. Stevens (1995) describes these as follows:

Bourdieu lists three important aspects of symbolic power: *naturality*, *misrecognition*, and *arbitrariness*. First, it is seen as somehow right and normal, the natural order of things. The whole idea of challenging it just never occurs to anyone, neither the powerful nor the powerless. ... Second, this perception of naturality is a *misperception* or, in Bourdieu's terminology, a "misrecognition". Like fish in the water, individuals in societies move through the taken-for-granted symbolic order that structures the whole of lived experience, but that structures it so completely by precisely *not* being seen to structure it. The fact that symbolic power is misrecognized as natural makes it much more effective than physical power, which is always liable to overthrow. From this follows the third characteristic, the arbitrariness of symbolic power. Only people not embedded in the particular social order see that it is not natural, but just one particular way of doing things (106).

In a society, the field in which symbolic power operates is called "culture". Norberg-Schulz (1988 a) defines culture as follows:

A common order is culture. The development of culture is based upon information and education and therefore depends on the existence of common symbol-systems. Participation in a culture means that one knows how to use its common symbols. Culture integrates the single personality in an ordered world based upon meaningful interactions (20).

Thus, in order to be able to participate in a social group people try to capture its culture, in other words, engage in its common symbol-system. The symbolic power flows from the possession of symbolic and cultural capital. There are four forms of cultural capital: institutionalized, objectified, social and embodied.

Institutionalized cultural capital consists of academic qualifications and educational attainments, knowing things, and being certified *as* knowing them. Objectified capital is cultural objects or goods, such as artworks or any of the many symbolic objects produced in society. Social capital consists of durable networks of people on whom one can rely for support and help in life (Stevens 1995, 107).

Embodied cultural capital exists within individuals, as attitudes, tastes, preferences and behaviors. This means that someone possesses it just by *being* cultured. In other words it is not something that somebody *has* but what he *is*. The embodied culture is a very important factor in accepting people in certain social groups, almost as important as the diploma of a school that certifies individuals as competent to join certain occupations. In many social groups people share a certain set of attitudes, tastes and dispositions. It is the case also for architects. To say that someone is an architect, not only means that he/she can design buildings, but also means that he/she shares all of the embodied capital that distinguishes an architect from a "builder".

This particular form of embodied culture is provided by architectural education, and, as Stevens (1995) mentions, this function of architectural education is as important as providing an institutionalized form of cultural capital that is a diploma in architecture.

It is important to understand that all forms of education not only transmit knowledge and skills but also inculcate some sort of embodied culture or habitus i.e. a set of internalized dispositions that incline people to act and react in certain ways and from which perceptions, attitudes, and practices are generated. The signs of this cultivation is slowly absorbed from those who are already cultivated. So schools provide two different modes of inculcation, the scholastic and the charismatic modes of inculcation. Bourdieu distinguishes these two modes as follows:

The scholastic mode is what we normally recognize as pedagogy, the formal and explicit teaching of formal and explicit knowledge and skills. The charismatic mode is the informal and implicit method of inculcation, which is the only possible means of transferring embodied cultural capital. The former is intended to produce knowing, the latter being (cited in Stevens 1995, 117).

The design studio is a very suitable environment for the operation of a charismatic mode of inculcation. This may be the reason why studio continues to act as the heart of architectural education system. As Stevens (1995) states, the studio is *essential* for socializing students with a cultivated habitus. This function of the studio should be more consciously recognized by the instructors and they should be aware of the effects of their attitudes, behaviors, approaches to the design and to the profession on the development of the students' habitus and the way their patterns of behavior change. The role of first year design studio and its instructors is very crucial from this point of view. As Mc Ginty (1993), based on the results of a research on "The Talent Development Projects" headed by Bloom, states:

The most important lessons taught by first year teachers and coaches is their love and enthusiasm for what they teach. The individual attention they give their students is also crucial, but their own mastery is not as important as their ability to share their enthusiasm (1).

In this studio, not only are the method that is followed and the problems given important, but also the way these are formulated, discussed and the attitudes of instructors all become important factors in the inculcation of the students. This informal side of education (in comparison with the formal one which is related to giving problems) is very important in the first year design education. This is also one of important points emphasized in the Prague conference (1993):

Beginning design is founded upon the individual. Each student brings their previous experiences with them to the educational environment. It is the role of the professor to bring out the intrinsic quality of the student. A professor induces, not imposes, education. There is a clear social dimension to the process of learning; the individual embarks upon a heroic journey which must be nurtured (Kalogeras and Malecha 1994, 29).

The role of the instructor in this journey is to provide an environment for maximum growth of students with different characteristics and experiences rather than trying to create a homogeneous mass. As Mc Ginty (1993) declares “the excellent teachers are skilled in balancing teaching as an encouraging and nurturing endeavor with teaching as a standard-setting judgmental endeavor” (2). The role of first year design studio in the formation of the practical, intellectual person and in civilizing and socializing the students should be considered very seriously. Referring to the discussion above on competencies that a good college education should provide, and taking the social function of studio in mind, the student should be educated in a way so that he/she can cooperate with others and can relate him/herself to others effectively. This is only possible by an efficient communication between the instructors and students, and students with each other which can be achieved by organizing the studio work in a way that encourages working

together. The observations of an architecture student well summarizes the role of the studio: "The design studio has the potential to develop a thoughtful, competent, responsible architect who is well integrated into society. It is also the place where a young mind can become insecure, egotistical, self-absorbed, easily intimidated, and eternally frustrated" (Briggs 1996, 75).

4.1.2. Recognition of the Social Role of Architect

Another sociological objective of introductory design education is to give some idea to students about their future social role. Depending on the way design education is organized, students develop an image about their role in the society and their responsibilities. The methods of introductory design education which emphasize the artistic qualities of architecture and the arrangement of forms in the habitual space, are not sufficient in preparing students for their future role. Stamps (1994) describes this as follows:

In so far as emphasis is placed on studio case studies, students will be encouraged to express responses in terms of arrangements of form in habitable space. The questions raised for architectural education are whether these pedagogical constraints will be sufficient to prepare designers for the societal trends in which they will have to work, and whether feelings based on imagination will be sufficient to design for tomorrow's societies (105).

A holistic introductory design education aims at making students aware of the social dimension of architectural work. When in an introductory design too much importance is given to formal relations, students are faced with difficulty in creating a balance between the functional requirements, the users' needs and the organization of forms. On the other

hand, the values and expectations which are developed in the school usually remain in students in the years of professional work. If these can not match the more general values in the society, a gap is produced between the profession and the society as a whole. Environmental designers are members of two cultures embedded in each other. One is the broader society and the other is the professional culture which has its own norms of behavior, values and expectations. Lang (1987) claims that "these professional norms and peer-group pressures to conform are extremely coercive in environmental design and in architecture in particular. The result is that the profession has been extremely slow in changing, even when faced with major repudiations of their beliefs" (98). The objective of architectural education can be set as educating the future designers as people who are not isolated from the social realities but as people who have respect for and can handle them.

4.2. Sociological Aspects as Objects of Introductory Design Education

In several methods of introductory design education, particularly those inspired from the system developed in the Bauhaus and some more recently developed ones, such as that suggested by Friedman (1989), the concern is to develop students' skills in "making" and organizing spaces; yet this is a space without context as the element of human being is not incorporated. If the human being is not added to the system with his various needs, it causes a misconception of the role of the architect and architectural design in the minds of the beginning students. Any built environment has some influence on the users. Hall (1969) says that "no matter what happens in the world of human beings, it happens in a spatial setting, and the design of that setting has a deep and persisting influence on the people in that setting" (xi). Moreover, architecture is above all a social service and its

main concern should be to fulfill the needs of the users and inhabitants of the designed spaces. Denel (1979) states this fact as follows:

We also realize that just making buildings is no longer sufficient. Strong requests on the part of the to-be-inhabitants require considerable sophistication and creativity on the part of the architects to fulfill clients' individual needs and aspirations (74).

Hertzberger (1991) writing about the influence of built environment on the situation of people defines the task of architect as follows:

Architecture, indeed, everything that is built, can not help playing some kind of role in the lives of the people who use it, and it is the architect's main task, whether he likes it or not, to see to it that everything he makes is adequate for all those situations. It is not only a matter of efficiency in the sense of whether it is practical or not, but also of whether what we design is properly attuned to normal relations between people and whether or not it affirms the equality of all people (174).

In many of the beginning design approaches, man may enter into the definition of the problems simply as a set of physical needs. This treatment of man in design problems continues in the upper levels of architectural education as well. As Ayiran (1985) states, the "functionalist" approach, developed by the architectural movements in the beginning of the twentieth century, is still dominant in many educational organizations. This approach defines function as the way objects are used, and concentrates on the man's biological needs rather than subjects related to human behavior. He claims that this approach is not sufficient in answering the psychological and social needs, that dimension of architecture which requires the highest level of creativity. The reason for neglecting the psychological and social needs of the users and their interaction with the built

environment in introductory design education seems to be partly due to the difficulty in handling these matters which vary from one society to another and even between individuals, and partly because there is not always a body of knowledge about these matters ready to be used in design and design education. On the other hand, these practical facts cannot be a reason for neglecting the most basic aspect of architecture in introductory design education. Denel (1979) claims that:

Teaching social sciences with all its ramifications incorporated into basic design is an impossible task. Yet, subjecting students to its forces thereby convincing them of their importance is a must. The basic problem of that convincing shall be looking into various ways of perceiving or appraising people and groups of people all the way from masses to individuals (93).

The importance of giving weight to matters related to social sciences in the education of the architects has increased in our time along with the improvements in the building industry and new materials and techniques. Architects now have the technological ability to construct their designs in various ways without understanding the ramifications of these designs for human behavior. On the other hand, often because of the lack of knowledge about matters related to social, cultural and psychological aspects related to design, designers tend to believe that people share their beliefs in what a good environment is. Lang (1987) presents this fact as follows:

Much recent architecture, landscape architecture, and urban design, however, shows that many of our beliefs about what constitutes a good environment for people is not perceived by them as such. Much of what has been perceived by designers to be good is perceived by others to be cold, inhuman, and boring (1).

Moore (1979), discussing the ideas of the Modern Movement, particularly those concepts

of International Style about superiority of simplicity of form and regular geometric configurations, asks:

But how do users perceive such forms? First, the vast majority of users do not perceive subtlety of geometric configuration, especially when it is only noticeable in plan and cannot be appreciated without the most difficult of intellectual exercises. Nor do people prefer the stark or brutal simplicity of many modern buildings. Second, curiosity, play, exploratory behavior, and human development are stimulated by variety and complexity in the environment. Passive exposure to environments can actually be detrimental, and redundancy can lead to arrested development, while variety and complexity lead to an active commerce, exploration, and development (60).

In architectural education, developing an idea about the way people really interact with their environment and the role of architecture in that context is very important. A basic function of architecture is to give order to certain aspects of our environment. In this way it regulates the relation between human beings and their environment and is an important factor in creating a milieu that is a meaningful frame for the activities of man (Norberg-Schulz 1988b). Rapoport (1979) describes the role of architecture in regulating social communications as follows:

The meaning of the environment and of setting within it helps social communication among people. ... Thus, environments, spatially and through meanings, influence and reflect the organization of communication. Who communicates with whom, under what conditions, how, when, where, and in what context, are important factors in the way in which the built environment and social organization are linked and related. Environments reflect and control interactions, its nature, intensity, rate, direction, and so on (9).

In a holistic introductory design education it is important that students develop a conceptual understanding about different levels of interaction between man and his environment and the factors which influence this interaction. Gibson (1966) shows the

basic processes involved in the interaction between people and their environment as shown in figure 4.1.

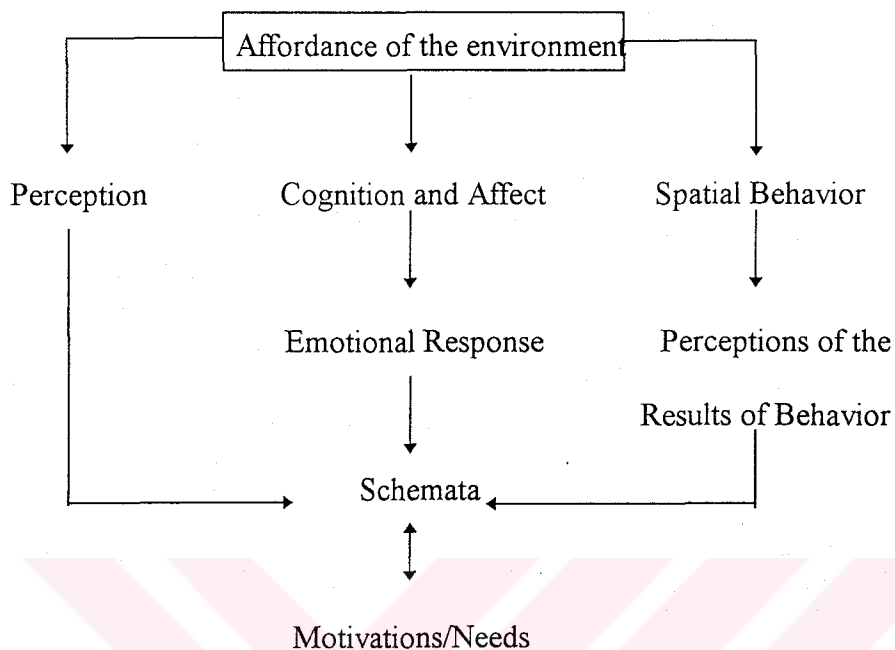


Figure. 4.1. The fundamental processes of human behavior

Source: Lang (1987, 84)

Lang (1987) describes the components in figure 4.1 as follows:

Information about the environment is obtained through perceptual processes that are guided by *schemata* motivated by *needs*. These *schemata* are particularly learned. They form the linkage between *perception* and *cognition*. They guide not only the perceptual processes but also emotional responses (*affect*) and actions (*spatial behavior*), which in turn affect the *schemata* as the outcomes of behavior are discerned. Human feelings and actions are limited by the affordance of the natural and built environments, the cultural environment, and by the intrapsychic states of the people concerned (84).

A further explanation of these components, how they are formed and how they influence human-environment relationship may help to formulate a more humane and more

socially-aware program for introductory design education. Some of these components are related to psychology rather than sociology, but since they influence the way one interacts with his/her environment an understanding of them is also necessary.

The concept of need is an important factor in human-environment interaction, because any behavior is directed towards the satisfaction of some needs. Any built environment operates as a mean to fulfill some needs in different levels, particularly physiological needs, safety needs and aesthetic needs. Lang (1987) mentions that the degree to which each need has to be fulfilled varies depending on the individual's philosophy of life, personality, culture, and habituation level-what they are used to.

Another important factor in human-environment interaction is perception. Neisser (quoted in Lang 1987) defines perception as the “process of obtaining information from and about one's surroundings. It is active and purposeful. It is where cognition and reality meet” (85). Although a great deal of environmental perception is through vision, the spatial experience is, as Hall (1969) states, not just visual, but multisensory. Three of the most influential perception theories in ideas of environmental designers are the Gestalt, the transactionalist and the ecological theories of perception (Lang 1987). These theories differ in the way they explain the process of perception. In summary, the Gestalt theory of perception suggest that “the basis for the integration is the spontaneous organization of sensory inputs to the brain” (Lang 1987), thus it is not related to past experience and is unique for all people. On the other hand, the transactionalist theory of perception expresses the role of experience, hence, the influence of cultural and social background in the perception. The latest theory of perception the ecological approach, suggests that perception is information-based and emphasizes the role of movement in visual

perception. It also accepts that past experiences influence the way one perceives the environment. The last two theories are very different than that of Gestalt in their dynamic nature and also because of acceptance of the role of experience in perception of the environment they don't accept the homogeneity of perception process for everybody.

