Conceptual Modeling as a Basis for Forming of Creative Skills

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Abstract. Modern architecture is based on new concept, new methods, requires new approaches, directions and goals, which should not be confined within narrow formal compositional requirements, but should be considered comprehensively: information, science and the environment in general predetermined the development of new directions. On the one hand, the main principles of architectural systems are dynamism, variability, adaptation of the compositional structure to the modern requirements of life, on the other hand, the gradual penetration of new ideas from the field of philosophy, ecology, and anthropology into the field of architecture. This paper is devoted to the formation of creative skills in teaching the basics of architectural design. The main goal of the conceptual approach in student course design is the development of creative potential, the formation of an individual creative method for each student, the importance of understanding the place of architecture in all spheres of human activity and in the overall ecosystem.

Keywords: conceptual modeling, architectural composition, problem method, imaginative thinking, the basics of architectural design.

1. Introduction

The beginning of architectural design in architectural education is a difficult process for students, since they have not yet developed techniques and design methods. It is necessary to form, first of all, the actual design thinking, which solves functional, planning and design tasks. Secondly, it is figurative or artistic thinking associated with the embodiment of architectural ideas in the form of images. Finally, this is normative-organizational thinking, coupled with the communication of the architect with the customer, authorities and builders. At the initial design stage, the main task is to learn the basics of design and imaginative thinking, while acquaintance with the regulatory and organizational aspect of project activities is not the prerogative of this stage, and this aspect is considered in senior courses. [1-8].

Without denying the importance of volumetric-spatial composition’s propaedeutic course, it should be noted that by the time when the student is first given the task of designing a simple architectural object, he does not have the necessary skills of this object’s "invention". Attempts to organize such a process within the framework of exercises’ system that are understandable for students lead to certain results, sometimes even to rather spectacular graphical representations, but, unfortunately, they do not have any substantive basis, internal "fullness" of the object. The methodological differentiation of the two components of a single process - the ability for formal modeling and comprehension of organizing
space’s idea - are separated in time, perhaps this question will remain outside the framework of the educational process. Nevertheless, it is problematization, conceptualism that is the true component of the most interesting and striking projects. [9-13].

Exploring new trends in architectural shaping, teaching experience in leading Russian and foreign schools, the emphasis in teaching and professional activity is transferred from the form, composition as such, to the substantive component, individualization of the problem setting and non-stereotypical its solution.

2. Methods
The initial training course in architectural design, starting from the basic provisions of the VKHUTEMAS propaedeutics, supplemented by the methodological developments of the Moscow Architectural Institute and regional schools, includes practical lessons on mastering the course of volumetric-spatial composition. In a number of architectural schools, the basic (“classical”) course of composition is being adjusted today as a result of experiments to improve teaching methods and taking into account the world architecture’s trends. [14-21]. While maintaining continuity with the fundamental developments in the field of architectural composition theory and methodology, the FEFU Department of Architecture and Urban Planning has developed its own methodology for teaching the basics of architectural shaping. [22-25]. The biggest problem in the initial course of architectural design is the prevalence of "assimilation strategy", which often means the ability to "copy" someone else's experience, working by sample. Such an approach, of course, is not imposed, but with the traditional issuance of an assignment for the object’s design, students can perceive it as a necessary and sufficient guide to action. In this case, the creative search is often replaced by a formal search for an acceptable organization of the functional process and external "vesting" of an architectural structure. The projects of different authors differ only in the variants of the compositional use of structures and forms that organize the external volume of the building.

Therefore, it is extremely important to emphasize the philosophical and worldview conceptual approach to design at the initial stage of "entry" into the professional method. Thus, at the first stage, students are offered to assimilate design techniques that allow for the synthesis of propaedetic composition techniques (formal principles) and figurative or artistic thinking (substantive properties). At the second stage, decisive importance is attached to the solution of the actual design tasks (functional, planning and constructive tasks).

3. Results
In this regard, for a number of years in the course of initial architectural design students are offered a slightly different methodology for issuing design assignments. It is based on the actualization of the philosophical and worldview conceptual approach to creating, first of all, not an architectural object (something external), but an architectural human environment (the original meaning of architecture is something internal). Initially, it is assumed that the use of the object is unknown, what it should be, for which it is also unclear - all these components are proposed to be comprehended anew. One might get the impression that the student is faced with the task of “finding that - not knowing what”. In fact, the teacher achieves a solution to this problem gradually, often breaking it down into simpler components. First of all, this is the stage of "unwinding", where the main goal is to avoid stereotypes, to develop one's own creative "architecture view" of the environment. To achieve this goal, different methods are used: associative, method of introduction, literary-philosophical, play, theatricalization, etc. Ultimately, such an approach "provokes" the creation of own concept in each work.

