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Critical Reading in Architectural Education

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Abstract: Architectural production is a text. Texts; while producing the new based on the other, architecture needs, production social life, technology, the geography where it is produced, etc. It is formatted by references before it, as well as elements. Blending this production into architectural education must be carried out adding readings on architectural design conception and teaching the articulated power of the theoretical structure of design. The need to rebuild, reinterpret and reproduce knowledge in the mind of each individual in their own way necessitates the questioning of the need to surpass the centred position that teaches the teaching method of the studio. The aim of this study is to prove the possibility of a method that by incorporating architectural texts and theory books into undergraduate education makes these texts more comprehensible, by demonstrating the contributions of these courses in architectural design studio. In accordance with this purpose a methodology suggestion has been tried to read and understand texts as part of production in architectural education. This methodology is formed by superposing steps towards understanding architectural theory texts through critical reading with learning steps towards transforming the text from conceptual maps to images. This way architectural education is rendered a whole with design and theory altogether and as a result, subjective construction of knowledge defines the key concepts of design studio as criticism and reconstruction.

Keywords: Architectural Education, Studio, Critical Reading, Conceptual Map, Visualising

Introduction

Architecture, being in relation with a series of disciplines such as literature, philosophy, history and linguistics, is constantly questioning its ontological foundations. Architecture uses literature for its original and free linguistic attributes, philosophy to formulate clear conceptual infrastructures for its ideological statements, and history as part of its study material. It can be asserted today that instead of a literary tradition in architecture that represents itself through form based studies only, representation by theoretical discourse and texts is more popular. In this said production, narratives sit in the centre point of textual representation, attributing great importance to the writer and the reader (Ersoy, 2013). Much like other domains of education, these quests for new methods in architecture find themselves in more flexible and innovation-seeking learning environments that prioritize learning by doing and combine more traditional methods and tools with fresh and cutting-edge technologies instead of approaches that succeed previous schools such as Bauhaus or Beaux Arts.

In our time, each domain of education seeks after raising individuals equipped with maps towards knowledge and critical thinking. In this regard, architectural education is a matter of creating the environment to nurture the learning habits and the mind structure that is required for life-long discovery, composing, sharing and applying abilities. The term “architectural education” that renders studying paradoxical subjects of architectural knowledge that are in constant change and reluctant to change altogether possible, may contribute to the development of a learning centred education strategy and tactics (Yücel, Aydınlı, 2015). This development necessitates also a research

approach that is different from the suggested models of architectural education. An approach that is founded upon the ideal of architectural education should be learning centred; and hence incorporates the development of educational strategies that aspire to offer abilities such as comprehension, internalisation of skills and knowledge and awareness and various tactics compliant with different perspectives. In learning centred education, the target is to "learn the way of learning" and creating the required atmosphere in accordance by the teachers. Science inspects how things are, whereas design is considered with how things can be (School of Schools Bienale, 2018). "Learning the way of learning" allows the individual to understand and rethink the environment by nurturing skills to comprehend how knowledge is altered by changing conditions, its determinism and how to reinterpret it.

Tekeli (2014) emphasizes that the architectural studio is the fundamental mechanism in teaching the design skills to students and these lessons should be evaluated with their unnoticed contributions that are of equal values. In the studio, the student takes a subject, soaks it through research, defines relevant issues, offers solutions to them, presents and defends the outcomes, receives and answers to criticism and holds the ideological ground. What needs to be prioritized is raising architects that can think flexibly in the ambiguous and dilemmatic domain of architecture, which is a recently spreading phenomenon, question and transform knowledge and tolerate complex and contradictory problems (Aydınlı, 2001). According to Yürekli and Yürekli (2004), universities should pay attention to the intellectual improvement of the students as much as the vocational education. Gasset, in Mission of the University (1998), advocates that the knowledge to be acquired in education springs when conflicted with the limits of learning skills. In our time, the abundance culture and technique alike, bears potential risk of a catastrophe for people and aggravates, even makes it impossible, for the new generations to digest (Gasset, 1998).

However, in the pre-modern era, architectural knowledge comprised solely the knowledge of construction. The suggestion that architecture can only be produced via construction has resulted in architectural knowledge being driven from the built. This reductive idea has long been abandoned. In the modern era, the idea of architecture being limited to the built has been significantly transformed by the suggestion that it also covers what has been produced upon the built. This way, production about the produced or constructed has entered the field of architectural knowledge. Tanyeli (1999) defines it as "theoretical knowledge", mentioning that while the "knowledge of making" dominated the time before the twentieth century, with the 20th century and forth, the "actual knowledge of architecture" that includes the "theoretical knowledge" as well as the "knowledge of construction" has started burgeoning.

