

SYMMETRY ANALYSIS OF NEOLITHIC PAINTED POTTERY FROM THE REPUBLIC OF MACEDONIA

1. INTRODUCTION

Neolithic pottery from Southeast Europe 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 provides abundant data for such analysis. Almost all of the fragments discovered so far and completely preserved painted pots from these regions were decorated under several visual principles, enabling precise disposition of the patterns onto the spherical surface of the vessel. This decorative approach was established throughout the standards of Neolithic geometry, which engage both symmetry and principles of visual entropy.

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

This paper aims to detect all possible forms of plane symmetry, patterns and compositions applied within the decoration of Neolithic vessels from Macedonia, as well as to promote geometric symmetry as a possibility for the reconstruction of decorated fragments. Thus, methods of mathematical observation will be supported as a means for detailed examination of the vessel's visual potential and will be further implemented in tracing the elements of visual identities of communities inhabiting Neolithic Balkans.

2. NEOLITHIC IN THE REPUBLIC OF MACEDONIA

The beginning of the Neolithic in Macedonia has been dated to the second half of the seventh millennium BC (Fig. 1). The process of Neolithization started rapidly after the first wave in the Balkan Peninsula and introduced domestication, economy, architecture and new rituals and social relations among communities. Newly established communities mainly spread across the plains, close to rivers where they built their dwellings made of wattle and daub. The abundance of vegetation and animals insured firm development of

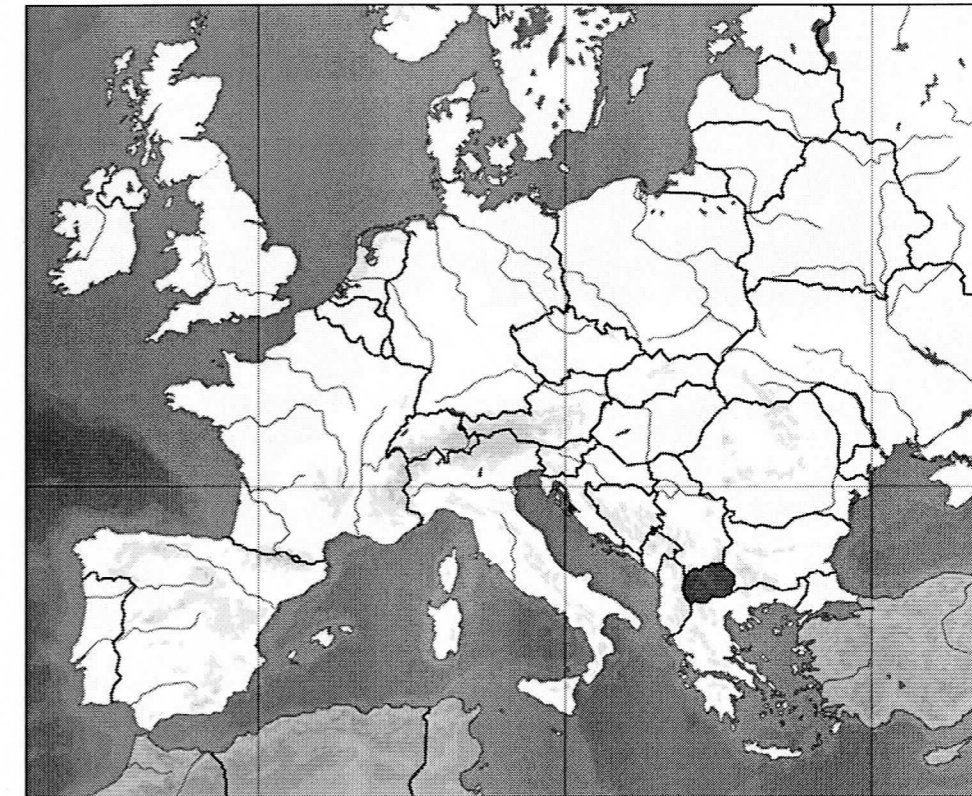


Fig. 1 – Position of the Republic of Macedonia in Europe.

the settlements and strengthening economic cohesion with those in the closer surrounding, as well as to those located far from the region. The import of the “exotic” materials within the settlements goes in the course of this process.

Newly established cultures were settling different regions and generating local identities, thus creating regional features, which later will be easily recognized by archaeologists. That way, several Neolithic cultural groups are confirmed, which were dispersed within geographically authentic and isolated areas (plains, lakes, rivers, etc.), but also emerging in different periods. As it is still traditionally ascertained, among the Early Neolithic cultural groups, those of Amzabegovo-Vršnik, Velušina-Porodin and Zlastrana groups are determined: the first one is located in the Ovče Pole plain, the second within Pelagonin plain, while the third on the territory of the Ohrid region (GARAŠANIN 1979; SANEV 2004). During the Middle Neolithic in the Pelagonian plain a new Trn cultural group emerged, whilst Velušina-Porodin and Amzabegovo-

Vršnik entered into their second phases. In the Late Neolithic the territory maintained by the Amzabegovo-Vršnik group demonstrated new cultural manifestations into Angelci-Zelenikovo group, whereas in the Ohrid region a distinct Ustie na Drim group has been confirmed (BENAC 1979; GARAŠANIN 1979; BENAC 1989; SANEV 1995).

