

Structural similarity of sign systems in culture and science

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In this report the problem of structural similarity of various sign systems is discussed: works of art creativity and models of chemical structures, genetic and linguistic codes. What does this structural similarity mean? Possibility of existence of universal metalanguage of culture through which the nature and the person create is suggested. Structural similarity (in some cases – isomorphism) of sign systems, relating to various spheres of culture, is objective reason for possibility of universal metalanguage culture. What proofs are provided?

Many ornaments on mausoleums and mosques in Islamic art precisely correspond to motives of inorganic crystal structures in polyhedral representation, especially structures of silicates.

The space of the Dutch artist Moritz Escher, structured by cubes, reminds the space in a mineral «sahaite». In this case similarity is associative and conditional.

An interesting example of structural isomorphism is the structure of architectural masterpieces with geodetic surfaces and fullerene molecules. Fullerene structures and geodetic domes are structurally similar to the forms of some biological organisms, for example, to the simple viruses and radiolyariyas.

Structural analogies of inorganic substances with spiral structures and the structural organization of viruses of tobacco mosaic are discovered. Among spiral structures the major place is taken by a DNA double spiral. The DNA molecule provides storage, transfer from generation to generation and implementation of the genetic program of development and live organisms functioning. In art works the spiral repeatedly drew attention of artists. It is represented in jewelry and ornaments. The bible Babel tower was under construction on the basis of a spiral. The helicoid mosque in Samarra (Iraq, IX century) is another example known. For the first time the Italian baroque architect Francesco Borromini created helicoid dome of Sant' Ivo church in Rome. The principle of a double spiral found reflection in the work by the artist-constructivist V.E. Tatlin in the monument to the III International offered and erected in 1919 - 1920. The most surprising fact is that Tatlin applied a double spiral 34 years prior to its discovery in DNA molecule structure.

Structural similarity between two information sign systems (a genetic code and a code linguistic) is noted as well. Fundamental similarity of these sign systems is shown in the identical principles of their structural organization.

The examples of different sign systems of similar structural organization presented in this work testify that universal metalanguage of culture probably exists [1, 2].

The given materials and reflections are returning us to the old classical problem on a new round of cultural development that is searching the principles of integrity and structural unity of the world in which we live in.

[1] Talanov V.M. Is the universal metalanguage of culture possible? Novocherkassk: South-Russian Polytechnic University (NPI), 2013. – 88 p.

[2] Talanov V. Structural similarity of sign systems as the basis of metalanguage of culture. Acta Cryst. A, (2014), 70, C1429.

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