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Seniz Cikis & Fatma Ipek Ek

Published online: 28 Apr 2015.

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Seniz Cikis and Fatma Ipek Ek
Izmir Institute of Technology, Turkey

ABSTRACT   In current educational practices within the discipline of architecture, the systematic use of conceptualization within the design process has not yet been extensively developed and applied. Though utilizing concepts within the design process has been discussed hitherto by educators and scholars, the conventional education system in architectural design may prevent its proper application in the studio process. Furthermore, because conceptualization describes an activity that has peculiarly visual and verbal dimensions, the coordinated use of drawing and language

as the representation systems also refers to the main character of the design process. In these respects, by offering a systematic alternative for conceptualization within the design process, this study presents a new educational pattern. The study was implemented during the sixth semester of the architectural design studio and includes an examination of the relationships and functions of drawing and language as the very media of conceptualization within the discipline of architecture.

Introduction

Visual representation is of great importance for all fields of design practice and design education. Drawing technique, as a two-dimensional medium, is the principal method of visual representation utilized in education within the fields of architecture, graphic design, industrial product design, urban design and fashion design. Drawing also provides students the opportunity to display their aptitude for design, for learning and also for communicating their designs with other members of the studio. Nevertheless, the drawing representation, which is generally accepted as an end product of education, is also a medium for both thinking and communication. Therefore, as an integral part of design education, it also refers to a medium that is utilized during all stages of studio work. It is impossible to produce and share information relevant to that production process without utilizing two-dimensional representation techniques, such as sketches, technical drawings, perspective drawings and collages. It is also the case that visual representation techniques, including drawing, neither constitute the unique medium of communication and reflection, nor are sufficient in all respects for the refinement and communication of ideas. The meanings and values produced by the process of drawing are also limited by its inherent potential and constrains. In other words, 'not everything that can be realized in language can also be realized by means of images [or visual representation], or *vice versa* . . . The two sets of meanings [or representations] are therefore neither fully conflated, nor entirely opposed' (Kress and Leeuwen, 1996). Since not all the features of design can be conveyed via drawing, we inevitably incorporate another medium, namely language. On the other hand, both language and drawing, as semiotic systems, depend upon conceptualization. The design, processed by means of language and drawing, reaches its final form synergistically, both in the designer's mind and on the drawing sheet. The design thinking

– which is progressed by reflective moves, such as abstraction, implication, causality and generalization – is based on the methods of *conceptualization* and *reflection by utilizing concepts*.

This study presents an alternative studio experience, based upon systematic use of verbal and visual representation techniques in the design process. This studio experience is based on a theoretical framework, described in the next section, in which the influences of language and visual representation in design experience are examined. The functions and forms of interaction of both media in a design process composed of conceptualization moves are also described in the next section. The final section includes the description and formation of the proposed studio experience, which depends on a new education pattern, planned around a new central approach. Each of the phases, the content and format of which were announced at the beginning of the studio process, were designed to support the coordinated use of both drawing and language. The studio experience examined in this study was developed and designed over two years preceding its application in the Spring semester of 2007, at the Department of Architecture at Izmir Institute of Technology.[1] The design study was performed with sixth-semester students (in an eight-semester education period) in the architecture studio. The following section describes the theoretical background to this design experience.

Background

What Is Design? What Are the Representation Media Used in Design?

Designing is an activity peculiar to humans, thus it corresponds to an ability to make choices by considering the context (Kress, 2003). This activity area, based on creativity and intellect, is composed of systematic and inventory processes, executed according to a specific goal. These processes are formed primarily with respect to individual perceptions, interpretations and style of expression. Therefore, it can be claimed that design is directly related to the ability and capacity of the human brain. Hence, due to the definite ability of the human brain and complexity of data, representations become necessary in order to produce a design. Consequently, design representations can be described as instruments, media and methods which are developed to be used in the production processes of all types of artefacts, and which direct the cognitive processes of the designer and convey product information.

What Is Drawing?

According to Gabriela Goldschmidt (2004), 'the ultimate design goal is to arrive at a satisfying representation of the designed entity', and thus, 'design is to represent, and in no case is there design without representation'. Design representations are, furthermore, prepared

by diverse techniques with regard to their purposes, modes, media and levels of abstraction (Grignon, 2000). This includes conventional drawing techniques or computational drawings, sketches, models, films, photographs, collages and modelling. Nevertheless, drawing is one of the most widely used representation techniques. Drawing constitutes different levels of expression, such as preliminary sketches, hard line drawings, presentation drawings, and technical or manufacturing drawings (Goldschmidt, 2004). Drawing is one of an extensive range of communication tools that display the designer's intention behind his/her representation (Lindström, 2006). Therefore, it is an end product of the abstract creation of design, a communication medium for architects and a conceptual medium that invites the architect into different and ideal worlds of imagination. As a result, just as the term architecture can be applied within different fields,[2] the phrase *architectural drawing* can also have several meanings. Thomas Schaller summarizes these meanings as follows:

> Visual representation of architecture can be used to envision and design a specific building, and to document and clarify the construction specifics of a structure to be built. In addition, architectural drawings may be used to portray or interpret the essence of particular structures for design proposals, competitions or marketing purposes. Finally, architectural artwork can be used to record or dream of ideas about buildings or architecture and its influence. The field of architectural drawing is, as a whole, too often seen simply as an adjunct, a by-product, of architectural design – an art about an art. (Schaller, 1997)

In addition, James Ackerman considers drawing as an individual expression style, and claims that:

> Architectural drawing is not just a document containing the required data, but inescapably bears the stamp of the author's personal style and that of the time and place. Further, a drawing may be a graphic form of architectural theory, conceived not only to illustrate the designer's principles but to persuade the viewer of the validity of his or her point of view. (Ackerman, 2002)

Similarly, drawing (or representation) is an individual style of expression and the most dominant medium through the architectural design process; it also covers the pre- and post-processes of the very activity of designing, in respect of sharing the designer's reflections with the public. Again, according to Goldschmidt (2004), 'designers represent – and design representations are made – before, during, and after the process of designing any entity, regardless of

whether the designed product is being constructed, manufactured, or assembled as a "real" product'. In other words, we may claim that the representation of architectural design by drawing refers both to a *private process* of designing in an *ideational* sense and a *public image* to be shared in an *interpersonal* sense.

