

## THE TRANSMISSION OF ACCUMULATED IMMATERIAL SENSES IN ARCHITECTURAL EDUCATION

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### INDIVIDUALISM AND INTUITION WITHIN EXPERIMENTATION IN ARCHITECTURAL EDUCATION

"The space is a reality in our sensory experience; a human experience like others, a means to expression like others; like other realities, other materials. Man perceives space through his sense of sight, through his sense of hearing, by acoustic phenomena; through means of locomotion; through his sense of equilibrium" (Moholy-Nagy, 1947, 107).

The questions about epistemology and knowing the truth about the universe have been matters of much discussion in philosophy, and a diversity of thoughts have been produced on these subjects. The dichotomies of "objectivity/subjectivity," "thought/intuition" and "rational/irrational" have embodied these thoughts, and reveal the main discussions through which ideas have been channelled. The intention herein is to focus on where "experimentation" in contemporary architectural education should be positioned among these concepts of philosophy. By looking into the subjectivity, intuition and irrational sides of the above dichotomies, this paper aims to analyse "intuition" in critical experimentation, and discuss how "intuition" can contribute to teaching and learning the senses in architectural education.

In contemporary architectural education, computer-aided design has witnessed rapid and necessary developments, and created concepts concerning experimentation that has become a subject of in-depth investigation in a diversity of research fields. Many different components of architecture are now applying digital tools into design processes according to their own requirements in fields such as; space syntax explorations, typology studies, form and plan generations, representations, abstractions, realizations; and theorizations of these issues. The depth and hazards in the so-called infinity of resources in digital tools and possibilities they enabled are still under investigation in architecture both practically and theoretically. This ambiguity requires architecture to re-determine

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connections between experimenting, individualisation and intuition. Accordingly, the influences of these architectural novelties on education warrant in-depth investigation.

Design parameters, which took their essence from Modern Architecture, have changed with the introduction of computer-aided design. A recent analysis by architectural critic Patrick Schumacher refers to contemporary situation within the development of digital architecture as a style that he defines as "Parametricism", after Modernism (Schumacher, 2008). Considering that dominant architectural practices create their own educational processes, and that education adapts itself to contemporary architectural paradigms, it is not possible to differentiate between architectural practice and education as the two are correlated.

### OBJECTIVELY-CONTROLLED EXPERIMENTATION

Criticism and experimentation have been driving forces of architecture both in practice and education, as the term "experimentation" can be used in the definition of two parallel but different modes: "experimentation based on objective standards and science," which was influential in dealing with Modern Architecture and its later forms after development and revision upon deficiencies; and "critical experimentation promoting subjectivity and intuition" especially in 1960s, which arose as a criticism of the first mode. These two modes have taken their fronts both to survive Modernism and to contradict its discourse paradoxically.

In order to discuss these issues, first, "the objective standards of experimentation" in education need to be clarified. In terms of the Modernist way of teaching, in particular *Vysshiye Khudozhestvenno-Tekhnicheskiye Masterskiye* (hereafter VKhUTEMAS, which can be translated as "Higher Art and Technical Studios") and Bauhaus, are two specific places to unfold about these objective standards of experimentation. Such an insight into objectivity is necessary if one is to better evaluate and consider the subjectivity-based methods of architectural education, as this would lead to a distinction in elaboration of experimentation between a Modernist approach and a critical approach.

In the reproduction and reshaping of architecture under Modernism, education system was an inevitable agent. Experimentation based on objective standards and science left its mark on Modern Architecture, resulting in the establishment of an architectural education system, and did much to shape the curriculum of pervasive/widespread architectural education. The reflections of Modern Architecture on education in the early 20th century came from two main sources: Bauhaus and the VKhUTEMAS. These two sources had intersections and parallelisms that developed around social considerations and dissolved boundaries between plastic arts in order to employ architecture that focused on a scientific approach and objectively evaluated experimentation. In addition, the aim of architectural education at the time leaned more towards the full awareness stage of the utopia of objective standards.