Architectural writing, which plays a great part in the literary representation of architecture, is concerned with theoretical knowledge and related to the history writing tied with the tradition of interpretation. Historiography as an activity of reconstruction, is evaluated in terms of three main approaches such as constructive, reconstructive and deconstructive. Reconstructivist approach that has been deriven from the constructivism, suggests that history can be known and re-written as it originally was, while the deconstructivist movement lead by a group of writers such as Jacques Derrida, Hayden White, Keith Jenkins, has construes the act of reading historical events and boundaries of the documents as an act of reconstruction (Durmuş, Öymen Gür, 2017). According to the traditional perspective, what comes to mind in terms of text is the written word. However, the semioticians have enlarged the limits of the literary concept and the assertion that every phenomenon that a meaning is deriven from is a text has started to gain recognition. (Ricoeur, 1971; Siegel 1984; Rowe, 1987; Hartman and Hartman, 1993; Lenski, 1998; Barthes, 2005; Lefebvre, 2014; Barthes, 2015). What A. Toffler (2011) suggests, "The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn,

and relearn", demonstrates clearly the importance of knowing the methods and ways of learning in the new age (Balay, 2004; Toffler, Toffler, & Gibson, 2011). Architecture can be discussed on a parallel basis that considers architecture as a text or accepts that architecture may be read like a text. Since architecture too is constantly reproduced in changing places and contexts throughout time.

One of the research channels that contributes to the production process of architecture is architectural texts and theory books. These texts are given to the students sometimes in design studios and other times in theoretical courses that support the studio as reading lists or individually to help understand and make meaning of the natural structure of production. Just like in the design studio, the transmitted knowledge aspires to improve the intellectual world of the architecture candidate. This study offers the idea of a method that creates a conceptual map by the critical reading of theory books, turns this map into an image by collaging different means of architectural representation, and exposes the design and theory union in architectural education.

This study discusses the hypothesis that concept maps will help in understanding architectural theory books. In this study, there is a method proposal in which reading theory books with a critical reading is discussed, and it argues that making the critical text more understandable by being visualized together with concept maps will contribute to studio education. In this context, the theoretical background of the study consists of the concepts of critical reading, concept maps and visualization.

Critical reading of architectural theory books

In a general sense theory is a conceptual scheme, used for understanding science and explain phenomena and their relationships (Yıldırım, 2016). In terms of architecture, there are differentiating definitions of theory-architectural theory that exceeds the aforementioned definitions of theory. In example, Nesbitt (1996:16-17) defines architectural theory as a discourse that defines and promotes the profession and application, while Hays (2002) defines it as the common ground comprised of the relationships between the visual analysis of an architectural production and its context. In addition to this, in architectural theory, the certainty of scientific theory is non-existent (İnceoğlu M. and İnceoğlu N., 2004).

According to Tanyeli, the binarism of architecture can never be understood unless it is accepted that thinking for doing is the same with thinking for understanding in architecture (Tanyeli, 1999). On the other hand, the association of theory and practice has given birth to praxis. Praxis, as Williams underlines, means the theoretical practice (Williams, 2018). This way, the field of architectural knowledge has expanded from only either theory or practice to a field that covers both. As Tschumi asserts, architecture is a form of knowledge and not the knowledge of form (Tschumi, 1996) and the discussion on how knowledge is formed is kept in the background. However, this is an important and extensive discussion that covers not only the formal entities but also the theoretical.

In Taşkın's conception (2006), theory is modifiable and comprehensive suggestions that are supported with proof derived from systematical observations and explain the reasons for phenomenological behaviours; and bear the potential to develop insights and provide questions for new scientific research. Driver et. al. (1996) emphasizes that understanding the nature of science involves understanding the relevance between proof and explanation, which is also a crucial point in learning science. The way the students interpret the proof is determined by their engagement to theory.

If design education is considered as a big puzzle, this puzzle would have a great many pieces that constitute a whole. One part of these pieces is courses such as basic design, design studio, and aesthetics that improve the visual, perceptual, sensory, critical, and mental aspects of students and nurture the artistic and aesthetical aspects of design. The other parts

consist of courses such as design knowledge, theory and concepts that support the theoretical infrastructure of design. (Onur, Zorlu, 2017). The importance of theory is growing larger with the expansion of the limits of visual culture by technology that renders the impact of the image more appreciable. Since the implementations of the previous century is still influential on the theory, experiment based education theory is still acceleratingly effective on implementation. Despite the theoretical limits of art, the educational context constantly aspires to enhance the influence of theory. For the benefit of students, these theoretical endeavours must be extended to professional life (Tavin, Anderson: 2003: 68). In this context, in Figure 1. a list of theory books to be read in architectural education is given in different groups. This list comprises descriptions and texts on architectural education relevant to the production processes in urban-space-body scale. A list has been created among the books that can help the theoretical process of the architectural design studio. Instead of all the critical works in the history of architectural literature, a reading list translated into Turkish, which is on the agenda and which reads the design phase through the city, space and body, is given as an example. In this manner, how should these books be written and incorporated to production in a process where knowledge cumulates throughout the architectural education?

