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ПРИНЦИПИ ФОРМУВАННЯ ІНДИВІДУАЛЬНИХ ОЗНАК СТИЛЮ В СУЧАСНІЙ ПРОЕКТНІЙ ГРАФІЦІ

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Одеська державна академія будівництва та архітектури, Україна

Анотація. У статті розглядається принципи формування індивідуальних ознак стилю в сучасній проектній графіці. Основною метою та завданням дослідження являється - з'ясувати роль архітектурного малюнка як допоміжного засобу вираження проектного задуму автора, з'ясувати місце та значення ручної та комп'ютерної графіки як особливі творчо-технічний процес у проектній діяльності та одним з елементів індивідуальності. розкрити функції і методи зображення у навчальному процесі, з'ясувати роль та особливості виконання антуражу та стафажу різними видами графіки, Додаткова роль антуражу та стафажу у процесі проектування формують особливі якості та навички при формуванні індивідуального стилю Саме вони, окрім загального стилю подачі, дозволяють створювати певний симбіоз з сухої комп'ютерної подачі та більш живої та емоційної ручної графіки. Надати приклад графічних розробок та малюнків різних авторів що сприяє розумінню основних принципів та методів графічного зображення середовища, навколишнього об'єкта, на основі яких майбутні митці створюють неповторну манеру малювання, свій індивідуальний почерк, власну графічну мову.

Ключові слова: формування індивідуального стилю, антураж, стафаж, архітектурна графіка, ручна графіка, комп'ютерна графіка

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THEORETICAL AND METHODOLOGICAL CONCEPTS OF FORM-MAKING IN ARCHITECTURE, DESIGN AND ART

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Abstract. The article covers concepts of form-making in architecture, art and design in the late 19th and the early 20th centuries. The focus lies on study of interconnection between internal structure and exterior form in organic and inorganic objects, which seems more relevant than simple reproduction and replication of natural forms. Study of such changes provided the basis for a trend of metabolism dating back to the middle 20th century in architecture and urban planning in Japan, biomorphism in design and morphogenesis in America. Those theoretical and methodological concepts of form-making greatly affected designing efforts of architects and designers throughout the world. Regrettably, that did not have a considerable effect on understanding general laws of form-making and composition in the Soviet and post-Soviet periods of architectural and artistic training.

A large number of publications dedicated to study of general laws, principles or categories of composition does not view them as interconnected with objective laws of form-making. Such approach distorts development of an integral system of knowledge of artistic and visual form-making in architects- and designers-to-be

Purpose of Research is to clarify the notions of “composition”, “laws of composition”, “general laws of composition”, their number and connection with form-making laws (morphogenesis).

The following **objectives** have been set to achieve the purpose:

- to study some concepts providing an insight into form-making (morphogenesis) in architecture and design;
- to identify interconnection between laws of form-making and general laws of composition.

Key notion in one or another theoretical and methodological concept of application of innovative processes in designing efforts of architects and designers is the notion of morphogenesis. In architecture and design morphogenesis may serve as a synonym of form-making, envisaging the process of occurrence and transformation of an optimum form of an object on the whole. The notions “form-making” and “composition” have a similar understanding of the process of creating a new form, a new reality, a new product in architecture, design and art.

Interconnection of general laws of composition and general laws of nature was pointed out by many scholars and artists. Relying on general laws of nature, we define five laws of form-making. From this perspective it is fair to say that the essence and number of general laws of composition as a key component of art, architecture and design are determined by laws of form-making.

Keywords: theoretical and methodological concepts, form-making, morphogenesis, composition, laws of composition, general laws of composition, laws of form-making.

Problem Statement. Creative design process implemented by an architect and a designer has dual nature. Firstly, it is artistic intuition or natural sense of harmony, developed professionally and strengthened by practical creative efforts. Secondly, it is generalized understanding of the essence of harmony transformed by centuries-long practice into laws and tools of form-making. Knowing those laws steers one’s search for a form and facilitates creative path from an image to its specific implementation into required correlations of masses, rhythms, proportions of details and the whole.