Reading from Bill Risebero's description, the Free State Art Studios founded in Moscow in 1918 became the school for art and technical studies under the name of VKhUTEMAS in 1920:

"Unique for its social commitment, universality and accessibility, it aimed to combine all the plastic arts – architecture, painting, sculpture, graphics

and craftwork – in the service of the community and opened its lectures and seminars to anyone who cared to attend" (Risebero, 1983,167).

Its members included such notable architects as *Alexander Vesnin, Ilya Golossov, Moisei Ginsburg, Nikolai Ladovsky, Konstantin Melnikov* and *Vladimir Semenov*. In the same year, *Institut Khudozhestvennoy Kultury* (hereafter INKhUK, "Institute of Artistic Culture") was founded, attracting such artists as *Wassily Kandinsky* and *Alexander Rodchenko, Varvara Stepanova* and *Liubov Popova*, as well as theorist *Ossip Brik*. VKhUTEMAS and INKhUK provided the architectural thought behind the revolution. VKhUTEMAS would go on to be replaced by *Vysshiiye Khudozhestvenno-Tekhnicheskiye Institutum* (hereafter VKhUTEIN, which can be translated as "Higher Art and Technical Institute") in 1926 as "institute" was replaced "studios", in which there were seven departments: painting, sculpture, architecture, ceramics, metal and woodwork, textiles and typography. VKhUTEMAS, with the enrolment of over 2,500 students, was the most advanced art school in the world for some years at the time (together with INKhUK, the ministry's new theoretical institute which was set up at about the same time, spring 1920) and became the cradle of Constructivism (Fry, 1999, 161).

Experimentation techniques promoted by VKhUTEMAS were following a track of objectivity-based understanding with a scientific approach that would be independent of creative individualism, yet the educational and experimental functions were associated together as a single entity with a unique objective. For instance, scientific duties of the painting workshop at VKhUTEMAS were set out by Alexander Rodchenko who promoted a redefinition of art that redeemed from a form of a reflective expression and became an objective entity (Rodchenko, 1920). The respective concerns were including the analysis and elaboration of problems in art through experiments in fields of colour and form, while following the laws of construction and studying the treatment of surface layer of materials throughout their preparation.

The objective standards of experimentation in education were also demonstrated at Bauhaus, VKhUTEMAS' German counterpart. The approach of Laszlo Moholy-Nagy, who joined Bauhaus as master of the preliminary course and the metal workshop, was comparable to methods of experimentation of VKhUTEMAS. In a similar approach to Rodchenko, Moholy-Nagy set out the "objective standards" for painting, whose intention he stressed was not to demonstrate only individual inventions, but rather the standards of a new vision employing "neutral geometric forms" (Moholy-Nagy, 1932). The "substance of relations" among the pictorial compositions formed by those neutral forms, which included standardized points of convergence and divergence, hinted at a quest for objectivity. The acknowledgement of "smooth, impersonal handling of pigment, renouncing all texture variations" of Moholy-Nagy constituted the objective standards in painting that were similar to Rodchenko's "surface treatment" of materials at VKhUTEMAS. Moholy-Nagy's particular contribution was his inclusion of technology to scientific profile of design process, as he noted that: "design ends up being the result of a dynamic relationship between art and science, revealed and materialized through technology" (Moholy-Nagy, 1932).

The preliminary course for year one outlined by Moholy-Nagy suggested an objectively controlled experimentation to permit the self-experience of students. In his words, the course offered a test of the students'

abilities and helped shorten the road to self-experience by embodying brief essential components of specialized workshops in order to give the students an opportunity to make a careful choice of their own field of specialization later (Moholy-Nagy, 1932). This course included “the acquisition of technique and skills” that would increase “the expressive power of the individual with the accumulation of experiences to refine the intellectual status” (Moholy-Nagy, 1932). This process considered the “unconscious” as an immature state along the path to the aimed objective standards, as the full awareness stage. Moholy-Nagy described his strategy in using this method as three successive stages: “1) observation, perception, and description, 2) systematic exploration and analysis; and 3) conscious manipulation and action, leading to the eventual mastery of design” (Moholy-Nagy, 1932). The Preliminary Course was crucial in terms of creating, “the artist-designers, integrators, persons who, within their activity, are actually capable of expressing their cultural epoch on the highest level,” as a model for the Modern society they manifested. Moholy-Nagy suggested “the distillation of a crude material into a more subtle substance, each cycle yielding purer immateriality,” (Moholy-Nagy, 1932) and described the last step to be attained as the “growth of the individual within the group” of artist-designers. Yet, the emphasis on Moholy-Nagy besides other pioneers of experimentation at the school is distinctive here because of architectural critic Jonathan Hill’s remark on establishing a connection with his ideas in terms of immateriality. Therefore, intuition was considered as an objective that was controlled through conscious canalization of individual towards a full awareness stage leading to neutral standards systematically.

