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FOREWORD

For already four years the conference 'Neolithic in Macedonia' brings archaeologists that are involved in research of the first agricultural societies in the Republic of Macedonia and neighboring countries. As the number of projects and collaborations enlarges so thus the interest for participation in this nowadays international conference. The number of participants in this conference consequently increases and it has the effect on the quality of presentations as well as on the broadening of the topics and scopes of the conference. This also reflects the publication that always follows the conference i.e. it is published as a result to preceding archaeological meeting.

On the last edition of this conference there were participants from various European countries that contributed with diverse topics ranging from fieldwork prospection through latest laboratory analysis to current interpretation and studies of material culture. Such variety of papers and topics opened new perspectives in the research and understanding of the first farmers in Macedonia and the surrounding regions. Same abundance of themes is transferred in the latest edition of 'Neolithic in Macedonia' publication that brings together some of the papers presented in 2017. Therefore the subtitle of this edited book 'challenges for new discoveries' as there are many new gates open in order to apprehend better the agricultural societies that inhabited the Balkans in the second half of the 7th millennium BC. Most of the papers deal with new approach in the study of Neolithic communities, their settlements, products, ideas and environment, while others reconsider the knowledge on archaeological sites and notion of culture in prehistory.

The publication starts with the paper of Elena Stojanova Kanzurova that reassess the excavation of the Neolithic tell at Stenče and brings new overview of the settlement and architectural features. The following paper of Igor Tolevski also concerns fieldwork on a site in Veles region that has been excavated in 2012 and elaborate the character of several structures and numerous artefact unearthed so far. The group of papers on excavation projects is enclosed with the contribution of Goce Naumov, Aleksandar Mitkoski and Hristijan Talevski on the last research season at Vrbjanska Čuka in Pelagonia and the results from study of the large Neolithic building.

The publication continues with the focus on the region of Pelagonia and the study of Gjore Milevski on GIS application in the research of Neolithic sites and implementation of spatial and viewshed analysis. Next paper is related with the work of Stella Papadopoulou on the chipped stone industry from the Anargiri site in Amindeon basin with particular focus on raw material, technology and typology of lithic tools. The last group of papers related to sites in wetland areas is authored by Pasko Kuzman where he ends his emense overview series of the Neolithic sites in Ohrid region with detailed presentation of Penelopa site.

The papers on the general overview of cultures, chronology and tangible cultural heritage starts with the study of Ljubo Fidanoski on historical and methodological perspectives of the past and current reserch of the Neolithic in the Republic of Macedonia. The following work of Aleksandar Mitkoski addresses the question on Late Neolithic through the presentation of the material culture from Ali Čair site within the city of Prilep. The paper of Milan Mitovski for the first time concerns the beginning of metallurgy in Macedonia and its relationship with particular Neolithic sites. The last paper is authored by Renate Quehenberger and considers the symbolic and geometric aspects of patterns elaborated on Neolithic figurines, house and bread models.

In sum, these ten papers deal with different aspects of the Neolithic in Macedonia and provide thorough insight into various cathegories of social, economic and symbolic processes among first farmers. It is apparent that such societies inhabited diverse environments and adjusted their modes of living acording to resources and landscapes where they dwelled. The results of research presented in these papers asserts the cultural abundance of agricultural communities and the broad perspectives for their understanding. Consequently we hope that this book as well as the previous editions of this volume will contribute in thorough study of the Neolithic in Macedonia and bring new viewpoints on the life of dynamic farming societies.

As always the Center for Prehistoric Research will continue with the affirmation of the Neolithic and its social, economic and symbolic components through the novel modes of research and presentation of the cultural heritage associated with it. In such way, this publication emphasizes the attempts of current archaeologists and their challenges in the understanding of the complex Neolithic societies. This could be used as further step in the presentation and accentuation of the Neolithic as one of the most significant stages for the human kind that introduced entirely new set of advances.

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Pod Selo-Tumba at Stenče Village: Neolithic Settlement in Polog Region, Republic of Macedonia

Abstract

The only archaeological sites from the Neolithic period that were explored in the past period in the Polog region are the settlements in the villages of Dolno Palčište, Brvenica and Stenče. The recent archaeological excavations of the already affirmed site Pod selo-Tumba, near the village of Stenče, and that were smaller compared to the first excavations, filled the knowledge gap for the Neolithic architecture, especially for the household inventory. The portable archaeological material of this Neolithic settlement, the various ceramic vessels, especially the items with sacral function, again confirms the mixture of cultural ideas from the both Macedonian Neolithic groups, Amzabegovo-Vršnik and Velušina-Porodin.

In this paper the new results and the insights from the previous researches of this settlement will be sublimated and presented, that will certainly be an addition to the limited scientific contribution of the Neolithic period in the Polog region.

Keywords: *Polog region, Neolithic settlement, architecture, a mixture of cultural ideas*

Geographical characteristic of the Polog Basin

The valley of Polog is positioned in the northwestern part of the Republic of Macedonia. It is one of the larger valleys with suitable natural conditions for inhabitation and development of the communities and their material and spiritual culture from the beginning of prehistory. The valley extends along the upper flow of Vardar River. According to the geological appearance, Polog is a tectonic valley. It is situated between the mountains Šar Planina, Suva Gora, Žeden and Bukovik. The valley is surrounded with high mountains from all sides, with the exception of the eastern side, where along the Vardar River is connected with the Skopje valley through the Derven canyon. The valley is connected with the southwestern part of Macedonia through the mountain Bukovik in the area of Gorno Kičevo and also with Bistra Mountain.

Neolithic settlements in the Polog Basin

The territory of Polog valley encompass the area of about 40 km with the length and average width of 6.5 km, and has several confirmed archaeological sites that chronologically belongs to the Neolithic period (**Map 1**). They are: Gradište in the village of Staro Selo; Tri Tumbi in the village of Preljubište; Tumba in the village of Saračino; Belo Pole in the village of Želino; Tumba in the village of Dolno Sedlarce; Tumba in the village of Brvenica; Tumba in the village of Dolno Palčište; Pod selo-Tumba in the village of Stenče (Археолошка карта на Република Македонија, Том II, 1996, 417–427). Recently, the Neolithic settlement in the village of Čelopek is also joined to these sites (**Fig. 1**).[1]

1 Information about the existesnce of a Neolithic settlement in the Čelopek village, confirmed by surface portable archaeological material (fragmented vessels with a round shape, fragments of dark brown painted pottery, impresso-technique, anthropomorphic figurines, cylinders of the Great Mother's type of altars, clay projectiles etc.) were received from Refet Emini from the village Čelopek, to whom I express my gratitude.