All of these cultures displayed their own features in the pottery production, but also shared similarities along with other groups, mainly on the level of architecture, economy and religion, thus including similar stone and bone tools, figurines, "altars", ornaments, as well as dwellings (with the exception of those in Ustie na Drim which are palafites). As for the vessels, along with the "Neolithic package" pottery production was also established, which enabled developing the variety of vessels, as well as a wide range of techniques for their manufacture and decoration. Most of the vessels were made of coarse fabric, mainly used for storing raw materials and liquids, but also for the preparation of food, thus including pots, jars, plates, askoi and lids (FIDANOSKI 2009). Those belonging to fine pottery indicate a different approach towards modeling and conceptualization of the vessels. Due to their polished surface and fine fabric, these vessels were not intended for cooking, thus allowing more concentration on their outlook and decoration. Most of these vessels include cups and amphora-like pots. Painting with white, black or brown colour onto red polished surface was the preferred technique for their decoration. The creative approach towards the styles of patterns disposed on these vessels resulted with the visual identification of the community's identity with the visual principles implemented onto decorated pottery.

3. SYMMETRY AND ITS IMPLICATION WITHIN NEOLITHIC DESIGN

The most remarkable and representative attribute of the Neolithic painted vessels is their firm and structured decoration. These are earliest attempts confirmed when such disposition of the imagery forms is plainly evident on the territory within the Republic of Macedonia. The globular shape of the vessel itself enabled this kind of organized decorative visualisation, as well as the shape of the vessel itself facilitated the cyclical movement and intertwining of the forms. The organised disposal of patterns, incorporated within compositions placed in symmetrical relations, obviously demonstrates that the Neolithic communities maintained rational and logically developed perception of the space. The potters attempted to establish all possible symmetrical principles, to enshape them and to create visually reminiscent compositions. The visual approach, in which one imagery composition is transposed onto the surface of the vessel, suggests another innovation introduced in the Neolithic. Namely, it is referred to firmly defined principles of arranged imagery forms, determined and repeated during the period of several generations.