“The art of the material culture of the technical age” was described as a new form of creativity that was fusion of utilitarian, ideological, and formal objectives. This approach provided the inspirations for VKhUTEMAS and the Bauhaus, which had contacts, visits and curriculum influences during that time. In a questionnaire, Kandinsky asked artists to describe their sensations from different types of line, form, and colour, as well as their interrelationships and combinations. Yet, the analysis of such basic visual elements and relationships in turn formed the focus of the two courses at the Bauhaus. Although the basic course at the VKhUTEMAS changed substantially within the first few years, it initially comprised a whole series of formal exercises, such as investigating the properties of colour (tone, weight, tension and relationships to other colours), and its interaction with other artistic elements (line, plane, volume, construction and facture) (Lodder, 1993, 32).

Although both schools had been committed to creating prototypes for industry, this was not achieved at the VKhUTEMAS, where none of the products seemed to have been mass-produced. In 1928, the July plenum of the Party’s Central Committee deplored the fact that technical education was not sufficiently linked to industry or orientated towards its needs. Yet, as Galaktionov sadly observed in 1930 “while metal is so scarce here, there can be no talk of using it” (Lodder, 1993, 37).

## A CRITICAL EXPERIMENTATION

Critical experimentation, promoting subjectivity and intuition in criticism of Modernism since 1960s, has witnessed a rise in popularity in architectural practice, and has been reflected in education when possibilities arose. It is possible to speculate about the existence of

negative aspect of practice and education that survived as “critical experimentation”. This approach embraced subjectivity rather than objective standards, senses and conceptualization as a process from materiality to immateriality in architectural education. The integration of outer forces into architectural knowledge in education under the notion of criticism - about the fundamental components of architecture in order to redefine them as a pursuing force when necessary - is one of the identifying features of critical experimentation.

In 1960s, the intention of achieving a utopia as the discourse of modernism was heavily criticized. Yet, criticisms of this idealism about utopian dreams were demonstrated on theoretical basis. For instance, an academic and practicing architect Tschumi debated the possibility of new and multiple truths by overhauling Modern Architecture, whose ideals turned into redevelopment nightmares; aims into bureaucratic policies through a gap between social reality and utopias, and the illusion of all-solving technique into economic constraints. His criticism was grounded on the assertion that “none of the early utopian ideals of the twentieth century has materialized; none of its social aims has succeeded” (Tschumi, 1998, 218). However, the individual works of architects in 1960s were still evaluated as utopian projects that were squeezed between the functionalist possibilities of intense usage of technology and the difficulties in its adoption to architectural theory. Besides, because of the claims about resembling to early periods of Modern Architecture in their use of technology, the shift they managed in architectural experimentation was underestimated (Banham, 1983). The multiplicity in criticism appeared as individual attempts disregarding a particular style and was evaluated as ambivalent by Frampton (1992, 280) in order to explain the role of architecture in the 1960s; but in essence it was reflections of inter-disciplinarity and subjectivity.

The implications of these changes in practicing architecture became a source for academia and a theorisation of the process was calling for the emergence of novelties; for instance, architectural theorist Hays (1998, 36) used the expression “architectural culture”. This culture was a laboratory both for the practice and education of architecture to be constructed, deconstructed and reconstructed, which borrowed methods from critical approaches in current philosophy. But (borrowing) not in a repetitive way; since the methods changed, this caused remarkable consequences on their adoption as well. The distinguishing factor in this was the change in the aim towards a utopia dominated by scientific approach, towards perfectionism under optimum conditions. As Hays (1998, 36) evaluated, borrowing the theories of science for use in architecture until 1960s (as “operational research and design methodologies that held a careful description of any building’s program”), which included methods of experimentation for design process yielding towards functional demands, was one of the most significant aims of Modern Architecture.

