Why Architects See Things Differently An Architectural Approach On Teaching Space Perception

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Abstract

Space is all around us, we experience it as shaped into buildings, rooms, tiny enclosures, as well as shaped into public spaces, squares, streets, and as natural landscapes. However, when we look at it, interact with it, walk through it, we all experience it differently. Psychology teaches us that the perceptual process is a very complex mechanism, which is essentially made up of two aspects: "one of which is essentially *figurative*, related to the percepts or images of successive states or momentary configurations of the world by direct and immediate contact, and a second which is essentially *operative*, related to the operations which intervene between successive states and by which the subject transforms parts of the world into reconstructable patterns or schemas." (Hart & Moore, 1973, p. 249). Thus, when looking at space, although we all "see" the same thing, we operate and understand things differently mainly because of our different social, cultural, religious, and geographical backgrounds (Downs & Stea, 1973). Therefore, the present study would like to focus precisely on this aspect, namely why do architects perceive space differently than the ordinary passerby?

Keywords: Architecture, space perception, architectural higher education

The Perfect Building

Architects and builders have been obsessing for centuries over the perfect proportions of their buildings. Going back as far as the ancient Greeks, the composition of the facades, the language of styles, and the rules of architectural orders, defined through the architects' approaches, have always looked for and argued over the "correct" way of conceiving architecture. For example, the golden ratio is probably the best-known example of the mathematical search for right proportions in architecture. Nowadays, there are specialized publications, on-line platforms, courses, conferences, discussions and prizes which all debate, on a highly

professional level, the aesthetics of the most recently built architecture. However, all of this is done within the profession - namely architects judge other architects' buildings, accomplishments, spatial experiments and so on. Whenever the architects take part in discussions, which involve people outside their circle, there always appears this one question: why do not ordinary people appreciate "Architecture" with capital A? Moreover, why do architectural professionals seem to have such radically different opinions on what makes "good architecture"? (Vais, 2015, p. 97)

Architectural Space Perception: A Distorted Point of View

This is a very common subject among architectural psychology studies. For example, David Halpern (as cited in Vais, 2015, p. 98) recounts that he himself contemplated the idea of becoming an architect, until, as a senior student in Cambridge, he took part in an experiment which investigated this aspect. The experiment used groups of students majoring in different fields (arts, architecture, and natural sciences). They were asked to view a set of pictures, which illustrated faces of people or buildings. The aim of the experimenters was to establish how different educational backgrounds alter the way "beauty" is being perceived. Results showed that all the participants, regardless of their background, had a very similar view on which features make an attractive face. However, in the case of buildings, as expected, there was a very clear distinction between the answers given by the architecture students and the rest; furthermore, the distinction grew, within the group of older architecture students, thus proving the fact that architectural education *distorts* the perception of beauty of the build environment. So then, why do we do it? Why do we train architects to "see" buildings differently?

Architects, when compared to others, have a particular point of view, namely they do not only interact with buildings on a daily basis, but they also have *to build* them. Designing a building implies a comprehensive knowledge of the particular building type one is developing; it also implies knowing how to ask the right questions regarding the different scenarios in which the building can be used, and also answering them! Thus, when looking at a space - be it a building, a public space or even a city - an architect will not see it just for what it is, but they will also try to figure out how it was build and how it works (Arnheim, 1977). Hence, even on a leisurely walk through a park, an architect could deconstruct the space around them and "perceive" physical or virtual features, which define a certain *place*, within its broader space (Norberg-Schulz, 1980). For example, a simple bench placed under the branches of a tree, emanates a different character than the space in its immediate vicinity. Being able to observe such subtle differences of physical or virtual boundaries, helps architects when

they design themselves space. Therefore, from an educational point of view it becomes clear that architects *need* to be trained differently when perceiving space.