A large number of publications dedicated to study of general laws, principles or categories of composition does not view them as interconnected with objective laws of form-making. Such approach distorts development of an integral system of knowledge of artistic and visual form-making in architects- and designers-to-be.

That is why the notion of “composition” turns into the notion of “arrangement”, i.e. adjustment of graphic material in order to obtain visual integrity based on standard rules and simple organization schemes. Study of laws of form-making in nature should inspire architects- and designers-to-be for development of creative thinking and professional skills and for use of those laws in future experiments.

Development of natural sciences in the late 19th and the early 20th centuries and further separation of biology into an independent system of sciences sparked interest in forms of animate nature. Those processes contributed to development of bionics – a discipline that developed at the intersection of biology and engineering and had an impact on organic understanding of architecture and fascination with bionics displayed by architects, designers, artists and others. The focus lies on study of interconnection between internal structure and exterior form in organic and inorganic objects, which seems more relevant than simple reproduction and replication of natural forms. Regrettably, that did not have a considerable effect

on understanding general laws of form-making and composition in the Soviet and post-Soviet periods of architectural and artistic training. Current state of scientific and methodological literature and experience in teaching formal composition to architects and designers highlighted a range of questions that need to be clarified.

Analysis of the Latest Studies and Publications. As far as humanities are concerned, recently, there has been a significant amount of interest in studies connected with the problem of digital globalization. Their purpose is to identify consequences of that general cultural phenomenon and ways to implement results in architecture and design. This is covered in works by M. Hensel, A. Menges and M. Weinstock [6], publications by J. Laarman [3], S. Roudavski [19], I. Koliada [17], S. Fiell [7] and others. A large number of methodological solutions regarding development of creative thinking and artistic skills in architects- and designers-to-be is covered in works by the following authors: analysis of features of development of professional competencies in institutions of higher education (I. Birillo [2], M. Habrel [4], O. Kaidanovska [14], S. Karpova [15], B. Kolarevic [16], Z. Nagaeva [18], V. Tovbych [20] and others), study of certain aspects of development of mental and practical knowledge, abilities and skills in fine arts and composition (V. Grigorjeva [8-12], F. Kovaliov [13]). Recently, there have been studies of formal composition and techniques for teaching it in institutions of higher education, but there is no uniform understanding of basic notions of formal composition and its connection with laws of form-making. There is still no generally accepted theory of composition in fine arts, architecture and design. Many researchers, architects, artists, teachers try to create a science-based theory of composition relying on their subjective perception and personal experience. There are theoretical studies of composition done by Kharkiv, Kyiv, Odessa, Lviv and other Ukrainian schools of architectural art and design.

Different scientific and methodological approaches to understanding the essence of compositional notions and their connection with form-making (morphogenesis) in nature highlighted a range of questions that need to be clarified.

Purpose of Research is to clarify the notions of “composition”, “laws of composition”, “general laws of composition”, their number and connection with form-making laws (morphogenesis).

The following **objectives** have been set to achieve the purpose:

- to study some concepts providing an insight into form-making (morphogenesis) in architecture and design;
- to identify interconnection between laws of form-making and general laws of composition.

Presentation of the Main Material. The late 19th and the early 20th centuries witnessed an interest to forms of animate nature, which had its impact on development of architecture and design. Study of such changes provided the basis for a trend of metabolism dating back to the middle 20th century in architecture and urban planning in Japan, and organic design as a holistic method of artistic engineering used for the first time by Charles Rennie Mackintosh and Frank Lloyd Wright in the late 19th century contributed to development of biomorphism in the post-war period. American art historian Alfred Barr used that expression in 1936 to describe a condition based on classical concept of forms created by forces of nature [1].

