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Modular Principle of Design in Industrial Design

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Abstract:

The article discusses the application of the principle of modularity in industrial design, the fundamental importance of the modular method in the design activities of the designer, as well as the features of the application of the modular principle of formation.

Keywords: industrial design, module, formation, design, composition, association, project.

There are many fields of activity in industrial design - graphic design, web design, environmental design, exhibition space design, industrial design, etc. In any case, the modular principle of formation is used in each of these areas. In the era of industrial production and unification, it is the modularity of elements that allows the development of objects that can exist and function separately due to the independence of the modular form, and that are combined into more complex, composite objects.

The purpose of this article is to determine the specific features of the application of the modular principle of formation in general design and in particular in industrial design. This allows us to see how consistent and complete the principle of modularity is in modern industrial design.

A module is a key element of sequential design in shaping architecture and design. It serves as a parametric, geometric and constructive basis for formation. Dimensional and modular integration methods were developed by the founders of design in the 1960s, 1970s and early 1980s.

The module is still in demand in modern design activities. Often, a design project is developed under predetermined constraints. Modularity is a special type of constraint.

In design, "module" (Latin modulus - small measure) is a unit of measurement that serves to give proportion to the whole object or its parts. A huge number of projects are being developed based on modularity - from fonts to environmental and industrial objects. For example, the project of the Korean designer "Grid Brick". A modular font project made in modular wooden cubes. By combining these cubes, you can build all the letters and numbers of the alphabet.

We can say with confidence that modular formation is an important part of design activities and the educational or training process of design students. The modular principle is used everywhere - in typography, polygraphic, environmental and presentation projects, industrial design, etc. In industrial mass production, economies of scale and variety of forms are achieved due to modular formation.

Using the modular principle of creating a form in design, you can come to a new way of developing space, where an independent module is already a complete unit and can be used independently. In addition, the form can be constantly expanded, adjusted in a new way depending on economic opportunities, social, aesthetic and other consumer needs. This is especially true during the crisis that the economy is experiencing today: a person cannot buy the whole product at once, but can do it in stages or replace not the whole thing, but only the elements that wear out during use. Another

reason for the growing interest in modular forms is the spread of ecological ideas, the desire to cause minimal damage to the outside world.

Let's consider the features of this principle of formation with examples.

1. Simplicity and compactness of the design, which ensures both the ease of design and the ease of perception of the modular object. These qualities are reflected in the design of the Korean designer Jung Jae Yup, Zen furniture (Fig. 1) according to the functions of the space. In this case, the modules are a stylized wooden "conversation cloud" similar to a comic book figure and an additional geometric component. Despite the good association, the form is clean and compact. In addition, the comic strip element offers layout options.

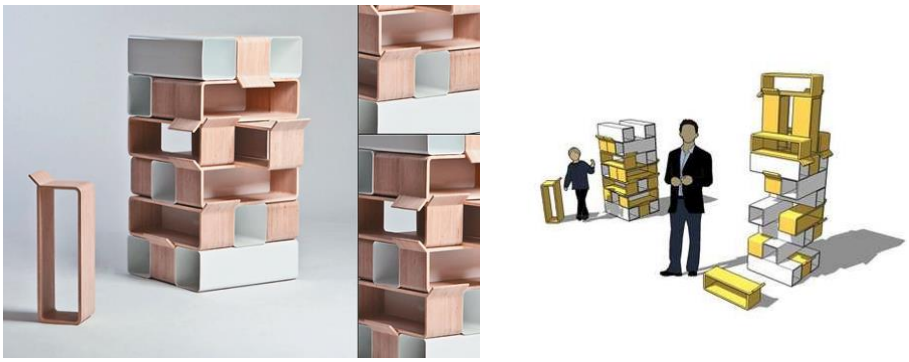

Figure 1. Designer Jung Jae Yup. Zen module furniture.

2. Integrity of form. This parameter, which is important for achieving the harmony of the objective world, becomes especially important with the development of man-made civilization of a "composite" nature. Aristotle also distinguished man-made, natural-and "soulless" artificial (composite) forms. When designing parts, the designer should always think about whether they will be integrated in the finished product, whether they will be accepted as a whole, because only it can optimize the spiritual state of the person and be evaluated from an aesthetic point of view.