Functions of Drawing

Drawing techniques like sketching, technical drawing, perspectives and axonometric projection primarily involve two functions: design and communication. Regarding the cognitive processes of the designer, a drawing (or representation) is primarily an intellectual practice, realized via thinking; according to the theory of modern architecture, drawing is an end product of the abstract creation of a design. Representation as a self-communication medium allows the designer to reflect on his/her creations and to make revisions to his/her own ideas. Hence its identification as a *conversation with oneself* is a function frequently mentioned within cognitive theories of design (Goldschmidt, 2004; Lawson, 1994; Oxman, 1997; Schön, 1983; Schön and Wiggins, 1992). When it is utilized for design exploration, on the other hand, representation is a means to answer various hypothetical questions. Galle (1999) describes drawing as 'a variety of obtaining knowledge about intended artefact, of probing into the consequences of tentative decisions about it, thereby providing a basis for rejection or approval of such decisions'. Thus, the other function of drawing comprises interpersonal communication. Drawing is the primary tool of building production; it facilitates communication between all actors taking part in the design and construction phases. The importance of drawing therefore becomes apparent if it is considered that a very intricate product like a building is realized as a result of complex processes undertaken collectively by many different actors, including designers, producers, specialists, legal consultants and consultants (Cuff, 1991).[3]

Common Points of Language and Drawing

The relationship between linguistic and visual images includes various dimensions. Among them, the dimension forming representation and expression has the primary position; for *linguistic and visual imaging as two kinds of expression styles support each other synchronically and strengthen the expression*. As Ernest H. Gombrich (1977) points out, there are many more relationships than might be expected between language and visual representation. As for the relationship between drawing and language, relationships between mental sets, convention and perception should also be interpreted attentively (Gombrich, 1977). The other dimension of the relationship between language and visual images is discourse. As Pierre Pellegrino (1995) stated, 'between form as appearance and form as a principle of existence lies a universe of discourse in which distance and closeness, difference and similarity, significance and silence are the object of the Project'.

One of the other common points between language and visual images (and also drawing) is that they are both conventions. 'Conventions of architectural drawing are, in a sense, elements of language; like words and sentences, they are invented or arrived at by mutual agreement and, once in place, remain with little change for centuries' (Ackerman, 2002). As Ferdinand de Saussure (1977 [1916]) stated, both are also semiotic systems, 'language is a system of signs that express the ideas' and 'the nature of the sign that is agreed upon does not matter'. Linguistic signs conjoin sound image with a concept. In other words, the 'mental facts (concepts) are associated with representations of the linguistic sounds (sound-images) that are used for their expression' (de Saussure, 1977[1916]). Like language, drawing is also a system of signs expressing ideas. In this respect, Ackerman (2002) adapts a similar approach to architecture and suggests, 'as a sign, a convention refers to an aspect that is signified. A drawing relates the signified, somewhat as a verbal description relates to aspects of objects it relates to'.

By following such approaches, and by considering architecture as a system comprising signs as its language, Peter Medway denotes the common features and importance of both architecture and language, as follows:

> Symbols and signs which form a part of systems (semiotic systems), notably the graphical and linguistic systems, are important in two ways. First and most obviously, they are a way of articulating or giving external form to an idea that is in the head. Second the same signs and symbols make it possible to communicate the idea to others. In practice, these two aspects interact to varying degrees; thus the need to communicate enforces the encoding of the idea in signs, a process that may lead to clarification of the idea or discovery of a deficiency; and the purely interior process of thinking about situations, conditions and solutions may utilize (through internalization) or be influenced by versions of those same external sign systems. (Medway, 1994)

Functions of Language and Drawing

The functions of language and drawing overlap in many respects. One of these is related to their being semiotic systems. From the creator's point of view, both language and drawing are signifiers that make sense and confer meaning in order to extend the comprehension of a signified form within a particular context corresponding to the real world. On the other hand, from the observer's point of view, both language and drawing are also signified entities, if we accept that language and drawing are two forms of representation referring to the virtual world in the observer's mind (Atkinson, 2001).

Nonetheless, again in a semiotic respect, as Gunther Kress (2003) denotes, operational mechanisms of these two systems differ in one essential issue: a written text or a speech is organized sequentially in time, which determines the reading or listening order, and thus determines the perception of the reader or listener. Thus, both have beginning and end points determined and imposed by the author/speaker. However, the situation in a drawing or an image is different in the sense that the observer determines the order of looking and, because this order of looking differs from observer to observer, it is not a sequential system. Thus, a graphical representation provides the observer with a freedom in perception and choice, and also increases the designer's creativity (Kress, 2003).

Moreover, when the functions of language and drawing are evaluated with regard to their semiotic characters, these functions correspond to each other in some other respects. The linguist, Michael Halliday (1994), speaks of two general functions of language and suggests that the main functions of language can be divided into two groups, as *ideational* and *interpersonal*. Ideational is related to the reflective dimension of language, and has expansions like utterances, state of affairs, concept and ideas that are expressed and communicated. On the other hand, interpersonal function points to the communicational dimension of language. Regarding this categorization of the functions of language, Halliday states:

> The fundamental components of meaning in language are functional components. All languages are organized around two main kinds of meaning, the 'ideational' or reflective, and the 'interpersonal' or active. These components, called 'meta-functions' in the terminology of the present theory, are the manifestations in the linguistic system of the two very general purposes which underlie all uses of language: (i) to understand the environment (ideational), and (ii) to act on the others in it (interpersonal). Combined with these is a third meta-functional component, the 'textual', which breathes relevance into the other two. (Halliday, 1994)

These two macro-functions together determine a large part of meaning potential that is inherent in the grammar of every language. Therefore, all types of ideational activities like thinking, making inferences, constructing relationships and classifying, which we experience in our daily lives, become possible through linguistic formations. Again, with the help of these formations, we can communicate with other people; as a result of this communication, we can reproduce thoughts and information in a reflexive manner; and finally reach conclusions. Concisely, the ideational and interpersonal functions of language support each other; and we use both of them mutually in a practical manner in our daily lives.