From the mentioned archaeological sites in the Polog Valley, only the Neolithic settlement in the villages of Dolno Palčište (1987/88) (Здравковски и Саржоски 1989,43; Саржоски и Здравковски 1991, 131–144), Brvenica (2012–2014, 2018) (Abazi and Tolevski 2017, 99–119), and Stenče (2000/07) were researched in the recent period.

Neolithic settlement Pod selo-Tumba, v. Stenče *(archaeological excavations in 2000)*

The archaeological site Pod selo-Tumba is positioned on the right bank of the river Vardar in the vicinity of v. Stenče, under the slopes of Suva Gora. The first excavations were organized by the Museum of Macedonia in the year 2000, and carried out under the leadership of Dragiša Zdravkovski. The results of the first research are presented in several papers (Здравковски 2004, 106–123; Здравковски 2005, 25–33).

The portable and immovable archaeological material from the explored area provides information on this Neolithic settlement long chronology that begins at the end of the Early Neolithic period and last throughout the entire Neolithic period. Neolithic cultural influences from Pelagonia region and Amzabegovo-Vršnik cultural group left material and spiritual marks on this site. On the other side, the Late Neolithic layer is partially confirmed.

Architecture and household immovable inventory (House 1)

In the explored area the architectural remains of one house were discovered that has not been entirely excavated. A large number of daub fragments were preserved and a small number of post holes from the pillar-carriers of the house wall construction. The floor of the house was constructed with a compact ground. From an immovable household inventory in the interior, an oven and item, named as "tub" were found. The floor around them was plastered with daub.

The oven was positioned in the northeastern part of the house and was set in the direction N-S/E-W. No remains of a partition wall were found near it, which means that it was placed in free space. The base of the oven was well preserved. The oven has square shape, with dimensions of 1.10 x 1.20 m and height of 0.60 m (**Fig. 2**). The substructure of the oven was filled with stones and fragments of vessels. The platform of the oven was renewed with several layers of thick clay during the time of its function. The lower part of the wall of the dome from the oven was partially preserved. On the outer part of the oven's base the pilasters connected with arches were preserved. The oven was used for a long time. Three construction phases of recovery have been identified.

According to the researchers, the oven was used for preparing food, that is, probably for baking bread. Such ovens are also known from the other Neolithic settlements in Macedonia, such as Tumba Mađzhari in Skopje; Slatina, v. Zelenikovo (Гарашанин и Билбија 1988, план II, III, сл. 8 и 3, 4); Cerje, v. Govrlevo (Bilbija 1986, 35, 36; Фиданоски 2012, 49; Толевски 2017, 49, 52, 53, сл. 12, 14, 15); Mramor, Čaška, etc. The majority of this household immovable inventory was identified by the researchers as cult items-altars (Санев 1988, сл. 8, 11, 14, Пл. II; Јовчевска 1993, 31–43, сл. 2, 3, 4). In addition, near the north-west side of the oven, a larger pit, filled with ash, with almost same dimensions as the oven, was found. The pit was probably used for a deposit of the ashes from the oven. Similar archeological situations concerning pits filled with ashes and positioned near the ovens are found in the other Neolithic settlements, such as,

Tumba Mađzhari (Стојанова-Канзурова 2011, 127, сл. 109, 117; Стојанова-Канзурова 2011, 42–44, сл. 12, 13).
In the same house, southwest of the oven, at a distance of 3 m, other identified architectural facilities known as 'tub' was discovered. This was a square shaped item with the recipient which has thin walls. (**Fig. 3a, b**). The base of this item was 1 x 1 m, and preserved height of 0.18 m. The platform/recipient and the walls were nicely polished with clay. There are no traces of burning or remains of ash. Around this item many ceramic spool loom weights were found. The function of this item is unclear, but according to the form, the material and the way it was built, it resembles an oven that was used for domestic purposes.

The researcher indicates the idea that this facility could be linked to the process of obtaining salt for cooking with water-desalination (Здравковски 2003, 111; Здравковски 2013, 282). At this stage of the research, archaeology does not have enough reliable confirmation for the use of salt, but also for the way of production, such as with evaporation of the water from the salt springs or crystalline forms of salt in the Neolithic period in Macedonia.

The earliest archaeological evidence for salt production in the Neolithic on the territory of Europe, so far has been confirmed in the Carpatho-Danubian region, in Lunca-Poiana Slatinei, Ţolici-Hâlâbutoaia in Romania, since the end of the 7th and 6th millennium BC, (Cavruc 2008, 79–91), and in the Provadia-Solnitsata in Bulgaria, in the middle of the 6th millennium BC, (Karanovo III–IV) (Николов 2008, 87–115).

The toponyms in Macedonia and abroad in the region like Slatina or Slatino are most often associated by the ethnologists as salt trading destinations (Стојанова-Канзурова, 2011, 233, 234). The insufficient number of discovered skeletal burials from the Neolithic period in Macedonia does not allow proper analysis for the health consequences, especially the functioning of the skeletal structure of humans, but also of animals as well, from the use or non-use of this mineral. Further analyzes are needed, especially pedological, in order to obtain more information on this issue which is of important meaning for the humanity, livestock farming, but also to its involvement in various segments of the social life of the population in the early prehistory. Pedological data speaks of a high amount of soil salinity in the central part of Pelagonia and Ovče Pole (Weide 1976, 439; Filipovski and Ćirić 1969, 500). Scientific attention should be paid to the cave system near the village of Slatina, and to the spring with salt water in the village Slansko in the region of Poreče, in the western part of Macedonia.[2]

Tangible archaeological material

Fragments of ceramic vessels with white painted ornaments (triangles, lines and nets) on red and brown background with fine texture were found in the disrupted cultural layers, chronologically connecting the settlement with the Early Neolithic (**Pl. I: 4–7, 10, 11**). Among the tangible archeological material found on the same level with the oven and around, the famous ceramic altar was discovered (**Pl. II: 2**), which is explained as a representation of the older variant of the ancient idea of the Great Mother cult (Здравковски 2005, 27, 28, сл. 9; Zdravkovski and Stojanova-Kanzurova 2009, 208, No. 6). This altar was found along with a lot of ceramic spool-shaped loom weights. A similar archaeological situation was found in Mađzhari, in House 1, when a cylinder of the same type of altar was discovered, alongside with

2 Information was obtained from the speleologist Ivan Žežovski from the speleological association "Peoni" from Skopje, to which I express my gratitude.

a group of ceramic weights. That is cultural feature of the Middle Neolithic of Amzabegovo-Vršnik group. A ceramic bowl with a round shape that resembles a gourd was discovered northwest from the oven (**Pl. II: 1**). A goblet with a conical body and a high base (foot) was also found near the oven. In the same layer, two semi-shallow bowls with an analogy from Pelagonia were found (**Pl. II: 3**).