Accordingly, a module requires not only the ability to exist separately, but also the ability to organize, achieved through thoughtful systemic relationships with other elements.

This quality is highlighted in the Baby Tower - Toddler Tower (picture 2) children's furniture by London designer Mark Newson, where all the elements fit together perfectly. The illustrations show that the form consists of two types of modules, which can be replaced when connected and supplemented with similar sets. If necessary, a bunk bed is placed on two sleeping places and children's chairs or surfaces for games, or the second bed is used to store toys. In addition, these modules can be used and added separately, which is relevant, for example, in small kindergartens placed in a small area. Please note that integrity is a particularly important quality of the living environment in the children's space, because it provides a sense of security, stability, harmony, without which the child cannot develop normally

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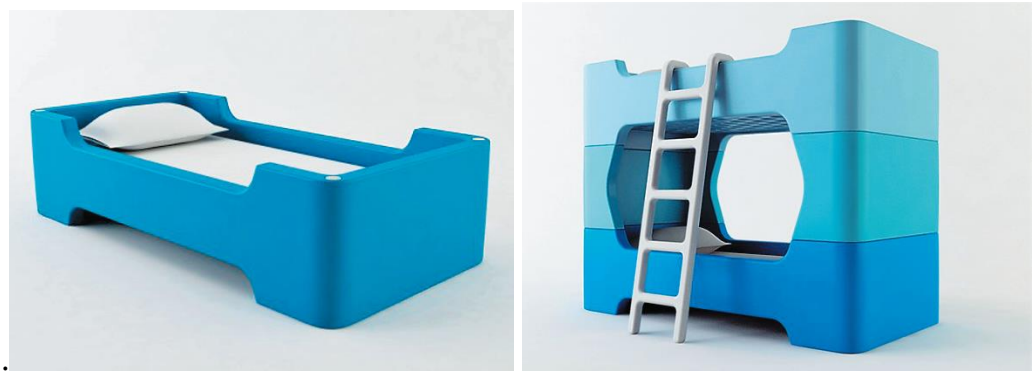

Figure 2. Children's furniture Toddler Tower ("Baby Tower"). The Designer Is Mark Newson. UK. 2011

3. The specialization of the form occurs as a result of taking into account its interactive development by the consumer. Using modular solutions, a person understands only the elements he understands and builds them according to his needs. This leads to a high level of rationality of the design and, in turn, ensures the individualization of forms. An example of this is the multi-module furniture collection of the Italian studio Heyteam, in which not only shapes, but also color serve as instructions for the user (Fig. 3). The simplicity of the shapes may not personalize this project enough. Together with color and taking into account the variety of solutions, they become unique for the consumer, that is, in the process of interactive interaction with the object.

Picture 3 modular furniture Multiplo. Design: Heyteam studio. Italy. 2010

4. The ability to creatively "live" a modular form through interactivity is often a theme for children and teenagers. This aspect can be considered in the example of Swedish designer Maria Wang's children's furniture (Fig. 4), which offers a set of modules (constructor) as a starting point from which you can assemble children's furniture or any other compositions. The boundaries of the formation are defined by the designer, within which the consumer can change and sort the forms.

Figure 4 children's furniture. The Designer Is Maria Wang. Sweden.2008

Stylized, realistic, flat and three - dimensional geometric shapes, the same and different sizes-the variety of modules created provides an almost unlimited area for design development. A module always attracts the attention of users and distinguishes an object from others, whether it is a modular grid in which the layout is structured or an object made up of modules.

Summarizing the above, we can conclude that the modular principle of formation is used.

1. The modular principle of formation is best suited for the tasks of designing bulk products in the conditions of large industrial production. This ensures both economic efficiency and various forms.

2. The modular principle of formation can be applied in environments where the flexibility of space is acceptable, and cannot be applied in areas that require constancy, stability. It can depend on the individual mental, age characteristics of the consumer.

3. Modules must be the same or their number is limited and strictly calculated, subsystems can be added.

4. The loss of the module cannot lead to the destruction of the entire form. Manufacturers should consider the possibility of its restoration, especially in industrial design.

5. All modules must overlap, overlap, have elements that "require" the consumer to have the character of working with the form.

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