Relationship between Concept and Language in Architecture

Conceptualization is among the subjects requiring special emphasis in respect of design and learning processes. As within other branches of design, the process of architectural design is largely a thinking activity, and is composed of consecutive series of phases. As Lev Semenovich Vygotsky (1986[1934]) notes, an idea or a concept 'is not an isolated, ossified, changeless formation, but an active part of the intellectual process, constantly engaged in serving communication, understanding and problem solving' (also see Delage and Marda, 1995). Representation techniques used during design as a conceptual operation are, thus, important in this regard because, using drawing techniques, it is possible to rethink results, improve and transform them, and consider various variables simultaneously (Agrest, 2000).[4] Therefore, visual expression is of fundamental importance for architectural thinking.

Furthermore, language is also an instrument with which it is possible to conceptualize the architectural product. Language, as the main representation medium of reflective production, and as the widest semiotic system of human culture, is also used to improvise the design object. Corrine Delage and Nelly Marda point out the function of language in design activities, and state: 'both verbal (talking) expression and visual representation (making) are concrete expressions of architectural thinking and both interact with each other, transforming our concepts about architecture' (Delage and Marda, 1995).

A New Systematic Approach: Combined Use of Visual and Verbal Representations in Design Education

As stated, the combined use of visual and verbal representations in design makes effective the design experience, which refers firstly to an operation of conceptualization, and then necessitates active communication. Therefore, drawing is certainly a vehicle of socialization, like language, and thus, the similarity between drawing and language also includes socialization. The functions of language coincide precisely with the functions of drawing in respect of the following assertions about language: 'it is the medium in which most organized thought and communication proceed' (Hodge and Kress, 1993), and 'it is the "social construction of reality"' (Berger and Luckmann, 1967). Yet both language and drawing are signifying systems, allowing us to construct our social worlds by perceiving and filtering the real world.[5]

On the other hand, in principle, architectural drawing can only represent specified features of design. It is, as previously stated, a representation medium through which to communicate, particularly with experts (professionals), as well as novices (students) of the same profession. Nevertheless, because the discipline of architecture deals with physical artefacts, that is, the buildings and built environments,

its communication manner mainly resides in visual representations. This is because it is relatively difficult to express *verbally* the sections, plans, elevations, or site plans of a building, which constitute the obligatory *visual* media to construct a building.

Therefore, in terms of the main purpose of our curriculum, we designed a pilot educational programme that utilized both drawing and language simultaneously, as two media operating together and compensating for each other. The requirements were arranged to ensure that students were able to advance their designs as far as possible, both in visual and verbal media, in order to reach and address the full range of implications, significance and effects of their subsequent designs. A student who is able to comprehend what he or she designed visually can marshal a verbal structure of arguments and criteria to constitute the concept of the project. Thus, in architectural education, widely used verbal techniques like juries or desk critiques are not utilized solely with interpersonal purposes, but also ideational ones.[6]

The subject of the project was designated as the *School of Visual Arts*, due to its character easily evoking conceptual associations, and thus its convenience for conceptualization. In this context, students were required to develop concepts for the project of the *School of Visual Arts*. Since our approach refers to a design experience depending mainly on the ideation of conceptualization, the relationships which were to be structured (by the students) between the selected concepts of visual arts and the final form of the architectural object (as the *School of Visual Arts*) formed the main character of this system.[7] Accordingly, the degree of complexity of the project programme was structured at the moderate level by also considering the knowledge level of the sixth-semester students.[8] The programme was composed of three sections: the first section included spaces open to public use, and consisted of a meeting hall, foyer, exhibition space and a café; the second contained the units of education spaces; and the third was the commercial section, comprising office units.

The studio work was composed of three related phases. Each step was planned to last one week and formed different levels, constituting the phases, each of which was completed with a poster.[9] Through integral studies on the content and architectural representation, students received feedback on their presentations and their works only in the juries, in which each student was required to actively participate once a week. Thirty students were included in the studio project, and none received individual desk critiques during any steps of the process. Instead, critiques and ideas were discussed through interactive dialogues[10] in the juries, between the student and project supervisors.

The first phase of studio work comprised the problem of pro-duction and representation of concepts. The second phase involved exploration of the architectural counterparts of the selected concept.

This phase included researching the spatial counterparts of the concepts, and testing various alternatives in architectural form. The third and final phase consisted of production of the architectural project, within which data such as site, technologies, materials and context, related to the conceptualization, were considered together. The following section discusses the theoretical framework and experimental scenarios used to develop these three consecutive phases.

An Experience on Reflective and Active Cycles in the Design Process

The three main sections within the studio experience were termed the ideational phase, transitional phase and interpersonal phase. Thus the ideational phase referred to the initial consecutive reflective moves[11] in design, which develop in an intrapersonal manner. The interpersonal phase, on the other hand, consists of the active communication of design with others. Though it is not defined by Halliday, a transitional phase was also added here, to provide an easy, gradual and plausible transition between the ideational and interpersonal levels of design thinking.

The *ideational phase* is related to the reflection dimension in the design process. This dimension primarily consists of reflective or self-communicative cycles, and is very important for design learning, as Rivka Oxman asserts: 'the idea of reflection on the problem in the medium of conceptual drawings, or sketching, introduces a cognitive orientation to design reasoning as a foundation of design learning' (Oxman, 1999).[12] Therefore, it may also be claimed that the designer's conceptualization or visual thinking by sketching, inspecting what he/she drew and revising the drawn material to refine the design, constitute the structure of ideational cycle (Suwa and Tversky, 1997). Though it may be termed self-conversation, self-communication or intrapersonal communication, the ideational function of design language refers to the main theme of this phase of the *conceptualization process*.