Organic design as a method used by C. R. Mackintosh and F. L. Wright involved development of solutions leading to creation of a holistic work of art. As a result, an entire architectural plan was developed in such a way so as to make the end result more significant than a sum of its details. In other words, they wanted to materialize at least an abstract essence of nature in the work, in an attempt to convey its spirit. In 1940, when organizing a contest “Organic Design in Household Environment”, which took place in the Museum of Modern Art (MoMA) in New-York, an American architect and industrial designer Eliot Noyes offered a definition of

organic design as a “harmonious combination of parts within the whole in accordance with structure, material and intention” [7, p.131-132]. With appearance of computer-aided design of automated production organic design gained more extensive use [7, p.133]. Like their predecessors Charles Eames and Eero Saarinen, today’s designers, such as Ross Lovegrove, strive to develop essential “organic design” by using cutting-edge materials and industrial technologies. Unlike organic design, biomorphism of the post-war period “copies and often distorts forms found in the natural world for purely decorative reasons” [7, p.50]. With development of technologies in the late 20th century on the whole and appearance of new approaches to design in particular, semantic field of biomorphism went through some changes. “Digital algorithms appeared, able to generate biomorphic structure, forms and surfaces, and programmed tools of sculpting and morphing enable to conduct design process similar to creative process of sculptors” [17].

For instance, Dutch designer Joris Laarman describes his own design approach using biological processes as an example, such as growing of trees – one of the longest living organisms on the Earth. With time active growth of a tree in height slows down, and the tree gains mass due to its trunk and side shoots, “building up” material for strengthening the tree structure where it is necessary. Drawing parallels between natural forms of Moderne, Art Nouveau (“New Art”) in France, Streamline Moderne as an American branch of Art Deco (“Decorative Art”) and organic design of the post-war period, J. Laarman points out that “due to development of digital and industrial technologies it is possible to use natural principles as a tool for creating a form in the context of evolutionary process” [3].

Authors of the concept “biological paradigm in architecture” Michael Hensel, Achim Menges and Michael Weinstock noted that “...all disciplines are in the process of deep revision, and within this process all concepts based on studies in biology, gain a new momentum becoming a source of inspiration and new paradigms in various spheres of creativity.” [6, p.12].

It should be noted that development of biology and its interdisciplinary ties as applied to architecture and design found its way into morphogenetic design – one of the innovative and promising trends, which is not only a part of computational design, but also reflects “organic logic of existence of open systems typical for synergetic picture of the world”.

Thus, a key notion in one or another theoretical and methodological concept of application of innovative processes in designing efforts of architects and designers is the notion of morphogenesis. Multidisciplinary nature of the concept of morphogenesis is manifested in its application in numerous systems of sciences, including biology, geology, engineering, crystallography and other sciences. Initial meaning of this notion lies within the sphere of biological sciences, and etymology of its constituent units (morphê – “form” and “genesis” – “appearance”) means “appearance and development of organs, systems and body parts of organisms in individual (ontogeny) and historical or evolutionary progress (phylogeny)”. Morphogenesis addresses a number of fundamental issues of appearance and further development of biological forms and structures at different levels: from separate cells to numerous groups of tissues and their further development into organs and entire organisms.

In architecture and design morphogenesis may serve as a synonym of form-making, envisaging the process of occurrence and transformation of an optimum form of an object on the whole; it may serve as a point of contact for diverse areas of human life. For instance, Stanislav Roudavski in his work “Towards Morphogenesis in Architecture” highlights potential possibilities and advantages of coherent study in architecture and biology [19]; it may be considered as a methodological approach in design. In his definition of digital morphogenesis Branko Kolarevic, Professor of Architecture in Calgary University, underlines that priority of digital potential is not a presentation of a design solution developed for one or another project, but its full-scale formation and further transformation [16]. In this case, as Bilge Müge İçmeli states in his article “Digital Morphogenesis in Architectural Design”, “a designer determines

internal production and creative logical patterns that provide various possibilities for form-making process” [1]. Thus, focus of architectural morphology oriented on appearing and adjusting properties of the form shifts from the pole of “form making” to the pole of “form searching”. Therefore, key notion in one or another theoretical and methodological concept of application of innovative processes in designing efforts of architects and designers is the notion of form-making, i.e. morphogenesis. The notions “form-making” and “composition” have a similar understanding of the process of creating a new form, a new reality, a new product in architecture, design and art.