The most marvelous layer is the one with the archaeological material that belongs to the Middle Neolithic (**Pl. III: 1, 2, 11, 14, 20**). The most characteristic fragments of vessels are medium and fine made. The base of these vessels is usually with a light and dark red color, various shades of brown, but also shades of gray. There are fragments of vessels, whose base has black and glossy surface (**Pl. IV: 2, 5, 7**). Analyzing the fragments of the vessels, it is noted that the rim of the vessels are more or less pulled out. The shape of the middle part of the vessels is often carinated. The engraved elements are more often in the ornamentation as well as straight and sloped channeling on the central part of the bowls (**Pl. IV**). Fragments of bowls, askoi and pots are the most common types of pottery for daily use (**Pl. III: 16–18**). Considering the huge amount of fragments, the goblets were favorite type of vessels (**Pl. IV**). They are recognizable by their (bases) foots, usually, with medium height and hollow inside.

The fragments of the famous "Great Mother" type of altars, anthropomorphic figurines and the table-altars are the basic representation of the spiritual life of the Neolithic settlement inhabitants (**Pl. II: 5–7; Pl. V: 1, 7, 10, 12–15, 18–22**). They also confirm that Pod selo-Tumba in the village Stenče is the center of the cultural influences of the two Neolithic groups Amzabegovo-Vršnik and Velušina-Porodin on the territory of Macedonia.

The Late Neolithic layer is partially destroyed. The well-known and well-preserved goblets with gray and brown color and channeled surface, belongs to this period (**Pl. II: 8, 9**). The goblet with, so-called, 'turban' channeling, continues as a form in the Chalcolithic period.

Archaeological excavations in 2007 *(House 2)*

The recent archaeological excavations of the already acknowledged site Pod selo - Tumba, near the village Stenče, which were much smaller in extension compared with the first excavations, made additional knowledge about the Neolithic architecture, that is, the household inventory (Стојанова Канзурова 2011, 148–151). The research was organized by the Museum of Macedonia in cooperation with the Museum of the Tetovo Region.[3]

In 2007, only two trenches were opened near the old ones. The remains of a new house and other immovable objects were discovered. There is not any detailed information regarding the construction techniques of the house. Several fragments of the daubed house walls have the board imprints with narrower and wider dimensions. In the excavated space several post holes were found, channels as well, that can be assumed to be part of the foundation of the house. Few well manufactured stones with an elongated rectangular shape were also found. The fact that post holes were found less than the channels, initiates that this is one of the ways of how the foundation of the house were built.

3 The project director was Dr Dragiša Zdravkovski, co-manager was Elena Stojanova Kanzurova and the team was composed of Ljuljeta Abazi, Srečko Jovanovski, Igor Tolevski and Vasilija Čali.

Household intangible inventory

In the investigated space (Sq. 2), at a depth of 0.60 m, an object that was defined as an oven was found (**Fig. 4a**). The oven is partially damaged, but it can be concluded that it had a rectangular base. The dimensions of the base of the oven are 0.80 x 1.50 m and the height is 0.40 m. The substructure of the oven was filled with fine stones and several ceramic fragments. A thin layer of clay on the platform was fragmentally preserved. Only a small part from the wall of the dome in the height of 10 cm was preserved. It is assumed that the frontal part of the oven was at the north-eastern side, where, despite the major damage on its basis, arc-shaped legs were evidenced.

Southwest of the oven, at a distance of 0.70–0.75 m, remains of a small wall with a length of 1 m, and a width of 20 cm, were found. Similar archeological situation of the oven placed along a partition wall were also found in Mađzhari in House 1 and also in the recent research. On the eastern part of the oven from its base, shallow relief hollows obtained by finger-pulling were noticed. This way of a household decoration on the immovable inventory is often encountered in Neolithic settlements (eg. Mađzhari, Mramor).

On the quite damaged northwest side of the oven, remains of another intangible - accompanying object was found (**Fig. 4b**). The preserved part of this object has rectangular shape and the interior was filled with pebbles. The dimensions of these objects were 0.40 x 1.10 m, and height of 0.38 m. The function of this object is not defined, but it may be part of the objects associated with the food preparation process.

Tangible archaeological material

The archaeological material discovered near the two architectural facilities – the oven and its accompanying object, as well as, in the rest of the investigated space, is usually composed of ceramic fragments of vessels for various uses, with ornaments characteristic to the Middle Neolithic. Among the other ceramic fragments, there are several white painted shards, which are connected to the end of the Early Neolithic, which, once again, confirms the chronology of this Neolithic settlement (**Pl. I: 1–3, 8, 9**).

Among the Middle Neolithic layer ceramics, the one with medium texture, with light and dark red background, is most commonly present. Fragments with painted brown ornaments on a red background are rarely noticed, which were characteristic to the Middle Neolithic of the Amzabegovo-Vršnik cultural group (**Pl. I: 12, 13**).

The surface of the vessels was sometimes treated with a technique of barbotine, engraving and pinching (**Pl. III: 3–8, 10, 13**). Small circular indented applications, single arrays with circular applications placed horizontally, were added on the surface of the vessels (**Pl. III: 9, 15, 18**). The handles have a simple ribbon shape and they were placed vertically.

The category of the so-called luxury ceramics with brown, dark gray and black glossy background is also present. The straight and sloped channeling ornaments on the middle part of the bowls and especially the goblets are fairly represented in this category of so-called luxury ceramics (**Pl. IV: 1, 3, 4, 6, 8–15**). Their occurrence is chronologically related to the end of the Middle

Neolithic and the beginning of the Late Neolithic. The goblets with the middle height feet and empty in the interior, are also among the fragments of the ceramics with fine quality.
The list of the archaeological material is complemented by the fragments of anthropomorphic altar, the Great Mother type (Tumba Mađzhari) with a high technical and aesthetic shaping, characteristic for the middle phase of the Amzabegovo-Vršnik group, that again confirms the western border of this group (**Pl. V: 2–5, 9, 11, 17**). The fragments of the famous type of a table-altar (mostly artistic performed with triangular extends), complement the repertoire of a cult purpose archaeological material (**Pl. V: 8, 16**).