An understanding of the process of cognition and affect is necessary in understanding the choices people make in the use of the environment. The subject of cognition focuses on issues of thinking, learning, remembering, feeling and mental development (Lang 1987).

Moore (1979) explains the difference between cognition and perception as follows:

Whereas perception refers to situations in which the response depends largely on the physical properties of the stimulus and to the situations in which the perceptual experience follows closely after the stimulus, cognition refers to the various means of awareness or knowing that intervene between external stimuli and the entire gamut of behavioral responses (61).

On the other hand, "affect deals with emotion and is concerned with likes and dislikes. It involves an understanding of values and attitude-formation" (Lang 1987, 93). It is difficult to separate these two processes which are guided by schemata. People adapt their needs to their environment, or adapt the environment to their needs and also learn new aesthetic values. In this process, learning, remembering and generalizing are the central issues and the role of experience and cultural patterns is fundamental. Lang (1987) describes this role as follows:

How people respond to the patterns of the environment depends on how they have categorized the environment and its elements, on the associations they have built up over time, and on the reinforcements they have received. Much of our behavior is culture-bound. It depends on how we have been socialized to like and dislike patterns of the environment and the successes that we have had in the past in dealing with them (94).

Patterns of the built environment also communicate a set of meanings to the user. Moore (1979) describes this fact as follows:

A further aspect of environmental cognition is meaning and symbolism. People react to the environment through its meaning for them. Early modern architects attempted to give architecture meaning in terms of architect's meaning, not the user's. Recent work in environment-behavior studies has begun to provide a user-oriented empirical base for meaning in architecture and is leading to the construction of a language of the built environment. All building types have latent meanings that differ for different user groups. The environment is both a setting for communication among people and a transducer of meanings (62).

All of our interventions in the environment are means of communication with others. That is why "those of us professionally concerned with changes in the physical environment for social purposes ... have a public responsibility for both the content and the effectiveness of our implicit and explicit messages" (Thiel 1981, 9). The importance of education in visual matters related to design is related to this subject. As a great deal of the information from the environment is taken through vision, to be able to communicate the content effectively, visual literacy becomes important.

The way people use the environment and organize their social relationships within that environment changes in different social and cultural groups. Hall (1969) defines a set of distances (proxemic patterns) that people use to control their relationships with others named as intimate, personal, social and public distances. He claims that these distances change in different societies and from one culture to another. For an environment to be efficient in answering the social needs of the users, these differences in spatial behavior should be considered by the designer.

In addition, people need to define their own territory, the desired level of privacy and status in the space they live in. The level of importance and means of obtaining these change in different societies and for different functions but are always important factors in organization and usage of the spaces. These and many other spatial behaviors are determined by culture. Hall (1969) states the importance of culture in human-environment interaction as follows:

... no matter how hard man tries it is impossible for him to divest himself of his own culture, for it has penetrated to the roots of his nervous system and determines how he perceives the world. Most of culture lies hidden and is outside voluntary control, making up the warp and weft of human existence. Even when small fragments of culture are elevated to awareness, they are difficult to change, not only because they are so personally experienced but because people cannot act or interact at all in any meaningful way except through the medium of culture (188).

Relying on these components of human-environment interaction and the role of social and cultural factors in shaping them, and accepting the fact that “the relationship between man and the cultural dimension is one in which both *man and his environment participate in molding each other*” (Hall 1969, 4), it is clear that basing the education of students in disciplines related to environmental design on the assumption that society is a homogenous, undifferentiated mass is not acceptable. In a holistic introductory design education, aiming at educating students as socially responsible persons, initiating an awareness about the complexity of human-environment interaction is necessary. Designing settings that people are happy to live in is not possible unless the designer can understand the true needs of the users. The study of human behavior is an important starting point, but it may not be sufficient because as Hertzberger (1991) has also

mentioned, it can never penetrate the thick skin of conditioning which has formed that behavior and which suppress a truly personal will. Thus, design should allow personal interpretation. As Hertzberger (1991) says:

We should go about designing in such a way that the result does not refer too outspokenly to an unequivocal goal, but that it still permits interpretation, so that it will take on its identity through usage (152).

To obtain personal interpretation, design should have flexibility, in other words, there should be a balance between what is made and what is left to the user to shape his own surrounding. On the other hand, a true understanding of human behavior is necessary to design articulated spaces, with appropriate dimensions and correct measurements of enclosedness to accommodate the patterns of relations of those who will use it, and not only this but spaces that is ready to accommodate a social pattern of utmost variety and richness (Hertzberger, 1991). In introductory design education these factors should be emphasized as factors which influence the choice of forms and also the composition of them and these should be added to the vocabulary of design. Denel (1979) suggests some ways to incorporate visual design with social and psychological dimension as follows:

- a) Take a complex social situation with many variables and reduce them in number and complexity,
- b) Define very carefully the scope of the activity,
- c) Make most physical variables existent but static-unchanging,
- d) Define carefully psychological ramifications,
- e) Make students analyze the problem and develop the program themselves (95).

There can be other ways of obtaining the same goal and all these may be valid as far as they make students understand the diversity and richness which exists in the human-

environment interaction and their influence on the design of the built-environment. In this respect, the problems of abstract nature which aim at teaching principles of formal composition are not sufficient in developing the students' sensitivity in the mentioned aspects. However, the problems related to formal composition may be handled as well in the more concrete problems, which also considers user-environment relationships. Another method can be to use a combination of these abstract compositions and more concrete problems in a coherent and systematic way so that they cover different dimensions of architectural design and give a chance to student to combine the information gained while handling formal compositions to synthesis problems which emphasize the social dimension of the architectural design as well.

4.3. Sociological Concerns in the Methods of Introductory Design Education

One of the criticisms about architectural education in general concerns its tendency of creating individual stars rather than acknowledging that a successful architectural work is generally the result of a successful teamwork (Schön 1985). Today, the complexity and content of many of the architectural projects require the architects to work as members of groups consisting of other architects as well as specialists in many other fields. Sommer (1969) describes the changing role of architects in our time as follows:

As men concerned with the application of knowledge and technique, architects have usually worked in teams. In the past the teams could be small, consisting of an architect and a few skilled workmen. Now the teams can be extraordinarily large and will include a design group, structures people, sales specialists, sewage system analysts, town planners, as well as economists, sociologists, and environmental biologists. With the increasing number of specialists in the design process, communication problems multiply (6).

The education of architects should prepare the architects-to-be for such a role, and in a way that they can perform successfully within a group. The student should become aware that architecture requires knowledge from many other fields that architects are not actually trained in and have to be obtained by working with others. Denel (1979) describes the necessity of teamwork for architects as follows:

In this team effort, the architect shall be preoccupied with search in all those areas of social sciences, sciences and arts he is not being really trained in. The architect is trained enough to communicate with such people but not conversant enough to find research methods and results on his own. He shall work then in a team spirit (167).

The importance of group work should be emphasized from the very beginning stages of education and should continue in the upper levels. The method of education in introductory design studio should make students learn to subscribe to working together. To achieve this, group critiques and general discussions are very important. Students should criticize each other's and the instructor's ideas objectively.

4.3.1. Creativity Techniques

There are techniques of developing creativity as a kind of problem-solving that can be used in introductory design education which emphasize learning through joint intellectual effort and foster team spirit. Two creativity techniques which are most commonly used are brainstorming (developed by Osborn 1957) and synectics (suggested by Gordon 1961). Lawson (1990) points out that:

Both (of these) techniques are based on the simple idea of using a group of minds acting in concert so as to avoid any individual mechanization of thought. In both

cases there are very tight rules of permitted behavior and participants are reprimanded by the group chairman for adopting judgmental attitudes but are encouraged to build on the ideas of others (113).

Brainstorming is based on generating a large number of ideas by a group with different interests and expertise. This process of idea generation may be used in various stages of the problem. It may be used to define, to understand, to look at or to solve the problem. The members of the group try to produce as many different ideas as possible, no matter how absurd or crazy they may be, without any pre-conception. About this technique Denel (1981) states that:

The notion of free association and ideas triggering ideas as well as putting ideas together to come by new ideas are employed as the means for idea generation. The purpose should be maximizing the production of ideas to help implementors. As one tries to give out ideas one should try very hard to be without pre-conceptions (xi).

In the group there should be a leader to ask questions when necessary, to help the group to produce ideas constantly. This leadership may shift in the group as the process goes on. By using this method, students can improve the sense of participation, learn to respect the others' ideas, and to help each other in doing their best in idea generation. Denel (1981) states that "various attempts to use this process in basic design or in the design process turned out to be most successful" (xi).

Synectics is a more elaborate technique than brainstorming (Lawson, 1990). Gordon defines synectics as "the joining together of apparently different and irrelevant objects ... (it) is the name given to a composite method or series of methods for analysis, ideation, and implementation" (qtd. in Koberg and Bagnall 1974, 114).

The central theme of the technique is the deliberate use of analogy. Denel (1981) defines three types of analogy employed in this technique. These are direct analogy, personal analogy and fantasy analogy. To these Lawson (1990) adds symbolic analogy. Lawson defines these analogies as follows:

When using personal analogy the problem-solver identifies personally with some part of the problem or solution, thus acting out the situation...The direct analogy allows for the use of parallel facts or systems to help understand the problem. This can be particularly useful where the problem is abstract and can be concretized and visualize as with a water flow model of electricity. In symbolic analogies the designer identifies not himself but some other object with some part of the situation ... Fantasy analogy allows the designer to suspend his sense of credulity and to explore temporarily the seemingly fantastic or impossible (114).

In synectics, the early stages concentrate on the investigation and reformulating of the problem, leaving solution generation until the later stages (Lawson, 1990). Denel (1981) suggests a group size of five to seven people with an expert to interfere or interject as well as answer when asked. This leader may shift within the process spontaneously. The problem is first outlined by the leader, and the group suggests goals and possible solutions. To start the session one of the goals is selected by the leader and then possible solutions are implemented. At all times group comes up with other viewpoints which will be tested by others not themselves.

These two techniques of generating ideas in a group have an important pedagogical result, that is, students become aware that there is no single solution for a problem. There may be a large number of correct answers to a single problem and all these are valid if one is capable of justifying it. Furthermore, the use of these techniques in introductory

design education can increase motivation and encourage group working in the students, but these should be organized carefully by the instructors to avoid the feelings of competition, anxiety and distractions which may be some effects of working in a group (Sprinthall and Sprinthall, 1977).

4.3.2. Student-Instructor and Student-Student Interactions

The design studio has particularities as an educational setting. What makes studio teaching different from theoretical courses is that the method of instruction is based on a set of social interactions rather than on a one way transmission of knowledge from instructor to students. Individual and public discourses, desk critiques and group discussions, are the main tools in guiding the students in the process of learning to design. These are interactive processes in nature in which both parties, instructors and students, influence the direction of the discussions. An important aspect in success of these methods is maximum student participation. In this way, students begin to develop their own set of value judgments and learn to communicate their thoughts to the others. In this respect group discussions are very important in introductory design education. Moreover, through these discussions students can see many alternative solutions to a single problem and realize their pros and cons. In introductory design education all sorts of student-instructor interaction types such as formal discussions, informal speeches and even gestures are important tools in an efficient teaching/learning process.

Another important set of interactions in the design studio is among students. Students not only criticize each other's designs in group discussions but also informally discuss their friends' and their own design works. It has been observed that these informal discussions

are very effective in introductory design education. Moreover, students learn many presentational skills such as techniques of model-making and drawing from their friends. In this education, different means of group work such as group projects and group researches can be used to foster the notion of team work and to improve social interaction among students. This intense contact, however, together with the time consuming and effort-demanding studio works, can lead to a reduction in the social relationships of the students outside the studio. Anthony (1991) states this as follows:

The intense contact with studio-master often makes it difficult for design students to maintain their friendships with those in other fields. As many students have admitted, the more years they spend in design, the fewer nondesign students they have as friends. Cloistered into the captivity of studio, the studio commands an increasingly greater role as the center of students' social lives, and consequently, the world outside studio becomes less important (12).

The findings of a research conducted by Carleton University, and published in 1992 also confirm this statement.

Students learn to focus their attention and passion almost exclusively on their studio projects. They tend to cut off or minimize relationships outside the school until their primary social reality is constituted by fellow students sharing similar circumstances, and by their faculty tutors who can teach them how to succeed. It is from this highly specialized community that support and encouragement is sought and intensely needed by students (cited in Crysler 1995, 209).

Although this group support is very important in introductory design education, the load of the course should be organized in a manner that does not prevent students from participating in other social activities and healthy social relationships outside the studio which are also important in education of the student in a broader perspective.

4.4. Sociological Aspects in Management of Introductory Design Education

The sociological aspects of the management of introductory design education constitute an important issue as design education is an interactive kind of education and a great part of the learning process is through the interaction of instructor and students as well as that among students. Sprinthall and Sprinthall (1977) define three important sets of attitudes which form the attitude of the teacher in teaching as: i) attitudes toward learning: how the teacher understands the nature of knowledge or knowing, ii) attitude toward students and iii) attitude toward self. These are also valid as the factors which influence the sociological management of introductory design teaching.

Crucial to any educational enterprise is the ability to respond to evolution and changes over time. One such changing aspect is the nature of student. In this context and about the nature of the students in our time Wall and Daniel (1993) state that:

the students of the 90s are ... products of their time. The 70s and 80s refocused on concerns of the self. The public, private and academic have become more separate and distinct entities. This shift, for the most part, has abandoned collective social concerns. The program now finds itself in a position of resistance. To clarify, it is resisting conformity, an acceptance of all things offered: an introversion towards personal, private expression (100).

In this condition the role of instructor has changed too. The beginning students are different and special. They are young and sometimes fragile. While approaching them, the instructor should offer support and encouragement and should respond to each project in a manner appropriate for that student and project. At the same time he/she should also create an atmosphere to encourage social interaction and group working in the studio.

Besides, the students are not all the same. Most important, they have different learning styles. McGinty (in Cappelman and Jordan 1993) explains these differences as follows:

Students learn in different ways. Some students may only need to briefly hear an idea explained to catch on. For others, a few vivid examples are all that are necessary to confirm their understanding. For many, nothing is clear until they have practical firsthand experience with a concept. Our students represent a variety of learning types, both abstract and concrete, to use the jargon of educational psychology. We teach both, and, surprisingly, both are valid modes (xv).

Students also have different personalities, cultural backgrounds and levels of motivation. Managing all this diversity is the main role of the instructor in an introductory design studio. Neglecting differences in backgrounds of students can result in privileging those who have a richer cultural capital because of living in big cities or coming from well to do families and so on.

The depth of the refinement of an instructor's understanding of students is a mark of teaching erudition. To be effective, teachers must appreciate the qualifications that students bring to the studio. They also should understand how a student's learning relates to their personal background. In addition, they should realize that teaching includes diagnosing those student characteristics. From this juncture they may be able to construct knowledge goals for student learning (Dinham qtd. in Bunch 1993, 36).