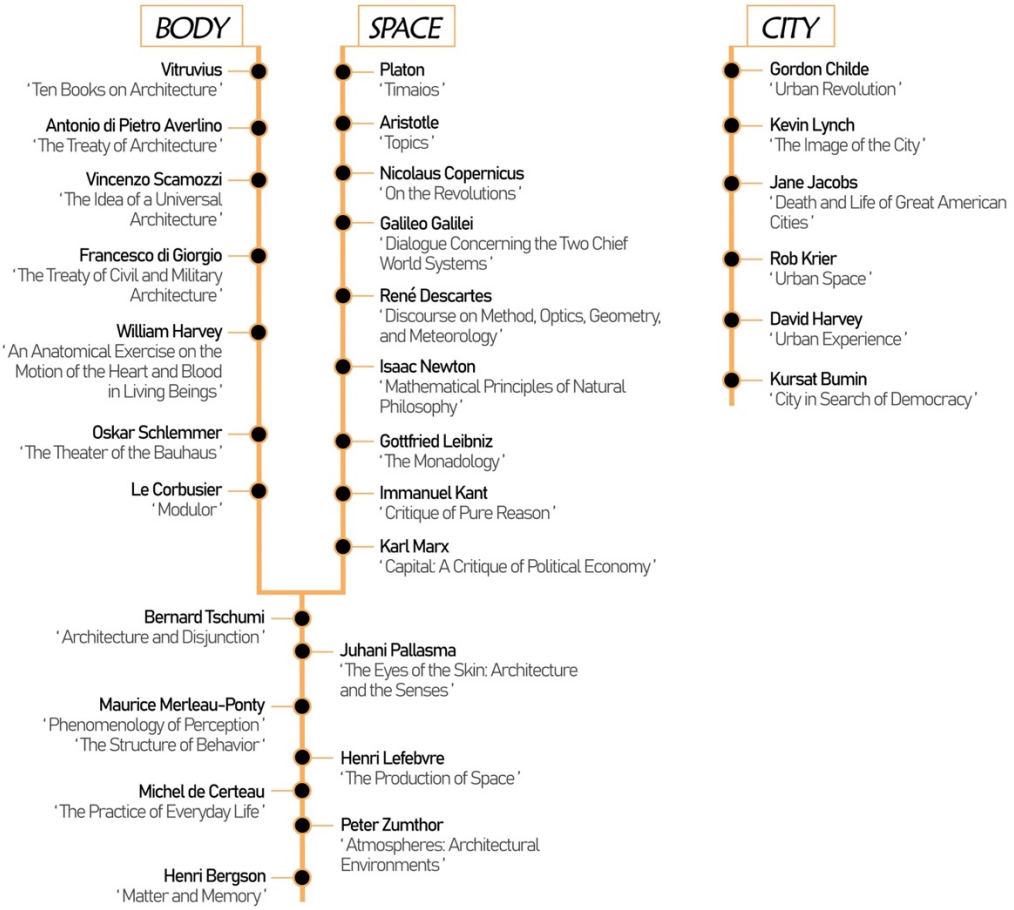


***Figure 1**: Selection of Theory Books Read in Architectural Education*

Criticism, thought to be the equivalent of the Greek word "krinein", means both "a word said on another word" (Gür, 2009) and "sorting out", "distinguishing" and "uncovering differences" (Attoe, 1978); it is a concept that expresses sorting out different ideas on a topic and distinguishing the effective from the non-effective. In studio culture, criticism is not equivalent to its counterpart in the popular culture where the majority determines the recognition; it is in close relation to processes of analysis, awareness, definition, evaluation, and interpretation (Şentürer, 2004). In the academia, criticism is considered as a process of decipherment and understanding the layered relations, and correspondingly, questioning the meaning and attributing new meanings (Güzer, 2009).

Critical reading independent from the studio atmosphere emphasizes the perpetual and organized reading with a critical point of view because in regular reading habits, it is only the perpetually and organisation aspects that are emphasized (Yılmaz, 2004: 116). In critical reading habit, what matters is to maintain perpetually and the critical point of view together. Özdemir (2002: 19) defines critical reading as follows: "The habit of thinking on what one reads, the ability to assess it using the personal standards of judgement." Cervetti, Pardales and Damico (2011) have declared in their studies that critical reading is assessing the text in terms of validity and accuracy. In critical reading, the text must be thought upon, the writer's point of view, message and motivation must be interpreted in addition to just being read. In this context, the reader must execute an appraisal process and discuss it based on their previous knowledge and reading experience. When this turns into a routine, the critical reading habit is acquired. Critical reading is important in terms of gaining critical thinking skills and enhancing the benefit and joy of reading. The non-critical reader takes the statements in directly and memorizes them while the critical reader is interested in what is explained in the book and how they are supported as well as how they are described. In Aşılıoğlu's study, levels of comprehension in cognitive learning is laid out as knowledge, comprehension, implementation, analysis, synthesis and assessment and a regular reader gets stuck on the first step while the critical reader uses all of them (Aşılıoğlu, 2008).

