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COMBINATORY IS RECEIVED FOR DESIGN AND FURNITURE CONSTRUCTION

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ABSTRACT:

Combinatorics is a mechanism that, according to certain rules and laws, generates a wealth of forms with given properties. of methods for designing objects of typified elements. What designers are striving for is the production of various geometric shapes where the size and character of these shapes, their interrelationships, and the colors used during operation have become the defining motives for abstraction. These abstract compositions created with the help of mathematical combinatorial patterns were conceived as combinations of shapes and colors. From which many possibilities are created for different combination and construction of the furniture.

Keywords: composition, form, furniture, design

1. Introduction

The interaction between art and geometry has existed since ancient times. Since the early decades of the twentieth century, beginning with experiments in Cubism and Expressionism, visual art has evolved from figurative to abstract. A number of artistic movements have emerged, some inspired by mathematics, and some, such as Constructivism, Geometric Abstraction, and Minimalism, have been inspired by the simplest forms of geometry [2,3,5].

Form and formulation are the subject of study in all sciences-natural, social, and humanistic. Structural combinatorics, which is closely related to formulation, as a mathematical term is borrowed from the theory and practice of artistic design and deals with the construction, creation and conception of new forms, as well as the organization, structuring and construction of matter in certain forms. exist in space [1,9].

The constant development of the industry imposes conditions for unification, typification and serial production of pieces of furniture and other design products. Due to the nature of the production itself, it is necessary that the forms of the products be maximally simplified and adapted to the industrial technologies.

The need for such a dynamic, intellectual and creative activity has arisen from the past, and today it results in numerous objects that have different applications in human everyday life.

2. Exposure

The essence of constructive activity with combinatorics.

At the core of the complex feature of constructive activity is the possibility of individual participation and its character in different forms of work. The constructive activity includes in itself a dynamic, impartial and independent unity of intellectual and practical work and activity with a creative, creative character [4,6,8].

The creation of structures and forms with a certain functional significance, due to its creative character provides favorable educational opportunities for the participation of designers in the competitive activity, for their intentional involvement in problematic situations and solving tasks of different nature.

The content scope of the activity includes the overall process of the creative activity - formulating the problem, through the design, to the construction of a prototype, model or real object. The complexity of this activity is also expressed through the synthesis of activities of various nature - artistic / pictorial, decorative, combinatorial, compositional / technical, graphic, technological, etc.

The rich and varied final solutions of the construction / combining tasks create a favorable opportunity for the development of creative artistic and technical abilities.

Creativity as a combination. To get into the essence of creativity, it is important to understand its nature, its dynamics as a process, the artist's attitude towards the artistic activity and the activity of creating something new. In the creative process, new products are not created all

at once from nowhere, but through the transformation of things that exist in the objective world, by changing their form, composition, structure, relationship, by combining a new system of elements that previously belonged to another system, either by grouping or a new way of connecting the elements of that same system (Figure 1).

Nature and matter first appeared, and man is the product of their development. In this regard, the whole variety of things in nature is a combination of a limited number of elements. The artificial environment - the second nature, occurs as a result of the combinatorial transformative activity of man. All its objects are essentially new combinations of already existing elements, objects, phenomena [7,11].

In itself, the visualization of new systems is not considered creative. Creativity is actually a form of activity and action of a certain subject, person, social group or society. The person who creates it has to meet many requirements: the ability to accept the task, speed of thinking, originality, ability to be variable, understanding combinatorics, analogy and synthesis.

repeated. Because every geometric shape is a complete shape. Each geometric figure can serve as a motive for the development of a combinatorial decorative element in the design of furniture. In our opinion, it is important to solve two main tasks when searching for the combinatorial element: the originality of the various composite techniques and its decorative and aesthetic value [3,10].

When designing furniture, a decorative combinatorial element must fit into any structure, be part of the composition. The search for a decorative combinatorial element based on geometric shapes is the most productive. In nature, there are different geometric shapes. Decorative combinatorial element, based on the study of nature, provides unique geometric designs - flower petals, tree leaves, fish, animal shells and form the formation of their structural type (geometric parameters).