All these make the role of a introductory design instructor very special. Rapoport (1984) criticizes the studio system as being based on a master-apprentice system. "This system ... nullifies what I think design should be and the essence of university teaching - a stress on ideas, theory and knowledge rather than personality, for example" (Rapoport 1984, 100). In introductory design education the role of instructor is much more than a master. As an educator, he/she should not only stress and teach the ideas, theory and knowledge

but also should be concerned with the personalities of the students in all its senses and try to improve them as well. Kalogeras and Malecha (1994) explain the crucial role of beginning design instructors as follows:

The role of teacher in beginning design is crucial. It is founded upon a deep respect for critical and reflective inquiry, as well as commitment to the process of learning. Teaching the beginning student places the instructor at the most influential point in a learner's career. It is a vocation which demands a selfless approach to helping the individual to think and see in new ways, while valuing each individual's heritage. Teaching at the beginning is dependent upon the transference of ideas, which includes valuing and accepting opposing views, the process of critical and reflective thinking, the interdependence of process and product and the search for references and sources of inspiration, including personal experience (30).



5. EPISTEMOLOGICAL DIMENSION OF INTRODUCTORY DESIGN

EDUCATION

The epistemological dimension of introductory design education concerns the way knowledge is produced and used in this education as well as its relation with other fields of knowledge.

5.1. Epistemological Objectives of Introductory Design Education

Dressel discusses one of the competencies that a good college education should provide as follows:

The student should know how to acquire knowledge and how to use it. Acquiring knowledge includes use of and evaluation of source material; evaluation and assessment of data using experimentation, firsthand observations, and discussion. Using knowledge includes evaluation of relevance and accuracy of evidence; resolutions of problems, explanation of events, analysis of courses of action and prediction. The acceptance of such a competency as an outcome of a college program has implications with regard to the relevance of the learning experiences (qtd. in Bunch 1993, 56).

These criteria can as well be the key points in setting the objectives of an introductory design education. The student in this course should learn in this studio how to acquire and evaluate the information related to different aspects of design and architecture and also should learn to use the relevant information in his/her own designs. In our age where problems of architecture have become more and more complex, the necessity of

using knowledge from different disciplines in design may not be denied. As Vesely (qtd. in Aravot, 1993) states "since the eighteenth century, the poetic, traditional creation of architecture has been transformed into the modern way of making, which is subordinate to theoretical knowledge as the primary condition of design " (163). Brady (1996) defines the necessity of bringing information from different sources together for architects as follows:

Architects must assimilate large amounts of disparate information and find ways to order it and apply it to particular settings. However, the whole of architecture is greater than the sum of its parts, architecture is the integration of the parts as a cohesive whole (33).

Studio teaching is a medium in which students learn to integrate theoretical knowledge gained from different sources (interdisciplinary knowledge), and design skills (disciplinary knowledge). About the importance of this matter in design education Brady (1996) states that:

The design of architecture is concerned with the expression of ideas through culturally significant and relevant form, issues that involve the ability to understand the relationships and implications of disparate issues as a part of the larger context. Therefore, for design to transcend the authority or dictates of traditions or trends, it must be informed and guided by a process of critical inquiry that provides for the interplay of precedent and innovation: precedent informed by research, and innovation guided by a creative, cyclic process. For this reason, it is important to teach design within the context of a broader base of knowledge (40).

To be able to teach design within a context of a broader base of knowledge it is necessary to go beyond the present attitudes to knowledge in design education. Teymur

(1992) explains the dominant attitudes towards knowledge acquisition in architectural design education as follows:

One of these is what I would call *professional minimalism* that restricts knowledge to what is needed for a particular design/ building/ business/ client/... requirement on given occasion. The other attitude is made up of the illusion that design is essentially a self-sufficient, self-justifying and self-fulfilling creative activity, either having its own internal knowledge or, conversely, not in need of any external knowledge! While the first attitude renders longer term accumulation of knowledge superfluous, the second one reduces knowledge to design (27).

These two attitudes can be traced easily in many of the approaches to introductory design education. Especially the second attitude is dominant in those methods where abstract problems are given and it is expected that the solution will be developed referring to the givens of the problem and depending on creativity of the student. These methods of beginning design education with their emphasis on formal compositions, place the wrong image in the minds of students that designer can design, and decide about form of spaces without using external information. This image can last in the upper levels of design education as well. A study by Tzamer and Churchman (cited in Bunch 1993) shows that it is a dominant attitude in architectural education:

Students relied predominantly on their own experiences, feelings and ideas (in making judgments about architectural problems and their solutions, and they proposed that) the education process should a) strengthen the ability to use external, objective information; and b) consciously promulgate a teleological ethical approach to design that requires that justification for decisions be the value of their results for the users (needs) (63).

To overcome this problem, Teymur (1992) suggests that the scope and meaning of the design projects should be expanded to be research-like, research-based and research gathering at one and the same time. In the same context, Onat (1995) states that:

An educational approach based on the transmission of information can not be sufficient in architectural education. Instead of teaching ready packages of information to student, it would be wise to teach him/her:

- to find the source of knowledge correctly and fast,
- to evaluate the information he/she has found and choose the correct one,
- to create an accumulation of information using scientific methods,
- to use this found information (329. My translation).

In a holistic introductory design education, the same objectives can be dominant. The organization of the course and formulation of the problems can be in such a way that students from the first step in their design education see research as an integral part of design process and be aware that information from many different fields is necessary in architectural design. Different means of gathering knowledge about issues related to architecture such as research through written materials, environmental analysis, study of nature, etc. might be used in introductory design education. To be able to evaluate and use information from these different sources, students should develop a critical view. One problem faced in the introductory design education is that secondary education does not prepare students for research and evaluating the information received. A critical view is often found to be lacking. Secondary education is mainly based on memorizing a given body of knowledge. In introductory design education, one of the important roles of instructors is to encourage students not only to do research in different subjects but also to evaluate them with a critical view. This is a necessity in developing a holistic view of

architectural design. Teymur (1992) declares this necessity of theoretical knowledge in understanding the complexity of the built form as follows:

while aiming to teach and to theorize in a *designerly* manner, we must also promote a *theoretically informed* design education..... Even though theory does not guarantee good design, it makes us more conscious of the impediments to it. Theorizing as a designerly habit would generate an awareness of the role of concepts, thinking patterns, media and ideological fixes, and would enable us to appreciate and understand the complexity of the built form (37).

The way knowledge is produced and used in the design process is directly related to the dominant philosophical position in education. Referring to the taxonomy given by Downing and Gribou (1994) about current theories in architectural education, different approaches to knowledge acquisition can be discussed. Table 5.1 shows the way these philosophies look at knowledge, the method of acquiring it and their effect on formulation of design problems. Actually these approaches can exist together. As was pointed out above, both rationalism and empiricism have been the dominant perspectives in architectural education, and structuralism and pragmatism approaches in formulation of design problems have been used occasionally. The new trend of using a phenomenological approach in formulating design problems is a result of the inefficiency of the other approaches in dealing with the subjective dimension of design. Architectural design is a multidimensional activity including both objective and subjective issues. Thus, different methods may be used to acquire knowledge about different subjects related to architectural design. While the first four approaches can be used to study the concrete, objective issues of architecture, the last one can be utilized to let students be informed about the sensual, subjective issues of architectural design.

RATIONALISM	EMPIRICISM	STRUCTURALISM	PRAGMATISM	PHENOMENOLOGY
Knowledge is: logical Knowledge is embodied in precedents	Knowledge is: provable Knowledge is embodied in: theories	Knowledge is: generic Knowledge is embodied in: taxonomies	Knowledge is: useful Knowledge is embodied in: models	Knowledge is: essential Knowledge is embodied in: phenomena
Method is: the justification of plausible arguments through appeals to logical precedents	Method is: based upon unbiased observations to confirm hypothetically predicted events, which are isolated through experimental or statistical controls	Method is: the successive approximation of categories which interact to exhaust the naturally occurring events identifiable in a given problem area	Method is: the continual corroboration of analogs against observable states of affairs in order to improve the correspondence of the analog to emerging events	Method is: by means of the suspension of judgment, existence is said to be bracketed
Generating systems and organized problem solving: Utilization of kit-of-parts. Development of rules of assembly. Permutation and Combination.	Systematic Design: Collect and classify information relevant to the design problem. Formulate potential solutions to the problem, which are feasible. Attempt to judge, by use of criteria, which of the feasible solutions most satisfactory answers the problem.	Pattern Analysis: Observation of the field. Formation of categories. Arrangement of: typologies hierarchies matrices Development of taxonomies.	Predictive Modeling: Diagnose by identifying and defining the problem. Consider alternative courses of action. Select a course of action. Evaluate the consequences of action. Identify general findings.	Phenomenological Reduction: Free the essence of consciousness from its factual concretizations. Reduce to objectivity. Reduce to subjectivity. Reduce pure subject to reach transcendental self. Involve temporality and history in consciousness.

Table 5.1. Taxonomy of different approaches to architectural education

Source: Downing and Gribou, 1994, 45.

5.2. Epistemological Aspects of Objects of Introductory Design Education

Stamps (1994) claims that architectural education still socializes its members into a predominantly artistic paradigm that emphasizes personal feelings and imagination and that this approach is specially dominant in beginning design education. For an introductory design education which aims at providing students with a theoretical basis, this approach cannot be valid. An understanding of different kinds of knowledge used in design process will help towards their more conscious usage in introductory design education.

The epistemological dimension of content of introductory design education can be handled in two different ways. The first concerns a study of the different kinds of knowledge used in design and the way an introductory design course may use this knowledge. The second considers the fields of knowledge which are used in formulating an introductory design course.

5.2.1. Types of Knowledge Used in Introductory Design Education

Akın (1986), Akın and Akın (1996), and Uluoğlu (1995) state that there are two broad categories of knowledge: declarative and procedural. Akın (1986) describes these as follows:

Declarative knowledge is described as all we know which describes how things are. This is accomplished through objects, ... their attributes ... and the relations between them. Procedural knowledge, on the other hand, is all that describes and predicts actions or a plan of action ... All knowledge of 'how-to's ... are examples of procedural knowledge (32).

Aravot (1993), on the other hand, suggests that every human specialization (including architecture) uses three types of knowledge:

- 1) Know-That or propositional knowledge,
- 2) Know-How or skill,
- 3) Acquaintance.

She describes these as follows:

Know-That or propositional knowledge is the content of every rational, discursive and communicable sentence of the form " X is Y", with all its variants, provided that the contents of the sentences are true.

Know-how or skill is practical, almost instinctive, knowledge which exercises intellectual capacity and/or the proper use of body ... Every creative activity, such as the manipulation of architectural forms or their assembly into an entity, involves the know-how of the person performing the activity.

Knowledge by acquaintance concerns the identification of an item as a particular object, or as belonging to a class of objects (164).

From these definitions it can be said that propositional knowledge and declarative knowledge, represent the same thing, as do Know-how and procedural knowledge. Acquaintance is generally formed as a result of the former types of knowledge.

All of these types of knowledge are used in introductory design education. Declarative (or propositional) knowledge about different aspects related to design is combined with the procedural knowledge about how to bring these together. To provide students with a degree of declarative knowledge and a rich preliminary experience to begin is important. Akin and Akin (1996) describe the importance of declarative knowledge for beginners as follows:

The declarative knowledge, is seen most often in early stages of learning while procedural knowledge is not fully developed ... Beginners, in a given area of expertise, tend to have a preponderance of declarative chunks (unit of knowledge). They laboriously reason through each problem using these chunks to decide when they may be applicable at each point in the design process.

On the other hand, there are two different categories of knowledge, general and specific purpose knowledge (Akin, 1986). In introductory design education, the aim is generally to make students form a body of general purpose knowledge applicable to many different

circumstances (schemata) and specific knowledge (such as instances) are used to reinforce the general knowledge. The generality of knowledge is necessary so that it can make a basis for the whole educational career where the problems may not be exactly the same as those in which learning has taken place. For example, when the problem of structure is handled in introductory design, the aim should be to understand the general behavior of structures rather than to learn a specific kind of structure or a single building's structure.

Akın (1986) also defines three categories of knowledge which are necessary and sufficient for design as: knowledge for search, knowledge for representation, and knowledge for reasoning. In introductory design education, the aim should be to formulate the problems in a way that students learn to search about the factors which are related to design, this may be search about the more tangibles of design, such as structural behavior or light, or may be about subjects such as the influence of culture on space formation and usage or human behavior which are more intangible. A part of knowledge for representation may be given in supportive courses to design studio, such as technical drawing, but they should be used and improved in design course as well. Besides, there are some representation skills such as model-making which are generally directly learnt and developed in an introductory design course. The knowledge for reasoning in introductory design is gained through the values formed as a result of the approach to the course and critiques, as well as by experiments of the student.

Akın (1986) also states that there are three categories of knowledge applicable to design: "knowledge of things, their properties, and plans of action for manipulating this information to achieve goal-directed behavior" (56). For instance, in the context of

spatial organization knowledge about the components of space, their properties, different ways of organizing spaces, the factors which influence the spatial organization and the way all these come together to form a design which satisfies the requirements are the concerns of introductory design education.

5.2.2. Fields of Knowledge Used in Introductory Design Education

The basic role of environmental designers is to organize the built environment that is to give form to it. Sancar and Studer (1996) describe the knowledge base used for this activity as follows:

The preeminent activity in the fields of architecture, landscape architecture and urban design is "design" defined as giving form. Therefore, the core knowledge base consists of "convictions" (including precedents, styles, and theories) about forms and form-giving, the associated skill is search for form ... The general consensus about design is that the task is complex, uncertain and wicked, and the knowledge base to address the task has to include a repertoire of form images, combinatorial rules and an overall framework.

On the other hand, with professionalization of the designer, the role of science in the development of the core knowledge base has increased. Furthermore, in introductory design education both abstract matters related to form-giving task of architecture and also usage of rational knowledge have gained importance. Kalogeras and Malecha (1994) describe the importance of a balance of reality and abstraction in beginning design and some means to achieve this as follows:

Underlying much of what occurs in beginning design may be described as a balance of reality and abstraction. The students are taught to seek the essence of a situation while also beginning to learn the necessary skills of studio. While continually challenging the student to think in terms of new models and fresh

solutions, they are also necessarily being taught the traditions and sources of knowledge and fundamental typologies. Reality and abstraction cannot exist without the other. ... Spatial perception and architectural visualization exercises give structure to the tension between reality and abstraction. The ability to transform abstract thought into spatial thinking defines architecture-in-between (29).

The fields of knowledge used in introductory design education can be driven from the factors which influence the practice of form generating in architecture. Malnar and Vodvarka (1992) define the main areas of concern in architectural design as subject, related to the program of the project; form, related to visual elements and principles of organization; and content related to public existence. Wallschlaeger and Busic-Snyder (1990), in the same context claim that the form generating activity in design is affected by visual elements of form, perception theory, communication theory, human dimension, structure and material. From these definitions, it is possible to categorize the fields of knowledge used in architectural design. However, the fields of knowledge used in introductory design education differ according to different approaches to this education, the objectives set, and the subjects decided to be covered by this course. In a holistic approach, the aim is to educate student in a way that can acquire, evaluate and use knowledge from all these related fields in the design process.

The method of beginning design education developed in the Bauhaus, and all other approaches that are based on the idea that visual aspects of design are the fundamentals that should be dealt with in the beginning year of design education, use those fields of knowledge which are related to visual aspects of design. These fields can be grouped under two main topics, those related to the elements of design and their properties, and those which consider the way these organizations are perceived by human beings. In

addition to these in the Bauhaus system, specially in its second phase in its history, study of materials and structure hold an important place in introductory design education.

Visual elements of form can be divided to two main groups: form generators and the visual and physical attributes of form. Form generators are basic elements of design, point, line, plane and volume and their attributes constitute of value/tone, color, texture, dimension, direction, shape and proportion. Thus, the fields of knowledge which are related to these subjects namely geometry and studies on color and light can be used in introductory design education to give an opportunity for more aware usage of these elements of design.