In this respect, a student is expected to have acquired the critical reading skills in order to read architectural theory and instead of only comprehending the text to produce new meanings by making contributions. This described critical structure of the design studio allows critical reading. Therefore, architecture becomes a multidimensional structure with its theoretical relationships with social anthropology, culture, economy and many other parameters. Its theory with no absolute truth is a result of this aspect of architecture. It passes a certain remark, but it is a general notion that is unprovable and based on the individual and the moment. Theory is shaped by the fluidity of all these parameters in architecture. It is in constant evolution, transformation, expansion, and complexity. How may this transformation be represented in architectural education?

Importance of conceptual maps and visualizing

Conceptual maps are the outcome of a 12-yearlong study initiated by Novak in 1972 and are based on Ausubel's theory of meaningful learning (Novak & Musonda, 1991). According to Novak (1972) a conceptual map is a graphic material that enables the student to associate new subject with the existing concepts. According to Nakhleh (1994), conceptual map is a technique that enhances meaningful learning, provides the student with active learning in the process of knowledge production, responsibility in self-learning and alternative ways in assessing meanings.

According to Ruiz-Primo, Schultz, Li & Shavelson (2001) conceptual maps are mental pictures that depict association of keywords of a subject. In addition to this, Erdem, Yılmaz and Özyalçın Oskay (2009) and Sarıca and Çetin (2012) have established the enhancing effect of conceptual maps on meaningful learning. In a conceptual map, there are concepts, their examples and interrelations, hierarchy and cross references (Novak & Gowin 1984, Novak &

Cañas 2008). According to Novak & Gowin (1984), conceptual maps may be used as a material and evaluation tool for teaching-learning strategies, planning the curriculum and teaching. In education, all activities must be arranged and carried out as to direct the students towards meaningful learning instead of memorizing and individual inventive learning instead of passive learning.

In the recent years the area of architectural knowledge has changed more than ever. In the modern time, also there have been significant epistemological changes in architecture; today these changes have gained new dimensions with the developments in digital technology as well as construction technologies. Nevertheless, production process in architecture has been a topic of discussion both in the recent time and in the modern time. This is because the means of production (serial production) and the agents of production (mechanization) in the modern time has changed. As a result, not only the architectural production itself but also the process of production has created a field of knowledge (Uluoğlu, 2002). Today, there are new means of production (mass production and mass individualization) and new agents of production (digitalization) in architecture. Therefore, a new field of knowledge has been defined by the architectural production and the process itself. Tanyeli (2017), promotes that a new architectural knowledge can come to life through anarchy and suggests making by breaking. What is meant here is not a physical but a conceptual making and breaking, pointing out to the destruction of the architectural knowledge to rebuild it with new concepts. Interdisciplinary relations have caused the changing of architectural knowledge and field of knowledge, while resulting in the development of new methods in conceptualization and design.

As Freire (2014: 39) mentions that in our time "an educational approach comprehending the context and the world must be embraced instead of one that is limited to reading the word and the text." In the recent researches in education (Partnership for 21st century learning (P21), 2007; Pearlman, 2009; Scardamalia & Bereiter, 2014; Yalçın, 2018) frequently emphasize the importance of acquiring the skills of 21st century. These skills are grouped under three categories such as the skill to learn and renew, skills on information, media and technology and vital and vocational skills. In developing these skills, it is important that the teachers should improve and strengthen themselves with knowledge, education and educational approaches involving teaching technologies and new media tools, reflecting them on their educational activities to enrich the learning process of their students (Özsoy, Mamur & Sarıbaş, 2020).

In our minds, there are cumulated masses of information, images and data as per our experience and perceptions. These might be called mental patterns. Associating these patterns and creating a meaningful whole from these associations is an act of construction. The act of designing might turn into an act of making by the mobilizing of these patterns. Cross (2006) and Alexander (1977) define these mental information masses as the code systems of the designer. In this system, there is a connection that turns sounds, meanings and words into visual objects. Much alike, Arnheim (1969) asserts that all mental media is perceptional and information is coded in images.

In terms of design, the newly designed object is a new text that is developed from the associations between the existing texts which are images, codes or patterns that are generated from the previously perceived texts in the mind. Words have imagined responses and lays a bridge between language and image. Concepts are perceptual images and the act of thinking is carried out with their assistance (Arnheim, 1969: 227). For this reason, experiences are coded as images while images pay tribute to all the structural attributes of things and events. The mental mass of visual images in the mind is a multidimensional pattern (Arnheim, 1969: 232). The text-form association method of reinterpreting and concretizing an existing text aims to turn subjective comments into forms. What is essential here is to interpret images through the relation of word and form (Yürekli

and Yürekli, 2002: 53-62). Literature is said to be a field that corresponds to this infinite diversification. It has a texture that promotes imagination and mental associations. According to Weiner (2005), literature that is established through language is the expression of imagination with words (Weiner, 2005).