It should be noted that the essence of the notion “composition” does not have a straightforward definition in research and art history literature. It was Aristotle who wrote that one should go from things perceived as a whole to their constituent parts, because the whole would rather be marked by feeling, and the common thing is something whole, since the whole includes a lot like parts. Such correlation we see in science, art, architecture and literature. This applies to composition in any human work. For the first time this notion was used by the famous Italian scholar, architect and artist L. Alberti. This notion was interpreted differently by famous artists of the past centuries. According to C. Van Mander composition is “harmony, i.e. completeness, sense and reasonable basis, skill and universal experience”. P. Rousseau writes that composition exists from the moment when objects start to be depicted not only for the sake of themselves but so that their appearance would convey reverberations they arose in our soul [8].

Composition (Latin “compositio” – making, contriving) – is a process of form harmonization, where all its characteristics are identified and unified, including dimensions, proportions, rhythmic structure, texture, colour, material and spatial concept of a work of art. Composition is a state of highly-organized form, intended structure of a work of art, achievement of interrelation and harmonious unity of all its elements. “Composition of a work of art is a closed structure with fixed elements connected by the unity of sense” [8]. Composition is one of the tools of artistic expression in fine arts, architecture and design, an arrangement, a structure, a framework of a work of art driven by its content, nature and purpose. Therefore, composition is an element of organization of an artistic form, subordination of components to one another and within the whole (integrity).

Structure of the theory of composition consists of a sum of notions: categories, properties and qualities, laws and rules, techniques and tools.

In theoretical literature the most important matter is a question regarding laws of composition, their essence, number and impact on creation of a harmonious artistic, architectural and designer form. There is no doubt about objectivity of existence of the laws of composition, but some scholars treat them as patterns and divide them into primary and secondary, which in our opinion is not correct, since the very essence of the law means its priority and permanence for any kind of creative activity.

Such discrepancy is a result of confusion of the notions “laws of form-making”, “laws of the art”, “laws of a work of art” and “laws of composition (form)”.

“Law of composition” shall mean something identical, constantly repeated, necessary, arising out of connection and interrelation of phenomena of objective activity. It is objective and expresses something, without which a phenomenon or an item cannot be.

Interrelation between general laws of composition and general laws of nature was pointed out by many scholars and artists. Goethe stated that art was nature created by man and it required actions from an artist in accordance with laws of nature [13, p.188].

We believe that the most logical view of this matter was offered by the famous Ukrainian educator, art historian and artist F. V. Kovaliov: “It is possible to discover laws of composition and to build a scientific theory only when we do not build laws of composition based on conclusions, but proceed from real existing laws of form-making in nature and art.” [13, p.42].

Form-making is a category of architectural and artistic activity, design and engineering creativity, expressing the process of construction and creation of a form. Therefore, theoretical notion of form-making may be defined as follows: form-making is a theoretical science studying patterns of form creation, principles and methods of artistic design aimed at creation of a structure, making technology and properties of basic materials in view of aesthetical factors. Form-making is a search and creation of works in artistic layout as a unified form and content based on requested engineering aesthetics in architecture and design. In our study form-making is identified with morphogenesis because both rely on existing general laws of nature.