This very process is composed of the selection and evolution of a *concept* until it arrives at the *central idea* organizing the architectural product in both spatial and formal respects. Yet, as Bryan Lawson stated, while these concepts may initially comprise several ideas, through the process, a dominating concept may sometimes be reached by eliminating subsidiary ones:

Good designs often seem to have only a very few major dominating ideas which structure the scheme, and around which other relatively minor considerations are organized. Sometimes they can even be reduced to one idea, known to designers by many names but most often called the 'concept' or the 'parti'. Such 'central ideas' inevitably emerge from

early explorations through 'primary generators'. However, it is interesting to note how little some of these ideas may be understood until later in the process. (Lawson, 1994)

The ideational phase of the experience was therefore planned as a process in which all linguistic, textual and visual representation systems are utilized together; this covered the third, fourth and fifth weeks of the semester.[13] The main aim was to identify a concept useful for the fields of both visual arts and architecture and, therefore, the description of the phase constituted the production of symbols and representation of concepts. In order to fulfil this aim, the requirements were determined as and limited to the representation of concepts in two-dimensional posters prepared using free-hand sketches, photographs, computational figure applications and so forth (the choice of techniques was optional) (Figure 1).[14]

At the initial step of the ideational phase, students were required to choose and research concepts which would benefit from visual and verbal analogies[15] between the abstract concepts (related to visual arts) and matured architectural objects (of the *School of Visual Arts*). It was particularly emphasized that the posters should represent the concept itself, and, *visually*, they were not to convey any architectural inferences at this stage. This imposition ensured that the students could focus directly on the concepts, their conceptual descriptions and representations. The juries also discussed and criticized the qualities of the submitted posters as graphical and communicational design products.

The complexity of the *transitional phase* arises because it refers also to a transition from the abstract context to the quasi-real one.[16] Therefore, it was planned as a process to facilitate the development of design by transferring the initial concepts into architectural design data. The transformation of the concepts into design *intrapersonally*, and the sharing of these developments with others *interpersonally* require simultaneous consideration of both ideational and interpersonal levels. In this respect, this phase covered the sixth, seventh and eighth weeks of the semester, and was formed by two consecutive and complementary exercises, by which the spatial counterparts of concepts were sought, and their alternatives in architectural form were examined.

Thus, the first of these exercises was described as the *architecturalization* of the concept, and titled Part-A. The main objective of this part was converting students' abstract concepts into the organizing ideas of their projects. Within this framework, students were required to prepare presentations by utilizing collage techniques and textual descriptions. Part-B was described as the composition of architectural tectonics, and its objective was consideration of building and site. This part therefore consisted of the creation of architectural compositions, which would also include the selected images or concepts. Sketches, diagrams, plans, sections, elevations,

and perspectives and physical models were also required from the students (see Figure 1).

The aim of the *interpersonal phase* was mainly to promote the development of architectural thinking amongst the students and also to improve their interpersonal communication skills, by arranging face-to-face dialogue (in the juries) between the students and project supervisors. Further progress in problem-solving skills in a quasi-real context, and technical drawing were also among the goals of this phase. Thus, it covered six weeks (from the start of the ninth week until the end of the fourteenth week). The students were not permitted to dismiss the concepts they selected; rather, they were to maintain those concepts by developing them into organizing ideas of their projects. The legibility of these concepts (or central ideas) through the project also facilitated easier interpersonal communication.

Architectural design, as the phase description, was discussed in all respects at this level, and thus data such as context, site, programme and structure were also considered in detail. The whole structure of the phase and especially the final presentation of the architectural object of the *School of Visual Arts* consisted of the process in which designs were, again, presented via widely used technical design representations, including plans, sections, elevations, perspectives and physical models. Students were also required to re-submit revisions of the poster(s) from Part-A by using a range of optional techniques (see Figure 1).

The following section provides practical descriptions of the project phases. Three examples of students' work illustrate the

Figure 1
Summary: contents of design phases.

	Ideational phase	Transitional phase		Interpersonal phase
		Part A	Part B	
Description	Production of symbol and representation of concept	Architecturalization of concept	Composition of architectural tectonics	Architectural design
Objectives	Searching a useful concept for both the fields of visual arts and architecture	Tectonic representation of the concept by exploring the architectural counterparts	Consideration of building and site	Development and communication of architectural design
Requirements	Representation of the concept in A3 poster(s) by optional techniques; improving the conceptual proposals by the feedbacks	A2 format posters by collage technique; textual descriptions; improving the project proposals by the feedbacks	A2 format posters including sketches, diagrams, plans, sections, elevations, perspectives; physical models (1:200); improving the project proposals by the feedbacks	A2 format posters including sketches, diagrams, plans, sections, elevations, perspectives; revision of the poster submitted in part-A by optional techniques; physical models (1:200)

projects' efficacy in monitoring the project development during all three phases.

Evaluation of the System via Three Selected Projects

The concepts chosen by the students included layering, dislocation, motion, decomposition, rhythm, light, clothing, speed, morphosis, abstraction, colour, fluidity and filtering. Three of these concepts are examined here in detail: *layering*, *dislocation* and *motion*. These works were selected based on students' performance throughout the three phases, and they lend themselves to examination in this study by clearly demonstrating students' evolution during each phase.

The first project examined the concept of *layering* by considering its characteristic appropriateness to both visual arts and architecture. The student determined that *layering* techniques are frequently used in branches of visual arts, such as animation and film. Subsequently, it was decided that the concept of *layering* could be applied to an architectural design scale in terms of layers, represented by floors and slabs, or functional stratification of the building programme (Figure 2).

In the ideational phase, the student presented the work via a typographical expression technique (Figure 2a), choosing to utilize typography as an expression tool through the conceptualization process. Although the approach of using a visual analogy of the concept of *layering* was appreciated by the jury members, they criticized the use of colour and aspects of graphical legibility, and requested a revision of the design. In Part-A of the transitional phase, the student explicated the concept by relating it to solids and voids (Figure 3), and was charged with providing relationships between the concept of *layering*, the programme and the site. In
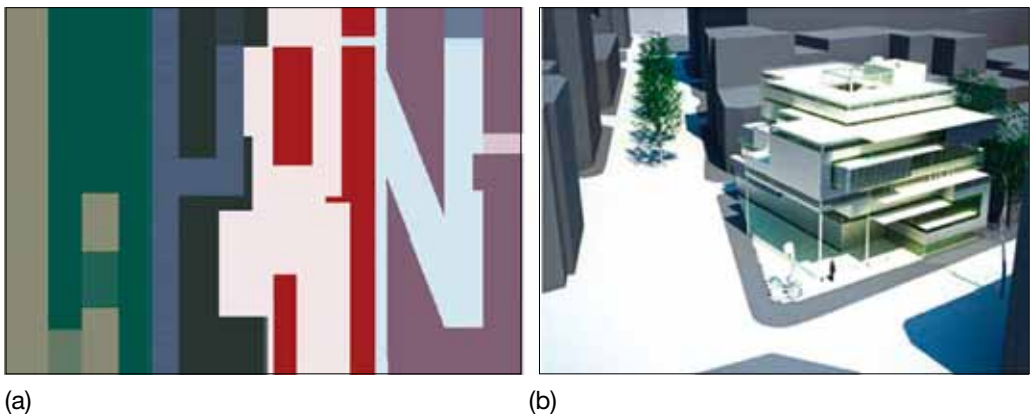

(a)   (b)

Figure 2
Evolution of the *layering* concept; (a) demonstrates the first conceptual poster of ideational level, and (b) demonstrates the final architectural image of interpersonal level: both images bear the imprints of the student's conceptual approach.

