

The Use of Support Schemes in Teaching Architectural Design

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Abstract:

This article discusses the theory of architectural design, which includes all types of art, as well as humanities and technical science. Currently, the future of architectural design largely depends on human potential and the development of engineering technology. In teaching architectural design, support schemes are used to assimilate the main points of knowledge and consolidate the learned material.

Keywords - Frame, tectonics, ergonomics, scale, dominant, metric rhythm, morphology.

I. INTRODUCTION

The research presented in this work discusses the theory of architectural design that helps students understand what is required of them. Their work was evaluated in the context of creative activities, with regard to the intelligence, emotionality, rationality of visual thinking and the creative approach of each student. Those who were trained with the help of support schemes showed good results. As one can see, through visual and non-visual arts, as well as through humanitarian and technical knowledge and skills, students learn how to think figuratively, systematically and innovatively [7].

Architectural design is the achievement of humanity, the contribution of the people in the development of world culture; it includes all types of art, as well as humanitarian and technical science and education. Currently, the future of architectural design largely depends on human potential and the development of engineering technology. In teaching architectural design, support schemes are used to consolidate the learned material. Since visual thinking plays a large role in perception, support schemes are used when students analyze the design of analogues [3].

Currently, it is difficult to imagine any sphere of human activity that does not involve designers. Design creates an attractive and comfortable environment for people, making it easier for them to work and live, as well as nurtures their aesthetic taste, focusing on the latest scientific and technological achievements, technologies and materials, the most modern fashion trends, and the most sophisticated consumer needs. Architectural design is a creative activity responsible for the development of utilitarian and spiritual needs for buildings. Architecture by its origin has long been considered an art form.

The *concept of design* consists in a specific series of design activities, combining art-subject work and scientifically sound engineering practice in the field of industrial production. This is a creative method, process and result of the artistic and technical development of industrial products, their complexes and systems oriented to achieve full compliance of created objects and the environment in general with human opportunities and needs, both utilitarian and aesthetic.

The *subject of design activity* (what it is aimed at) is the creation of a harmonious, substantial and expressive form of the object, which reflects the integral value of its use value [5]. Design objects can include any new technical industrial product (unit, ensemble, complex, systems) in any life sphere, where human communication is socially and culturally determined [6].

The *main design method* is the artistic-figurative modeling of the design object through composite shaping. It is based on the results of the analysis of utilitarian and aesthetic needs and preferences of certain consumer groups, with regard to the situation and the environment of use and perception of the object, as well as the analysis of the function of the object (as a means of providing the corresponding needs) of structural and finishing materials and manufacturing technologies, conditioned by the capacities of a particular enterprise.

The main design categories are as follows:

- The image is a clear idea of the object, an artistic-figurative model created by the designer's imagination.
- The function involves the work that the product should perform, as well as the semantic, symbolic and value roles of the object.
- Morphology includes the composition and structure of the product's shape, organized in accordance with its function, material and manufacturing method, embodying the designer's intention.
- The technological form is the morphology embodied in the method of industrial production of design objects as a result of the artistic understanding of technology.
- The aesthetic value is a special value of the object revealed by a person in aesthetic perception, emotional, sensuous experience and assessment of the degree of conformity of the object to the aesthetic ideal of the subject.

The above can be summarized in the leading areas of design creativity [1] in Figure 2.

The design of the architectural environment is a type of design and a form of design culture that synthesizes the components of a lifestyle into a functional and artistic integrity.

There are several types of design such as environmental design, graphic design, industrial design, art design, architectural design, landscape design, phytodesign, media design, website design, engineering design, ecodesign, trade design, exhibition design, ergodesign, styling design (art adaptation of the finished form – interior-exterior), folk

(urban) design (popular in Western countries). There are also such types as non-design that organizes the processes of production, service, marketing and training; advertising design that is rather a commercial craft, based more on achieving profit than on art; futurodesign that is a historical design and a predictive design of the future; handicraft design is rather a craft based more on personal experience and taste.