The field of imagology must be approached from two perspectives; first leans on constantly seeing and observing images and therefore the cognitive processes and perception in the interior of the mind, second on a more complex and neglected area that is the recognition, analysis and interpreting of meaning. Visual designs and meanings of images, whether existing in the memory or not, communicates with the reader. In this respect, to receive the meaning an exponential reading must be done. Of course, the importance of language is undeniable in this, the two communicative systems, visual and verbal, must intertwine. Especially the cultural studies of the recent years in the occidental literature contributes to the progress of these fields (Parsa, 2007).

To read a written word is to expose the meaning of that text. The reader is in a position in the face of the text, making sense of it (Günay, 2003: 14). Just like written texts, visual texts need to be written. The individual affronts the verbal or visual texts should be called the reader. After the invention of television, computer, and especially desktop broadcasting and internet the role of messages in the field of visual communication has changed. Visual images broadcasted from the mass media are meaningful constructions and offers subjective information. Today, communication through images surpasses written words.

Reading is one of the fundamental activities of the human brain when encountered with a meaningful structure. This activity happens in three phases: *perception, memorizing and reconstructing the indicators by reinterpretation* (Günay, 2003:18). A literary or a musical work, a painting or a television advertisement that constitute a meaningful visual structure, all indicators that are created to establish meaning are read, interpreted and analysed in the perceptive ways of its receiver. As explained in Visual Literacy: Image, Mind & Reality by Paul Messaris (1994:180) amongst the most celebrated scientists studying visual literacy and image, the production process of the image and on the contrary the interpretation process of the reader must be discussed together and reach meaning by doing so.

To read and grasp, one must firstly “look”. It suffices to look at abecedarian books for children, which are very much enriched by visual material. To make learning the letters easier, they are linked to images. Since letters are abstract figures, pictures and images facilitates the transition to texts. Pedagogue Edgar Dale proves this with “cone of Learning” in the learning process. According to the cone, what sinks in after hundreds of pages is %10 while this percentage is %50 after watching a film (quoted by Buehler, 2000: 8).

In terms of graduate education, text is the dominant element in establishing meaning and narrative. In the century of visual culture, occularcentric societies where images are placed in a central position has grown in the west (Jay, 1993; quoted by Rose, 2001: 7). In Iconology: Image, Text, Ideology, W. J. T. Mitchell seeks to answer two questions: “What is an image and what is the difference between images and words?” Mitchel answers the former as follows: “to be alike, imitate, resemble” (Mitchell, 1986: 7). Every branch of this “pedigree of image” is in relation with a discipline. Mental imaging belongs to psychology and epistemology; optical imaging to physics; graphics, sculpture and architecture to history of art; verbal imaging to literary criticism; perceptional images to the common field of physiologists, psychologists and neurologists. Other recent studies elaborate the visual culture and how it is perceived. John Berger (1972:1) starts Ways of Seeing by this phrase: “Seeing comes before words”. Barnard reminds that visual culture courses in Northwestern and Harward universities in the USA are studied in the scientific field (Barnard, 2002:20).

Methodology and materials

Various techniques have been developed to understand the conceptual structure of architectural education. This study exposes the phases of a method developed to understand the book of Bernard Tschumi named Architecture and Disjunction (1996) that is being read to comprehend architectural paradigm better. Below are the steps of the process of producing critical reading skills conceptual map and images, on 25 students from, third, fifth, and seventh semesters that have taken the selective course titled Psychology in Architecture during the 2020-2021 spring term in İstanbul Kültür University Department of Architecture.

1. Step reading/reflecting on/perceiving the given part of the book
2. Step creating the conceptual map/evaluation/memorizing of the given part
3. Step visualizing/ criticizing reinterpreting of the conceptual map (Figure 2).

The attitude survey developed by Oluk, Kan and Emekçi (2016) has been applied to the students at the end of the study. Warner & DeFleur (1969) found in their studies that

Steps of critical thinking	Reading – reflecting on	Evaluation	Critical regard	
Steps of visualization of the concept	Perception	Memorizing	Reinterpretation	
Steps	**1.STEP**	**2.STEP**	**3.STEP**	
	Recognition and analysis of meaning		**Interpretation**	