Figure 3
Design process in Part-A of the transitional level: the student expressed the chosen concept by utilizing different images to provide clues about the possible processing and formation of the concept of *layering*.
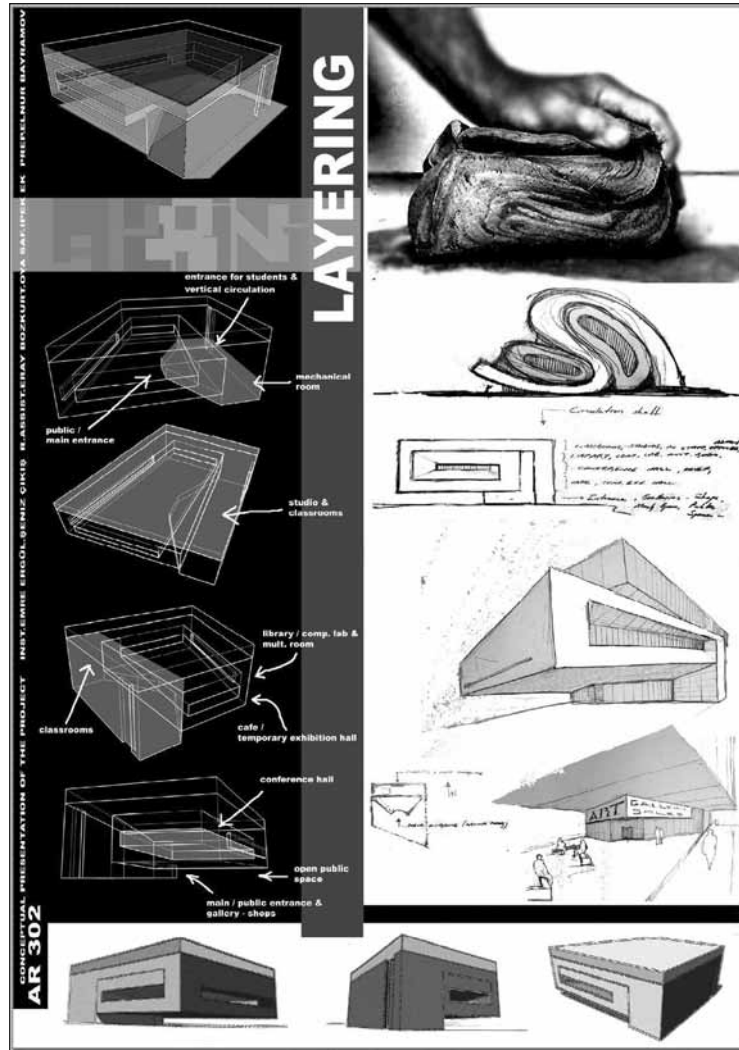
Part-B, therefore, the concept of *layering* was treated in terms of the assemblage of cells containing the parts of a programme. In this way, an architecturally tectonic expression style was proposed (Figure 4). The aim of the interpersonal phase was for the previously developed tectonic expression to be transformed into constructional elements, such as columns, beams and slabs. During this phase, functional, spatial, structural, urban and massive qualities of the building were also discussed. In these respects, in order to provide an urban space, the student also designed a void on the entrance facade (Figure 5).

The second project examined in this study focused on the concepts of *speed, shifting,* and *dislocation* (Figures 6a and b). The student changed the concept twice in the process of design

improvement, and finally selected the concept of *dislocation* because of its frequent use in architecture (such as in computer-aided design), cinema, animation and illustration arts. The student further extended the meaning of *dislocation* via subtitles such as *change in position*, *dynamism*, *location* and *manipulation*, then denoted the role of each of these subtitles within the visual arts and their counterparts in architectural tectonics (Figure 6c).

In the ideational phase, the concept of *dislocation* was treated and represented in a poster implying *order* and *random shifting* (Figure 6c). A complementary colour scheme was chosen to emphasize the idea. In addition, connotations common in both architecture and animation arts were also considered by vectorial and volumetric symbols used in design. In Part-A of the transitional level, regarding architectural tectonics, the student interpreted the concept of *dislocation* by projecting the functionally dominant spaces in the programme in a manner contrary to the general geometrical order. This approach was reflected on the facades by the mass organization, and on the plan by the spatial organization via the use of colour coding and differentiation in the structural system. In Part-B, after several trials, the complex differentiating in massive and spatial respects was applied to the section of the design including