Consequently, since the rise of criticisms of Modernism, two views emerged that have influenced contemporary architectural education; taking their reference points either as the conventional norms of Modern Architecture, or as its criticism. The first view tended to rely upon revisions to overcome inadequacies of Modern Architecture. This approach can be said to have retained the terminology/vocabulary of Modern Architecture, around which it has developed. The second one, on the other hand, is considered here as an extension of the opposition, being dependent upon

critical experimentation with a tendency to evolve around open-ended criticisms and has changed the established terminology when necessary, in order to expand the vocabulary radically. In this approach, architecture is regarded as a more fragmented entity that comes together with more organic bonds of criticism that are open to development, heeding flexibility without aiming fixed norms in architecture. In stating the existence of this paradoxical duality, the aim in this paper is to posit “critical experimentation” in contemporary architectural education, for which intuition and subjectivity are indicated as the embedding sources that require investigation. Questions concerning the difference between one-to-one architectural experiences and experiencing the space virtually in terms of intuition and experimentation are important at this point.

The bonds between two schools mentioned above and contemporary approaches to experimentation in architectural education warrant deeper exploration; however within the scope of this paper it will only be mentioned that there are indications of organic bonds and relations in its consideration as a crucial educational method, although a fundamental evaluation of the contemporary approach takes a side based on subjectivity heeding more on “intuition”.

Philosopher Bergson (2002) described “intuition” as a method (of ridding the mind of the utilitarian habits it has acquired, that reduce an object only to its immediate usefulness), and claimed that it is through “intuition” that the world is experienced. One of Bergson’s predecessors, Harald Höffding, described four types of intuition: “*immediate intuition*” (the immediate perception in which sensation, imagination and memory are grouped together and not distinguished from each other); “*practical intuition*” (spontaneous belief/opinion during an observation); “*analytical intuition*” (the cognition of the difference or sameness between two sensations, imaginations or memories; the analysis of the relation between imaginations and ideas, such as in Poincaré or Descartes); and “*synthetic intuition*” (the cognition of the whole during an analysis; the comprehension of the whole and the parts, such as in Spinoza) (Höffding, 1912). Respectively, as an assessment of intuition in architecture, “*immediate intuition*” can be compared to process of “analysis”; “*practical intuition*” to process of “synthesis”; “*analytical intuition*” to process of “abstraction”; and “*synthetic intuition*” to process of “representation”. In the whole process of design, intuition contributes as a crucial factor, as Poincaré described it thus as a fully-fledged solution that breaks through “after conscious exertion on a problem and accompanied by a feeling of absolute certainty; suggesting, “the subliminal ego has taken over work on the problem, after consciousness has initiated it”. On the other hand, by developing Bergson’s emphasis on intuition, the philosopher Gilles Deleuze considered it specifically essential for experience, as leading us to go beyond the state of experience towards the conditions of experience, which are neither general nor abstract, they are no broader than the conditioned and they are the conditions of the real experience” (Deleuze, 1998, 17).

### **Intuition and Subjectivity**

The debates into sources and consequences of the term experiment, in the form of emergence of Modern Experimentation in the first half of 20<sup>th</sup> century, was due to a non-synchrony between developments in philosophy and science. Objective knowledge in the autonomy of science, which implied relative corroboration in scientific statements, was confronted by the suggestion “only in our subjective experiences of conviction, in our

subjective faith, can we be absolutely certain" (Deleuze, 1998, 280). For instance, Karl Popper maintained that the philosophy of science depended on the "theory-ladenness of observation" in which "...a universal statement that we know its truth from experience usually means that the truth of this universal statement can somehow be reduced to the truth of singular ones". Popper introduced "the falsification theory" claiming that it is not to prove the theories true but it is possible to eliminate false theories along the process of scientific thinking. The goal of science was to "subject tentative answers to ever renewed and more rigorous tests". Voicing another point of view regarding subjectivity, one of Popper's followers, Hanson, argued that the same object may be perceived differently. He concluded that all observations are theory-laden, which to some extent developed the claim of the impossibility of theory-neutral observation language. Such arguments and discussions led to a shift from the objective, testable science to subjective science (Popper, 1965, 281).