Figure 2: *Methodology*

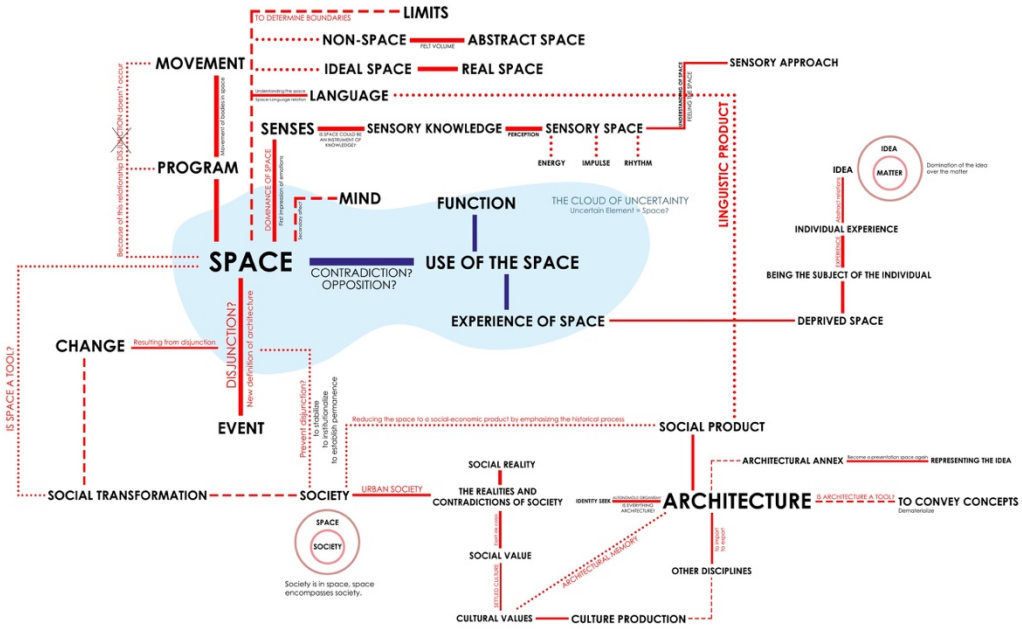


Figure 3: *Conseptual Map of Reading Part of the Book (Student Study)*

attitude has an effect on behaviour. Attitude, which is described as one of the important affective features affecting learning, has the power to affect individuals' learning positively or negatively (Cited by Tanrıverdi and Demirbaş 2012). For this reason, it is important to determine the attitude of people towards a phenomenon. In this study, the validity and reliability study was conducted with 125 university students prepared by Oluk, Kan and Emekçi (2016), and the attitude scale in which 23 statements and a 5-point Likert scale were used as an answer was used directly.

Findings

1. Step: In this step, the students are asked to read the given pages in the book and reflect on the given part. No commentary has been placed. Perception of the text was targeted in this first step of visualizing the conceptual map.
Students read the first 27-53 pages of the book about space.

2. Step: In this step, the students are asked to prepare a conceptual map upon the part they have read and talk about these maps during the class. In the second phase of conceptual map visualization, concepts mentioned in the book were linked together and memorized (Figure 3).

3. Step: In this step, students were asked to look at their conceptual maps with a critical regard and reinterpret them with the assistance of architectural visuals. At the end of this stage the conceptual collage work was completed. While the first two stages help the students to understand and recognize what they read, the third stage allows them to reinterpret their readings in architectural expression (Figure 4)

Steps of critical reading, reflecting on what one reads, assessing them and using personal judgement of values to do so, explained through the study process of 4 students (Figure 5-8). The resulting image may be evaluated as the recognition, analysis and reinterpretation of the meaning. In this regard, the cognitive process in the production of the image would be executed via perception, memorization and reconstruction of the indicators by reinterpretation.

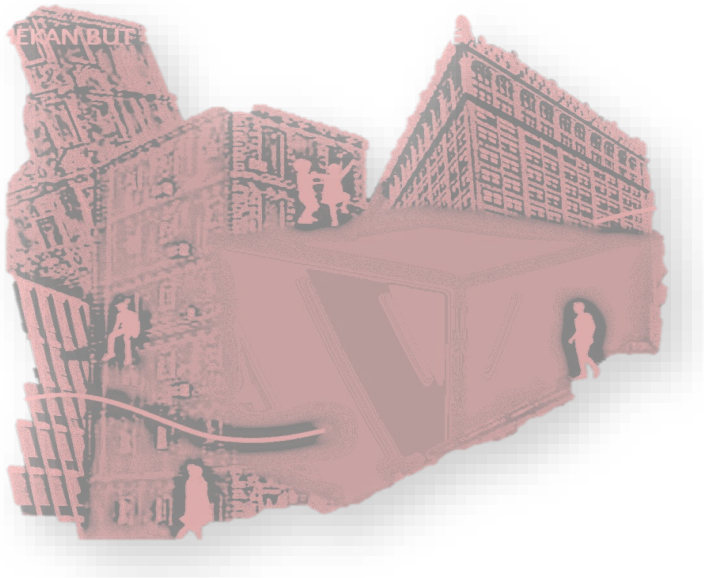


Figure 4: *Visualizing of Reading Part of the Book and Conceptual Map (Student Study)*