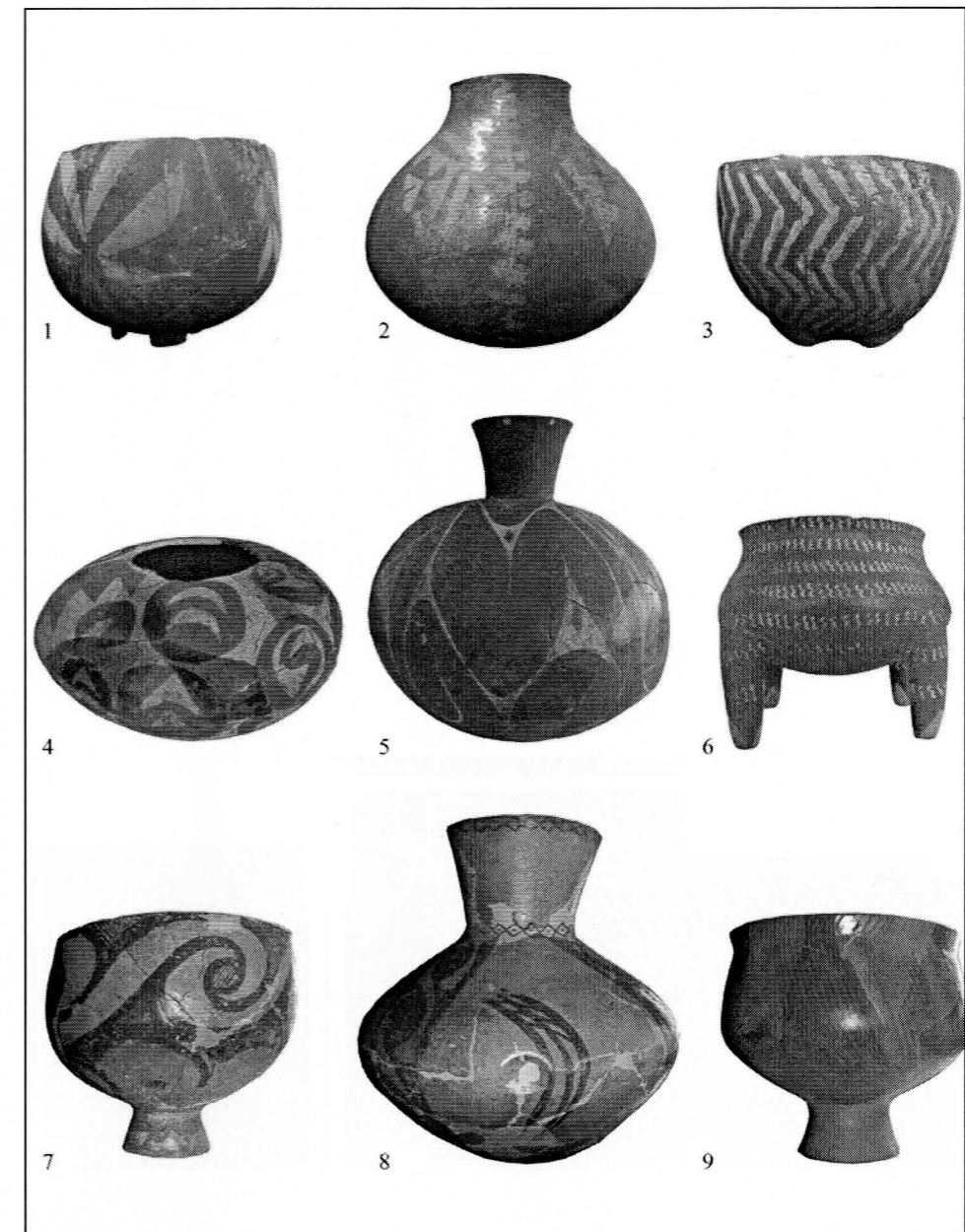


Fig. 2 – Early and Middle Neolithic painted pottery from the Republic of Macedonia. 1-3: Amzabegovo; 4-6: Veluška Tumba; 7-9: Madjari (photos by G. Naumov).

These points towards the existence of a Neolithic design, represented by established combinations of patterns, which on the one hand corresponded to the imagined idea or concept, but on the other, also represented the visual entity throughout which one cultural group identified itself (Fig. 2).

In various periods and regions there are communities where imagery rather than the written "language" was used as the major means of communication. Diverse imagery forms, both representational and nonrepresentational, embodied visually projected ideas fundamental to the crucial concepts of those cultures. These ideas were usually visualised through exact principles conceived on concrete geometric accuracy. In this sense, the basic mathematical values might be concerned and used in understanding these regularities. This provides the profound depiction of patterns in its most elementary level and consequently the elaboration of its features defined by a certain model. Symmetry analysis enables determination of regularities within the visual structure of a repeated pattern, which was used in various aspects of developing compositional structure or certain exact imagery form. As today, symmetry was also identified in the past as a vastly effective principle for structuring visual and social relationships among the cultural groups and their essential imagery forms. Considering that these relationships were based among non-literate populations, they were metaphorically embedded thought proper symmetrical standards that structure patterns created onto visible surfaces of many forms of material culture (WASHBURN, CROWE 2004).

Analyses of the patterns morphology and structure demonstrate that they are made very accurately, thus following a scheme determined beforehand and used in the positioning of the patterns in a symmetrical ratio. Symmetry was used as fundamental principle which disposes the patterns in organized compositions, establishing the concept of eurhythmia, i.e. the harmony of the parts into one entirety. In spite of the fact that some authors consider that these patterns and their arrangement are of entoptic origin (LEWIS-WILLIAMS, PEARCE 2005, 120-122; BUDJA 2004, 62), the geometrical flexibility of these patterns should be considered, as well as their capability to be mathematically arranged on one concrete surface, i.e. composition (NAUMOV 2005, 71; NAUMOV 2009a). The linear structures that build the composition are often referred to as modules, where the symmetrical arrangement of the composition is constructed by their permutation and transposing.

These principles of modularity, generative grammar, symmetry and asymmetry have been analyzed by several authors who underline the mathematical approach towards pottery decoration (HAGSTRUM 1985; JABLAN 1989; JABLAN 1995; WASHBURN 1999; HODER 2003, 61-74). Consequently, a Euclidean geometry was engaged, thus providing the structure of patterns (designs composed of regularly repeated elements). This way, compositions are developed by the symmetries, i.e. rigid motions that generate the patterns

due to four elementary constructive movements: translation, rotation, mirror reflection and glide reflection (WASHBURN 1999, 549). This geometrical approach implies that a Neolithic community developed strict psychological definition of the space and throughout its organization. The mental potential for defining organized visual structures onto pottery was also reflected and intertwined with the other elements of social life: settlement and habitat organization, definition of the hierarchical system, exchange of goods, as well as with the elements of religious practice and symbolic communication.

Symmetry is one of the most crucial principles in the formation of design practiced worldwide. Success of theory of groups of symmetry in crystallography, which proposes the use of discrete groups of isometries of the Euclidean plane in the study of the planar patterns, influenced mathematicians in analyzing the Moorish decorations in Alhambra as well as in the study of the Southwest Indian pottery. That way, exact mathematical methods were used in order to be applied in ethnographic and anthropological research (GRÜNBAUM 2004). The approach of classification and analysis of patterns based on symmetries was enriched by the contributions of different authors (SHEPARD 1948; BELOV 1956; WASHBURN 1977; CROWE 1986; JABLAN 1995; GERDES 2002; GRÜNBAUM 2002; DAUGHERTY 2004; FRAME 2004; ROE 2004). Instead of analogies, these authors involved more precise geometric-crystallographic terminology and the theory of symmetry, which were constituted as a potent means for research of pattern principles. Gradually, symmetry analysis of patterns was developed as consistent method, used mainly to study ancient decorative arts or that of tribal populations (JABLAN 1995, 4).