Furniture design combinatorics allow you to transform the design of jewelry, including constructive, technological and functional completeness. The interchangeability of the combinatorial-modular elements, the variety of designs lead to high efficiency of the models. The use of

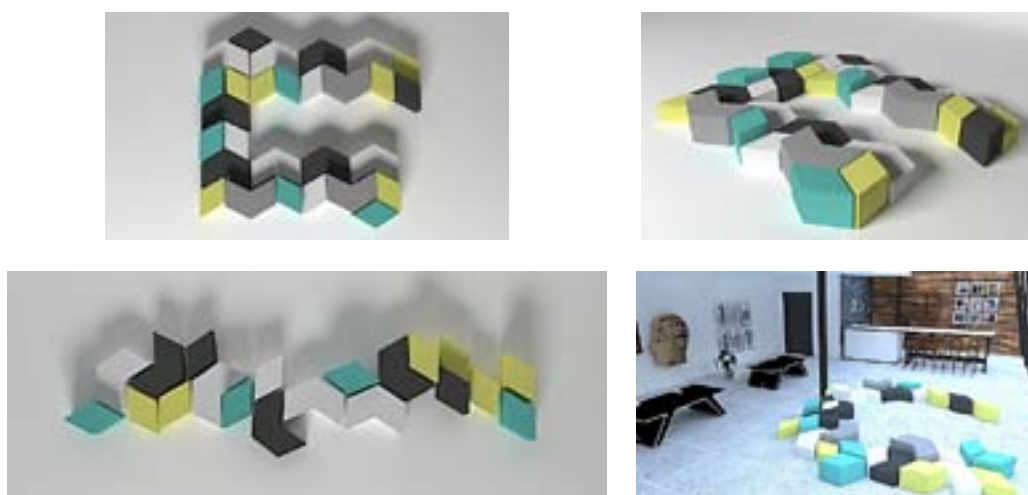


Figure 1. Creativity as a combination

Module and modular order. The module is a unit of measure. The modular construction laid the foundations for combinatorics. The module can be located in a pre-designed network. Based on the same network and one module, you can create many compositions. The difference of the images is obtained by changing the properties: shape, size, colors of the module. When designing furniture, great attention should be paid to the solution of decorative combinatorial problems. Working skills in this area allow you to unleash creativity and increase the range of transformations of different pieces of furniture. The basis for creating decorative combinatorial elements are geometric shapes. Designers use geometric shapes in terms of aesthetics, because even the simplest of them (dots, lines, triangles, etc.) give a decorative effect when

the combinatorial module in the creation of furniture contributes to the rhythmic consistency of the parts and the harmonization of the product as a whole. When creating static, dynamic compositions of geometric shapes, the main task should always be to organize a holistic structure, a clearly expressed idea of a certain category, easily seen by the eye as something indivisible. The static composition is an underlined expression of the state of rest, firmness, stability of the form in all its structure, in the most geometric basis. The dynamics of the composition is related to the proportions and ratios of quantities. In the case of equality of relations, it is characterized by a static character, while with their contrast dynamism is created, while the visual movement is obtained in the direction of greater magnitude.

When developing the combinatorial element when designing furniture, precise calculations and accuracy are required. The calculation must be such that each side of the combinatorial element when connected corresponds to a modular solution. Then you get a clear, constructive and complete form of the composition, logically justified in a decorative and rhythmic and aesthetic sense. Guarantee for successful and competent construction of any furniture in its integrity and functional expressiveness. Thus, combinatorics in furniture design provides a rich material for creative thinking and contributes to the development of skills and abilities. In fact, almost all designed works for the production of furniture on individual elements and shape parameters, the whole process of creating the model is a continuous creative flow of searching for combinatorial solutions. and technology-based elements, and focuses on quality indicators and the emergence of models. Thus, decorative combinatorial elements in furniture design are part of the universal mechanism for the formation of art forms. Through the use of this method, we get not only their diversity, but also the economic efficiency of the process, because many forms are the essence of derivatives from the combination of the same initial elements.

Relatively connected and independent stylized images (elements), called modules, equal in shape can participate constantly in the construction of a modular decorative composition (Figure 2). This type of composition has great application in applied decorative art and architecture.

The composition is developed in such a way that the layout of each module is aligned with the adjacent modules next to it. There are many combinations with which you can get a decorative image with the help of modules. The modular composition can be created by „turning“ or by alternating (replacing) in the network; on the principle of axial symmetry between adjacent modules; by rotation (turning the module within 4 squares or by parallel alignment in a specific direction.

Modular compositions can be constructed from embossed modules or arranged in a flat surface. Such compositions are used to decorate objects and form articulatory parts.