The types of design and its general functions, as well as connections with art forms are given as an example in Figure 1 and Table 1.

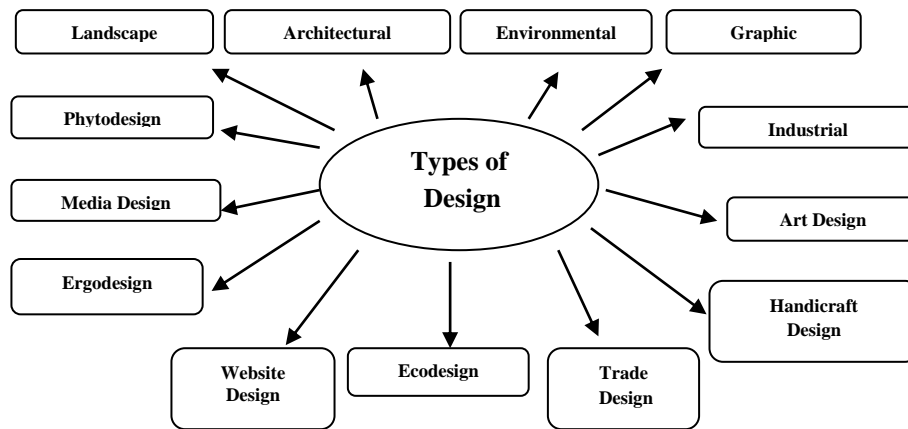


Fig. 1. Types of design

Tab. 1. Design culture creativity in architecture

Types of design	General functions	Related art forms
Graphic design <ul style="list-style-type: none"> • Visual communications • Advertising, packaging • Corporate style • Printed products • Computer graphics 	Information	Painting, graphic arts
Industrial design <ul style="list-style-type: none"> • Mechanical engineering • Vehicles • Devices, tools • Furniture, plumbing fixture • Household appliances • Kitchenware • Electronics • Fabrics, clothes • Perfumes, household chemicals • Jewelry 	Industrial and domestic needs	Decorative and applied arts, sculpture
Art design	Aesthetic needs	Painting, sculpture
Architectural design <ul style="list-style-type: none"> • Massive housing • Public and industrial buildings • Engineering facilities 	Spatial basis of life activities	Architecture
Landscape design <ul style="list-style-type: none"> • Creation of artificial and rehabilitation of destroyed landscapes • Decorative dendrology 	Ecological balance	Garden art
Environmental design <ul style="list-style-type: none"> • Interiors • Urban environment 	Subject-spatial complexes	Architecture, decorative and applied arts, sculpture, scenic painting