The fundamental consequence of these remarks was the replacement of objectivity with subjectivity and single, absolute truth with possible multiplicity of truth, which also had reflections in architectural thinking in establishing a relation to science. The suggested disparate critical approach is projected here as; a theoretical shift in how to experiment, and the change in conventional thinking that depended on more objective ideals in Modern Architecture and its discourse. The emergence of subjectivity in science and philosophy has contributed to experimentation in architecture in a critical way and as a distinguishing factor. Experiment in architecture covers a wide range of issues; however there exists a margin/crossover in its evaluation that may be defined as falling under the influence of the changing grounds in theories of science – from positivist to post-positivist thinking.

Linda Zabzebski stated that knowledge is a "cognitive contact with reality arising out of acts of intellectual virtue," adding that it is not an isolated process, in that it is dependent upon "the knowledge and the intellectual virtue of a host of other persons in our intellectual community", which we can attain here as the conventions in architectural education that depended on modernism (Zabzebski, 1996, 109). The teaching methods in critical experimentation aim to reject and diminish the established dominance/authority of this intellectual community. This inevitably causes a contradiction between scientific and metaphysical sources of architectural education.

The most heeding aspect of critical experimentation is designating the knower as a more striking component of learning process in education. In terms of highlighting the control of the knower, Zabzebski suggested that it is not possible to isolate the conditions for knowledge to be independent from the properties of the knower yet the knower has control (Zabzebski, 1996). In forming a body of knowledge and locating intuition within this process, as Suzanne Gieser put it, archetypal conceptions function as instincts of apprehension and have the power of conviction and evidence for the self (such as "a priori synthetic judgment" in Kantian philosophy she marked) (Gieser, 2005, 174).

The approach in critical experimentation tended to channel this control of the knower towards a process about "intuition" as a fruitful and promising source and rejuvenated itself with every knower. This contribution of the knower is evaluated as a process to redefine the norms of design to be taught. The "control" of the knower can also be considered in

relation to “intuition” in architectural education. In almost every stage of design process, “intuition” is involved inherently – in “abstraction,” “representation,” “theorization,” “materialization,” “analysis,” “synthesis” and “conceptualization”, I suggest intuition takes place consecutively. Architectural education indigenously includes the cognitive process of teaching and learning methods when dealing with “intuition,” however this causes a contradiction between the scientific and metaphysical aspects of architectural education. Therefore, the critical experimentation in architectural education indigenously includes the cognitive process of teaching and learning methods on “intuition”. Frosso Pimenides, a Year 1 tutor, suggested:

“We always set projects we ourselves don’t know the answers to, then we start exploring them with the students. Investigating together keeps us tutors enthused and ‘fresh’. It’s a collaborative studio exploration, rather than a pedagogic exercise to teach drawing and building skills” (Cook, 2000, 124).

What she called “this mental ability to make unexpected leaps” aims to develop “eccentricity”. This very personalized and subjective way of developing and articulating ideas in design comes from the individuality of each student, and that is what is taught in order to “channel one’s individualism creatively and without shallow self-indulgence,” according to Pimenides (Cook, 2000, 125). As Yael Reisner suggested, “it is culture and not algorithms and applications of technologies that architectural poetics is evolving from. The aesthetic capacity of architecture is charged by poetic visual qualities that might evoke emotions in the observer” (Reisner, 2010, 38).

### **Instinct in the “Unconscious”**

Both the scientific and philosophical disciplines imply that “conscious includes the unconscious” when discussing knowledge, however its presence in architectural education is a matter of some debate. Although recognized in the body of professional sense and research, a suitable discussion field is yet to be found in architectural education. In a sense, it is blurry, in that it finds embodiment in several situations, but not in the form of specific knowledge or a particular subject. Education transmitted knowledge systematically in layers, where connections among different sources of information were planned in advance; however here it is suggested that this process was on a planar, rather than layered level, in which the “unconscious” is positioned alongside the conscious forms of knowledge, making the connections more open to different configurations through intuition rather than being planned. In this way, the student retains the potential of instinct in the “unconscious,” in that the form of knowledge needs to be questioned and examined at every level.