Geometry is an important source of knowledge in analyzing and making coherent relationships between the elements of design. Friedman (1989) explains the importance of geometry in space design and as a fundamental subject in introductory architectural education as follows:

... a deeper understanding of geometry enables architects to organize the entire ensemble of elements they are creating. Geometry provides architects with a means to find unity in the order of the parts, the characteristics of the site, and the proportions that relate all elements. Such strategy is not merely aesthetic conceit. Architects continually use geometric analysis to resolve design problems, so that people and the space they occupy can become one harmonious whole (25).

Antoniades (1990) speaking about what geometry affords designers, claims that it gives the power to realize geometrically conceived forms with ease, the ability to describe form with precision, and a set of ready-made forms that can be manipulated in a variety of forms (202). On the other hand, the usage of geometry in space design goes much

further than a tool to bring visual elements of design together to form a composition. The geometry of the built form should also satisfy anthropometric, structural, flexibility needs and should be complementary with the human scale. Antoniades (1990) criticizes the way geometry is used in architectural education:

(recently) geometry in the studio is used only for beautification, as a tool in the achievement of plasticity. Another recent use has been purely abstractive, focusing on the two-dimensional possibilities of geometric fields and attempting compositions devoid of function or social destination. Even though abstract exercises in geometry and stereometry are certainly beneficial, they do not serve the goal of architecture, which also has functional and technological dimensions (202).

In holistic introductory design education, students can be directed towards using geometry as an integral part of architectural design which can be explored in relation to the other aspects such as structure and circulation.

Another source of knowledge which is related to the explanation of visual attributes of form are studies on light and color. It is known that in the system of the Bauhaus, particularly in Itten's period, color studies took an important place in the beginning design education. An understanding of basic concepts about color and light makes a more conscious use of these design elements possible for the beginning students.

Since traditionally the main objective of basic design courses has been to teach students to organize the visual world, the theories about visual perception has had a profound impact on the formulation of this course. Actually the studies in this field are very important for architectural design since they describe the way people actually perceive

their environment. The Bauhaus school used theories of Gestalt psychology about visual perception as a scientific proof for universal principles of design. This theory has remained influential in introductory design approaches from that time on. One of the criticisms about Bauhaus-based methods of beginning design education is that these have not been able to catch the later developments in the field of perception which could open new horizons for the organization of beginning design courses (Lang 1974). Considering the importance of visual and spatial perception in architectural design, a review of major theories of perception and their possible impacts on the content of introductory design education is necessary.

The Gestalt theory of perception formed a basis for the formulation of universal principles of formal composition in the Bauhaus school, and still is the basis of many basic design methods in our time. Some aspects of this theory which are used in architectural design are as follows:

According to the Gestalt theory, form, a closed and structured element in the environment, is fundamental. Behind this solid figure or form extends the ground which is unbounded and diffused (Lang 1987, Jules 1979). This theory suggests a list of factors which influence the perception of formal organizations. These laws of visual perception are called law of proximity, similarity, closure, good continuance, area, symmetry, common movement and configuration (Lang 1987, Lang 1974, Denel 1970, Jules 1979).

Gestalt psychologists believed that these laws could be explained in terms of isomorphism, "a hypothesized parallelism between the form of underlying neurological processes and the form of the perceptual experience" (Lang 1987). That is why these

laws are supposed to be universal. Lang (1987) states that the concept of isomorphism is highly suspect and there is no evidence that the perception process takes part as Gestalt theory explains. In this light it can be said that architectural concepts of universality of organizational laws are open to serious questions and that these laws of visual organization are not the basis of perception, rather they are ways in which we order the environment.

Another theory of perception which brings a different description of how people perceive the world is the transactional theory of perception. In this theory of perception the role of experience is emphasized and perception is considered to be a transaction in which the environment, the observer, and the perception are mutually dependent on each other (Lang 1987, 1974). According to this theory perception is an active process and the person-environment relationship is a dynamic one. Moreover, both past experiences and present motives and attitudes are accepted as the basis for what people pay attention to in the environment and what is important to them. Lang (1974) describes the main contribution of the transactionalist school as follows:

Perhaps the main contribution of the transactionalist school has been to make us aware that different people attend to different things in the environment, based on their own experience, education and purposes. Architects have been educated to attend to certain formal relationships, and these have become extraordinarily important to our polemics. These will not necessarily be the relationships which are attended to or regarded as important by other people (100).

The Ecological theory of perception was developed by Gibson; similar to the transactional theorists, he suggests that "perception depends on memory or past

simulation, i.e., it has a past that lays the foundation for the perceptions of here and how" (Hall 1969, 191). Furthermore, this theory assumes that:

perception is the function of our direct visual response to the sundry relationships between objects and surfaces. Thus, perception is a direct response to retinal images, which are formed by light striking the retina (Malnar and Vodvarka 1992, 31).

This theory emphasizes the role of movement in perceiving the environment:

People explore the environment to perceive the finer details by moving their eyes, heads, and bodies. With experience, a person is able to identify the finer and finer details of the world and broader and broader relationships (Gibson and Gibson qtd. in Lang 1987, 90).

Gibson (1950) claims that the visual world is

extended in distance and modeled in depth, it is upright, stable, and without boundaries; it is colored, shadowed, illuminated, and textured; it is composed of surfaces, edges, shapes, and interspace; finally it is filled with things that have meaning (qtd. in Malnar and Vodvarka 1992, 31).

According to this model, the world consists of surfaces varying from longitudinal to horizontal (Lang, 1987, 1974). Some surfaces of the world hide the others and the hidden part changes as the point of observation changes. The implication of this theory of perception on teaching of the formal issues of design is obvious. Instead of frozen and static organization of geometric shapes, the emphasis can be placed on the way spaces are perceived when one moves through it and the three dimensional relationship of surfaces. As Lang (1974) states:

A number of architects recognizing that much of our interest and pleasure in the world stems from the way in which changes take place as we move through it, have attempted to go beyond this static conception. Basic design should be more concerned with these transitions and transformations of the world as we move through it than it is at present (101).

Structure is one of main determinant factors in deciding about the form in architecture and as Denel (1979) indicates, one of the most important concepts that a beginning design student must learn. Structural behavior is basically independent of the kind of materials that they are made of. "All structures regardless of what material they are made of behave in a similar way" (Denel 1979, 82). Thus, students may be provided with a basic knowledge of structural principles and structure might be introduced as the fundamental and inseparable part of design. Nature may be used as a source for analyzing and learning the structure types as all structural systems exist in the nature as well.

The fields of knowledge related to human concerns which can be used in introductory design education can be divided into two main categories. The first considers the physical needs of the user. Anthropometry and ergonomics are two such fields in this category. The second group comprises the fields which deal with the human-environment interaction at the individual as well as the social level. The importance of anthropometric and ergonomic data in design is clear. The beginner student should be taught about how these data are obtained, how they can be used in design and learn to rely on these rather than his own experiences and pre-conceptions.

In order to formulate an introductory design education which takes the human being as the center of interest, understanding the human-environment interaction in different

levels is of vital importance. To this end, the social sciences should be used as a source of knowledge. Psychology and sociology are the two main related fields. Subjects related to human-environment relationships were discussed previously under the title of sociological aspects as objects of introductory design education. The point that needs to be clarified here is that it is not possible to teach every thing related to the mentioned subjects to the students in their first year of design education, but it is possible to formulate the problems in a way that make student develop a concern for these subjects and become directed towards the usage of the related sources of knowledge.

5.3. Epistemological Aspects in Methods of Introductory Design Education

Groat and Ahrentzen (1997) define three distinct and complementary modes of thinking which is necessary in a successful professional education as follows:

- 1) discovery, whereby the knowledge base of a discipline is increased; 2) integration, whereby new insights emerge from exploring the connectedness of knowledge within and across disciplines; and 3) application, whereby knowledge is applied to consequential problems in society (277).

The student should learn to exercise and combine these modes of thought in design education and the studio model offers a great potential for achieving this goal. Besides, studio teaching is a special type of teaching in which both skills necessary to design and the knowledge required are obtained. Jones, P.B. (1996) explains the nature of studio teaching as follows:

Studio teaching is inevitably integrative, in that all aspects of the discipline, technical or cultural, have to be engaged and understood in relation to each other. Studio teaching is also active, and it is student-based, for each student has

to propose his or her own design. Knowledge is tested in context, in active engagement with a task, and teacher is obliged to get involved in a dialogue with the student, often on the student's terms. Implicit skills in design _ those we are not fully conscious of in ourselves _ can be transferred in such a process (71).

The type of knowledge which is generally dealt with in the design studio is related to both concrete and abstract aspects of architecture and can be in general or specific form. In an introductory design course which tends to inform students about the complexity of the architectural work these aspects should be handled as well. There are several ways that these subjects may be learnt in a design studio. Knowles defines six types of learning activity that are prominent in the university setting as follows:

1) general sessions or large meetings of the entire class that allow the usage of platform presentation and audience participation, 2) small groups of various size for a variety of purposes including: topical discussion, laboratory, inquiry, skill/practice, and learning/teaching teams, 3) individual consultation or directed study, 4) reading, 5) recreation or meditation, and 6) preparatory activity that allows the participants the opportunity to collect data or for self-analysis (qtd. in Bunch 1993, 43).

All of these learning activities may take place in a design studio and can be used in teaching the subjects related to design. The most widely used system of instruction is project critiques. This is an interactive/communicative phenomenon rather than a one way flow of information. The critiques in the studio may be in the form of group or personal critiques. Snyder (1984) notes that criticism is the historical foundation of the educational process "because ... the intellectual tradition of architectural education emphasizes precedent and adaptation rather than knowledge development" (qtd. in Bunch 1993, 29). On the other hand, Uluoğlu (1995) states that in architectural education, primarily the ways of organizing and producing new knowledge should be

taught to the students. This necessitates a true understanding of the types of knowledge which are communicated within this process. Uluoğlu (1996) defines the types of knowledge which may be communicated in the critiques as: i) reflective knowledge for understanding things through interpretation and descriptions, ii) operative knowledge about how to do through coaching and demonstrating, iii) contemplative knowledge leading to thinking about things by asking questions, iv) directive knowledge which faces the student with evaluations, and v) associative knowledge to help bridge the gap that exists between ideas and concretizations. In the critiques these means may be used consciously in teaching students 'how to design'.

Another kind of knowledge used in design teaching is declarative knowledge. In transferring this kind of knowledge and in order to teach student to organize and produce new knowledge, Uluoğlu (1995) suggests that it is necessary

to make student face different problems, different levels and forms of problems to increase his capacity in abstraction (conceptualization);

to help student to form the norms necessary to make this abstraction and to set up the relationships, and for this, to lead his attention to the media which enrich and deepen his visual, theoretical and life experiences;

to help student to construct the relationship of the abstract and the concrete and in doing so to abstract the concrete examples, and to discuss the abstraction in concrete example levels (176. My translation).

An important subject related to the epistemological aspects of the method of design instruction is the manner in which the design process is explained. This involves the ideas about how the knowledge necessary in design is going to be used in the process. Dorst and Dijkhuis (1995) and Dorst (1996) state that there are two main paradigms for

describing the design activity. Each of these represents a different way of looking at the design task, the design process and design knowledge. These two models are those which define design as a problem solving activity and as a process of reflection in action.

The first model entails adopting a positivistic view of science as a model for a science of design. According to this view, the problems in design are ill-defined and unstructured and the design process is a rational search process in an objective environment to find an answer to the problem. According to this view, design knowledge is based on procedures and scientific laws (Dorst 1996, Dorst and Dijkhuis 1995).

There is much stress on the rigor of the analysis of design processes, 'objective' observation and direct generalizability of the findings. Logical analysis and contemplation of design are the main ways of producing knowledge about the design process (Dorst and Dijkhuis 1995, 262).

The basic activities in this rational search process are analysis, synthesis and evaluation. These also become a basis for division of design projects to a number of phases. Dorst and Dijkhuis (1995) state that describing design process in this way is particularly apt in situations where the problem is fairly clear-cut and Dorst (1996) states that "the rational problem solving description of design runs into trouble in the conceptual phase".

The second model of describing the design activity has been developed by Schön. According to his model every design task is unique and can be interpreted in many different ways. Thus, the design process develops as a reflective conversation with the situation of the project. In this model, knowledge of design is defined as the artistry of

when to apply which procedure and which piece of knowledge. Schön (1985) points out that the process of design involves knowing-in-action as well.

Dorst (1996) suggests that the design activities that involve subjective interpretation, particularly in the conceptual phase of design project can be best described by this model. Schön (1984, 1985) sees the design studio as an example of learning through reflection-in-action. He states that in the context of the studio, there is a double paradox which he describes as follows:

On the one hand, the student cannot initially understand what he needs to learn; on the other hand, he can only learn it by educating himself, and he can only educate himself by beginning to do it (Schön 1985, 57).

The essence of this self-education is the interaction of the studio-master and the student. The student must actively be engaged in trying to do something and the critiques should take the form of reciprocal reflection-in-action. The necessary knowledge in design is introduced in design process when necessary rather than dividing the process to certain phases for gathering information and synthesizing them.

Schön (1985) suggests that in the process of reflection-in-action there are three noteworthy dimensions. The domains of language in which the designer describes and appreciates the consequences of his moves, the implications he discovers and follows, and his changing stance toward the situation with which he converses.

According to Dorst (1996) a combination of these two models, design as rational problem solving and design as reflection-in-action can be used in teaching and learning of design. She states that:

The teaching of design in the end requires both approaches: students have to learn to tackle design tasks in a rational way, they have to learn how to use the tools of analysis and evaluation, and they also have to learn how to behave in the more 'subjective' interpretation-laden phases of design too. ... We should be aware that while rational problem solving concentrates on teaching design, reflection-in-action concentrates on learning and reflection: the paradigms connect to different phases in the learning cycle. The combination of the paradigms might radically alter the layout of design education.

5.4. Management of Epistemological Aspects in Introductory Design Education

Generally, the transmission of knowledge in design studios is effected through an instructor-student interaction and is based to a great extent on the personal knowledge of the studio-master. This may be supported by some lectures, environmental analyses, and visual presentations but often these are not regular parts of the program. Uluoğlu (1996) shows the components of this interaction as in figure 5.1.

This diagram indicates that studio master (SM) transmits knowledge to the student (ST) through critiques. The components which form the content of the master's knowledge are his/her personal knowledge as an architect and as an educator. These are general in their character. The studio master adapts these to the specific case of the student characteristics and limitations of the project and transmit these to the student by some kinds of representational molds and codes. The student as the receiver takes the message; interprets this according to his knowledge content and transmits the response to the

master. The factors which constitute the content of the knowledge of the student are similar to those of the master. The process is a two way communication and the studio master and the student both act as transmitter and receiver in the process.