Modular compositions placed in a network are also designed as spatial forms in the architectural environment. They are used in the construction and decoration of buildings, partition bars, furniture as well as in the design of children’s toys and playrooms.

The variety of forms that differ in type, size, and color, as well as the contrasts between them, have been used in compositions for decorative objects and architectural art solutions since ancient times.

Based on the modules, the modular networks are created, which invisibly participate in the organization of the elements in harmonious unity (Figure 3).

They control the design and construction of the product, regardless of its character. The modular network also al-

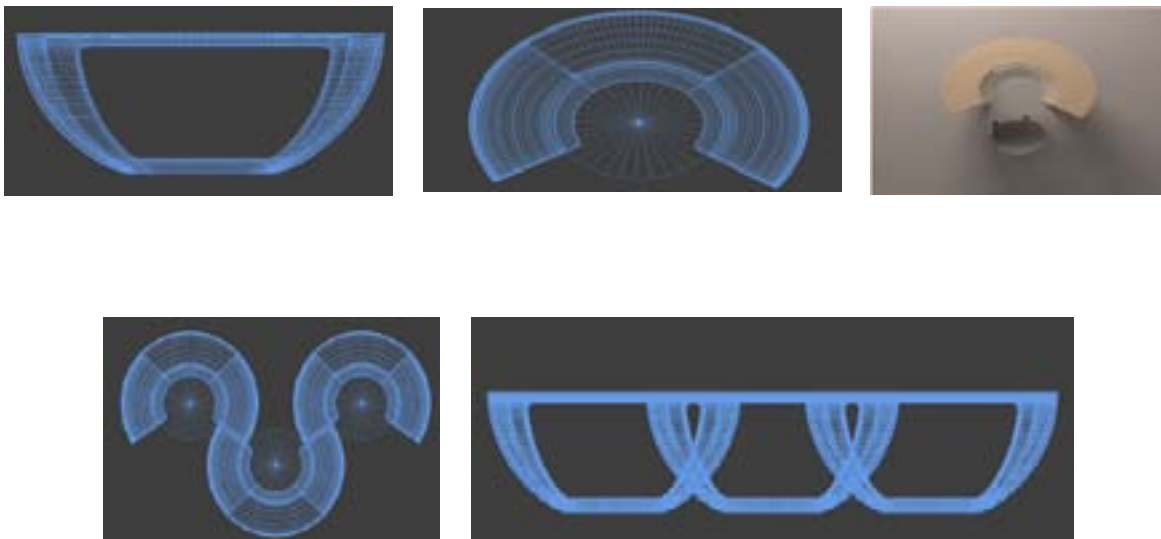


Figure 2. Module

With the help of modular decorative compositions, many elements in design and architecture are formed, such as decorative walls, partition bars, floors, etc.

In the design, a previously drawn network (regular square), triangular or irregularly shaped, is used as an auxiliary means for arranging the modules in one composition.

lows the application of electronic programs in the design process. They are widely used in graphic design, architecture, interior design, furniture design, industrial design and more.

At the base of the modular network is the circle, which is quite a suitable module but its tightness is much higher



Figure 3. Application and repetition of a module in design

compared to the square and has a special application in the field of furniture design.

3. Conclusion

The characteristic phenomena of combinatorics and its specifics and advantages for creating a modern design are that it offers variants such as enrichment of new spaces, beautification of the composition. This design leads in modern times with implications of modernism and how modular elements should be used in different types of spaces.

Combinatorics, as a method of building shape in design, is largely borrowed from nature. The rules and principles of using output elements (morphotypes) are preserved. The approach, inspired by nature, fits into the understanding of design methods explained by the emotional-intuitive and mimetic characteristics of the creative process.

Through the researches and analyzes for the application of the structural combinatorics in the design and the ways of transformation of the forms, the aesthetic appearance and the existence of the designed objects in the space are indirectly influenced. In this study, the opinions of famous designers are presented, some of which classify furniture as a function and others as an art. With the help of structural combinatorics and the creation of forms with the help of combinatorics, the pieces of furniture that are designed at the same time serve both functionality and art.

A specific feature of combinatorics that is very close to formulation is the possibility of multifunctional use of designed objects and their repeated sorting in various ways. This feature is directly related to the unified mass production. They can be used for multiple purposes, to be transformed or when they do not have a specific function, they act as a work of art in space.

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