According to D.K. WASHBURN (1977, 12, 13, 23): «the definition of symmetry focuses upon the symmetrical figure as an end product of series of motions across a plane or about a point. In this perspective, a symmetry operation can be defined as a process by which the basic asymmetric parts of a figure pass through specified motions on specified axial loci until they reach identity with themselves or superposition with the next figure». All symmetrical patterns are based upon one or more of the following four motions:

- Translation: involves the simple movement of fundamental part or parts along line axis.
- Reflection: requires the fundamental parts to be reflected across line axis in a mirror image relationship.
- Rotation: requires the fundamental parts to be moved about a point axis. They can change orientation any number of N-fold times within 360 degrees arc.
- Glide reflection: combines motions or mirror reflections across a line followed by translation along that axis into the succeeding position. This motion produces a figure that resembles the alternating left-right movement involved in human locomotion.

generated around a single point axis through which line reflection axes may or may not pass. One-dimensional are generated along a single midline axis. Two-dimensional patterns are generated along both horizontal and vertical axes (Fig. 4). Finite designs can possess only the motions of reflection and rotation, whereas those 1 and 2 dimensional can be generated by all four of the basic motions: translation, reflection, rotation and glide reflection. The majority of pure finite classes, as well as one- and two-dimensional designs have corresponding counterchanged forms (Fig. 5).

In his work, D. CROWE (2004, 9) asserts that «...each of the four rigid motions may be present, or absent, in given 1 or 2 dimensional pattern. Often the four-symbol notation is given, so that the presence of certain movements is emphasized. Thus, the first symbol is *p* – signaling the existence of translation. The second is *m* – used wherever is vertical reflection and *l* otherwise. The third symbol is also *m* – if there is a horizontal reflection, than *a* – if there is glide reflection and *l* otherwise. The fourth symbol is 2 – if there is a half turn and *l* otherwise».

4. PATTERNS WITHIN THE PAINTED POTTERY IN THE REPUBLIC OF MACEDONIA

As it has been emphasized by other researchers, painted pottery in Macedonia can be classified in two cultural groups (GARAŠANIN 1979; SANEV 1995): Amzabegovo-Vršnik (consisting of Ovče Pole, Polog and Skopje region) and Velušina-Porodin (Pelagonia and Ohrid region), although some of the patterns are found in both regions of Ovče Pole and Pelagonia (Fig. 6). As for the earlier phases of Amzabegovo-Vršnik group (Fig. 2, 1-3; Fig. 7), most of the patterns consisted of stair – like triangles, inclined stripes with triangles, netted stripes and doubled triangles, dots placed beside or on the line, zigzag lines, bend and vertical lines, angled lines positioned vertically or oppositely with the peaks to the front. Due to the fragmentation of pottery, only few complete Early Neolithic compositional structures are possible to be determined including compositions constructed of zigzag lines where one zigzag line was used as a pattern which is replicated all over the body of the pot (Fig. 7, 1).

Other compositions of this cultural group were created by using the horizontal arrangement of patterns where one of the patterns, consisted of a vertical stripe of angled lines, essentially serves as a frame in order to create two larger areas in which the central pattern is positioned, duplicated or modified on the other side of the pot as well (Fig. 7, 2, 3). Rarely, vertical belt arrangement is present, although this manner of disposing the patterns is common for the Middle Neolithic of the Amzabegovo-Vršnik group (NAUMOV 2005; NAUMOV 2009a, 123-125). These compositions consisted of two belts with different patterns in each, mostly including triangles in the upper first belt, while in the larger belt below netted angled stripes or vertical lines are positioned (Fig. 7, 6-7).

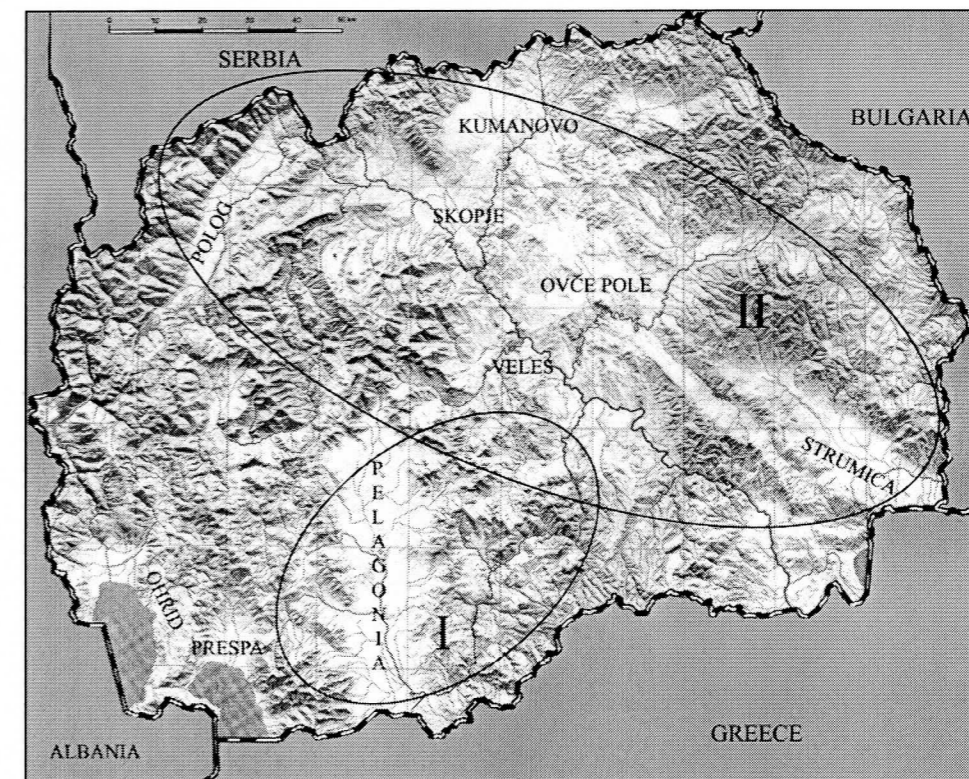


Fig. 6 – Regional cultural groups developed in Middle Neolithic. I: Velušina-Porodin; II: Amzabegovo-Vršnik.