Figure 5
Final representation of
the project, interpersonal
level: in this final poster
presentation of the project,
the design process was
also demonstrated through
the layers composed in
an interlaced pattern,
beginning with the
conceptual image and
progressing into the
technical drawings.
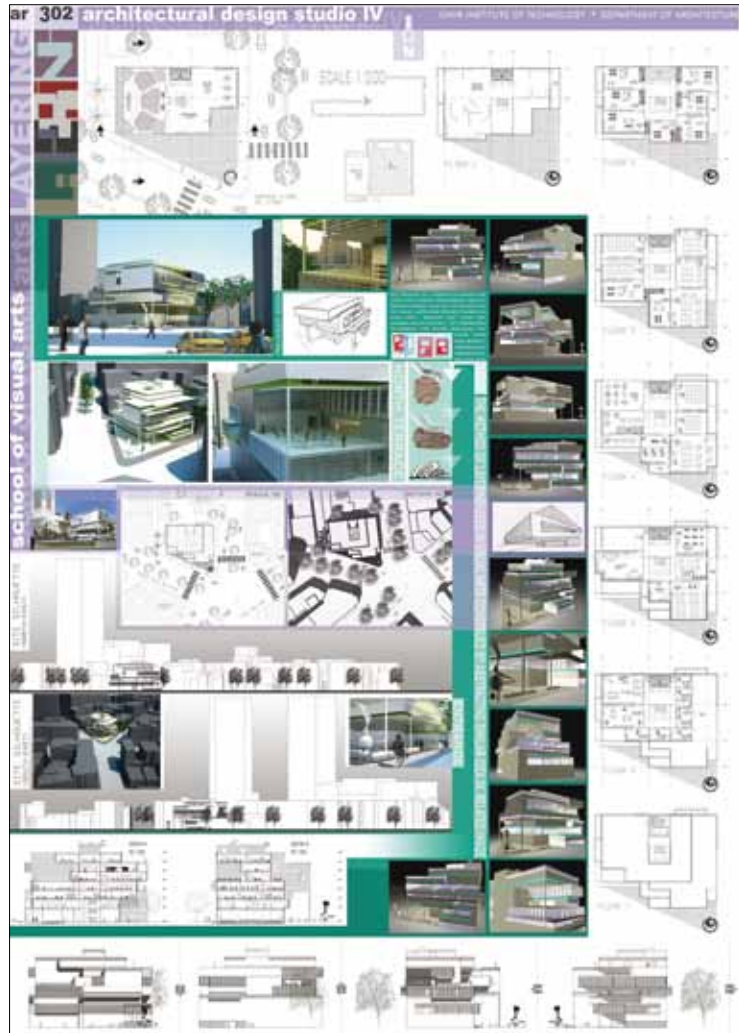
the conference hall and its foyer. In order to convey the central idea
to the interior spaces, a relationship was also provided between the
entrance volume and the *dislocated* conference hall. Finally, in the
interpersonal phase, the student solved the problem by designing
a dominant orthogonal order which formed a wide gallery space
containing the conference hall on the top floor (Figures 7 and 6d).

In the third project, the concept of *motion*, as one of the main
features of film and animation arts, was selected by the student
because of its convenience for adaptation to architecture. The
student learned during the research phase that this current concept
has frequently been used in diverse subjects, such as time and
perception, or digital architecture and non-Euclidian geometries,
then discussed these subtitles through the process of the project
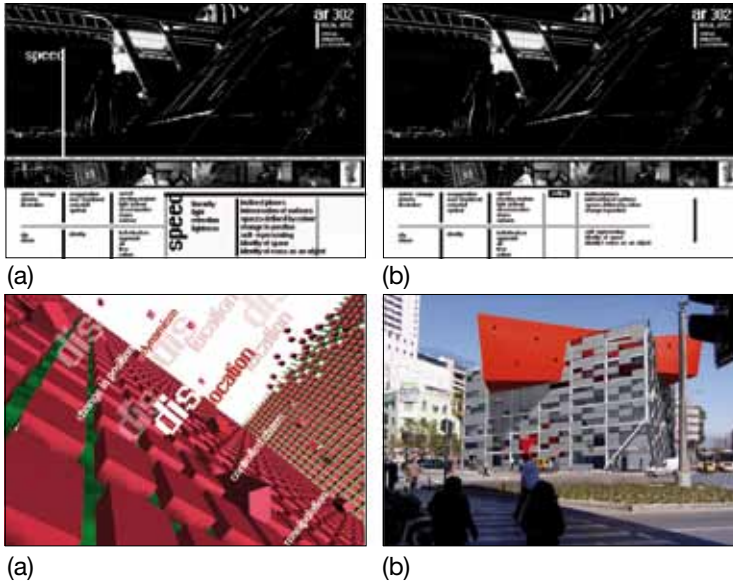(Figure 8).

(a)

(b)

(a)

(b)

Figure 6
Evolution of the *dislocation* concept – (a), (b) and (c) demonstrate the primary conceptual posters of ideational level, and (d) demonstrates the final architectural image of interpersonal level: the images summarize the student's conceptual progression and the end product.

In the ideational phase, the student undertook the presentation of the chosen concept by means of changes in time and perception (Figure 8a). The student was also advised to study stroboscopic images appropriate to the concept. In Part-A of the transitional phase, the concept was treated by a dynamic fold in building bulk and curves on facades. However, the jury emphasized that this concept should not be studied only by means of mass organization. Therefore, the student proposed to treat the concept by means of the main circulation system and organization of circulation spaces of the building. In Part-B, the student decided to adapt the concept
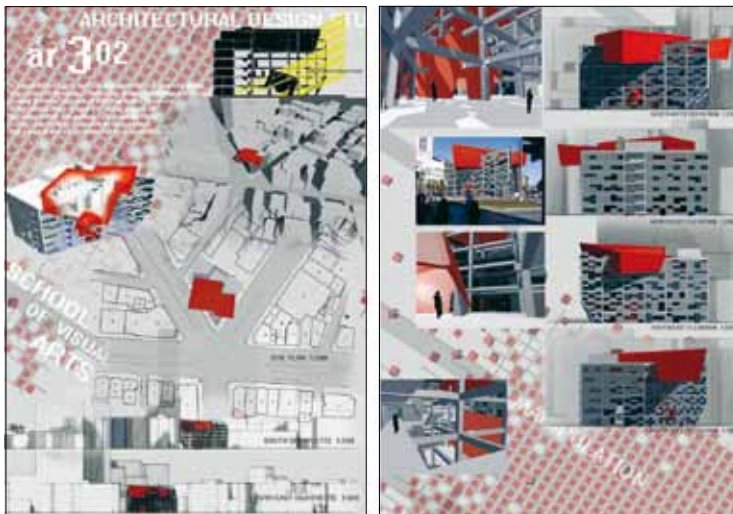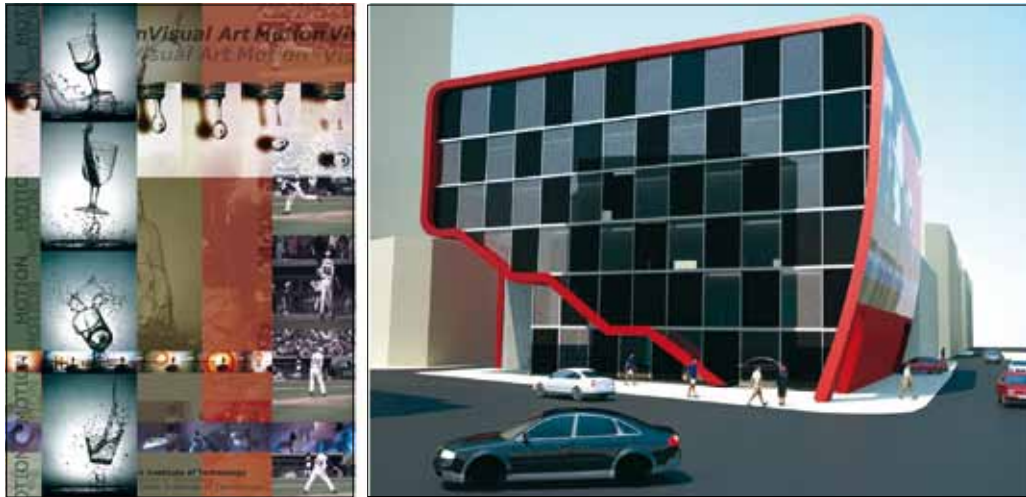