Any living being or an object is made of parts and forms a whole. This is the first law of form-making. Parts of the whole are in certain correlation to one another and to the whole – this is proportionality or the second law of form-making. Type of arrangement of the parts in the whole is expressed in the third law of form-making – symmetry. Parts of the whole are arranged in a certain pattern (rhythmical) – this is the fourth law of form-making. Parts are united around the whole – this is the fifth law of form-making. Relying on general laws of nature we emphasize five laws of form-making.

Based on the above it is fair to say that essence and number of general laws of composition as a main component of art is determined by laws of form-making. There are five laws of form-making, and thus five laws of composition: **law of the whole, law of proportions, law of symmetry, law of rhythm, law of identifying the essential in the whole.**

Conclusions. Summing up, in our study the notion “morphogenesis” may be identified with the notion “form-making” in the meaning of the process of creation of a new form, a new reality, a new product in architecture, design and art, based on general laws of nature. In other words, general laws of nature determine five “laws of form-making”, which relate to “general laws of composition” in architecture, art and design.

Study of the laws of form-making in nature should inspire architects- and designers-to-be to develop creative thinking and professional skills and to use them in future experiments.

It is planned to aim **further studies** at clarification of the notion “formal composition” and application thereof in designing efforts of architects and designers.

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ТЕОРЕТИКО-МЕТОДОЛОГІЧНІ КОНЦЕПЦІЇ ФОРМОУТВОРЕННЯ В АРХІТЕКТУРІ, ДИЗАЙНІ ТА МИСТЕЦТВІ

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Анотація. В статті розглядаються концепції формоутворення в архітектурі, мистецтві та дизайні в кінця XIX початку XX століття. На передній план виходить вивчення взаємозв'язку внутрішньої структури і зовнішньої форми в органічних і неорганічних об'єктах, що видається більш істотним, ніж просте відтворення і повторення природних форм. Вивчення цих змін лягло в основу течії метаболізму, що зародилася в середині XX століття в архітектурі та містобудуванні Японії, біоморфізму в дизайні та морфогенезу в Америці. Ці теоретико-методологічні концепції формоутворення мали великий вплив на проектну діяльність архітекторів і дизайнерів всього світу. Нажаль, це суттєво не вплинуло на розуміння загальних законів формоутворення і композиції в радянський та пострадянський періоди архітектурно-художньої освіти.

Значна кількість публікацій, присвячених вивченню загальних законів, принципів або категорій композиції, не розглядає їх у взаємозв'язку з об'єктивними законами формоутворення. Це спотворює формування цілісної системи знань у майбутніх архітекторів і дизайнерів з художньо-образного формоутворення.

Мета дослідження полягає в уточненні понять «композиція», «закони композиції», «загальні закони композиції», їх кількість і зв'язок з законами формоутворення (морфогенезу).

Для досягнення мети були поставлені такі **завдання**:

– розглянути деякі концепції, що розкривають формоутворення (морфогенез) в архітектурі та дизайні;

– виявити зв'язок законів формоутворення з загальними законами композиції.

Ключовим поняттям в тих чи інших теоретико-методологічних концепціях застосування інноваційних процесів в проектній діяльності архітекторів і дизайнерів є поняття морфогенезу. В архітектурі і дизайні морфогенез може виступати як синонім терміну «формоутворення», припускаючи процес виникнення і перетворення оптимальної форми об'єкта в цілому. Поняття «формоутворення» та «композиція» мають спільне розуміння процесу створення нової форми, нової реальності, нового продукту в архітектурі, дизайні та мистецтві.

Взаємозв'язок загальних законів композиції з загальними законами природи підкреслювався багатьма дослідниками та художниками. Спираючись на загальні закони природи, ми визначаємо п'ять законів формоутворення. Виходячи з цього можливо стверджувати, що сутність та кількість загальних законів композиції, як головної складової мистецтва, архітектури та дизайну, визначається законами формоутворення.

Ключові слова: теоретико-методологічні концепції, формоутворення, морфогенез, композиція, закони композиції, загальні закони композиції, закони формоутворення.