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DOI <https://doi.org/10.30525/978-9934-26-236-4-23>

CURRENT PROBLEMS OF SCIENTIFIC AND TECHNICAL CREATIVITY IN THE TRANSFORMATION OF MODERN ENVIRONMENTAL DESIGN

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Statement of the problem. Design Development Priorities XXI Art. associated with the concept of sustainable development and reorientation from consumer aspects to the search for innovation and the creation of creative sustainable socio-cultural and environmental-economic solutions. The principles of balance, resource saving, energy efficiency, eco-balance define new tasks of modern design in the formation of living arrangements, solving urgent problems and demands of society. For example, the search for innovative design solutions in balance between the artificial and natural environment using digital design technologies, modern designs, technologies, materials with new qualities and capabilities [1, 2].

Results and discussion. The main directions in the development of modern design are the widespread use of computer modeling, orientation to nature and the transition from the design of individual objects to the design of entire systems [3]. For example, innovations in materials, together with the advent of advanced analytical programs, make blue design realistic.

According to Günter Pauli, if "green design" means creating objects that are safe for the environment, then "blue design" will also bring benefits – for example, improve water and air quality, participate in the regulation of the ecosystem [4].

Such design decisions require algorithms with adequate processing power to analyze and test a significant number of possible options, as well as design experts who are able to explore the environment of the design object, determine tasks and parameters using data. So, at the basis of the solutions of modern ecological design is the accuracy in determining the parameters for optimizing the choice. Although it should be borne in mind that the widespread use of computer software products not only provides the designer with effective opportunities for modeling and shaping, but they can limit their creativity to the limits of artificial intelligence tools.

The development of functionality in modern eco-design is associated with shaping that imitates the shaping in nature. As the theory and practice of parametric design show, the more cycles of computer «evolution» a design object goes through, the more it acquires organic, natural forms [1, 5]. After all, nature, on the basis of the evolutionary development of forms, is deprived of unnecessary costs, providing solutions that are optimal in terms of resource consumption and reliability. That is why people in everyday life and technological progress have long borrowed many ideas from nature (wings, blades, nets, containers, etc.).

Numerous examples of the application of bionic trends in design prove the prospects for their application, the effectiveness of implementation, the formation of a new lifestyle based on the development of environmental consciousness and the search for new forms of harmonious coexistence with nature [6].

A promising trend of modern design is the analysis and search for natural analogues in the interaction of different resources. Design solutions appear when aesthetics are combined with the functions of recognizing and responding to the environment; in the design of structures, the functions of restoration and self-sufficiency appear, for example, based on the development of nanotechnology, innovative energy supply technologies. Accordingly, organic forms of objects appear in modern eco-design with optimization for a given function, taking into account the influence of environmental conditions, solving the problem of saving resources.

Conclusion. Thus, the basis of modern ecodesign is the implementation of the idea of complex interaction of environmental objects, ecosystems. The request for the creation of complex solutions of ecodesign, similar in complexity to natural ones, requires a transition from the individuality of the

creative process to teamwork, cooperation in a team of engineers, programmers, technologists and designers.

It should be noted that the evolution of the bionic approach in ecodesign has led to a new stage, which requires the generalization of various areas and concepts and the formulation of general principles for the application, education and development of ecodesign based on the analysis of complex systems and synergistic principles in modeling.

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