Final observations

The results of the two field working seasons (2000/2007) give arguments to connect culturally and chronologically the earlier phases of this settlement with the settlements in Pelagonia. The cultural development of this settlement in the next period is under the influence of Amzabegovo-Vršnik II and IV i.e., it is associated with the synchronic settlements in the Skopje region, which communicated intensively due to the easy connection between the two valleys.

In addition to the topic, it is good to mention the current knowledge on the Neolithic in the Polog valley. Namely, the settlement in Tumba of the village Dolno Palčište, which is the first explored in this region, had three stages in its cultural development. The oldest phase chronologically and culturally is associated with the end of the Early Neolithic, as part of Amzabegovo-Vršnik I–II, while the next phase of the Middle Neolithic is connected to Amzabegovo-Vršnik II, III and IV. The last phase of the development of the settlement is correlated with the Zelenikovo II in the Skopje valley, but the connections with Pelagonia are also apparent, for example, with the Mala Trnska Tumba.

The longest researched settlement in this region, Tumba in the village Brvenica, in its earliest stage, had also influences from the Pelagonia cultural group (Velušina-Porodin I and II). Later, in the Middle Neolithic, the settlement is culturally connected with the Amzabegovo-Vršnik II, III and IV. In the early stage of the Late Neolithic, the archaeological material that corresponds to the Zelenikovo II cultural group is characteristic, but new influences from the Adriatic and Central Balkan cultural groups like Cakran III, Vinča-Tordoš II and Sopot II are apparent (Abazi and Tolevski 2017, 113, 114).

The sublimated information about the material and spiritual culture of the Neolithic communities in the Polog valley regards the mixture of cultural ideas from the two Macedonian Neolithic groups, Velušina-Porodin and Amzabegovo-Vršnik, as well as influences from the distant cultures of the neighborhood.

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List of figures

Map 1 Archaeological sites from the Neolithic in the Polog region, northwestern part of Republic of Macedonia: 1. Gradište, v. Staro Selo; 2. Tri Tumbi, v. Preljubište; 3. Tumba, v. Saračino; 4. Belo Pole, v. Želino; 5. Tumba, v. Dolno Sedlarce; 6. Tumba, v. Brvenica; 7. Tumba, v. Dolno Palčište; 8. v. Čelopek; 9. Pod selo-Tumba, v. Stenče (made by Elena Stojanova Kanzurova).
Fig. 1 Archaeological material from Neolithic settlement in the village of Čelopek. (unpublished, photos by Refet Emini).

Fig. 2 Remnants of household immovable inventory (oven) in the Neolithic settlement Pod selo-Tumba, v. Stenče, 2000 (unpublished, photos by Dragiša Zdravkovski).

Fig. 3a, b Remnants of household immovable inventory in the Neolithic settlement Pod selo-Tumba, v. Stenče, 2000 (Здравковски 2005, сл. 7, 8).

Fig. 4a, b Remnants of household immovable inventory (oven and additional facility) in the Neolithic settlement Pod selo-Tumba, v. Stenče, 2007 (unpublished, photos by Elena Stojanova Kanzurova).

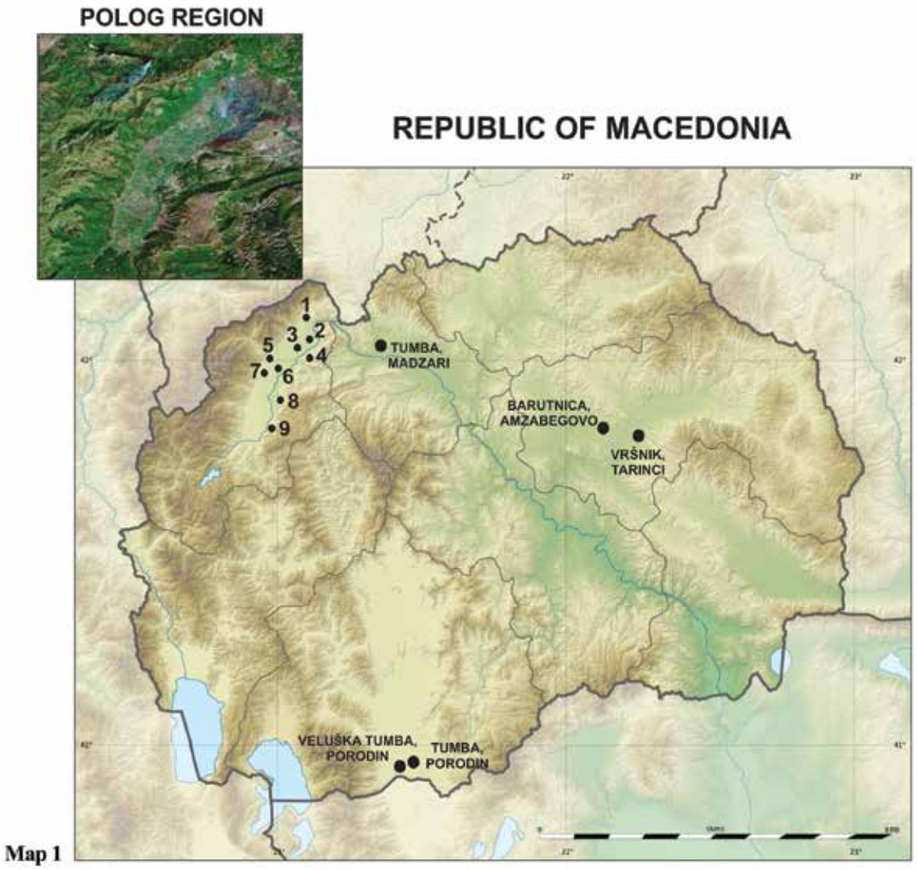
Pl. I White painted sherds, 2000 (4–7, 10, 11), 2007 (1–3, 8, 9) and brown painted sherds, 2007 (12, 13) (unpublished, documentation of Neolithic collection of Pod selo-Tumba, v. Stenče in the Archaeological museum of Macedonia, made by Elena Stojanova Kanzurova).