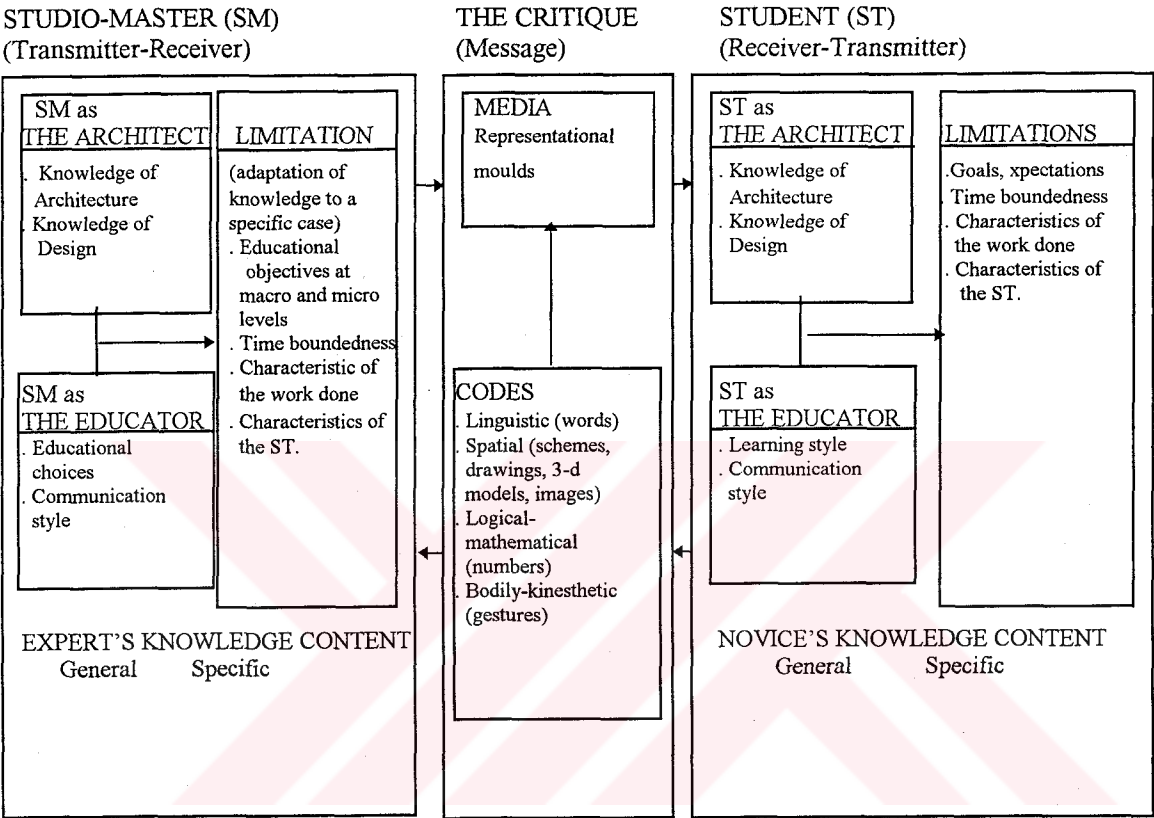


Figure 5.1. A model for SM-ST interaction in the studio

Source: Uluoğlu 1996.

The introductory design studio is different, however, from other studios in its mission of giving a view of the context of architecture and its various dimensions, and the interdisciplinary nature of architectural design to students which have no preliminary information about the subject. Thus, it is necessary that the student-instructor interaction be regularly supported by other means and all available possibilities in preparing lectures, slide shows, field trips, etc. Be used. It takes more time and needs much effort on the

part of the instructors but without these a holistic introductory design education with a knowledge is not possible.

Another important aspect is that today, because of the vast amount of knowledge available in any discipline, no longer it is possible to rely on the instructor as the only source of information. New means and technologies such as global networks of knowledge are now easily reachable by students. These can be used in architectural education as well. The role of instructor in this respect is a guidance for way-finding and for teaching the students how to access, to group and to use this information.



6. PEDAGOGICAL DIMENSION OF INTRODUCTORY DESIGN EDUCATION

One of the most important dimensions of introductory design education is its pedagogical dimension. To be able to organize the body of knowledge and skills to be learned in the course properly, to find suitable methods of transferring them to students and to achieve maximum efficiency in teaching, the instructors of this course should be aware of different pedagogical approaches as well as the implications of the chosen methods on the students. Whatever the intentions in the organization of the introductory design course may be, without a suitable pedagogical approach the result cannot be satisfactory. The characteristics of beginning students and that they are just in the first step of their educational journey to become architects, makes careful pedagogical approach to the organization of the course even more crucial. To be able to formulate a successful holistic approach to introductory design education which places human being at the center of concern, needs the same treatment about the students, that means, to place student at the center of interest in design of educational program.

6.1. Pedagogical Objectives of Introductory Design Education

Setting pedagogical objectives is important in introductory design education because these create a basis for developing content and procedures and “assist the instructor in i) selecting learning experiences, ii) communicating to the student the learning experience and what is expected, and iii) giving both the student and the instructor standards for the evaluation process” (Wallschlaeger and Busic-Snyder 1992, xii). Although objectives of

this education are different in various institutions, it is possible to use a taxonomy for setting the general objectives.

Benjamin Bloom (cited in Wallschlaeger and Busic-Snyder 1992, and Sprinthall and Sprinthall 1977) has developed a taxonomy of educational objectives. According to this taxonomy the instructional objectives can be set within three learning domains, namely: the cognitive domain, the affective domain and psychomotor domain.

“The cognitive domain includes objectives and skills that make up ‘understanding’ and ‘concept formation” (Wallschlaeger and Busic-Snyder 1992, xii). Bloom has classified six levels in this domain as follows:

- 1) Basic Knowledge: In this level students are responsible for knowing specific facts, terms and methods and remembering of materials or events by recognition and recall of ideas.
- 2) Comprehension: In this level students represent their understanding of the materials, facts and theories.
- 3) Application: requires students to apply their knowledge to real situations.
- 4) Analysis: In this level student should be able to separate a whole to its component, understand the relationship between the components and reorganize the principle that organizes the structure or the system.
- 5) Synthesis. the educational objective at this level is to learn to synthesize materials. This means making something new, bringing elements together to form a new product.
- 6) Evaluation: learning of value judgments. It is the ability to create standards and set of criteria for judgment.

“ The affective domain includes those objectives that deal with an individual: interests, attitudes, appreciation, values, and emotional sets or biases. Affective objectives exist on a continuum ranging from simple attention to selected phenomena to complex qualities of character and conscience” (Wallschlaeger and Busic-Snyder 1992, xi). The categories in this domain are as follows:

- 1) Receiving: in this level student becomes willing to receive the specific stimuli.
- 2) Responding: is responses by learner that go beyond recognizing a phenomenon or concept.
- 3) Valuing: is assigning worth to things, places, events, behaviors and so on.
- 4) Organization: the organization system categorizes the values, determines the interrelationships among them, and establishes which values are dominant and which values are pervasive.
- 5) Characterization: is the most complex level in the category and means personal judgment, of a value, or value complex, which functions according to the internal value system (Wallschlaeger and Busic-Snyder 1994, xii).

The psychomotor domain includes objectives related to the development of neuromuscular or motor skill performance. Although the physical development of university students is fairly complete, there exist differences in individual abilities which should be considered. In the design education objectives in development of skills of drawing and model making fall in this domain.

This taxonomy shows that, firstly, the educational objectives in these three domains of learning should be set and then, instruction method chosen should let student pass through the relevant steps in each domain to reach those objectives. In introductory design education as well, this taxonomy can be used for classification of the objectives and also it can help to define in which step of development students are, and how should the problems in each step be organized so that students can understand and response to the problems effectively.

In the following sections the objectives of introductory design education will be studied in relation to two main categories, the objectives in choosing the content of the course and the objectives in deciding about the methods of instruction.

6.1.1. Pedagogical Objectives in Relation to the Course Content

In general, the studio is the primary means of teaching of at least three basic aspects of design education. Ledewitz (1985) defines these as follows:

It is where students learn and practice a number of new skills, such as visualization and representation. It is also where students learn a new language....Thirdly and most significantly, the studio is where students learn to "think architecturally". In architecture, as in other fields, this "way of thinking" refers to a particular domain of problems and solutions that characterize, and are fundamental to, professional performance (2).

In the design studio students learn all these aspects of design at the same time and also learn to integrate them in the design process. The introductory design experience involves these factors as well. The major goal in this studio is to provide students with a

basic understanding of the design world and to acquire the basic knowledge and skills necessary to design. With this major goal several basic objectives may be set for introductory design education.

Generally the first objective of introductory design education is to involve students in the design process and make them learn to design i.e. to learn different ways of organizing and making order in the world they deal with. It is possible to use different means in obtaining this goal depending on the view about design and its fundamentals. The problems given can be two or three dimensional; may be abstract or concrete; may be done within a closed system or accept the role of external factors; but the general aim is to make organizations, or to produce a basis for organization of the elements of design. What is shared by all these methods is the process. Each starts with a problem and arrives at solutions within a context. Thiel (1981, 32) states that “design is ... an alternative-evoking and decision-rationalizing activity, involving a series of operations and decisions in a iterative process” since to find a way to optimize the use of limited sources of time and material in the realization of predetermined objectives, one face with the necessity of originating and evaluating alternatives, and then choosing among them. He identifies the operations included in design process as follows:

- 1) Identification of the problem and its contextual constraints,
 - 2) Specification of the goals and of the criteria for an acceptable solution,
 - 3) Hypothesis or invention of possible alternative solutions,
 - 4) Simulation or production of a testable representation of the proposed solution,
 - 5) Testing or the application of the acceptable criteria to the simulation of the proposed solution by the appropriate person,
- When all possible acceptable solutions have been generated, the process continues with the implementation and operation phases:
- 6) Comparison and rank-ordering of acceptable solutions,
 - 7) Implementation of the most suitable alternative solution
 - 8) Evaluation of the implemented alternative, in use in the real world (32).

Wallschlaeger and Busic-Snyder (1992) on the other hand, define the design process as a problem-solving activity with definition, analysis, ideating, selecting, implementation and evaluation steps. These steps can be arranged in several models, such as linear, circular, branching and feed-back models but the practices involved form the core of design activity. There exist different descriptions about steps involved in design process but there are general characteristics of design process that are listed as follows:

- 1) The process is endless,
- 2) There is no infallibly correct process,
- 3) The process involves finding as well as solving problems,
- 4) Design inevitably involves subjective value judgment,
- 5) Design is a prescriptive activity,
- 6) Designers work in the context of a need for action (Lawson 1990, 90).

Students in introductory design course are directly involved in the design process and try to identify the problems within the context of design and to produce solutions that is to put different elements of design according to a concept, to form an order or unity. In this respect, to acquaint the students with the concept of design, and to develop conceptual ideas which integrate various elements of design into a whole (McGinty 1979a) become objectives of introductory design education. This becomes also a basis for their professional education in the following years. Xu (1993) explains the importance of conceptual education in introductory design as follows:

...conceptual education in fundamental program is essential for the success of entire design education, and is the basis for students' understanding of architecture and design, and their conceptualization of design solutions. ... It is recognized that design by now is an activity dealing with a high complexity and synthesis of human interpretation, conception and knowledge about environment Therefore, a principal goal of design education, especially of foundation

teaching is to foster students' conceptual understanding of environmental design, in addition to skill-knowledge learning and experience (140).

Some factors make the process of conceptualizing difficult for the beginning students.

McGinty (1979a) defines these factors as follows:

Three problems block skill development in conceptualizing. The first block deals with problems of communication, the second with inexperience, and the third with the problems of generating hierarchies (213).

The problem of communication is a two-fold problem. The first and most difficult communication problem as McGinty (1979a) states, is to explain our ideas to ourselves. The problem of unfamiliarity with architectural concepts makes this communication even more difficult for students in the first year of design education. Another communication problem that influences concept formulation is the lack of graphic communication skills in beginning design students. An introductory design method should find ways to overcome these problems. So learning skills to convey the ideas, graphically in two and three dimensional forms and verbally, becomes one of the aims of this education.

Another objective of introductory design education, which is also related to this, is to teach a common language or a terminology of design to students and to make them gain capability in using this terminology in their designs as well as in communicating their ideas. Because the basic terminology of design is accepted as common in all the various fields related to space design, learning this language can make communication between designers working in different fields easier and lead to better team-working possibilities in the future. Schön (1985) describes the elements of the language of designing as the names of elements, features, relations and actions, and of norms used to evaluate

problems. The terminology handled in introductory design may change according to the view of what is fundamental in architecture, hence, the method applied, but in any case covers the matters related to basic elements of design and their relations, etc.

6.1.2. Pedagogical Objectives in the Instruction of Introductory Design

In an architectural education which tends to address the whole person and aims at helping students to improve themselves in different directions and develop their own set of values and judgment criteria, design studio teaching should have a conceptual and systematic basis which allows obtaining the mentioned goals. Unfortunately often studio education is carried on in an accidental manner (İnceoğlu, 1994, 23) and pedagogical implications of the system used are not taken into consideration. Ledewitz (1985) states the importance of approaching studio teaching consciously as follows:

If we think of teaching studio as designing learning experiences, we might consider the "models of design" that underlie our practice of architecture. By conceiving of teaching as itself a process of design, we may be able to inform the way we teach through our understanding of the design process (7).

In introductory design education, this conscious organization of studio teaching is even more important, as the role of this studio in establishing a foundation for further years of education and its influence on the students' personality development is undeniable. The organization of introductory design education can improve the personality of the student in a way that he/she can define the problem, decide independently and continuously, produce many alternatives and enjoy what he/she does. To attain these goals, one should

have an idea about how learning occurs and how one's teaching system can form the ground for an efficient learning process.

The process of learning is a trajectory with levels of accomplishment that relate to time and space. Each of these levels should be recognized in order to enhance the role of teacher as a catalyst. The recognition of this role would enhance student learning experiences toward more complex issues with less energy depletion on the part of the student. The process of learning is from lower to higher orders, through many stages of disorder. This process demands a multi-dimensional approach, creating a social aspect of learning. The student/teacher relationship is a critical aspect of this process (Kalogeras and Malecha 1994, 29).

Akin and Akin (1996) state that "learning and teaching are fundamentally cognitive acts. Thus, a cognitive approach to teaching can be used to foster learning". And Uluoğlu (1990) defines learning in general terms as to make things that are perceived pass through a cognitive filter in a way that causes changes in the person's thoughts and behaviors. Whitehead proposes that learning occurs in a cyclical manner and that there are three stages of learning. These stages are described by him as follows:

There is the general comprehension of some topic in its vague possibilities (romance), the mastery of the relevant details (precision) and finally the putting of the whole subject together in the light of the relevant knowledge (generalization) (qt. in Wall and Daniel 1993, 97).

Although these theories are about the way a child learns, the same process can be accepted as true also for the beginning design student. On the other hand, Bruner proposes that learning takes the configuration of an upward moving spiral. Wall and Daniel (1993) describe this analogy as follows:

This analogy is used because of its implied continuous and non-ending motion reaching outward and upward. Taken further, the apex of each cycle represents a new level of developmental complexity and understanding (96).

Furthermore, according to Bruner meaningful learning often requires actual discovery (Sprinthall and Sprinthall 1977). This desire to learn and to discover is accepted as innate and can be nourished and can grow. Bruner's theory of education (cited in Sprinthall and Sprinthall 1977, and Uluengin and Önder 1994) has four major principles: motivation, structure, sequence and reinforcement.

Motivation is the condition that predisposes an individual toward learning. The will to learn is sustained through intrinsic motivation which includes curiosity drive for understanding and discovering, drive to achieve competence, and reciprocity (need to work with others cooperatively). The program of any course should facilitate and regulate the students' exploration of alternatives which includes three phases. The first phase is activation. To start active exploration a certain level of uncertainty should be experienced by the student. The second phase is maintenance. In this phase the activated exploration should be maintained. The last phase is direction. To achieve a meaningful exploration it should have a direction which is a function of two factors: knowledge of the goal, and knowledge that the exploration of alternatives is relevant to the achievement of the goal. In this context, Akin and Akin (1996) also mention the role of the motivation factor in speeding up the process of learning:

It is well documented that students, who are highly motivated can achieve much higher level of expertise and faster compared to unmotivated students. Motivation can be due to sources that are internal such as, desire to achieve, career orientation, professional goals; or external such as, rewards of success, socio-economic constraints. Often the delivery and strategic selection of course material can be used effectively by teachers to foster motivation.