In Pelagonia as major part of Velušina-Porodin cultural group, white painted pottery is present in both Early and Middle Neolithic with patterns mostly shaped as: triangles with lozenges, stair – like triangles and lines, stretched triangles, C and 3 patterns, lozenges in negative, multiplied cross, as well as the so called “drops” (Fig. 2, 4-6). Within compositions, the belt division dimly exists and only as a spatial organization of patterns in groups. A vertical disposing of patterns is most often employed by multiplied horizontal stripes of one pattern, vertically positioned all over the vessel, or only on the rim, the end of neck and around the handles. Despite this approach, there is highly more precise positioning of patterns in the more complex and apparently abstract compositions. These compound large patterns are actually duplicated on the other side of the vessel thus creating entities on the whole surface (Fig. 2, 5 and Fig. 8).

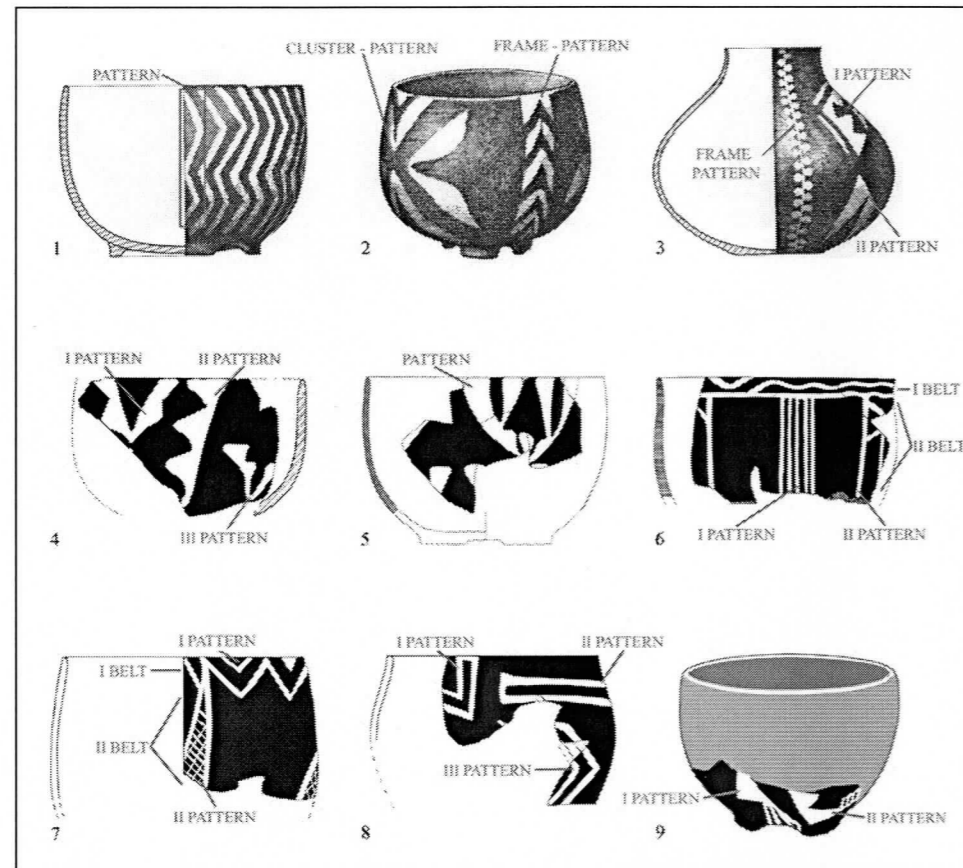


Fig. 7 – The compositional principles on the white painted vessels. 1-6: Amzabegovo (after GARAŠANIN 1979, T. XIII: 1, 3, 6; Tasić 2006, figs. 3, 8; Korošec 1971, 135, fig. 1); 7, 8: Govrlevo (drawing by G. Naumov); 9: Nemanjica (drawing by G. Naumov).

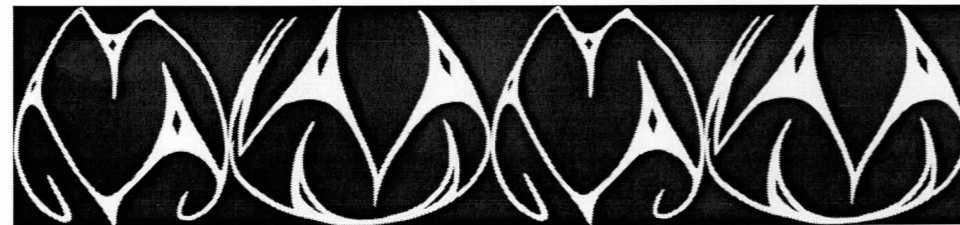


Fig. 8 – Reconstruction of white painted composition from Veluška Tumba (drawing by G. Naumov).