Pl. II Various archaeological finds from Pod selo-Tumba, v. Stenče, 2000: 1. h – 27 cm (Здравковски 2005, сл. 13, 28; Zdravkovski and Stojanova Kanzurova 2009, No.6, 71), 2. h – 24 cm (Здравковски 2005, сл. 10, 27; Zdravkovski and Stojanova Kanzurova 2009, No.69, 209), 3. h – 9 cm (Здравковски 2005, сл. 11, 28; Zdravkovski and Stojanova Kanzurova 2009, No.4, 67), 4. h – 11 cm (unpublished, documentation of Neolithic collection of the Archaeological museum of Macedonia), 5. h – 6 cm (Zdravkovski and Stojanova Kanzurova 2009, No. 38, 139), 6. h – 5 cm (unpublished, documentation of Neolithic collection of the Archaeological museum of Macedonia), 7. h – 12 cm (unpublished, documentation of Neolithic collection of the Archaeological museum of Macedonia), 8. h – 12 cm (Здравковски 2005, сл. 20, 30; Zdravkovski and Stojanova Kanzurova 2009, No.33, 125), 9. h – 10.5 cm (Здравковски 2005, сл. 19, 30; Zdravkovski and Stojanova Kanzurova 2009, No. 34, 127).

Pl. III Fragments of ceramic vessels, 2000 (1, 2, 11, 14, 20), 2007 (3–10, 12, 13, 15–18) (unpublished, documentation of Neolithic collection of Pod selo - Tumba, v. Stenče in the Archaeological museum of Macedonia, made by Elena Stojanova Kanzurova).

Pl. IV Fragments of the category of the so-called luxury ceramics with brown and black surface and channeling, 2000 (2, 5, 7), 2007 (1, 3, 4, 6, 8–15) (unpublished, documentation of Neolithic collection of Pod selo-Tumba, v. Stenče in the Archaeological museum of Macedonia, made by Elena Stojanova Kanzurova).

Pl. V Fragments of anthropomorphic models of altars and models of altar tables, 2000 (1, 7, 10–15, 18–22) and 2007 (2–5, 8, 9, 11, 16, 17) (unpublished, documentation of Neolithic collection of Pod selo-Tumba, v. Stenče in the Archaeological museum of Macedonia, made by Elena Stojanova Kanzurova; Pl. II 6, Здравковски 2005, сл. 17, 29).



Map 1

Fig. 1

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Fig. 3a

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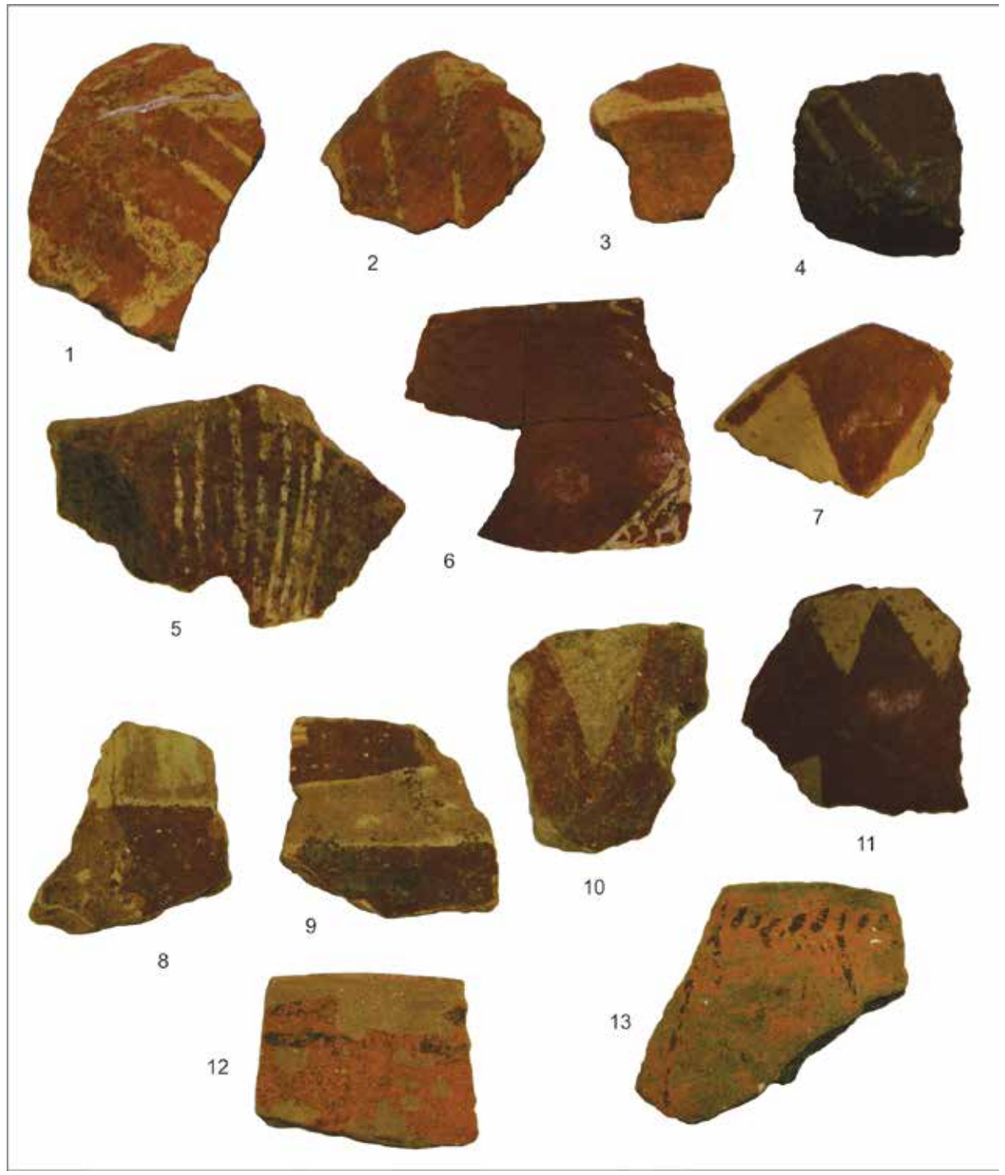
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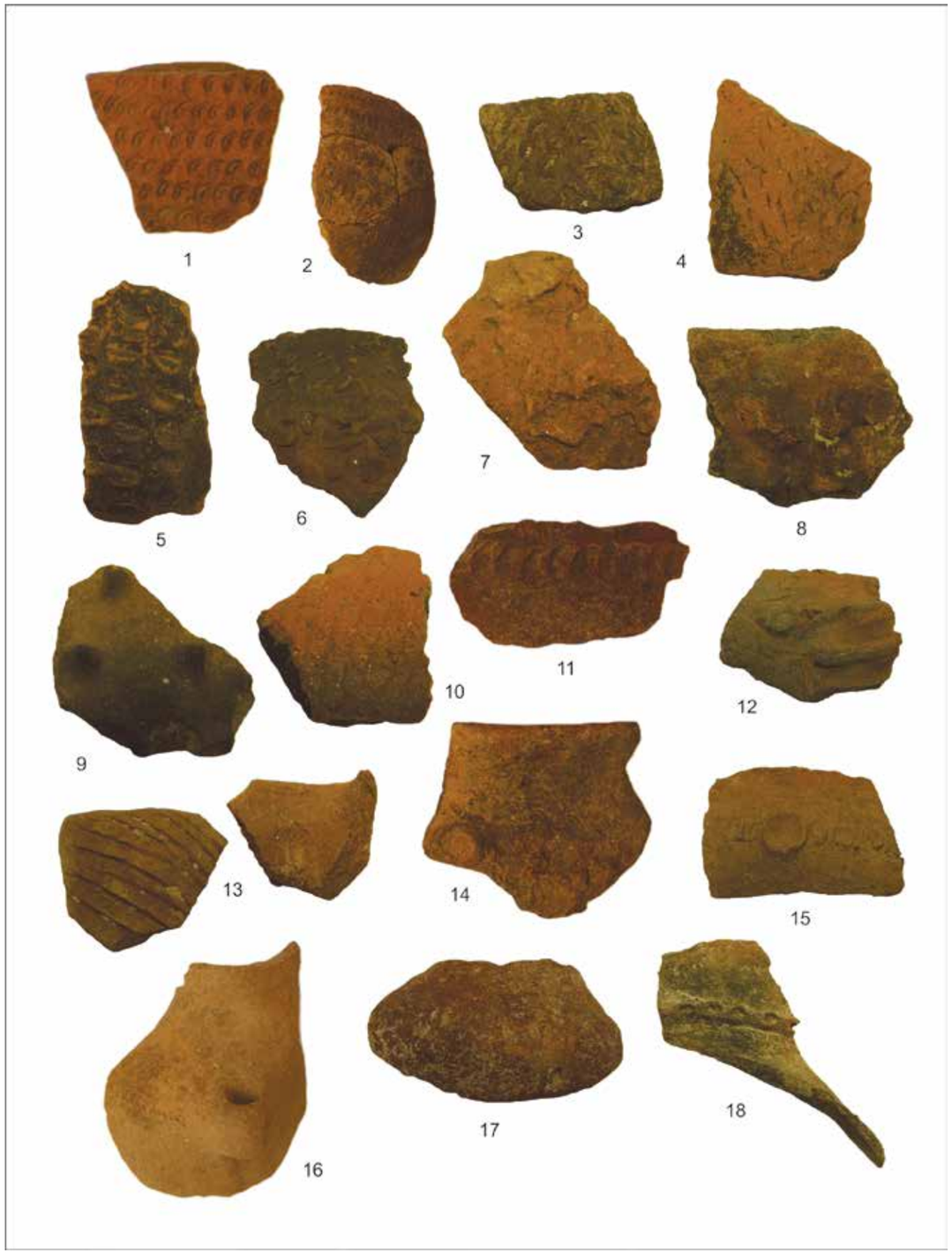
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Igor Tolevski
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Archaeological Excavation of the Site Ramnište near the Village of Sopot, Veles (Preliminary report on archaeological excavations in 2012)