Pimenides considered the form of knowledge taught in architectural education from a curriculum formulated around an objective-based “checklist” as “dangerous, because it sees students as identical vessels to be filled, and discourages in architectural culture the variety of approaches which in an uncertain future will enable it to evolve and flourish” (Cook, 2000, 125). She suggested that one should be constantly aware of change, and modify constantly what and how knowledge is imparted. She emphasizes that the self-critical trust of “instinct” is a fundamental part of all she describes. Consequently, she highlights the importance of “subjectivity” in architectural education in the formulation of a critical approach and the development of character as a designer as such:

"The main aim of Year 1 is to explore "ways of seeing," understanding and interpreting objects, events and places, and learning to look beyond the visible into the invisible and "absurd" quality of things. In this way a place is seen as something with its own identity, which each designer must interpret. The importance of "character" is emphasized throughout the design process, whether it concerns analysis, site interpretation or architectural vision" (Cook, 2000, 125).

The interaction between different built forms of matter and human beings has become a matter of exploration in architecture, yet architect Friedrich Kiesler defined the term "correalism" in this sense as a theory of design in 1939. Salter pointed out Kiesler's essay entitled "On Correalism and Biotechnique: a Definition and Test of a New Approach to Building and Design" reinforcing ideas already developed in the 1920s by the Constructivists, in which correalism was defined as the "exploration into the dynamics of continual interaction between man and his natural and technological environments" (Salter, 2010, 31). Kiesler was founder and director of the short-lived Laboratory for Design-Correlation at Columbia University from 1937–1941, where he explored concepts of intuition, perception (specific work on a so-called vision machine), and dreams as well as issues of human–environment interaction. Kiesler's aim was to investigate "the separation and dualities between vision and reality, image and environment could be dissolved, leading to experiences", as Salter suggested that:

"A new scientific theory of design, Kiesler wrote, was needed to understand how aesthetic practice could be harnessed to create the conditions for a new kind of socialized human in constant contact with an environment increasingly embedded with technology" (Salter, 2010, 31).

### **Learning and Teaching the Senses of Space**

Architectural space has to do with senses; and teaching students how to convey senses in space and understand what kind of senses a space transmits to an individual is part of architectural education. Senses are closely linked with subjectivity; however education also has traditionally an objective aspect. Subjectivity in relation to objectivity has to be taught in architectural education; and an architect learns to provide for the immateriality of space by learning through materiality. While all representations of architecture aim to illustrate the three-dimensional reality of space, and architecture conditions itself through materiality as the representation derives mostly from materiality, the architect comes to that point of materiality from immateriality, which is a process that is taught in architectural education. Therefore, conceptualization, which here refers to the process from materiality to immateriality, is a method that can be nourished by different types of information.

The consideration of "intuition" in relation to control of the knower, therefore, can envision better in identifying the critical experimentation in architectural education. One of the means of evaluating intuition in critical experimentation, which can contribute to teaching and learning the senses in contemporary architectural education, is the students' internalization of the experience of space by making. This can be either model making or production in a one-to-one scale. In other words, both one-to-one architectural experiences and experiences of the virtual space offer the potential to impart knowledge on immaterial senses. For example, the process of making a model from a drawing can help to internalize the design process, allowing one to benefit from

the subjectivity in drawing and the subjectivity in model making. The contemporary notion of computer-aided design has the tender points of objectivity in attaining the role of the architect as script-writer or task distributor in a digital environment. This process should not include standards or specific methods of representation, but should be flexible enough to allow the inclusion of the individual's own subjective approach for reflecting self-experience and communicating both with the model and the drawing in architectural education. For instance, Neil Spiller, explaining a flexible, speculative teaching method, said, "Let's follow an idea and see where it goes" (Cook, 2000, 74). The paradoxical philosophical reflection about the certainty of truth and its evaluation in architectural education can be seen in Spiller's determination that there's good and not so good in their unit, but never a right or wrong. He indicated that "we're happy to support a variety of ideas, some of which aren't necessarily interesting when we start to explore them but get interesting later" (Cook, 2000, 74).