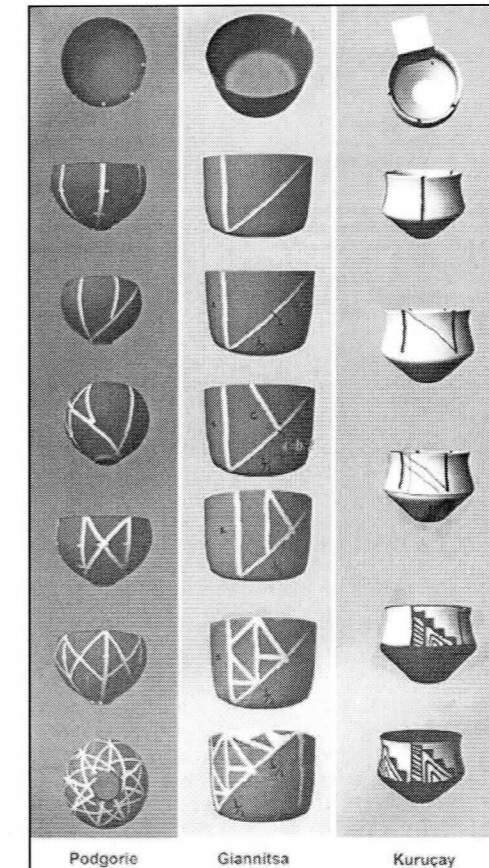


Fig. 9 – Geometric principles on the painted pottery from Podgorie, Giannitsa and Kuruçay (after Tasić 2007, fig. 7).

5. NEOLITHIC GEOMETRY IN THE BALKANS AND ANATOLIA

The principles of Neolithic geometry were implemented among all cultures in Southeast Europe, which produced pottery in that period. Almost an identical approach toward decoration of the vessels was practiced in Greece, Bulgaria, Serbia, Albania, Romania and Croatia, as well as in Turkey from where in earlier periods some of the most recognizable patterns originated (Fig. 9). These cultures used similar mathematical arrangements, but incorporated different patterns which in specific local styles were developed in authentic compositions typical for each region. V. NIKOLOV (2002) and D.K. WASHBURN

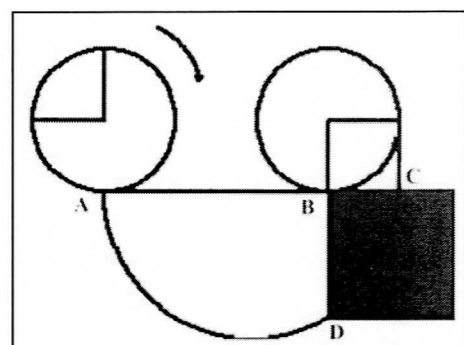


Fig. 10 – Geometrical approach towards squaring the circle (after TASIĆ 2007, 107).

(1984) made important contribution towards a definition of visual structures which were painted on Early Neolithic vessels from Bulgaria and Greece.

In his attempt to decipher the mathematical approach within the decoration of vessels, N. Tasić induced the geometrical concept of squaring the circle implemented within painted compositions on vessels from Balkans and Anatolia (TASIĆ 2007, 2009). Analyzing pots from Giannitsa, Rakitovo, Kuruçay and Haçilar he noticed that the height of the pattern is almost identical to the radius of the pot (Fig. 9), suggesting that Neolithic potters were using principles of squaring the circle in order precisely to dispose 6 or more metopes along the vessel's surface, without having an empty space between them (Fig. 10). Sometimes vertical lines were used, which have helped in applying the geometric equitation related with the incorporation of square patterns onto spherical shell. On other vessels from Podgorie, the potters were calculating the size of each triangle (or a square made of two triangles) relative to the perimeter of the vessel. This calculation had to be in relation with the diameter of the pot, as well as with the sphere and the diameter of the base (TASIĆ 2007, 107).

6. COMPOSITIONAL STRUCTURES AS VISUAL IDENTITY IN THE NEOLITHIC

Morphological analysis of pattern displays that painted compositions in Macedonia were a result of firmly established conventions. The establishment of such principles indicates that in one settlement or culture these patterns were repeated for a long period. During the Early Neolithic, some of the compositions were applied for at least 200 years, while in the Middle Neolithic identical painted patterns were preserved for about 400 years. Some researchers suggest that, during a continuity of 450-500 years, there was a change of 27-30 gen-