Abstract:

The archaeological site Ramnište is positioned 10 km North from the town of Veles, near by the villege of Sopot. Surface prospections of the National Muzeum–Veles confirmed that it was a newly discovered Neolithic settlement. Archaeological excavations were conducted in 2012 in order to refine the CP 557, CM Sopot, close to the modern motorway (E75). From seven archaeological rectangular trenches, most information are giving those numbered as I, IV and V and their extensions IA, IVA and VA, which revealed several architectural objects and tangible archaeological artifacts of pottery, stones and animal bones. These objects and their discovered peculiar context are linking chronologicaly the Neolithic settlement of Ramnište with the surrounding similar Middle Neolithic settlements that belongs to the Amzabegovo–Vršnik culture.

Key words: *Neolithic, Ramište, Veles, pottery, stones and bone artifacts.*

Geographical position and natural characteristics of the landscape

Geographically, the Veles Basin is part of the northern Macedonian valleys, oriented on both sides of the Vardar River, but also deep in the valleys of the Babuna and Topolka rivers on the west side (Петровъ 1896, 72, 208, 259; Цвијић 1906, 274; Trifunoski 1977, 132–133). While on the opposite eastern side, long, still dry shores and alluvial valleys (Otovička Reka) are stretched from the ancient rivers that once flowed from the west side of Ovče Pole to the Vardar (Trifunoski 1964, 589)[1]. These river valleys were directions for gradual conquering of new areas and enabled to build a number of small short Neolithic stations or larger settlements on their high terraces.[2]

The archaeological site Ramnište (**Fig. 1, 2**) is positioned five hundred meters northeast of the village of Sopot or about 10 km north of the town of Veles.[3] On the left side of the modern Skopje–Veles motorway, before the paytoll a mild hilly elevation rises. On the west side of this slope there is a deep dry dug through which a flow was streamed from the spring, today called Boleva Češma. Further south through the modern auto route high rocky hill Gaber is steeply rising (381m), which together with the opposite Orlov Kamen, disjoined the valley away from the Vardar in the turbulent geological times.[4] Eastern and northern side of the mild slope of Ramnište gradually rises to the nearby hills that enclose this geographical area, thereby forming a pleasant valley for living.

1 The hills above the river valley stretching to the northeast–southwest in the village settlements Otovica, Sojaklari, Kumarino and Ivankovci, they are created from the Neogene lake sediments, which on the surface are seen as sandy soil and in depth are clay (Trifunoski 1964, 589). In the last century in fron of the rocky gorge of Otovička Reka a dam was built for the artificial lake Mladost known as Veleško Ezero.
2 The recorded and excavated Neolithic sites positioned on the banks of the Topolka and Babuna rivers are: Ridot near the village of Golozinci, Mramor near the village of Čaška, Zuniver near the village of Izvor, in the Ovče Pole region are the Neolithic settlement near Mamutčevo, Novo Selo, Nogaevski Pat near the village of Ubogo on the right bank of the river Bregalnica, etc. (Алексова 1954, 52; Petački i Beldedovski 1980, 194; Јовчевска 1990, 56; Јовчевска 1993, 31; Петачки 1996, 64, 77, 84, 85; Јовчевска 2006, 39; Јовчевска 2008, 10).
3 The coordinates of the archeological site "Ramnište" are: 41.786240 northern latitude and 21.76728 eastern longitude, as well as 261m altitude.
4 The rocky hills on both sides of Vardar towards the end of the Taor Gorge are consisted of Paleozoic or Mesozoic metamorphic shale and limestone shale, especially in the lower part of the gorge (Цвијић 1906, 275; Herak 1973, 187).