The second principle of Bruner's theory is structure. According to this principle any body of knowledge can be organized in an optimal way to be understood by almost any student. The success of teaching becomes possible if subjects are meaningful, based on basic concepts and principles and structured in a unified way. Three characteristics of the structure of any body of knowledge are: mode of presentation, economy, and power. The mode of presentation involves the technique, the method, whereby information is communicated. Economy of presentation states that there should be an economy of information the learner must keep in mind in order to continue learning. And power presentation states that a powerful presentation is a simple presentation, one that is easily understood.

The Sequence principle indicates that the subjects within an educational program should be confronted with a gradual increase in depth and width. Finally, the Reinforcement principle states that in order to achieve mastery of a problem, one must receive feedback as to how he/she is doing.

Although this theory is based on discovery, Bruner does not claim that discovery is the only form of learning. Nor is he saying that students should discover all the solutions to every problem by themselves. "This would be extremely wasteful, if it were even possible, for it would mean that each generation would have to rediscover the ideas and technology of their culture" (Sprinthall and Sprinthall 1977, 318). Rather this theory suggests to let students discover some of the basic principles on that they can built up their further knowledge.

In a system of education based on the ideas mentioned above the student is accepted as the center of learning and the instructors' effort is to make student an active participant in all educational endeavors. This enables students and instructors to engage in education collaboratively "to remove it from the world of 'training' into one of 'learning' "(Wall and Daniel 1993, 99). The aim of this education is to make the students grow as wiser, more skilled, more sensitive, and more aware persons. In this process, self-transformation or self-education is important:

Bruner states that "instruction is a provisional state that has as its object to make the learner or problem-solver self-sufficient". Thus, the learner cannot become so dependent on the teacher's reinforcement that the teacher must be perpetually present. Ultimately, the learner must take on a self-corrective function (Sprinthall and Sprinthall 1977, 317).

This requires an openness to experience, the curiosity to consider new ideas, the interest to see new relationships, the courage to feel new emotions and the bravery to try new patterns of behavior. The amount one changes in this process depends on his/her participation (Thiel 1981, 44). As İnceoğlu (1994) mentions, in order to overcome the problems that architectural education is now faced with, "it is important to change the studio to a medium for exchange of ideas" (18). Moreover, failure should be accepted as an educational tool rather than a sign of unsuccessfulness. There are always many points to be learned from mistakes. The implementations of a student-centered program in introductory design education is described by Lasada and Hines (1993) as follows:

Students would be led to discover a personal way of working using their own history and individual ways of comprehending and imagining the world; to construct a set of principles serving as a basis to make decisions; to articulate a concept of quality; and to develop an approach to self-education (312).

In the same context Şentürer (1994) mentions that design studio is a system which aims at

preparing a medium to make architects-to-be find their own approach to design, method, and opinions about the world of architecture, in summary, to find themselves, and to educate students as free persons, who are open to discussions, ask questions, criticize and produce ideas (87. My translation.).

In such a system of design education, the importance of the design process as a learning process is obvious. The design process is always more important than the end-products.

Hodde (1994) states the pedagogical dimensions of design process as follows:

To prepare students in design process implies a pedagogical project of three directions: acquisition of "personal dispositions", becoming sensitive to "social efficiency" and development of "reflexing thinking" (53).

Within this process students can develop an awareness of the manner of working. In studio work, thinking and learning should sustain and reinforce each other in a spiral way. The student should lead to take responsibility for personal decisions and an important component of it is self-criticism. In this way, student becomes able to criticize his/her own work as well as the work of the others and to share his/her ideas with them. In a broader perspective, developing a critical view and critical thinking in students is necessary if the aim is to educate people who are aware of what happens in the world around them, who can criticize the existing situation and produce solutions and at the same time accept the responsibility for the decisions they make. Şentürer (1994) answers the question of "why critical thinking is important?" as follows:

Because critical thinking :
Awakens perception.
Leads to thinking.
Makes one ask questions.

Makes one make comparisons.
Is concerned with principles.
Pushes the boundaries and stimulates creative thinking.
Leads to research.
Causes improvement.
And finally forms an awareness condition (86. my translation).

6.2. Pedagogical Objects in Introductory Design Education

The area of concerns of an introductory design education can be derived from the components of architectural design. Malnar and Vodvarka (1992) demonstrate different dimensions of architecture in a diagram as shown in figure 6.1 and state that in architectural design the aim is to achieve a unity of these dimensions using a concept. Güngör (1972), and Bevin (1989) suggest nearly the same elements and principles of organization as stated in the form portion of the diagram in figure 6.1 as the basics of all forms of art and design. Wallschlaeger and Busic-Snyder (1992) categorize the visual elements of form in two main groups, namely form generators and visual and physical attributes of form. The first category includes point line, plane and volume. The second category includes value/tone, color, texture, dimension, direction, shape and proportion. Designers bring these elements of form with various attributes to achieve compositional/visual organizations using design principles such as balance, repetition, harmony, rhythm, variety, contrast and dominance. There are different kinds of organizations that can be used such as centralized, linear, clustered, symmetric and grid/lattice systems. These matters related to visual organization of forms, in two and three dimensions, which is believed to be the foundation of all visual arts and design are the concerns of basic design model developed in the Bauhaus and many of later approaches based on the same ideas about acceptance of formal compositions as

fundamentals of architecture (Kucker 1994, Llewellyn and Tew 1994, Friedman 1989). To teach matters related to the organization of forms, usually two and three dimensional abstract problems are used and the relation of these abstract organizations and architecture are either ignored or not important to express. In this approach to beginning design the other components of architectural design shown in figure 6.1, and their influence on the form decisions in architecture are neglected.

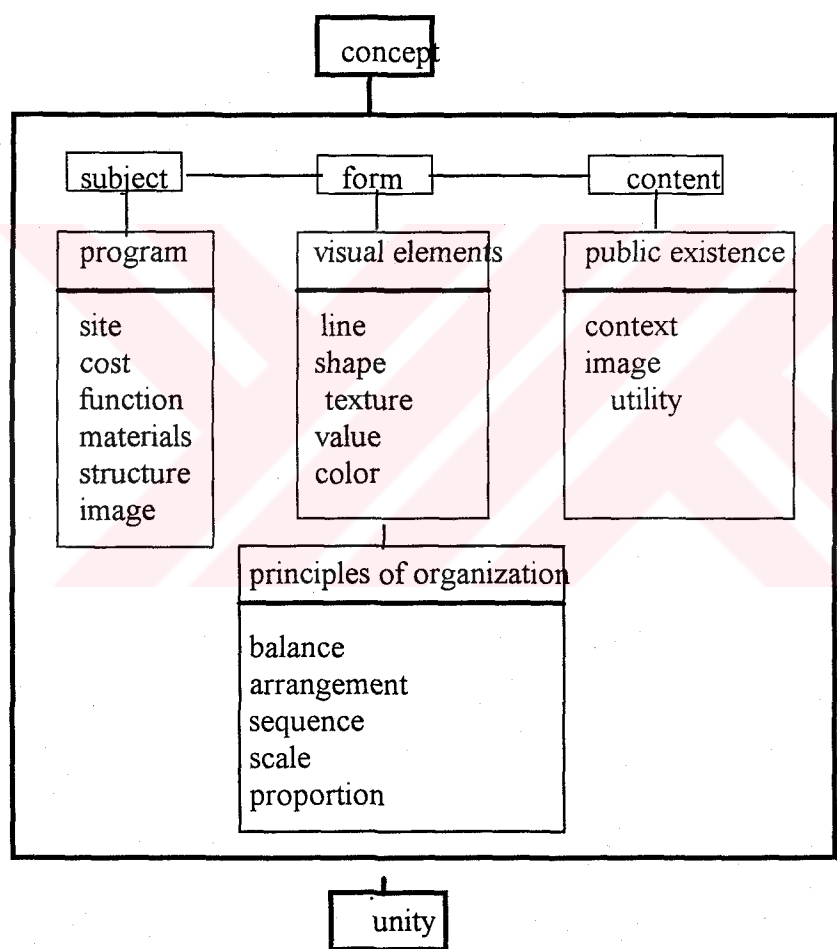


Figure 6.1. The Concept-Unity diagram

Source: Malnar and Vodvarka, 1992, 36.

This approach has been criticized by many of the people working in the field of architectural education (Teymur 1994, Denel 1979, Louw 1995, Stanton 1993). Lang in 1974 had stated that

Basic design, as is taught and discussed in the literature, has been heavily criticized for a number of reasons. These include the inappropriateness of the subject matter for architects and the failure to keep pace with current research on the psychology of perception. Probably most importantly, it has been recognized that the most creative architects amongst us do not think about formal issues in the terms specified by most basic design theories. Despite recognition the situation little effort has been made to reformulate basic design theories (98).

The criticisms of the Bauhaus model of beginning design education led to appearance of new trends in formulation of this course and the type of the given problems. A review of the collections of best beginning design projects (Mc Ginty 1979, Jordan 1984, Cappleman and Jordan 1993) shows a shift from the Bauhaus model towards more “architectural” problems. In the collection of best beginning design projects edited by McGinty, in 1979, although the Bauhaus-based projects still occupy an important place in the collection (eleven of the thirty nine projects submitted fit within the general outline of the Bauhaus model), a new tendency toward beginning with architectural problems can be seen. Cappleman and Jordan (1993) state that in this collection

The real surprise, and the harbinger of change, was that the balance of the projects were concerned with a broad array of architectural issues, and five were written around an authentic building design problem, completely forgoing tradition in favor of direct admission to the mysteries of architecture (11).

In a second collection of the best beginning design projects edited by Jordan in 1984, a decline in number of the purely abstract problems, is seen when compared with the first

collection, in favor of building design or "architectural issues". In this edition only five of the problems are Bauhausian in character, thirty of the problems are architectural, of which fifteen are concerned with the design of building. Jordan evaluates this condition as follows:

As is generally the case with architectural educators, there is no common vision represented by the collection. There is instead, when compared to volume one, an increased focus on the design of buildings, some quite complex, and a complementary decline in the number of purely abstract, Bauhaus based projects reflecting, no doubt, the changing climate of architectural design (ii).

He categorizes the submitted projects into three groups:

- 1) Abstract.
- 2) Transitional (problems either abstract and phase into issues of building design, or focus on issues analogous to building design, or represent a collection of exercises having both abstract and building design elements).
- 3) Building design.

This change of approach to beginning design education became even stronger in the following years. The third volume of the Best Beginning design projects was published in the 1988. About this collection, Cappleman and Jordan (1993) wrote:

Of the thirty-eight projects in Volume 3 of Best Beginning Design Projects, published in 1988, eleven were abstract, eleven studied a range of architectural issues, and sixteen were purely building design (11).

In a later collection of 30 beginning design projects by Cappleman and Jordan in 1993, there are only two that fit within the Bauhaus model. In this collection the projects

submitted are categorized according to five taxons: nature of the problem, subject matter, scale of the problem, scale of documentation and mode of documentation. Studying this taxonomy, diverse approaches in beginning design education can be followed clearly. The beginning problems may be conceptual, analytic, nonobjective/compositional, compositional/architectonic or architectural in nature or the subject matter may be poetic, metaphoric, literacy, human concerns, environment, visual vocabulary procedural, programmatic or tectonic. Ertürk et al. (1995) give a more general categorization of the different approaches that are used in beginning design education. These five approaches are as follows:

- 1) The approach which uses a small architectural project with a simple functional scheme at the beginning.
- 2) The analytical approach which uses problems divided to short phases and each part is analyzed according to its function and later the suitable form for each function is searched.
- 3) The approach that uses problems based on Basic Design (or abstract problems), the aim is to develop creativity.
- 4). The approach which uses design problems completely different from architectural design, to teach the design process.
- 5) The approach which uses different kinds of design problems during the semester to teach different dimensions of designing (83. My translation).

The above statements show that in recent years the concerns of introductory design courses have been diverted into several distinctive directions. Saleh Uddin (1993) states that today in beginning design projects particular emphasis is placed on individual components of architecture, vocabulary of architectural design, understanding of structure, understanding of climate, analysis of historical precedents and so forth. Respecting the current trends he categorizes the basic design exercises for architectural design education in four main groups as follows:

- 1) Compositional: Two and three dimensional; emphasis on design principles...

- 2) Structural: Evolution and construction of three-dimensional form (tangible material/tangible form: emphasis on elements and principles of design)...
- 3) Analytical: Analysis, study, abstraction and representation of components of significant precedents (art and architecture).
- 4) Synthetical: Combining components/constituent elements into one unified design element, or one whole design (403).

A combination of these different kinds of design problems can be used in an introductory design course. In introductory design education abstract problems may help students to organize their thoughts and their design ideas but these can easily turn to geometric puzzles and become ends in themselves forgetting that the realm of space design has responsibilities beyond formal attributes. Moreover, these kinds of formal compositions are not suitable to make students feel the space they design. On the other hand, without exercises in formal organization, students get the misconception that in design "anything goes". Saleh Uddin (1993) has observed that students who had little or no exposure to formal and compositional basic design concerns produced unsophisticated designs with poor arrangements of spaces in the upper classes and since compositional skill is nonexistent, whatever the idea or concept behind the design, it never produces an efficient, exciting arrangement of spaces. Thus a combination of abstract design issues and more concrete design problems may be used to bridge the gap between the two. The organization of design problems in an introductory design course can be in such a way that students realize that the organizational quality of space design is not an aim in itself but a means to make better arrangements of spaces for man to live in. On the other hand, the view that defends the idea that students should learn about structure, walls, roof, etc. as the main elements of the language of architecture and nothing else in the first year, represent a strict professionalist view of architectural education which neglects the necessity of giving a background for a capacity to think and to pave the logic of

architectural work later. These statements do not mean that any introductory design course should begin with abstract formal compositions, rather, the formal organizational concerns can be a part of any given problem, and not only in the first year design but also in any level. The approach that assumes formal composition as more "simple" and suitable for the beginning neglects the complexity of formal decisions in design. As Teymur (1994) states:

There is no simple building, simple design or simple learning. Every problem is complex in its own ways, and can thus be raised in the context of teaching and learning at any level. Therefore, it is the *method* rather than subject matter that should determine what is suitable for which year (90).

Norberg-Schulz (1988 b) states that to obtain an adequate architectural education the point of departure should be the desire of the student to be an architect and the student has to be trained in the creation and understanding of architectural totalities. He goes on to say:

The first demand is therefore that the problems the students have to face shall be *complete*. From the very beginning the problems presented have to comprise all the aspects which characterize a typical architectural totality: building task, form, technics, and semantical relations between these factors. When solving the problem, the factors have to be considered *simultaneously*. The building task should be defined in terms of its physical and symbolic dimensions, and form and construction must be developed in accordance with this definition (223).

He suggests to begin with a synthetic problem such as a camp where a group of persons shall exercise simple functions within an adequate architectural frame. The next step should consist in the presentation of a second, more complex synthetical problem, and the level of complexity should increase in any new problem. In each problem all aspects of architecture such as human concerns, structure, etc. should exist together but within

certain limitations. There can be many other methods to achieve the same goal. The important idea is that problems be organized in a coherent system, rather than be treated as self-contained mini exercises on the way of learning to do real, big professional architectural design (Teymur, 1994) and let the student become aware of the complexity of architectural design activity. This also fits the theory of Bruner which claims that learning is much more efficient and stable if the student learns at first the general structure of the subject and then goes back to study and learn the parts and details (Sprinthall and Sprinthall, 1977). In the diagram suggested by Malnar and Vodvarka (figure 6.1) it can be said that the a holistic introductory design education should be concerned not only with the formal organization of the space but also the subject and content of it, so that students can develop a concept of architecture and to develop the ability to create designs with unity in all its aspects. To give a holistic view about architectural design to the students, the three main areas of concern of architectural design, architecture and the human condition, architecture as the making of space and architecture as a technology, should be dealt with in introductory design problems.