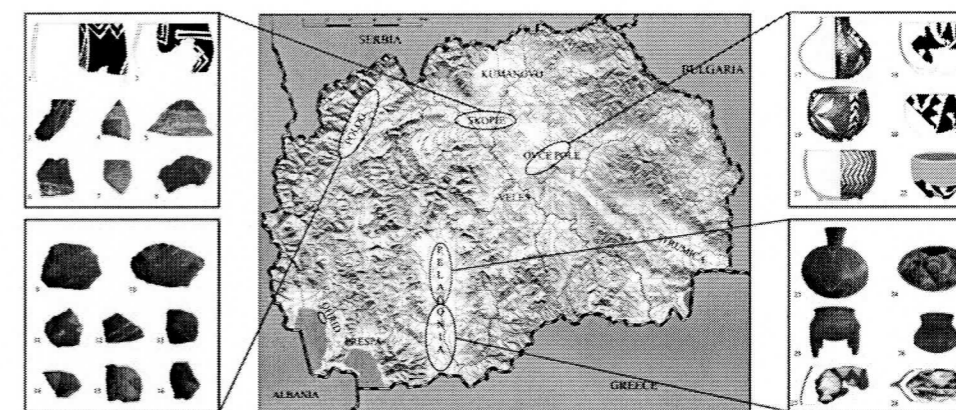


Fig. 11 – Regional Neolithic communities and their visual identities manifested through white painted pottery (design by G. Naumov). Skopje region (1-5: Govrlevo, 6-8: Zelenikovo); Polog (9-15: Stenče, 16: Dolno Palčište); Ovče Pole (17-21: Amzabegovo, 22: Nemanjica); Pelagonia (23-26: Veluška Tumba, 27-28: Vrbjanska Čuka).

erations that implemented painted decoration as a system of communication through these generations (NIKOLOV, KARASTOYANOVA 2003).

The extensive elaboration of painted patterns and compositions suggests that they were used as an essential element for preserving the tradition of the community. Hence, the tradition became a result of the creation of visual memory which strengthened the community's identity. Consequently, painted vessels were used as an element of symbolic communication among the members of one community, but also they embodied the visual identity of that community. Analyses of compositional styles asserted the affinity of a certain community in a region towards concrete patterns and compositions. Considering that Neolithization on the territory of Macedonia was a rapid process, it can be noticed that this hasty demographic or cultural activity developed new local identities (NAUMOV 2009b). This "cultural colonisation" was probably performed by a group or several individuals who inhabited certain area and, independently or in contact with the indigenous population, created new settlements in which the elements of local identity were developed (THORPE 1999; ZVELEBIL 2001; PERLÉS 2003). Although these settlements were based on general Neolithic acquisitions (agriculture, cattle breeding, architecture and pottery), in the domain of mobile mediums authentic local features were developed.

Pelagonian design was developed onto its own principles and it was specific only for that region: complex compositions with bent lines and triangles, C and 3 patterns, lozenges, dots, angled stripes, replicated cross, etc. (Fig. 11, 23-28). Although some of these patterns were used in Ovče Pole as

well, they were developed in completely different compositions. The disposition and invention of new patterns, as well as the horizontal organization of the compositions with zigzag and “vegetal” patterns and stair – like triangles assert that the population of this region had a sense for visual “isolation” (Fig. 11, 17-22).

In contrast to these two regions, completely new patterns and compositions appear in Skopje Plain, including bound triangles and netted stripes (Fig. 11, 1-8). It is still early to stress that they were synchronic with those from Ovče Pole or that they belong to Middle Neolithic painted vessels as an Early Neolithic tradition. Similar patterns were also painted in Polog, including stretched triangles and stripes with triangles resembling those both from Pelagonia and Ovče Pole pottery (Fig. 11, 9-16).

7. MIDDLE NEOLITHIC TRANSFORMATION OF THE GEOMETRIC STRUCTURES

The Early Neolithic traditions developed authentic visual features of the communities for each region in the Republic of Macedonia. These communities existed synchronically in different regions, and therefore intended for emphasizing the elements of visual identification. There are noticeable differences in the selection of patterns and in the approach towards compositional structure, i.e. what is typical for Ovče Pole is not present in the Skopje Plain and vice versa. In the domain of painted decoration at the beginning of the Middle Neolithic there are apparently rapid changes. In all sites from the Amzabegovo-Vršnik group, where previously different Early Neolithic designs were present, in sixth millennium BC new unified compositions in brown and black color began to be painted (Fig. 2, 7-9). These compositions often consisted of curved patterns which were developed by the multiplication of Y motive continuously rotated within complete composition, thus constructing a visual unit (Fig. 12).

In contrast to these regions, Pelagonian Middle Neolithic was not affected by the design changes. The communities from this region maintained white painting and changed the repertoire of patterns and compositions only slightly. Still, despite the generalization of new compositions in Amzabegovo-Vršnik group and preserving the decorative traditions in Pelagonia, the settlements in these regions shared certain visual and symbolic communication in the domain of patterns, beliefs and figurine production. At the beginning of the Middle Neolithic, specific white painted patterns, as well as clay models of anthropomorphic houses were produced in both of the above mentioned regions. Although some regional and typological characteristics can be noticed in the decorative and sculptural structures (CHAUSIDIS 2007; NAUMOV 2006, 66; NAUMOV 2007, 258), they integrate identical morphological and semantic features. This demonstrates that in the Middle Neolithic there was

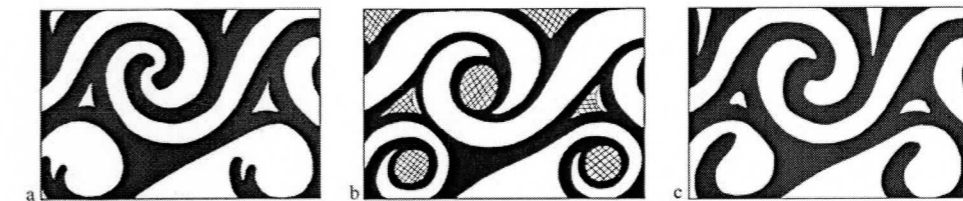


Fig. 12 – Curved compositions painted on the Middle Neolithic cups (drawings by G. Naumov).