The proximity of the valley to the Vardar, which is one kilometer to the southwest of the settlement, probably influenced the contact with the concurrent settlements, in the north, in the Skopje valley. But, of course, the openness towards the east–northeast direction enabled the cultural influences of the settlements from Bregalnica River and Ovče Pole to reach this Neolithic settlement (Zdravkovski 1995, 11–16; Tolevski 2007, 69–78; Наумов 2009, 36; Толевски 2014, 56–63; Митревски 2013, 91; Fidanoski 2017, 29–68).

Archaeological excavations in 2012

The archaeological site was found during the field prospections conducted by the archaeologist Trajanka Jovčevska from the National Museum–Veles during 2010. Surface artifacts indicated that the site Ramnište is a Neolithic settlement. The excavation took place at CP. 557, CM. Sopot.[5] It was carried out on 7 trenches with dimensions of 4 x 3 m, with the direction north–south and three extensions. A number of objects emerged in the trenches with numbers I, IV and V, while trenches II, III, VI and VII gave information for the surrounding space in the neighborhood and the environment of a Neolithic house (**Fig. 3**).

The remains of architectural objects

Due to the shallow layer of the edges and their long–term processing a large part of the building wall surfaces were fallen. Consequently, by the excavations, there appeared quite loose mud plasters, most of which on one side had a flat and smoothed surface with a greyish–white color. The base of the dwelling (House 1) is 6.30 x 3.20 m., with a stretch in the direction southeast–northwest. In the hard Pleistocene sterile layer (sand–gravel yellow clay), in trench IV 15 post–holes with different perimeters were discovered which served as piles and they belonged to the southern wall (**Fig. 4**). From the southeast corner, the east wall of the house beneath a sharp angle turned north (trench V). At the north side 6 post–holes for piles were discovered (trenches I and V), while on the west side the house space was spread out of the excavated segment. The shape of the house base is probably trapezoidal with a possible entrance from the east–southeast side. A rectangular construction of the furnace–fireplace (in trench IV and the control profile between trenches I and IV) was also discovered, consisting of larger stones and lumps of plasters, with dimensions of 2.8 0x 1.00 m., with a dominant position in the middle of the dwelling (**Fig. 5**).

Archaeological artifacts

During archaeological excavation, a large number of completely preserved and fragmented objects were discovered, which according to the character, function and material were made of stone, flint, animal bones and pottery.[6]

The stone and flint archaeological objects, found as fragments or completely preserved tools, were made of various mineral resources provided near the settlement or from afar (**Fig. 6, 1–3; T. I, 4**). The most common mineral resources are large-sized shales for grindingstones; quartz, basalt, calcedon, opal, jasper, etc., minerals for flints and serpentine for the group of polished stone tools used for the axes, which were revealed in a minimal number.

5 The archaeological team consisted of: archaeologist Trajanka Jovčevska custodian advisor (project manager), National Museum–Veles, archaeologist Igor Tolevski (field manager), Panče Barbutov architectural documentation, art student Biljana Soleva–Tolevska and support staff from town of Veles. KP. 557, KM. Sopot is owned by Stojan Kolev and Slavčo Kolev from the village of Sopot and we would like to thank for the appropriate cooperation.
6 All discovered artifacts from Ramnište are an integral part of the prehistoric collection of the National Museum–Veles and we are grateful for their open support in the preparation of this text.

During the excavation of the archaeological site Ramište, a large number of bone remains of animals (within the House 1) were discovered, and some secondary ones also served as a raw material for the production of various types of tools. Among others, several bone needles were discovered, a well developed bone spit in a fragmented state, and a bone tool that probably served to smoothing (**T. I, 1–3)**.

The most typical is pottery, consisting of a large number of fragmented vessels, but a small number of partly or completely preserved items. According to the traditional classification, pottery remnants can be separated into three groups: coarse, medium and fine products.

From coarse pottery most common are large vessels that were used for storage, transport and preparation of food, such as pithoi, askoi, amphorae vessels, large and deep bowls. Almost everywhere in the area of the belly of the vessel lightweight or thicker layer was applied, somewhere unorganized or organized barbotine. The other kind of vessel decoration, the impresso, is represented only by two pottery fragments and according to the dimensions most likely they are from small vessels (**Fig. 7**).

This group includes fragmented cup with handle which is displayed just below the rim and arc curved ends above the bottom (**T. I, 5**). Then a little cup fragments (**T. I, 6**) and several fragments of vessels like bottles stored vertically with cylindrical necks and performed ball–like crafted body (**T. I, 7, 8**). According to fabric these types of vessels are flattened and partially have smooth outer surface with ocher to reddish shades.

From the large and roughly decorated vessels, imprint of section of cattail is preserved, on the bottom of one of the vessel (**T. I, 9**). This indicates that most probably one of the production activities that occupied the inhabitants of the Neolithic settlement of Ramište was weaving.

The pottery with medium or „intermediary“ features are similar like some fragments of coarse pottery with flattened and partially smoothed outer surface. The color of the ceramic vessels is obtained by uneven firing, and the fragments most often contain grayish and brownish shades.

The fine vessels are found in a minimal number, they mostly have thinner walls over which the coating is made of purified clay. They are well smoothed and polished on both sides, monochrome (red or black). Painted vessels with red surfaces had black or ocher-colored ornaments with ornaments of brown color (**T. II, 2–4**). Also, in the group of fine vessels are those with a black topped decoration technique during firing of the vessels (**T. II, 5**). These fragments originate from forms of vessels such as cups, erected on a short or high cone hollow leg, semi–spherical and carinated vessels with flat bottom.

In the group of ceramic objects also the fragmented artefacts are distinguished which enter the sphere of spiritual life. Typical are the female antropomorphic figurines, zoomorphic figurines, altar tablets, ritual bread and others (**Fig. 8, a–b; T. II, 1**).