Denel (1979) categorizes the matters related to the space design in two main groups. The first group includes tangibles, those factors which make a volume a space. The second group represent the intangibles. The tangibles he defines are: i) definition, ii) visual structuring, iii) physical structure, iv) light, and v) scale. The intangibles of space are: i) social, ii) psychological, iii) the subject of economics, iv) movement, v) aesthetics, and vi) recapitulation. He suggests that students should learn first to organize the visual world. In doing so problems of an abstract nature, whether two or three dimensional, can be used. But he emphasizes that these are tools for learning the language of design and for developing skills in making spaces. For a volume to be called a space, he says all

the tangibles should be present. Even then this space has no content as the factor of man is not added. Thus, intangibles should be added to make the space a real entity. Therefore, he suggests that in an introductory design course, students should be acquainted with these subjects, however, these can be introduced to the problem era in a controlled manner so that students can understand and cope with them.

To be able to achieve this aim, the organization of beginning design problems should be in a way that let student use the experiences from all previous stages in dealing with the new and more difficult problems. Denel (1981) explains the necessity of this cumulative experience in basic design as follows:

In basic design, each problem carries in itself some obvious and some hidden restrictions. Separating, accepting and comprehending these and their connotations for the solution of the problem, is a primary necessity. Thus, every prior problem's solution and answer is part of the student's experience. Thus they become cumulative proofs with incorporated facts from which other and new facts can be derived. When enough facts are thus accumulated, new rules and laws can be drawn from them (xiv).

Furthermore, to improve the ability of the students in making, seeing and understanding spaces and spatial relationships the projects can be supported with research in different subjects as well as with environmental analysis so that students realize the relation of the matters discussed in introductory design with the reality.

6.3. Pedagogical Dimension of the Methods of Introductory Design Education

Studio teaching is a special kind of education which combines all the three models of teaching, through transmitting knowledge, through discovery and inductive inquiry and

through interpersonal learning (Sprinthall and Sprinthall 1977). It is also where students learn the skills and artistry of architecture, improve their justification capability, learn some declarative knowledge and gain the ability of understanding problems and the ways of dealing with them (Rittel 1985, 20). Thus, the pedagogical method applied in the studio in any stage of the architectural education becomes very important. The pedagogical dimension of the methods of introductory design education will be studied under three main headings. The first considers the methods that can be used in studio instruction. The second is concerned with the critique process and the third looks at the jury system as a method of assessment of design works.

6.3.1. Methods of Instruction

Teare (1948) states that the general purpose of a satisfactory professional education is to provide the students with a basis of fundamental principles and to teach them to use these in dealing with situations that are new to them. He goes on to explain the basic plan in a professional education to achieve these goals as follows:

The basic plan is to make the student do more of the work in the learning process and to have the teacher do less of his thinking for him, thus shifting the student's role in the direction from passive to active, on the principle that he learns from what he does, all that he does, and only what he does. He learns to deal with new professional situations only by actually dealing with professional problems that are new to him and by dealing with them in a professional manner (1).

The studio medium provides a good opportunity for such an education. The student learns to design by engaging directly and actively in the process of designing. Although Akin (1986) states that design skills can be assimilated by humans through learning by

instruction as well as by doing, teaching design through learning by doing, is still the dominant form of architectural education as it is believed that the skills, the language and the approach to problems of design can be learned more effectively through direct experience rather than through other means. Direct experiments can probably be supported by instruction in design methods as well to help students being aware of the actions, goals and preconditions of each method. Akın (1986) states that the generate-and-test and hill-climbing methods of design are well-defined processes in format that can be taught by direct instruction. Generate-and-test is "a way to generate possible candidates for solution plus a way to test whether they are indeed solutions. A generator is a process that takes information specifying a set and produces elements of that set one by one " (Akın 1986, 183). The hill-climbing method is similar to the generate-and-test method, with the addition that the candidate element is compared with a stored element /the best so far / and replaces it if higher. Actually these methods are used in practice in design education but are not explicitly explained. Some examples of these will be discussed later.

The selection of studio experiments should be in a coherent sequence that clearly overlap but are different from each other in some respects, so that the student can repeat what he has learned in a following exercise. Furthermore, the scope of the problem should fit the present knowledge level of the student on one hand, and on the other provide him with information that can be generalized to be used in different situations. Akın (1986) points out the importance of the repetition of experiences and basic intentions in formulating design projects as follows:

Learning by experience seems to be best helped by *repetition* of experiences and *induction of knowledge* through novel expectations. *Repetition* obviously helps

learning by providing a set of experiences from which generalized principles can be induced. If the set of experiences cover a very wide range, then the task of generalizing will be difficult. If, on the other hand, the set of experiences cover a very narrow range, then generalization is easier, but its transferability to other contexts will be limited. That is, it will not be applicable to a sufficiently large set of new circumstances (177).

He also emphasizes the importance of illustrating, specifying, or describing the solution domain in design as tools for forming appropriate expectations about the end result, especially for beginning students.

The manner in which projects are formulated in the design studio is directly related to the view of design process. Two main paradigms of the design process were discussed in section 5.3. The more traditional design methodology tends to divide projects into defined steps whereas heuristic design methodologies tend to give a more holistic understanding of the design activity to students. Lasada and Hines (1993) explain the difference between these two methodologies as follows:

Normative design procedures tend to be linear and sequential progressions: from an information gathering, analysis and programming phase to a synthesis of those activities in schematic design, design development and presentation. The heuristic process operates as a cyclic non-linear network, wherein students seek to synthesize complete formulations during each phase. It is characteristic of heuristic design methodologies, that throughout the entire process, solution and problem definition are inextricably entwined, forming spirals of interaction, somewhat like the spirals and interactions of genetic material (312).

Some of the difficulties faced in teaching design based on a rational problem solving method (or normative design procedures) have been explained by Ledewitz (1985). The first and most important problem is the discontinuity between analysis and synthesis. Often students cannot incorporate the results of analysis in their synthesis. A second

problem is that student can easily confuse intentions with solutions. This problem occurs because the student can mistakenly take the elaboration of analytic diagrams for a design solution. A third problem with this method is that students are not provided by any means of knowing when to stop designing. The last problem she defines is that since the student feels that he/she has no control over the design process, he/she becomes fearful of designing. To overcome these problems a cyclic process can be organized. A cyclic process in design can be explained with the reflection-in-action model of Schön. Ledewitz (1985) suggests a model she calls the concept-test model and explains this model as follows:

The concept-test model conceives design as a development process that interconnects the activities of "conjecturing" and "testing", or as Korobkin and Zeisel defined the "imaging, presenting, and testing". These activities occur in a cyclic pattern that Zeisel describes as a spiral converging on a "domain of acceptable responses" (5).

In this model, the student conceives a solution in principle early in the design process, which is progressively developed and refined (or discarded). This solution is presented by drawings or models and these become means of elaborating and communicating it back to the student or to others for evaluation or testing. This model seems to be compatible with the hill-climbing model described earlier. It also matches the ideas of Bruner who claims that "when student understands the structure of a subject, he or she sees it as a related whole. ... Grasping the structure of a subject is understanding it in a way that permits many other things to be related to it meaningfully" (qt. in Sprinthall and Sprinthall 1977, 307). This view holds that in many learning situations the best approach is to work first on the whole and then go back to various parts.

Although there may be differences in the application of cyclic heuristic models of studio teaching, some general characteristics can be observed. The first is that each project is subdivided into a series of stages or cycles that concludes with a design proposal for the project as a whole. Students are provided with information necessary to initiate the first stage of exploration, including the concept, theme, facts, media and direction (Lasada and Hines 1993, 313) and are encouraged to conceive of a solution before they are asked to analyze it. The aim in this approach is to encourage students to generate a design concept of their own in order to initiate a cycle of concept and test. This cycle is repeated and elaborated throughout the project life, starting each time from a more informed base. Ledewitz (1985) claims that this way of formulating design problems helps create for students the perception of a need for knowledge which is a critical motivating factor. Further information is broken to a series of packages and is supplied in relevance to the level of studio. Lasada and Hines (1993) state the justifications for this method as follows:

This is important on two counts: First, undue complexity and too much information, overloads and overwhelms the student's capacity to recognize, order, and play in the situation being explored. On the other hand, overly reduced content or too little information may fail to provoke curiosity. Second, information and feedback is most valued, and capable of being internalized, when it is discovered or found as an answer to a question which is formulated, and recognized as necessary, by the student at that point in the development of the project (313).

The entire process can be enriched by readings, short courses in different subjects, environmental and formal analyses and discussions on projects in groups to draw the attention of the student to different dimensions of the field. In this context, Norberg-Schulz (1988b) states that

... the ability of solving complex tasks through concretization, is only developed by means of *exercises*. The *intentions* comprised by the task, however are not learned through these exercises, but have to be taught more directly. The unity of theory and practice, thus, is basic from the outset. ... In addition we need training in architectural *perception* to make the theoretical knowledge become alive, and to give the production an adequate intentional depth. Training in architectural *analysis* is also necessary to make the teaching become something more than a mere transmission of information. Through analytical exercises the theory should, so to speak, be developed anew by the students (218).

In an introductory design course these approaches can be used in formulating the course material as well. Thiel (1981) suggests that the method used in introductory design education should bring students from a position of unawareness to a position of proficiency in dealing with the subjects of the course through the stages of acquaintance and understanding. He defines these stages as follows:

Unawareness: (student) Has no knowledge of subject, has never attempted design, novice.

Acquaintance: Knows it exists and what it is, is aware of approximate relationship to field.

Understanding: Knows the jargon, how to use consultants, understands potentials and limitations.

Proficiency: Informed as to principles, processes, and state of the art, competent in design under supervision, as apprentice (43).

Similar methods of teaching in introductory design are available which use almost the same stages in organizing the course material. An example has been suggested by Delage and Marda (1994) by using the three iterations of the awareness, understanding and ability cycles. In the awareness phase, the aim is to make students aware of the vocabulary, the understanding phase is the analysis state that relies upon the absorption of working vocabulary and the ability cycle includes less prescriptive exercises that require the ability to employ vocabulary and principles involved in the initial two steps. These terms (awareness, understanding, and ability) are used also by NAAB to describe

levels of accomplishment that students in an accredited program should achieve prior to graduation and are parallel with the learning cycle which is suggested by Schön including activity, recognition, decision and adjustment phases (Hardin, 1994, 49).

Other methods and exercise types can be valid, as well; no one method can be claimed to be correct for all. The method of instruction should be decided by the instructors according to the objectives they have set, the subjects to be handled within the course and also the backgrounds of the students. The important point to be underlined is that to obtain success, the pedagogical method applied in introductory design should be carefully chosen and to do this a basic knowledge about different pedagogical approaches and methods is necessary.

6.3.2. Studio Critiques

Studio critiques, individually or in group, are the main tools in design instruction. In this process student receives feedback about his/her design work and accordingly tries to improve them. As Schön (1984) explains, the studio critiques may be carried on in two ways. The instructor may demonstrate some part of the process he/she believes the student needs to learn, or he/she may tell the student something about his/her design. This may take the form of general descriptions, specific instruction or criticisms, questions, or suggestions. The method used varies with different instructors. Some refuse using drawings as they believe that mechanical imitation of these by the students blocks their own thoughts. Others prefer drawing because they distrust mere words as a vehicle of communication about something as inherently visual as designing. And some combine the two. Keeping in mind that in introductory design education the role of

instructor is to give guidance to the student rather than to produce solutions, it seems that telling can have more weight in critiques. When drawing is used, it should not be a suggestion of a final product, but rather a tool to describe the existing situation, its problems and some suggestions which might lead the student to a higher level. A crucial point in design critiques is that the instructor should carefully figure out what the students understand, their problems and what they need to know. Otherwise, several gaps between the instruction and performance can be created. Schön (1984) explains these gaps as follows:

The instruction may be insufficiently specific for a particular student at a particular moment of his or her development. The instruction may be ambiguous either in the general sense in which all instructions are ambiguous (think of the experience of trying to follow directions to a strange address) or in the sense special to architecture. It may be novel, in the sense that it refers to things not yet included in the student's repertoire. Or it may conflict with meanings the student constructs for it. In all four cases, as the student tries to translate instructions into action, she discovers or reveals gaps between instruction and performance (7).

Schön claims that both the attitude of the instructor and the reaction of the students are formed during the action and as a response to the situation. Thus, these are examples of reflection-in-action. In this process, the students learn both about specific matters related to their design as well as the art of designing.

In an introductory design course, especially in the early stages, the critiques can be arranged in the form of group critiques as these can make students participate in the instruction process more actively and also let them see many alternatives to the same problem which makes them aware that there is no single solution for a design problem. They can also hear different criticisms from different points of view about many subjects

that may not be present in their own works. The important point in these critiques is that they should include a discussion of both the negative and the positive aspects of the works. Moreover, self-education and self-evaluation can be achieved by encouraging the students to criticize their own works. Ledewitz (1985) claims that by this way student reflects on his/her own work and learns much more while doing so.

6.3.3. The Jury as a Method of Assessment

The assessment of design works is a very important part of design education. A process of assessment derived from clear learning objectives is necessary for the overall success of instruction. Generally in design studios the summative evaluation is done through juries. The jury system can be traced back to the Beaux-Arts. Then, the students' works were evaluated behind closed doors by a jury and the grades were announced to the students with little or no comment. Later, during the 1940s and 1950s, these juries changed from a closed to an open format (Anthony 1991).

Juries in design education are seen as a continuation of the critiques carried on in the studio. The difference is that it is a public critique. The students present what they have designed using drawings and/models to a jury composed of their own instructors as well as others. The aim is to generate a discussion about the projects from many different viewpoints, and give opportunity to students to receive and learn from constructive criticism of their works and those of the others. Another aim is to make students not only produce high-quality design works but also to have them participate in criticizing them. On the negative side, juries may give rise to psychologically destructive and

sometimes unethical behavior stemming from antagonism, fear, boredom, insensitivity and competition (Anthony 1991). Jones S.H. (1996) also points out other problems influencing the effectiveness of the juries as follows:

One major difficulty with evaluating the effectiveness of crits as an occasion for assessment is that opportunities for a comparison of students' abilities are not easily available. First, a discipline such as design involves a thinking process which produces a large number of solutions to problems rather than one which can be identified as the right solution. ... Secondly, the multi-solution character of design implies that students participating in a crit might be developing different scales of project and different building types, using different materials, and in particular, different presentation techniques. Those members of staff discussing their work may or may not have seen their work before, may or may not have been prepared by reading briefing material, may have a particular interest in one aspect of a project or a particular dislike (136).

She also adds the results of Lowe's study about the validity of jury evaluation. His findings (cited in Jones, S.H. 1996) show that presentation techniques have an important affect on the assessment. He concludes that "the emphasis on presentation created by the traditional comparison of finished work was devaluing the process of learning engaged in by the student" (137). Lowe also recognized the influence of group dynamics within juries. "His groups of tutors often began their sessions with a *'polite but vigorous social confrontation'* where members attempted to determine their status in the group" (Jones, S.H. 1996, 137). These factors and many others relating to subjective influences that have nothing to do with the true qualities of the design under study bring him to the conclusion that crits are unreliable assessments of design quality.