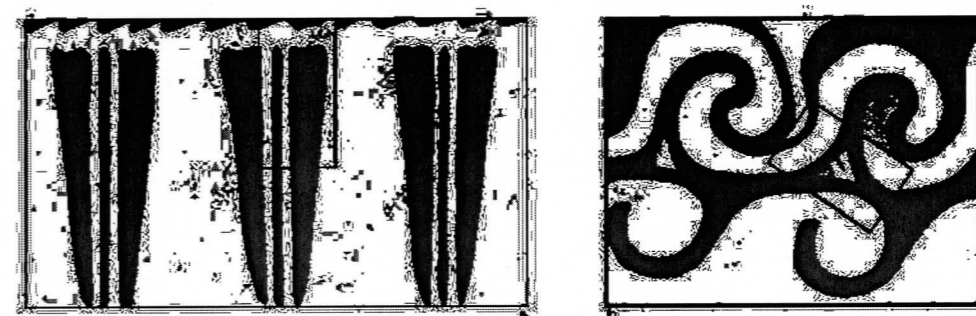


Fig. 13 – Reconstruction of a rectilinear and curved composition from Zelenikovo and Govrlevo (drawings by G. Naumov).

newly established communication, which further strengthened the relations between communities in different regions.

8. SYMMETRY ANALYSIS AND PATTERN RECONSTRUCTION

Symmetry analysis enables reconstruction of the painted compositions where the definite canons and their independent and group-ordered relations with other patterns have been performed. By gathering data provided by a number of preserved compositions, the compositional entireties are possible to be identified even within shards on which elements of the defined styles are being preserved. On the fragments where parts of elaborated patterns are still visible and where it is noticeable that they are organized in an already defined compositional entity, the rest of the composition which is not preserved can be envisaged. That way, the feasible reconstruction would be approached with certain probability, mostly because one composition is not always identically repeated.

Two examples are given below, where an option for a reconstruction of compositions is illustrated. Each of them, not considering the dimensions, possesses enough elements for reconstruction, especially those that are most typical

and which belong to the style with alternated lines in a form of a triangle, and those belonging to the style with wave-like lines in negative (Fig. 13). After the reconstruction of the fragments is performed, the placing of the reconstruction on the surface of the cup can be approached. When the fragments are consistently transformed into a reconstruction of a cup, an image concerning the quantity and variety of ceramic production in the Neolithic could be obtained.

9. THE SOCIAL AND SYMBOLIC FEATURES OF THE PAINTED PATTERNS

Stylistic analyses of the design demonstrate that symmetry is the basic concept of the composition construction. It is used for the disposition of the patterns and the building of the horizontal and vertical structure of the composition. Symmetry is a basic element in the perception of nature, and various populations used these visual principles whenever constructed visual unit. The patterns and symmetry are also employed as visual metaphor in the representation of the essential principles of one culture. Consequently, one culture engages the symmetrical structure of patterns as an element of metaphoric transposition of the ideological principles through an artistic medium, i.e. pottery.

The function of the visual metaphor is fundamental for preserving the basic codex and crucial concepts of the culture. Specific symmetry used for metaphoric visualization of the culture's permanent values differs between cultures, depending upon the different approach toward the conceptualization of the essential life advancements and relations (EBER-STEVENS 1980, 121-160; CHAUSIDIS 1994, 39-67; WASHBURN 1995, 14, 51; WASHBURN 1999, 548-553; GOLAN 2003, 259-269; CHAUSIDIS 2005, 16-129). Therefore, durable mediums are usually used as an "archive" of these cognitive elements. This knowledge about the own culture and the world in which it exists is most often in relation with identity and religion in general.

The Neolithic painted pottery from the Republic of Macedonia also generates metaphoric cognizance of the cultures and their surrounding (Fig. 2). Throughout symmetry analysis it is detected that this visual approach has specific local features in every region, inducing that several authentic concepts existed in Pelagonia, Ovče Pole and Skopje Plain. It is still difficult to say whether these concepts were related to a common idea, but considering the identical elements of socio-economic existence, it can be assumed that all these cultures intended to represent similar perpetual processes. This was followed by the incorporation of geometric principles, which except their aesthetic or decorative utility were alongside most complex cognitive processes in the Neolithic. Moreover they demonstrate that Neolithic communities developed absolutely rational perception of the space and engaged its structural manifestation in the production of material culture and ideas incorporated within.

Acknowledgments

I would like to thank M. Katalin Biro for her willing to include this paper on Neolithic symmetry in this publication, as well as for her understanding and patience during the finalization process.

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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.