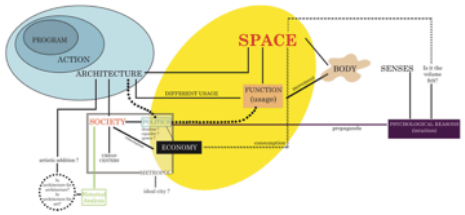
1. STEP	Reading Reflecting on, Perception	*..." That there is no architecture without program, without action, without event. As a whole, these texts reiterate that architecture is never autonomous, never pure form, and, similarly, that architecture is not a matter of style and cannot be reduced to a language. Opposing an over rated notion of architectural form, they aim to reinstate the term function and, more particularly, to rein scribe the move ment of bodies in space, together with the actions and events hat take place within the social and political realm of architecture. But these texts refuse the simplistic relation by which form follows function, or use, or socioeconomics..." (Architecture and Disjunction, p: 11)*
2. STEP	Evaluation, Memorizing	
3. STEP	Critical regard, Reinterpretation	

Figure 5: *Student Study 1*

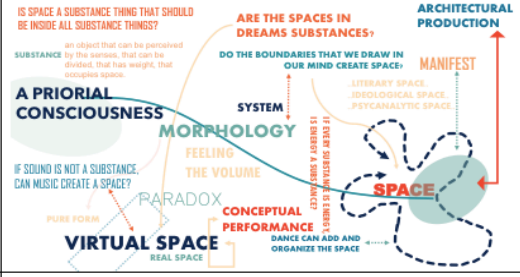
1. STEP	Reading Reflecting on, Perception	*..." Object before the subject, it dominated senses and bodies by containing them. Was space inherent to the totality of what exists? This was the question of space for Spinoza and Leibniz. Returning to the old notion of category, Kant described space as neither matter nor the set of objective relations between things but as an ideal in eternal structure, a prior consciousness, an instrument of knowledge..." (Architecture and Disjunction p: 44)*
2. STEP	Evaluation, Memorizing	
3. STEP	Critical regard Reinterpretation	

Figure 6: *Student Study 2*

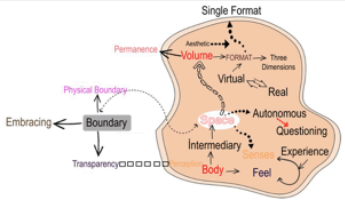
1. STEP	Reading Reflecting on, Perception	*... "By restricting visual and physical perception to the faintest of all stimulations, they turn the expected experience of the space into something altogether different. The almost totally removed sensory definition in evitable throws the viewers back on themselves. In "de prived space," to borrow the terminology of Germano Celant, the "participants" can only find themselves as the subject, aware only of their own fantasies and pulsations, able only to react to the low-density signals of their own bodies. The materiality of the body coincides with the materiality of the space. By a series of exclusions that become significant only in opposition to the remote exterior space and social context, the subjects only 'experience their own experience.'..." (Architecture and Disjunction, p:63)*
2. STEP	Evaluation, Memorizing	
3. STEP	Critical regard, Reinterpretation	

***Figure 7**: Student Study 3*

1. STEP	Reading Reflecting on, Perception	*... "Much of the current confusion about space can be illustrated by this ambiguity. While art and architecture have been concerned essentially with the first sense, philosophy, mathematics, and physics have tried throughout history to give interpretations to something variously described as a "material thing in which all material things are located" or as "something subjective with which the mind categorizes things." Remember: with Descartes ended the Aristotelian tradition according to which space and time were "categories" that enabled the classification of "sensory knowledge." Space became absolute..." (Architecture and Disjunction, pp: 43-44)*
2. STEP	Evaluation, Memorizing	
3. STEP	Critical regard Reinterpretation	

***Figure 8:** Student Study 4*

Table 1: *Numerical equivalents used in scale rating scale ratings Value Range Scale Rating of Adherence Levels*

Value Range	Scale Rating of Adherence Levels	
1.00 – 1.80	Strongly disagree	1
1.81 – 2.60	Disagree	2
2.61 – 3,40	Neutral	3
3.41 – 4.20	Agree	4
4.21 – 5.00	Strongly agree	5

In order to validate the statement "Conceptual maps have helped students better understand the book", the attitude survey developed by Oluk, Kan and Emekçi (2016) has been applied to the students at the end of the study. Trial items of the scale have been prepared using literature review (Okebukola 1992; Rye & Rubba 1998; Karakuyu 2010), expert opinion and the individuals that have been sampled in the study.