In this sense, The Research Studio at METU highlighted an emphasis on the design process rather than an end product by concentrating on writing an urban program for an existing urban environment, which made it possible to include both material realities and social expectations. Namely, integrating the senses of spaces was a task for the urban program of an existing materiality. Sargin and Savaş (2012) describe this experiment as follows:

"Rather than designing an end product, the students were asked to introduce tactical instruments with which each actual intervention into the built environment would be tested under the realities of social and cultural conditions." (Sargin and Savaş, 2012, 367).

### **Conveying the Experiences of Space**

Architectural education also involves a process of experience, which allows the student to establish relations among different stages of the design process. This might include various methods; however the sum of these methods results in a dynamic learning process that is not necessarily linear, as it may also be planar. On this plane of education, a foundation cannot be described as a particular domain, as any stage might have a potential foundation in this respect. In other words, foundation is not a definite particular course for each student, being shaped according to the individual, by which they form their own foundations as a result of inputs from many courses. In this respect, it is an experimental process of learning that is open to innovation.

In architecture, one of its components is the intuitive creativity that involves a process of transferring knowledge from other disciplines to architecture as having a capacity for managing "spatial realization" to reformulate the components of architecture" (Burns, 2007, 5). Benefiting from the transfer of knowledge from other disciplines to facilitate the transmission of senses when developing ideas provides the development of envision for discussing the sources of intuition in critical experimentation.

Karen Burns described this process of knowledge transfer from other disciplines into evolutionary theory by quoting from John Frazer's book *An Evolutionary Architecture*, in which he distinguished between a scientific hypothesis and a design hypothesis, while insisting on the nature of inspiration (Burns, 2007, 6). Burns' quotation is an example of the reflection of contemporary differentiation of knowledge transfer,

and uses the term “mutation” from this terminology to exemplify and explain the process:

“The strange mutations of scientific discourses when rewritten in architecture, of course marks architecture’s inside; a terrain where external ideas are not merely imported but formulate new internal histories and theories in architecture, where the technology of architecture realigns material into its own disciplinary formations. Older architectural terms and questions are both discontinued and continued in this formation” (Burns, 2007, 6).

The following text by Stephen Gage opened the concept of “experience” as a virtual in architectural education in relation and contradiction to reality and physicality:

“You could equally argue that we’re creating that part of experience that is real, that doesn’t deal with virtual representations. But I don’t believe that’s possible. The techniques by which we represent to ourselves hypothetical futures are essentially virtual. We can’t avoid the notion that reality as put together on a building site is a constructed reality, a memory construct expressed physically. Yet we neglect the stuff of physical reality” (Cook, 2000, 94).

Kiesler’s (1937-41) “Vision Machine” should be mentioned as an interesting design at this point as he described it as a “pedagogical, demonstrative apparatus that showed what neither light, nor eye, nor brain, alone or association could see”, but rather the total coordination of human experience (Spuybroek, 2008, 102).

### THE ACCUMULATION OF IMMATERIAL SENSES IN ARCHITECTURAL EDUCATION

Architectural critic Jonathan Hill described “immaterial architecture,” which he has also correlated with Moholy-Nagy, as “an idea, a formless phenomenon, a technological development towards lightness, a tabula rasa of a capitalist economy, a gradual loss of architecture’s moral weight and certitude or a programmatic focus on actions rather than forms” (Hill, 2006, 3). Hill emphasised Moholy-Nagy’s understanding of space as “an extension of the body in dynamic relations with other spatial forces” and highlighted his emphasis on experience: “such a conception of space locates the immaterial in experiences rather than abstractions” (Hill, 2006, 142). This correlative approach towards immateriality suggests a reconsideration of the strong concept of abstraction in Modern Architecture and posit immaterial as another variable. For instance, Moholy-Nagy’s vision as both a catalyst of turning passive spectator into an active participant, and a creator of the potential for an inventive transformation of human organism; was illustrated by Chris Salter as “equally incorporating the play of both material (mechanics, elevators, optical instruments, airplanes) and immaterial (light, film, and projection) apparatuses (Salter, 2010, 39).