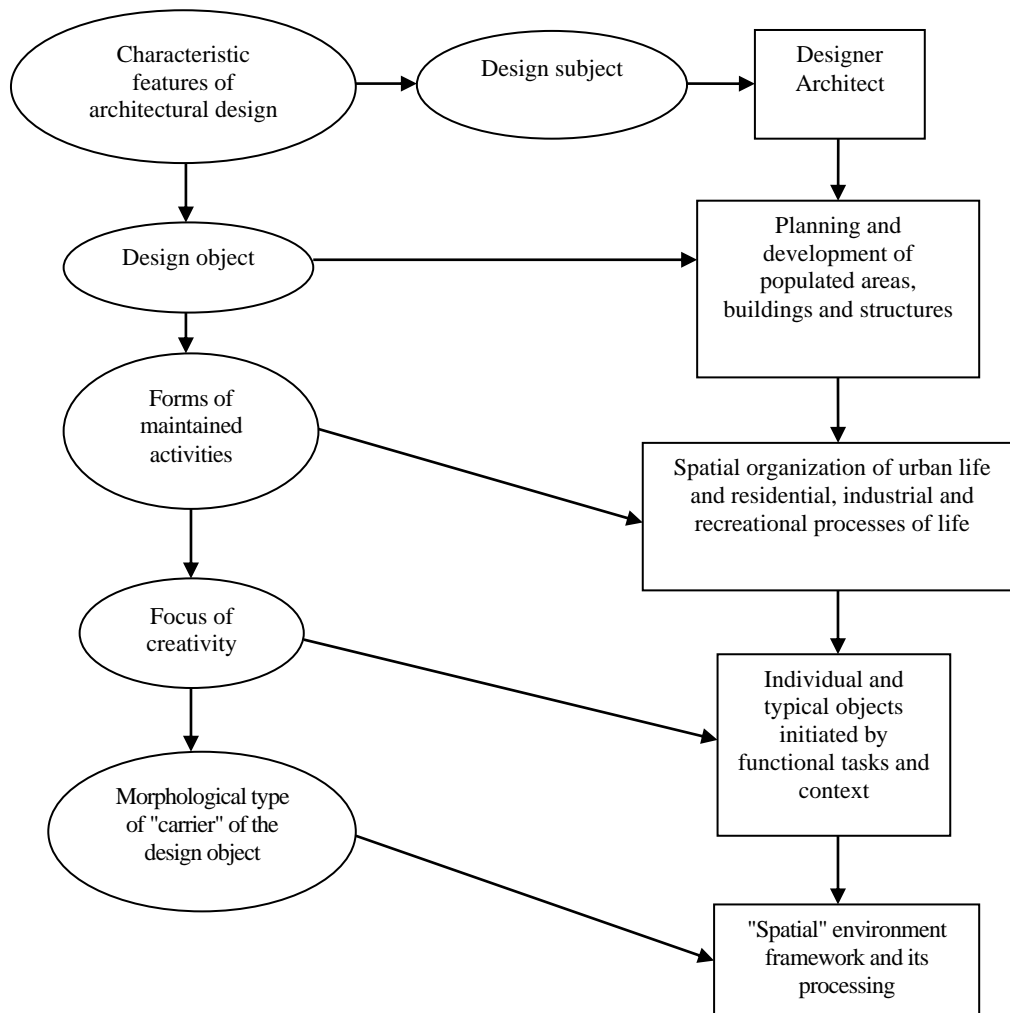


Fig. 2. Features of design creativity in architecture

II. RESULTS AND DISCUSSION

Architectural design is a special section of design, which is currently determined within the framework of architecture, the general purpose of which is to organize the material and spatial conditions of human life and society. However, specific tasks are actually divided into mainly artistic (“architecture as art”), embodied in cult and unique public facilities, and mundane pragmatic, embodied in ordinary residential, industrial and public buildings and complexes. The latter part of architectural art is included in the presented figure. The increasing process of saturating all types of architectural and spatial situations of various kinds with equipment and other design works has led to the formation of a new integral form of design activity – environmental design. A specific feature of the professional technology of this form is the environmental approach, which suggests the inclusion of various types of “extra-architectural” environmental components in the leading design factors from the dynamics of environmental processes to the subjective representations of their participants [6]. In this regard, environmental design is associated with the formulation and solution of conceptually new tasks for the integrated organization of human life, both subject and spatial. There is a special area of

this type of design activity – *design of the architectural environment*, enhancing the role of the artistic principle in environmental objects and systems.

Composition in architectural design is formed as a result of the system of traditional and modern design techniques [2]. The classical compositional means in design, as presented in Figure 3, include proportioning, symmetry and asymmetry, scale, rhythmic organization, tectonics, nuance, identity, and contrast of activity. They are combined with the current interpretation of the ways of forming design products – assemblage, combinatorics, assembly, installation, etc. The ultimate goal of using these means is a complex aesthetic organization of material-constructive and visual components of a product (poster, environmental system, etc.) as a result of formative activity, as shown in Figure 4. General information about the origin and subject of design (all types) is the basis for further consideration of a number of terms and concepts used in modern art design in the reference dictionary [4]. These groups of concepts are associated with the results of design activity, and specifically, with the “object” of design, the spatial and spatial environment formed by it, its aesthetic value and such important concepts as “ensemble”, “typology”, etc.