The scale has been defined as strongly agree, agree, neutral, disagree and strongly disagree. Positive items are graded as 5, 4, 3, 2, 1 from "strongly agree" to "strongly disagree" while negative items were graded as the opposite (Table 1). Adherence Values of Students to the Opinions in the Attitude Survey Scale on Conceptual Maps are given in the table below. According to these outcomes, "conceptual maps are not compatible with the architectural education" is the least graded item amongst 10 negative attitudes (Table 2).

Table 2: *Adherence Values of Students to the Opinions in the Negative Attitude Survey Scale on Conceptual Maps*

OPINIONS	**N**	**SD** (standard deviation value)	**AVR** (average value)
Conceptual maps are not compatible with architectural education.	25	0,62	1,36
I find conceptual maps redundant.	25	0,55	1,36
Conceptual maps should not be used in courses.	25	0,75	1,40
Preparing conceptual maps was a vaste of time.	25	0,50	1,48
I would not want to use conceptual maps in courses.	25	0,75	1,52
Conceptual maps make the classes boring.	25	0,69	1,64
Preparing conceptual maps is a nightmare.	25	0,88	1,84
I only use conceptual maps when it is compulsory.	25	0,82	1,88
I'd rather use other methods to study than conceptual maps.	25	1,06	2,48
I find it hard to work with conceptual maps.	25	1,20	2,76

Table 3: *Adherence Values of Students to the Positive Opinions in the Attitude Survey Scale on Conceptual Map*

OPINIONS	**N**	**SD** (standard deviation value)	**AVR** (average value)
Conceptual maps help me learn key concepts.	25	0,40	4,80
I think I understand the subject better when I prepare a conceptual map.	25	0,49	4,60
Conceptual maps make it easier for me to associate concepts.	25	0,57	4,56
Conceptual maps help me improve my knowledge of the subject matter.	25	0,57	4,48
Conceptual maps motivate me to think individually.	25	0,50	4,48
Conceptual maps improve my system of thoughts.	25	0,50	4,44
Conceptual maps are beneficial in sharing my knowledge on the matter with others.	25	0,73	4,32
I enjoy learning new things about conceptual maps.	25	0,79	4,32
Conceptual maps help me see how I understand the subject.	25	1,18	4,24
Conceptual maps help me learn permanently.	25	0,65	4,24
Conceptual maps make the lesson more enjoyable for me.	25	0,95	4,12
Preparing conceptual maps increases my motication in class.	25	0,93	4,08
I participate better when i prepare conceptual maps.	25	1,17	4,00

Students were 33 dressed 13 questions to evaluate their positive attitudes (Table 3) and the statements “Conceptual maps help me learn key concepts” and “I think I understand the subject better when I prepare a conceptual map.” Have been strongly agreed by them. Judging by these findings, it is concluded that preparing conceptual maps help critical reading and is an important step in understanding the architectural theory book.

The images that students have prepared after the stages of the book have improved their skills in both critical reading and producing visual images in order to read comprehensibly and narrate what they read. This study has also improved the aspired program outcome of the curriculum by Psychology in Architecture such as critical thinking, questioning, expressing abstract thoughts, evaluating contradictory opinions, discussing outcomes on similar scales.

The importance of spatial experience has been the subject of architectural debates, experience and physical space, which are independent from each other but interacting with each other, have begun to be mentioned together. Experience should be seen not only as a phenomenon of the built space, but also as a phenomenon of design. Bernard Tschumi’s (1996) contribution in the architectural terminology and implementation is evident. As Suha Özkan mentions (Özkan, 2000: 25-35) what is expected from him is bring in structures that compound ideas with life. The way Tschumi turns knowledge into real practices through built examples is leaving traces for the generations to come.

Conclusion

The most significant outcome of this study is exposing critical reading skill as positive method in superposing it with architectural visualization for understanding the architectural theory book. This study also proves that in the modern society where education and knowledge is treasured, the skill of producing and using knowledge is not only possible by reading but also by thinking and criticizing. The importance of verbal language is of course undeniable, verbal and visual communications must intertwine. An architectural studio, carried

out by this method, would offer a preparatory training that promotes creative thinking and teaches to question the complex structure of design from different perspectives.

It is a fact that the quality drops by years on every level of the educational system and in order to reverse this drop, different educational methods should be tried to promote creativity by providing creative thinking skills. Activities in universities must be arranged in order to motivate the students to read and research. Reading environments that would be organized regarding the interests and needs of students must be offered to them in a way to demonstrate reading as a need. In this respect, this study contributes to literature in recognition of the positive contributions from not only architectural discipline and studies but also different fields of social sciences on the relevance of architecture and space.

This study is an indicator of the learning outcome that is knowledge based understanding, comprehending and acquiring the knowledge of spatial behaviour patterns. It is essential to interpret and reinterpret and make architecture with dynamics existing in all times, in parallel with these conglomerating consistent or contradictory ideas, discourses and theories that prove the efficiency of critical approach. The study also gives clues to future studies with a new method proposal that will contribute to architectural studio education.

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