

SYMMETRY AND ORNAMENT

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***Abstract:** Throughout history there were always links between geometry and the art of painting. These links become especially evident when to the study of ornamental art we apply the theory of symmetry. Therefore, ornamental art is called by A. Spaiser "the oldest aspect of higher mathematics given in an implicit form" and the "prehistory of group theory".*

The idea to study ornaments of different cultures from the point of view of the theory of symmetry, given by G. Pólya and A. Speiser, was supported by the intensive development of the theory of symmetry in the 20th century. This caused the appearance of a whole series of works dedicated mostly to the ornamental art of ancient civilizations, to the cultures which contributed the most to the development of ornamental art (Egyptian, Arab, Moorish, etc.), and to the ethnical ornamental art.

Only in some recent works, research has turned to the very roots, the origins of ornamental art- to the ornamental art of the Palaeolithic and Neolithic. The extensions of the classical theory of symmetry- antisymmetry and coloured symmetry, made possible the more profound analysis of the "black-white" and coloured ornamental motifs in the ornamental art of the Neolithic and ancient civilizations.

This work gives the results of the symmetry analysis of Palaeolithic and Neolithic ornamental art. It is dedicated to the search for "ornamental archetypes"- the universal basis of the complete ornamental art. The development of ornamental art started

together with the beginnings of mankind. It represents one of the oldest records of human attempts to note, understand and express regularity- the underlying basis of any scientific knowledge. The final conclusion is that the most of ornamental motifs, which have been discussed from the standpoint of the theory of symmetry, are of a much earlier date than we can expect. This places the beginning of ornamental art, the oldest aspect of geometric cognition, back to several thousands years before the ancient civilizations, i.e. in the Palaeolithic and Neolithic.

The contents of his talk were published in Jablan's recent book with the same title.