Figure 7
Final representation of the project, interpersonal level: geometrical contrast was also supported by the colour scheme to emphasize the *dislocated* space.

(a) (b)

Figure 8
Evolution of the *motion* concept – (a) demonstrates the first conceptual poster of ideational level, and (b) demonstrates the final architectural image of interpersonal level: *motion* in different respects was demonstrated in the conceptual poster, which was also designed in a relevant manner; lastly, it was concretized in the architectural end product.

of *motion* by designing stairs which were to be expressed on the entrance facade, and which also comprised the main circulation axis open to public functions. These stairs were also related to the diversification of spatial perception via time and *motion*. Finally, in the interpersonal level, the treatment of facades was considered as an important feature of the project to finalize the design process (Figures 9 and 8b). In addition, one of the building elevations was designed as an urban communication facade, as a screen reflecting ever-changing animated images.

Conclusion

Following the design process, students provided feedback, from which a number of conclusions can be drawn. One student stated, 'I used to think about how to draw my project, rather than how to explain it. But now I know that I can be a good designer if I can explain my project in a comprehensible manner'. The same student also stated that 'Studying with the concepts solved the problem of losing time, particularly in the initial phases of the project. Furthermore, I did not confront, then, the problems of determining what to focus on, and on establishing the primary criteria'. Similar student comments indicate that our studio achieved the aims set at the beginning of the semester. The conclusions drawn in the colloquium at the end of the semester also reflected the general opinions of this student. The majority of the students managed successfully to present their weekly progress and orient the discussions in the juries; to acknowledge the opinions of their critics; and to consult them about their problems. Due to the predetermined presentation formats, students were able to utilize both verbal and visual representations as the design and communication media. They also realized that studying a specific concept defined their thinking and explanation on design, as well

Figure 9
Final representation of the project, interpersonal level: in the end product, the facades and plans adopted similar forms, recalling a trapezoid to imply the effects of *motion* which was also reflected in the poster design.

as the actual design product. Therefore, they also constructed their own project criteria.

This studio experience was organized around the notion that language not only represents a form of communication, but also a design medium in design education; thus, this experience also presents an alternative pattern, with a syllabus to be adopted in conceptual project studies. In other words, it exemplifies a manner of conveying the ideational correlation (between the language, visual images and concepts that we recognize in our daily lives) into the field of architectural design. Conceptualization is an approach frequently used in fashion, graphical, or industrial design, yet this approach can easily be applied to disciplines of architecture, urban design or planning in which different inputs (like context, technical

knowledge, social issues, function, form, aesthetics and so on) diversify. The present study therefore exemplifies how the method of conceptualization is to be processed in the teaching of such disciplines.

Furthermore, this method offers a solution to problems stemming from the blurring of processual division and integrity of presentation peculiar to the conventional system, which mainly comprises individual desk critiques and final juries. Another important result of this studio experience is that it represents a process-based approach in the studio, rather than the product-based one (while, on the contrary, in a conventional system, process is reduced only to the degree of satisfaction and attendance). The characteristic method of this studio experience (at the end of which a studio portfolio containing students' products in consecutive phases was also compiled) appears to have potential for further studies. In this way, evaluation was made possible by viewing the process within the perspective of objective products.

Notes

1. To provide an extensive understanding of the applied system, we should briefly present the main features of architectural education in the Department of Architecture at the Izmir Institute of Technology, one of Izmir's three public universities. The department offers both undergraduate and postgraduate degrees, though the former was established at a later date (1998). The Bachelor's degree in Architecture is granted following a four-year (eight-semester) undergraduate programme, and the language of instruction is English. One semester corresponds to a fourteen-week period of education. Furthermore, an interdisciplinary education is also provided by the integrated studios of Architecture and City and Regional Planning during the first three and the seventh semesters. However, the third year studios (which includes in this case the sixth semester), includes only Architecture students. For further information about the department, see http://likya.iyte.edu.tr/arch/architecture /index. html.

2. The term *architecture* is referred to in many respects with different meanings, such as the discussions of a specific building, building activity in general, or even verbal and written criticism on theory and practice.

3. Dana Cuff (1991) identifies forty-six different participants in an architectural project under six groups: long-term participants, paid consultants, regulatory and approval bodies, interested parties, informal consultants and incidental influence.

4. Within the profession of architecture, drawing has functions similar to language. Drawing is used in ideational fields (design and conceptualization) of the profession, in addition to facilitating communication. According to Diana Agrest (2000), architecture

as a thinking activity 'often works metaphorically, trying to emulate other fields, in particular philosophy, science and art. In this case architectural representation works as a shifter that allows codes of one system to be switched to another culture, painting or architecture'.