Often the jury's goals are not explicitly spelled out and students and faculty may have differing opinions about what the jury should accomplish. Most of the time the juries in design classes weigh heavily toward the negative aspects of the projects. This makes the

jury critiques far from being constructive for the students. Anthony (1991) explains the results of interviews held with design students about juries as follows:

In general compared to final juries, interim juries are a more affective learning technique. While interim juries seem to serve many useful purposes, the educational value of final juries appears to be minimal at best. ... Students report learning the least from criticism of their own and other students' projects at final juries. By contrast they report learning the most from informal discussions and desk crits with their instructors (35).

Accepting that learning from the jury is a key goal, a revision of jury system appears to be necessary. To make juries more effective, the first action is to transform juries into a dialogue between the students and the jury members. The criteria of evaluation have to be clarified beforehand and the focus should be on the process rather than the end product to achieve a higher level of learning. The criticism should be constructive, i.e. it should include both negative and positive points about the works, should be specific so that student can catch the points easily and should include some guidance to be used in further steps. The jury members should be careful about their verbal and nonverbal communication styles and focus on the project and not on the person so that less tension and no public humiliation occurs. Furthermore students may be involved in the jury criticism. Participation of the students in the jury makes a dialogue much easier and also improves the ability of students in objective criticism. Still juries may be very time consuming and boring procedures for both students and jurors. Anthony (1991) and Dinham (1986) suggest some practical hints to overcome this problem.

6.4. Pedagogical Aspects of Management in Introductory Design Education

Generally a two semester course of introductory design education is placed in the initial year of the curriculum of architectural education lasting 4 or 5 years. Seldom this course may be supported with some preliminary courses and students may be provided with some skills and knowledge before coming to the first year studio, but this is not generally the case. Clarke (1994), questioning this system, states that:

... Totally lacking any skills or knowledge, certainly encourages "artistic" self-expression rather than responsible, professional stewardship of resources, places, and people. Medical students do not dissect cadavers without anatomy and students should not design without enough background to make the experience valuable and responsible (59).

This lack of basic skills (for instance in drawing and model-making) with a total absence of knowledge about what architectural design is really all about results in introductory design education facing major difficulties. The lack of a knowledge of presentation techniques makes it very difficult for students to convey their ideas and for instructor to communicate with the students graphically. Especially in the initial weeks of the course, the program should be formed in a manner that can overcome this problem. Furthermore, the lack of a basic theoretical background may lead students to rely on their intuition and preconceptions. In this way, the introductory design studio's role becomes that of a medium for teaching basic skills of communication, providing students with a theoretical background, as well as teaching the concerns of design and skills in designing. There are generally theoretical courses in the curriculum to support studio teaching and to provide students with a theoretical basis. An ideal organization of the curriculum in architectural education is the one that obtains an integration of these

theoretical and studio courses. Teymur (1992) states the necessity of creating an integrated framework for architectural education as follows:

...whatever is expected of the particular components of the curriculum, they should not be isolated either from various other components or from broader educational goals. Conversely, the expectations from architectural education should be so formulated that they should contextualize theory, design and other components in a more *integrated* framework than has been the case so far (34).

The lack of integration in studio and theoretical courses is partially due to the structure of the traditional curriculum. Brady (1996) poses this situation as follows:

The current curriculum structure does not encourage or facilitate making connections between academic and studio courses. They often exist as two isolated traditions, complete with their own cultures, to the detriment of the architect's education (37).

He suggests instead a modular structure for the curriculum, in which the semester is divided to modules, and in those modules the subjects of the studio and the theoretical courses are decided in a way that can be integrated with more ease. To integrate theoretical knowledge and design education, Frinjs, Graafe and Klerks (1994) also describe another model of curriculum based on the principles of problem-based learning, applied in the Delft University of Technology. In this model each year is divided to blocks. "The themes of the blocks are derived from questions and/or problem areas of architectural practice. So, in each block, knowledge of different disciplines, practical skills and design skills are integrated" (47). A revision of the organization of the courses in the curriculum towards providing students with basic theoretical knowledge and skills related to design before beginning their first design course can result in a much more efficient introductory design education. In the current situation, coordination of

theoretical courses, courses related to relevant skills such as drawing and model making and design studio is necessary to be able to integrate knowledge gained about different dimensions of design into a whole.

Another subject which should be discussed in this context is the relation of first year design and design studios in the upper classes. As the main goal of introductory design is to provide a foundation for the whole design education, a strong relationship between what is done in the first year design studio and the design studios in the upper classes is crucial. The studios in the following years should reinforce and enrich what is learnt at the beginning. This is the essence of a continuous education. Often it is seen that the formulation of subjects, the point of emphasis and even the terminology used in the studios following the first year are totally different with what is learned in the first year. This is especially the case when the emphasis of the first year design education is mere the formal aspects of design. This creates a source of confusion for the students and some of students can not adapt themselves to the new system. For an introductory design course to be meaningful, a coherent relation with the upper level studios, particularly the second year design studio is fundamental. The instructors of these studios should be informed about the content and methods used in the first year, and subjects to be handled in each year should be decided as the meaningful and sequential parts of a whole. The contribution of first year design education should be measured against the contribution it makes to the curriculum as a whole. As McGinty (in Cappleman and Jordan 1993) describes, there are several means of achieving this goal:

An appropriate measure is the quality of the linking and joining, the reinforcing that happens during a student's career at a school. But how do we measure this? A pragmatic measure might be the number of projects regularly offered in advanced courses that expand on projects offered at beginning. Another measure

might be whether or not the vocabulary introduced at the beginning is regularly used by reviewers at all levels. Perhaps the best measure would be the number of senior faculty who regularly teach beginners (xvi).

All, or at least some of the mentioned solutions can be tried, to fill the gap between the beginning studio and the upper ones. The first year design studio can not be seen as a separate part of architectural education which deals with subjects that are somehow useful for design education but not directly related to it. Instead the subjects which are dealt in this year should be handled as well in the upper studios with more complexity and enrichment in each step.

A major factor in the success of an introductory design program is the quality of the instructors. Being a successful architect is not always sufficient for one to become an instructor of first year design. Knowledge about the subjects related to design is of course crucial but not sufficient. The instructor should have basic knowledge about learning process, should be able to explain and discuss explicitly many complicated matters related to design and other related subjects, should be very patient, and should be willing to search and learn about different subjects. Thus, the selection of the instructors of first year design education should be done very carefully. Kalogeras and Malecha (1994) put this requirement in the following words:

Teaching beginning students is a combination of counseling, monitoring and inspiring skills through training. Teaching at the beginning is a great responsibility to be reserved for the most mature and the best prepared individuals; after all, it was Louis Kahn who said, "I love beginnings!" (30).

In addition to the system of education, organization of the curriculum, and adequate instructors, there are some physical factors which also affect the success of an

introductory design course. Zeren (1966) defines these as: "i) working space, ii) Density, iii) Arrangement, and iv) Educator-Student ratio" (8. My translation). He suggests that the working space should be a comfortable space to work in, the number of students should be suitable for the size of the studio so that it does not become too empty or too crowded, the organization of the space should allow easy communication, and the ratio of the numbers of instructors and students should make the instructor able to follow the method students use in reaching their solutions to the problems, and their working manners. Aksoy (1969) and Fayton (1966) have also discussed these aspects.



7. CONCLUSION

The special role of introductory design in architectural education makes its careful formulation and organization a necessity. To be able to formulate an introductory design education which can form a basis for further levels of education, its different dimensions should be considered and objectives should be set very carefully. Only then, can decisions be made about suitable content and method of instruction according to these objectives.

Architecture is a profession with high social responsibilities. Any change in human-made environment has a direct or indirect impacts on different aspects of users' lives. Therefore awareness about the social responsibilities of an architect should be given to the students right from the first stages of architectural education. Furthermore, as a result of technological developments our world is going towards globalization with an enormous speed. There will be much more chance in the near future than today for the architects to perform their profession in different societies with diverse cultures. This fact multiplies the importance of an architectural education aiming at equipping the future architects as multi-dimensional, global persons aware of their social responsibilities and sensitive to their own values as well as those of the others. The approach to introductory design in an architectural education which aims at forming future architects as persons who are environment-conscious both from sociological and physical points of view is of crucial importance since it is in the first year of this

education that students develop their initial conceptions and ideas about their future careers and their roles and responsibilities .

The aim of this thesis has been two fold. i) To make a multidimensional analysis of the subject, covering different aspects related to introductory design education, and ii) To draw a general framework for the assessment of a holistic, human-centered approach to this education. To be able to do a systematic research on the subject and to decide on the content to be covered by the study, the theoretical framework suggested by Teymur for investigation about the educational practices in general and architectural education particularly has been used as a basis. However, it has been observed that in each dimension of disciplinary framework, the content, the methodology and the management is directly related to the objectives set in that domain. Thus, the dimensions stated in the disciplinary framework form the main headings of the study and the subject is analyzed according to its objectives, objects, methods and management in these areas. In the study it has become clear that decisions in any of these areas are also interrelated. In the context of the study these relations can already be observed. For instance, the way the design process is described affects both the way in which knowledge is produced and transmitted, and the formulation of the problems as well as the method of instruction. These interrelations have been discussed in detail in the thesis.

The ideology of the introductory design education by definition is the set of ideas which underlies its whole organization. Decisions on the other aspects of this education such as epistemological and pedagogical approaches are made based on this set of ideas. For

beginning students of architecture, to be able to understand the complexity of the built form and the context of architecture, developing a world view is essential. The ideology underlying the organization of introductory design education, however, is generally transmitted implicitly and unquestioningly and students develop a set of ideas and values according to this ideology. This makes a conscious approach to setting this ideological basis and awareness about its implications, of crucial importance. An analysis of ideological basis of current approaches to introductory design education and observation of their inefficiency in providing students with a view about the context of architecture, and its relation to human beings is the basic reason for an attempt in the formulation of a framework for a holistic approach to this education.

Two dominant approaches to architectural education, empiricism and rationalism are both based on the belief of the existence of universal principles and laws in design. They neglect cultural and social differences as factors which affect the perception and organization of the man-made environment. The treatment of human beings as a homogeneous mass with the same needs in these theories is no longer acceptable. Studies in fields related to social sciences and psychology show that culture is an important factor in human-environment relationships. In this regard, understanding the alternative theories about architectural design and about the role of architect in the society is important in formulating an alternative for the existent approaches. A human-center holistic approach to introductory design education which aims at educating students as persons aware of their social responsibilities and with a more humanistic approach towards environmental problems should provide students not only with an understanding

of how parts come together to form a whole but also to understand the implications (know-why) from different points of view. This is why, in order to give an insight about what the role of architect is in the society, a shift in the interest of introductory design education from visual aspects of design (in a vacuum of external factors) towards an understanding of different dimensions of architecture and human-environment relationships should be realized.

The purpose of architectural design can be defined as creating order in the man-made environment. In respect of this, helping students to learn about formal elements of design and to develop their ability to grasp underlying relationships of visual organizations, which are used in creating visually ordered environments, remain as some of the main aims of introductory design education. However, these formal compositions and design principles are neutral; what makes them function in a certain way are the intentions behind them. Students should be made aware that these formal organizations are tools in architectural design rather than being aims by themselves, and that these may have different meanings for people living in different societies and having different cultures.

Considering this role of architecture, and accepting the importance of this role in regulating the relations of human beings and their environment, acquiring a holistic view of architectural design and its context by students is not possible without a conceptual view about the way people interact with their environment and about the factors which influence this interaction. Thus, including the human being and different levels of the human-environment interaction in the formulation of the problems in introductory design

education can lead to developing an awareness about this very important side of architectural design by the students.

The methods of introductory design education which are based on developing the intuitive creativity of students are not sufficient in developing the kind of creativity which is necessary in architectural design. Creativity should be based on knowledge. The aim of a holistic introductory design education should be to bring up students with an intellectual basis and to direct them towards the ability to encounter the complexities of architectural design simultaneously.

Beside its function in transmitting formal scholastic mode of inculcation, which is to teach knowledge and skills necessary to design, studio teaching has also another important role in architectural education. In this studio, students are cultivated with a kind of habitus or embodied culture. In gaining this culture, which causes also changes in students' pattern of behavior, the role of instructors, their attitudes, behaviors and their approaches to design and the profession are very important. The first year design studio, as the first contact of students with their future career has an even more important role. For this reason, this function of studio teaching should be more consciously recognized by the instructors. Only in this way the organization of the course material and attitudes of instructors can help in forming practical, intellectual persons and to help in socializing and civilizing the students.

Different methods of instruction can be used in introductory design education to help the socialization of the students and to foster the notion of team work. Creativity techniques are examples of these methods. Moreover, studio teaching is a system based on a set of interactions rather than on one way transmission of knowledge. When consciously approached, these interactions can be strong pedagogical tools in teaching. To arrive at satisfactory results, maximum participation of students should be encouraged.

With respect to the epistemological dimension, in a holistic approach, the studio is seen as a place where students learn to integrate theoretical interdisciplinary knowledge and design skills (disciplinary knowledge). From the very beginning of their education, students can be led to do research about different aspects related to design, and in this way to learn how to acquire and evaluate with a critical view and then use the information gained in the design process. The way projects are formulated has a profound role in leading students towards doing research.

An awareness of different types of knowledge used in the process of design can help instructors in using them more consciously in the teaching process. Paradigms describing the design activity also describe the way knowledge is produced and transmitted in the process of design, consequently, they are important in deciding about the way design problems in the studio are formulated. An awareness about these paradigms and different methods of formulating design problems accordingly is necessary for a more conscious organization of studio teaching and formulation of the problems in introductory design education.

Teaching in the design studio necessitates an awareness about different pedagogical approaches as well as their implications. The pedagogical objectives of introductory design education can be set within cognitive, affective and psychomotor domains and in relation to the course content and the methods of instruction. Looking at the learning process as a cognitive activity, a study of the ideas of people working in the field of education can result in a more conscious approach to the design of teaching and learning activities. A student-centered teaching method can help students not only in developing skills, gaining knowledge necessary to design and discovering a personal manner of working, but also in improving their personalities as independent and responsible persons. In a holistic approach to introductory design education, the problems should cover different aspects related to different dimensions of architectural design in a well-organized manner so that students can realize the overall structure of the subject and can use information gained in one problem in the following ones. For this purpose, different types of problems varying from abstract, compositional ones to more concrete, architectural ones might be used in a logical way to obtain the desired goals.

One very important aspect related to the organization of introductory design education is its relation to the other courses in the curriculum. The overall success of this course should be measured against the contribution it makes to the whole educational process. Integration of the first year studio and theoretical courses in a way that the knowledge gained in them can be transformed and used in the design process is of crucial importance. Another very important aspect in this context is the relation of introductory

design education and design education in the upper levels. Since this studio carries a mission of constructing a basis for the whole architectural design education, objectives, objects and methods utilized should be decided taking into consideration the system of education in the institution. In the same way, the upper levels studios should be organized in a way that enrich and strengthen what students have learnt in their first year of design education.

A satisfactory introductory design education can only be organized by taking all of the dimensions mentioned above into consideration. In this thesis it has been attempted to suggest a framework to form a basis for making decisions about the organization of introductory design education and to draw the main lines of a holistic approach to this education. Based on this framework alternative methods for different situations can be developed. The subject, due to its multi-dimensional character and its relation to many different issues, provides many possibilities for further research works. Discussion and evaluation of different methods of introductory design education according to the suggested framework can be subjects of other studies. As well, each of the issues handled in this thesis can be investigated in more detail in further researches.

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