From Architectural Practice to Architectural Theory

Architectural theory, as a discipline, deals precisely with this issue. It analyses, deconstructs and studies the built environment and then it issues theoretical concepts, which (try to) explain what makes buildings/spaces a success or, on the contrary, a failure. Of course, architectural theory itself ends sometimes misjudging the facts and draws the wrong (or at least incomplete) conclusions, which, further on, produce bad spaces (Tuan, 1974; Tuan, 1977). However, architectural theory remains quite an important instrument in educating and shaping architects. In this regard, there are several texts referencing spatial composition and perception. Probably the most famous one is Francis D. K. Ching's *Architecture - Form, Space, and Order* (Ching, 2007), although there are a lot of fundamental texts going all the way back to Rudolf Arnheim's *Dynamics of Architectural Form* (Arnheim, 1977) and the more famous *Art and Visual Perception - a Psychology of the Creative Eye* (Arnheim, 1954). Moreover, virtually every architectural school has its own theory department, whose research focuses, on a smaller or larger scale, on some aspect of how space is or should be perceived.

There are some quite interesting independent studies conducted by practitioners or theoreticians regarding this issue. For example Luigi Moretti, an Italian architect and theoretician active during the early 1970s, did some quite unique research in the field of space perception. His studies focused on the moment when the individual observes and starts *to perceive* and *comprehend* the space surrounding them. His curiosity on the matter made him feel the need to "freeze" the space he was examining, turning it into a solid, which could be handled and analyzed in detail. Thus, Moretti made several models of the interior space of the buildings he was researching - models of subjective and affective spaces. The architect used in his description terms like plasticity, material density and even *chiaroscuro*, in order to characterize the "intellectual aspects of material in its concrete physicality" (Moretti, 1974, p. 124). The different sequences of architectural space - solid, void, narrow, broad - are translated into an almost mechanical manner; namely, Moretti perceives the various types of pressure space exerts upon the visitor. In his view, space turns into matter; it has a presence of its own, detached of the building materials which enclose it - this "rarified substance" being able to communicate with the individual on a perceptual level. Moretti, by modeling the immateriality of space, manages to determine a way of identifying, preserving, and analyzing the spatial characteristics, the

order and the reference system which are established between the subject and the space surrounding them - an affective bond, labeled by Tuan as *topophilia* (Tuan, 1974).

And From Architectural Theory to Architectural Education

This shift of perspective, which implies shaping and fostering *an architectural* manner of perceiving space, happens gradually, over time. From an educational point of view, it is difficult to define the perfect method of accomplishing this. However, such a process should rather aim at establishing a goal - a type of attitude, a procedure or a methodology - so that students are encouraged to develop their own path, their own rhythm of assimilating and applying a more or less empirical way of gathering the information. Learning *about* space, learning *how to create* space is a process which is based on the power of example: observing its physical features, the quality of the light, the different points of view, the path, the climate and the geography of the terrain, as well as its sensorial and cultural features - including the manner in which different individuals manage to walk through and interact with that particular space.

Thus, the aim of the Theory-Methodology course, taught during the second year of studies at the Faculty of Architecture and Urban Planning, the Technical University of Cluj-Napoca, is to discuss, in a contextualized manner, two main subjects: *the composition* and *the perception* of space. First, the course is trying to identify, analyze and explain basic compositional aspects regarding *spatial morphology* - namely primary elements such as *point*, *line*, *plan* and *volume* - and *spatial syntax* - compositional and organizational principles. Then, the course proposes an integrated and transdisciplinary approach regarding the process of *perception*. Thus, the analysis slides towards broader fields, such as psychology, sociology, anthropology and geography, explaining concepts such as *personal space*, *wayfinding*, *mental maps*, *territoriality*, *non-place*, *heterotopia*, etc. Finally, the course intends to establish a clear connection among the three layers of space: *a space which is conceived*, *the physical space of the reality* and *a space which is perceived*. Consequently, a fundamental infrastructure is being established, so that different examples of architecture can be critically approached and discussed.

Projected Space, Produced Space, and Perceived Space

The novelty of the approach consists in the fact that, beside the familiar discussions regarding *the composition of the space* (Ching, 2007), the course tries to teach the students that they should also take into account information which comes from related fields of study, such as psychology, sociology or culture theory. Although, there are quite a few worldwide

famous examples of programs studying environmental psychology (University of Surrey, 2016), of independent research structures analyzing different aspects of the relationship between architectural space and its users (Academy of Neuroscience for Architecture, 2016), or of structures which focus on involving the community in the actions they take (The Center for Human Environments, 2016), this course is trying to focus mainly on the issue of *space perception*. Thus, taking the three layers of space as a starting point, the course is trying to break them down into fundamental units.