Thus, problematic or conceptual-attitudinal forms of assignment issuance have a number of common features:

1. Attracting associative and philosophical components of creative thinking, which is expressed in the epistolary formulation of the project idea, understanding its essence, in a critical attitude to stereotypical samples.
2. Alternation of descriptive literary-philosophical and compositional-figurative graphic and volumetric modeling.

3. Comprehension of the internal organized space by "implantation", theatricalization of the environment, proposing a new use of the relationship "person - environment", where students become accomplices of internal processes.

4. "Distraction" from the main topic of course design through the introduction of a number of creative graphic and model assignments that make it possible to comprehend the methodology of philosophical and conceptual design without regard to the specific architectural form (opposition: black - white, chaos - order, etc.).

The techniques described above predetermine the main directions of research activities and educational practice to improve architectural and art education. In addition to the existing methods, new approaches to the formation of an individual creative method have been formulated, as well as specific methods of initial conceptual modeling have been developed.

4. Discussion

The first project theme - "Space for recreation with water source and a sunshade" - allows to consider the features of this approach. The first classes are devoted to the search for an image, and then the actual design tasks are emphasized. When issuing an assignment, the task is for the student himself to compose a design assignment. Initially, it is proposed to compose an associative array related with water (possibly in opposition to other elements - fire, wind, etc.): the state of water, its movement, sounds, natural sources, etc. After that, it is proposed to create an abstract composition on the theme of water, fire, wind, in which it is necessary to express the meaning of the element, its character (Fig. 1). Then a philosophical understanding of water’s topic is proposed: what attracts a person to water, what he wants to get, being near it.

![Figure 1. Abstract composition "Image of water" (clause): a - "Rough sea", b - "On the crest of wave", c - "Mountain river".](image)

The simplest symbolic meanings are built on the basis of pictorial associations. The topic of water as an element is considered in various aspects, including in opposition to other elements. A more complex development of the image theme is metaphorization. If stylization determines the generalization of the form itself (natural or objective) on the basis of analogy, then metaphorization basically involves the study of the inner essence of forms, objects, phenomena.

Based on these positions, thought out by each author individually, an idea is formed about a water source, about the purpose of a person's stay in this environment. Thus, at this stage, students can comprehend the nature and functional zoning: places of rest with a sunshade. The direction of people and water movement in accordance with the conception are determined. This stage ends with a model clause. And only at the next stage it is advisable to issue the assignment, which is, in fact, a system of restrictions, but not defining, but indirectly influencing the student's intention. Here you can acquaint students with the possibilities of modern technical solutions, while leaving them the right to search for their own.
The complex solution of problems aimed at creating a small open space in the urban environment includes the compositional aspects themselves. An open architectural space is an external urban space that has its own compositional structure and compositional elements: accents or landmarks, contour or spatial boundaries, composition axes or direction lines (Fig. 2).

![Image 1](image1.jpg)

**Figure 2.** “Space for recreation with water source”.

Another task is "Exhibition Pavilion" (Fig. 3). Traditionally, the student is invited in the first lesson to approve the theme of the exhibition, which is very often limited to either a universal or non-binding theme of an exhibition of flowers, marine life, household items, equipment, etc. The stereotype is triggered: there is a spectator and there are objects, which they came to see. But is the function of the exhibition pavilion only “to show?” It is proposed to come up with a new purpose of the pavilion, where the viewer is not a passive observer, but a participant in events, a researcher, an inventor, a creator. Students present different concepts, writing down a literary “legend” being actively involved in comprehending the idea of the project, its philosophy, the inner “filling” - the meaning of the pavilion. Some kind of action or philosophical understanding is assumed within the organized space; therefore the first clause begins with an understanding of this space, and not the external volume of the pavilion.

![Image 2](image2.jpg)

**Figure 3.** “Exhibition Pavilion”.

Interesting results are also achieved by early involvement of junior students in competitive design. For example, the traditional theme of the course project "Travel Shelter" was replaced for some of the students with the theme "Extreme Housing". At first sight, under certain restrictions (a small object in extreme climatic, geographic, ecological conditions), the topics are largely similar. But the approach to solving the topic "Extreme housing" is completely different: the aspect of problematization becomes the main aspect here. The challenge to survive in extreme conditions and its solution led to the proposal of a number of new ideas for the existence of such architecture - easily transformable, mobile, changeable, and unsinkable, etc. (Fig. 4).
5. Conclusions
Conceptual modeling is the basis of the professional activity of an architect. Searching for an idea, creating an expressive artistic image, a philosophical concept of an architectural work is the most difficult task of forming project thinking. Various methodically thought-out techniques of initial creative "training", intersecting with the project process, stimulate search, research, discovery - actions that lead to non-standard solutions, unexpected finds in the creation of an artistic image, due to which the unique features of one's own creative method are formed. The main goal of the conceptual approach in student course design is the development of creative potential, the formation of an individual creative method for each student, the importance of understanding the place of architecture in all spheres of human activity and in the general ecosystem.

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