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Symmetry analysis of Neolithic painted pottery from Republic of Macedonia

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Abstract

Neolithic pottery from the Balkans and Anatolia is well known by its remarkable and specific decoration. Very often the visual features of these objects are used for relative chronological determination of the excavated sites, without consideration of its potential for mathematical observation. The repertoire of patterns used for developing the compositional structures painted on the vessels provide abundant data for such analysis. Almost all of so far discovered fragments and completely preserved painted pots from these regions were decorated under several visual principles enabling precise disposition of the patterns onto spherical surface of the vessel. This decorative approach was established over the standards of Neolithic geometry which engage both symmetry and principles of visual entropy.

In same manner, the painted vessels from Early and Middle Neolithic settlements discovered in Republic of Macedonia provide variety of informations about the organization and structures incorporated over the decorated pottery. In the earlier phases these painted compositions were mostly based on The Four Rigid Motions of pattern disposition on one dimensional format, while later, beside using this concept the principle of antisymmetry was implemented in order a two-dimensional image to be composed.

This paper aims to detect all possible forms of plane symmetry, patterns and compositions applied within the decoration of Neolithic vessels from Republic of Macedonia, as well to promote geometric symmetry as possibility for reconstruction of decorated fragments.