5. Our obligatory dependence on language, as well as on drawing, in order to construct our social and virtual worlds, and thus, their being the signifiers of those socially and virtually constructed worlds, are among the issues frequently emphasized within the literature: for example, while Robert Hodge and Gunther Kress (1993) have made seminal assertions on the social perspective of language, Dennis Atkinson (2001) denotes the character of drawing as the signifier of the virtual world in the designer's mind. Furthermore, according to Stan Allen, drawing is a notational system, and he describes its relationships with the real as follows: 'Notations are necessarily reductive and abstract, yet the products of notation do not necessarily resemble the notation itself. Consideration of drawing as notation also directs attention toward all of the intangible properties of the real that cannot be set down in graphic form. Many aspects of the experience of architecture can never be effectively simulated or predicted by representational drawing' (Allen, 2000).

6. Furthermore, the studio experience was organized within consecutive phases, and was evaluated by continuous jury rather than the conventional system of individual criticism and jury used in architectural education. As Helena Webster (2005) explained, 'conventional studio organization is realized by individual criticism and a jury system. The design studio and final jury remain central to the pedagogy of architectural education across the world. Today, juries consist of a panel of experts who would make a collective judgement about the quality of student's work, based on a verbal presentation of drawn or modelled work'.

7. In other words, considering Gabriela Goldschmidt's explanations on similarity-based reasoning and rule-based reasoning, our aim was to design and experience a new educational pattern which consciously emphasizes the cooperation and interactivity of these two cognitive systems. To elicit our aim, we may also consider the related descriptions by Goldschmidt (2001), which state that rule-based reasoning 'signifies the ability to form abstract concepts and use symbolic representation, primarily through the use of language', and similarity-based reasoning is 'cognitively facilitated by imagistic operations', 'pertains to figurative qualities, and is therefore largely visual'. Another important point in Goldschmidt's approach is the description of a new aspect of the educational system. Similarly, Rivka Oxman (1999) also proposes a pilot educational programme based on the visual reasoning and conceptual processing, and which was developed by a critical approach to the traditional studio-based architectural education

that evaluates the product rather than the increments in design learning. Regarding the proposals of both authors, it can also be claimed that the conventional education systems within architecture studios may need to be reconsidered and reformed in respect of the design processes.

8. The decision to adopt this system during the sixth-semester (that is, the second semester of the third year) architecture studio relates to the features of the general education system applied within our department (see Note 1). In this respect, the sixth-semester students have the appropriate background and experience of both the reflective and active cycles in design. Yet this sixth semester corresponds to the level that is three semesters after the basic design studio (which covers the first two semesters, and fundamentally considers the subject of conceptualization in design). During the sixth semester, students also have sufficient experience in communicating through the panel critiques, have developed skills of deciding what they have to communicate about their projects and how they can utilize feedback.

9. The *Oxford English Dictionary* defines a *poster* as 'a large printed picture (which may or may not be an advertisement) suitable for decorative display' (*Oxford English Dictionary*, 2000). It was therefore decided to use this word, because it refers both to a designed entity and to a composition which provides the flexibility of representing the related visual and textual images (about conception) and technical drawings (of the architectural object) on the same sheet.

10. Through those interactive dialogues, student and project supervisors tried to convince each other. Thus, students first presented their posters, and then received positive and negative advice and design feedback from the supervisors about how they could progress the concept and convert it into the central idea of the architectural project. If the student did not agree with the critiques, or he/she thought that there was a misunderstanding, then of course, he/she could further advocate for the design and re-present his/her works to the jury members and other students. In this way, for example, some of the students decided to change their concepts at the initial phase, and some improved their designs by adding further subtitles as expansions of their concepts.

11. The term *move* is described by Donald Schön and Glenn Wiggins (1992) as 'the basic unit of the design process'. However, this term is also used in the present study in Oxman's (1997) sense that describes it as '"a series of actions" of the designer which result in transformations of a representation' in the 'process of conceptual design' by referring to Bryan Lawson's (1980) and Ömer Akın's (1986) descriptions. This later description, in particular, coincides with the issues in the present study, where

the progressive 'transformations of a representation' within a studio project constitutes one of the main fields of interest.

12. Within the context of cognition, Oxman (1999) mentions the role of *design reasoning* as one of the 'two important modifications to the traditional model of design education' by referring to Schön's (1983) definitions.

13. The semester comprises fourteen weeks in total. The first and second weeks of the semester were not scheduled within the first phase of the project, due to inaugural ceremonies within the department, and thus low attendance rates during the first week of the semester; a technical trip to the project site was arranged for the second week.

14. Posters were prepared in A3 format sheets in the first phase, but for the second and third phases they were presented in A2 format sheets

15. The word *analogy* is used in Goldschmidt's (2001) sense, in which it is defined as the 'similarity between relationships'.

16. The quasi-real context refers to the *representation* of the real world within the drawing medium, regarding its role as a signifier in the semiotic system in Atkinson's (2001) sense, or a notation in Allen's (2000) sense.

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Biographies

Seniz Cikis is an assistant professor at the Department of Architecture, Izmir Institute of Technology. She worked as a research assistant between 1991 and 1998 in the Department of Architecture at Dokuz Eylül University and attained her PhD degree from the same department. She continued as an instructor between 1998 and 1999 in the Department of Interior Architecture at Bilkent University. She was assigned as an assistant professor in 1999 in the Department of Architecture at Izmir Institute of Technology. Articles written by Cikis include: 'A critical evaluation of mathematics courses in architectural education and practice' (*International Journal of Technology and Design Education*, DOI, 2008) and 'New trends in architectural education and effects on production of professional knowledge' (*Changing World Changing Professional Practice, XII*, *International Building and Life Conference*, Bursa, 2005).

Fatma Ipek Ek is a PhD student and research assistant at the Department of Architecture, Izmir Institute of Technology. Having graduated in 2003 from the Bachelors programme of the same department, she has worked and published on Giovanni Battista Piranesi during the Masters programme, and is currently working on her PhD dissertation on housing studies in Izmir.

Addresses for Correspondence

Dr Seniz Cikis, Assistant Professor, Department of Architecture, Izmir Institute of Technology, Izmir 35430, Turkey.
Tel: + 90 232 750 7019
Email: senizcikis@iyte.edu.tr

Fatma Ipek Ek, Ph.D. Student and Research Assistant, Department of Architecture, Izmir Institute of Technology, Izmir 35430, Turkey.
Tel: + 90 232 750 7031
Email: fatmaek@iyte.edu.tr

Acknowledgements