Architectural design is limited by the tasks of materializing the spatial demands of life. As for general design, it is intended to combine – synthesize – the whole palette of possibilities of specific types of design engineering, coloristic research, expressiveness of texture, etc., but removing a visual, meaningful foundation from the works of art. The final results of various “designs” also look different. The decisions made by the architect-designer almost always have the

character of a visual ensemble, as they are associated with a specific object (the subject-spatial environment of the house, the system of visual information elements of the city or region, the environment of their separate but important node, etc.). In architectural design, objects and solutions, as a rule, are single or form narrowly targeted functional-spatial complexes – urban, residential, etc.

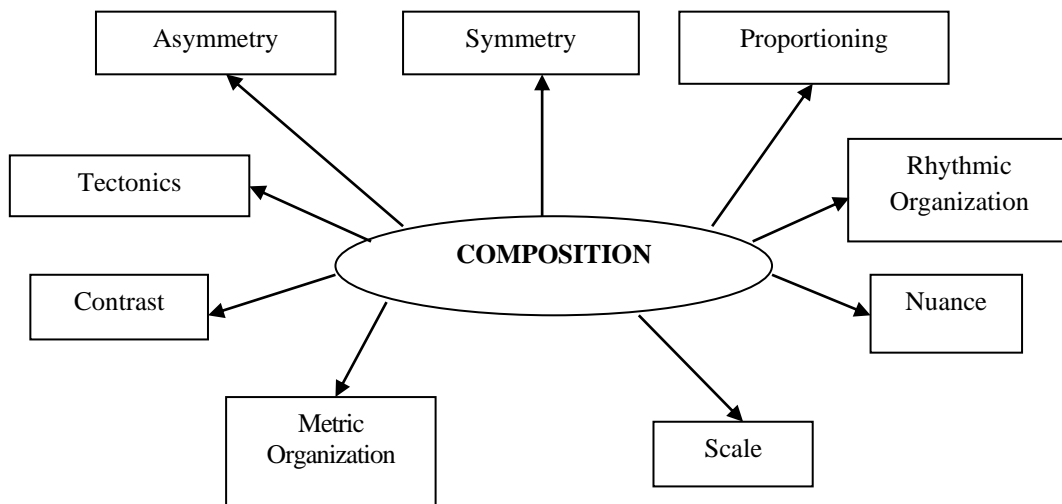


Fig. 3. Classical compositional means in architecture

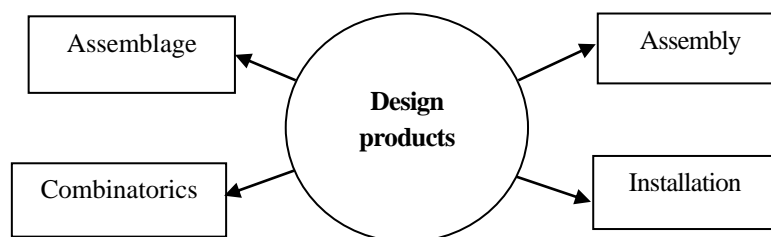


Fig. 4. Result of formative activity in architecture

III. CONCLUSIONS

For this purpose, students must study exact sciences and engineering, in addition to humanities. After mastering the culture of drawing and design, students can switch to computer programs and work. Then they can prove themselves as professionals in the field. Thus, we can draw the following conclusion that it is necessary:

- to develop students’ independent ability to analyze analogues with the help of this support scheme, to identify technology and sciences for self-improvement in identifying new knowledge and to find its application at the present stage;
- to develop students’ ability to determine the type of design, style, concept, project, physical structure, etc. for further creative growth of the independent acquisition of knowledge and abilities, and automate their skills for further self-realization;

- to teach how to conduct experimental work for its realization using new technologies of modern practical activity, as well as competitiveness and professional growth of a specialist in all areas of modern life;
- to review all the disciplines of humanitarian, technical and natural sciences, as well as pedagogy and didactics, particularly, methodology;
- to form students’ professional, social, methodological and individual competences, as they are closely interconnected and necessary for self-realization.

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