The first one, *the projected space*, is the space that the architect imagines and conceives. It is a virtual space, which is not built yet. However, it is a type of space which is worth studying, analyzing and discussing. The only way the architect can depict this type of space is through drawings, plans, models, through 3D animations, and, lately, through virtual reality. Perceiving such a space is difficult, especially for untrained eyes.

The second type of space, *the produced space,* is actually the physical space, the built space in all its instances - micro-architecture, temporary architecture, spatial experiments, architectural object, or urban space configurations. Basically, it is what one calls *the built environment.*

The third type of space, *the perceived space*, is the space as it is understood by its user; a perception which presupposes cultural, psychological, philosophical and/or social differences. Thus, in order to analyze the complexity of this last layer of space, the architect needs *to contextualize* the impact of the built object within its historical, cultural, social, philosophical and/or geographical environment. In order to be able to understand what others might think of the spaces one creates, one has to understand *how* the others *perceive space*.

The Breakdown of the Perceptual Process

Thus, in order to be able to use such complex concepts, the student must first master the manner in which the perceptual process works. Consequently, the course presents concrete facts about how perceptions are formed, basing them on the extensive studies undertaken by Jean Piaget (Piaget & Inhelder, 1956), and , more recently, Irving Biederman's (as cited in Miclea, 2003) studies of recognition by components, or *geons* (geometrical icons), as he calls them. Then, the focus is shifted upon the manner in which the information received at the end of the perceptual process is structured into *mental representations*. Starting out with the *gestalt principles* (Lang, 1974; Levi, 1974; Burnette, 1974), the students learn how *mental maps* are formed (Lynch, 1960) and how people are able *to navigate through space* (Stea, 1974). *Wayfinding* is a concept, which mainly relies on memory and its ability to re-represent space: "Memory begins for a person when she has an experience and perceives what happens, where it

happens, who is there, what her role is in the experience, and the feelings she has at the time. Her brain disaggregates elements of these perceptions allocating each to a different part of the brain. The mood of the event goes one place, the colors of clothing another, and the size of the space a third. Faces of participants, action terms (verbs), nouns, and objects all go into different areas of the brain, and the way she traveled to or from the place (her cognitive map) into still another." (Zeisel, 2006, p.146)

The students responded rather well to this approach and several of them have been quite interactive during the discussion sessions following each course. Some of them even reported taking into account the principles studied during the course when designing their own projects for the Design Studio.

Conclusion

A rather elementary conclusion is that when one judges architecture, one actually speaks about *perceiving architecture* and not about architecture *per se*. After describing and analyzing the complexity of the perceptual process, it becomes quite obvious that, before an evaluation or a discussion of architectural aesthetic principles, the student must understand that the success or failure in architecture is a matter of *perception*. Such a discussion on perception, form an architectural point of view, is meaningful for several reasons.

One of these is simply the way in which one perceives the architectural object in front of them. Namely, what the user *perceives* when they try to identify the manner in which a space should be navigated, the attitude they should have towards the physical environment, whether they identify or not the meaning of the space. It is an intimate, personal and immediate relationship with architecture - in which, of course, the aesthetic factor plays an important part -, but which depends mostly on one's knowledge, system of decoding and interpreting meanings, preconceptions or rituals.

Architecture is more than just a spatial or volumetric composition, architecture can *design spatial perceptions* and, at the same time, it can be judged as being a success or failure when the object - the product of architecture - is *perceived* in its context. Thus, we have reached the fragile relationship between *designing* and *dwelling* space, between *imagining* and *creating* space perception and *practicing* perception in the real, immediate space.

The complexity of the architectural theoretical analysis resides in this two-way relationship: theory is, on one hand, critical - analyzing and interrogating the physical reality, the immediate space or architectural product - and, on the other, it tries to come up with solutions - methodologies

that are fundamental to the designing process in order to make a difference in the outcome of the final architectural product. Practically, one can trace theoretical endeavors, which are concerned as much with the creative process - that precedes the actual construction phase -, as they are with the effects produced by the implementation of the architectural object - the post occupancy phase.

However, the present study managed to answer half of the question, namely *why architects see things differently*, nonetheless, the second half of the question, *why architects have a different idea of what makes a building beautiful*, remains still unanswered. Thus, the subject is open to further research.

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