Abstractions mostly have embodied the immaterial side of architecture, which is combined among various terms arisen and nurtured from a complex background that informs architecture conventionally. However, a variety of agents that lead experiences; such as “intuition”, “instinct”, “unconscious” can reconstruct the components of “immateriality” of architecture either individually or in a unified manner. These agents have always existed as complementary and challenging sources that are sometimes taken for granted as pragmatic developmental tools, and sometimes regarded as limiting boundaries whose limitations give shape

and sometimes threaten the objectivity of disciplinary boundaries; but those agents inform architecture inevitably, and inescapably create a buffer between objectivity and subjectivity; as well as defining a territorial boundary rather than a linear one. For the Modern Movement, abstractions were declared as reaching objective standards in order for the optimum conditions of space as a firm response against vulnerabilities of the complex background of subjective approaches as dominating or weakening aspects that may deviate architecture from social considerations. But the integration of subjectivity associated with these agents, such as "intuition", "instinct", "unconscious", into architecture can contribute to immaterial aspects of space; namely, "senses and experiences of space" can be redefined and discussed in theoretical and productional means in architectural discourse under the employment of these changes. Besides, the integration of this process into architectural education in the form of criticism of fundamental components may become a pursuing force when necessary, as one of the identifying features of critical experimentation. For example, Phillip Tabor, a tutor of architectural school, explained the process as determining the necessity of flexible control about teaching design by warning off the students off unfruitful areas and by trusting the students' intuition in order to do the most of the navigating and encouraging them to uncover new territories for themselves and he suggests this controlled experiment promoting learning and advancing architectural knowledge (Cook, 2000, 9).

## CONCLUSION

"Experimentation" in contemporary architectural education oscillates between a new challenge of establishing objective standards to overcome the depth and hazards of so-called infinity of resources in digital tools and possibilities, and an endeavour of how architect should be positioned in this as an individual. "Intuition" can be integrated in this process to generate and re-determine connections between experimenting and individualisation, both to save the objective standards from excluding architect's individual participation in design process, and to redefine the melting boundaries of the discipline within multi-faceted digital methods of computational thinking.

Therefore, "intuition" can be employed in an experimental way in teaching and learning of knowledge related to the immaterial senses in architectural education as an alternative and critical approach. Education has to consider "subjectivity" as a considerable alternative to objective standards, which underestimate the issue of "individualism" and "intuition". Contemporary approaches to critical experimentation in architectural education can recognize the value of both issues, and can integrate them both as variables within an objectified framework into the transmission of accumulated immaterial senses in the educational process.

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Anahtar Sözcükler: Mimarlık Eğitimi; sezgi; öznellik; eleştiri; deneysellik.

## MİMARLIK EĞİTİMİNDE BİRİKTİRİLMİŞ DUYULARIN AKTARIMI

Bu yazının amacı, deneysellikte “sezgi” kavramını tartışmak ve bu kavramın mimarlık eğitiminde maddi olmayan duyulara dayalı bilginin öğretilmesine ve öğrenilmesine olan katkılarını araştırmaktır. Öznellik, bire bir mimari deneyimlemenin ve sanal/batını mekanın deneyimlenmesinin öğretilmesi; ve deneyelliğin ve maddi olmayan duyuların anlaşılması açısından bir kaynak olarak ön plana çıkarılmıştır. Nesnelliği tartışırkten, bu yazı Modern Mimarlığın kendini eğitim süreci ile yeniden kurumsallaştırdığı VKHUTEMAS ve Bauhaus okullarındaki tasarım metodolojilerini araştırmuştur. Dolayısıyla, bu dönemde göz ardı edilen fakat günümüzde mimarlık eğitiminde yeniden ele alınan nesnelliğe, biriktirilmiş maddi olmayan duyuların aktarımına ve gelişmesine katkıda bulunan “sezgi” kavramının eğitim sürecinde vurgulanması hedeflenmektedir.

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