There are also a large number of fragments of ceramic vessels that are not represented in this occasion, as this is preliminary text. In the meantime larger and more comprehensive publication will serve as a basis for a that and will have the possibility of the Neolithic settlement of Ramnište near the village of Sopot be presented in a completely new light.

Conclusion

Through the archaeological excavations at the site Ramnište near the village of Sopot, Veles region, it was confirmed that the site is a Neolithic settlement erected on a flat plateau along the small river. The excavation revealed that the settlement existed in the Middle Neolithic and had two consecutive construction phases.[7] Due to lack of time, tight budget and also because of the space restriction, the research was directed only to the stated parcel. However the settlement probably spread to the surrounding area (east and north side).

One of the most interesting occurrences is the presence of several fragments of ceramics belonging to bottle–shaped vessels. Fragments of these vessels named as bottles were also discovered in the Neolithic settlements Rug Bair (Санев 1975, 216, 224) and Anzabegovo (Корошец и Корошец 1973, 51; Гарашанин и Гарашанин 2009, 95; Гарашанин 2009, 249, 251), dated back to the Middle Neolithic period or Anzabegovo III (Гарашанин 2009, 251).

The presented fragments of painted ceramic vessels (dark or brown to red surface and brown to yellow or ocher surface) are also analogous to the Neolithic settlements belonging to Anzabegovo III–IV (Гарашанин и Гарашанин 1961, 28; Гарашанин 2009, 251–254) and according to Gimbutas, Anza III (Gimbutas 1974, 55–57). Also like the neighboring settlements with their cultural phases Vršnik IV (Гарашанин и Гарашанин 1959, 65), Rug Bair II–III (Санев 1975, 224–225), Zelenikovo with the cultural horizon of the Middle Neolithic (Гарашанин и Спасовска 1976, 112).

According to the character of the tangible archeological material, it can be classified to the end of the Middle Neolithic or more accurately fitted into the existing culture of Amzabegovo–Vršnik III–IV, that is, as part of the Balkan–Anatolian cultural complex.

Acknowledgement: This paper is dedicated to Trajanka Jovčevska one of my field teachers and a good friend.

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7 During this archaeological excavation, the lower layer under the Neolithic house was partially explored and therefore it is not discussed in the text.

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List of Figures

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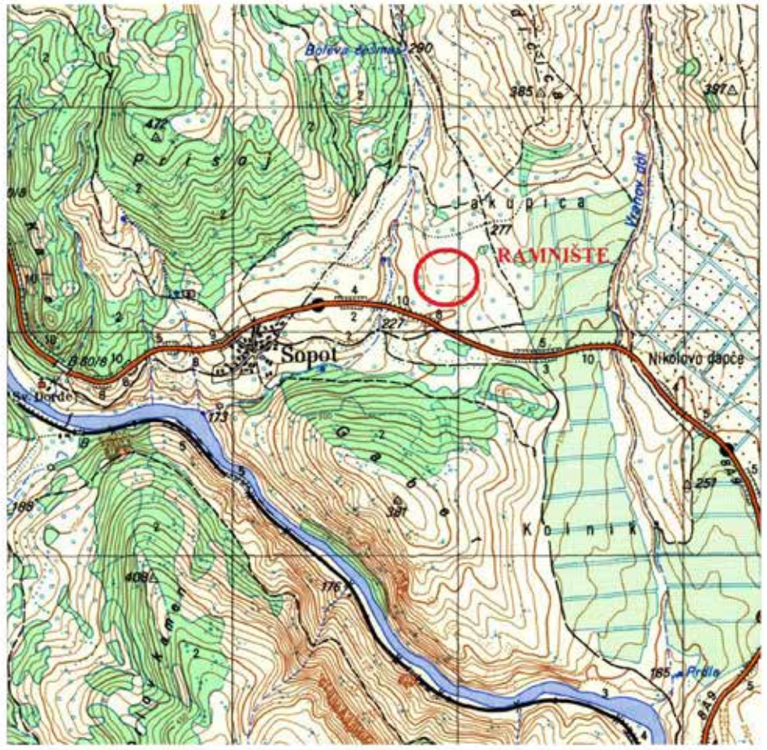

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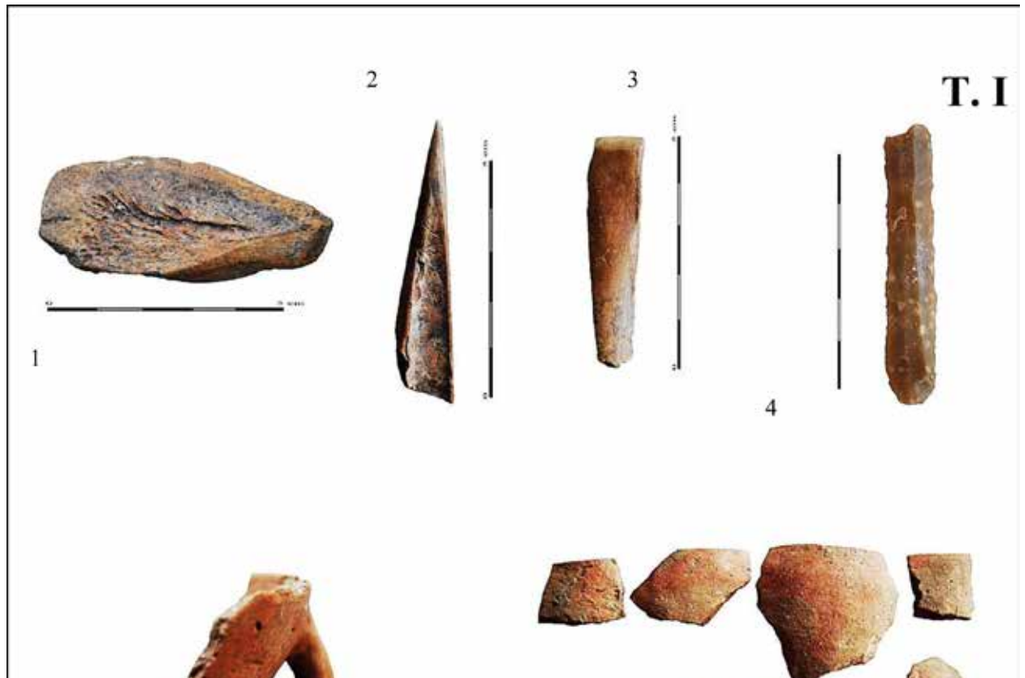
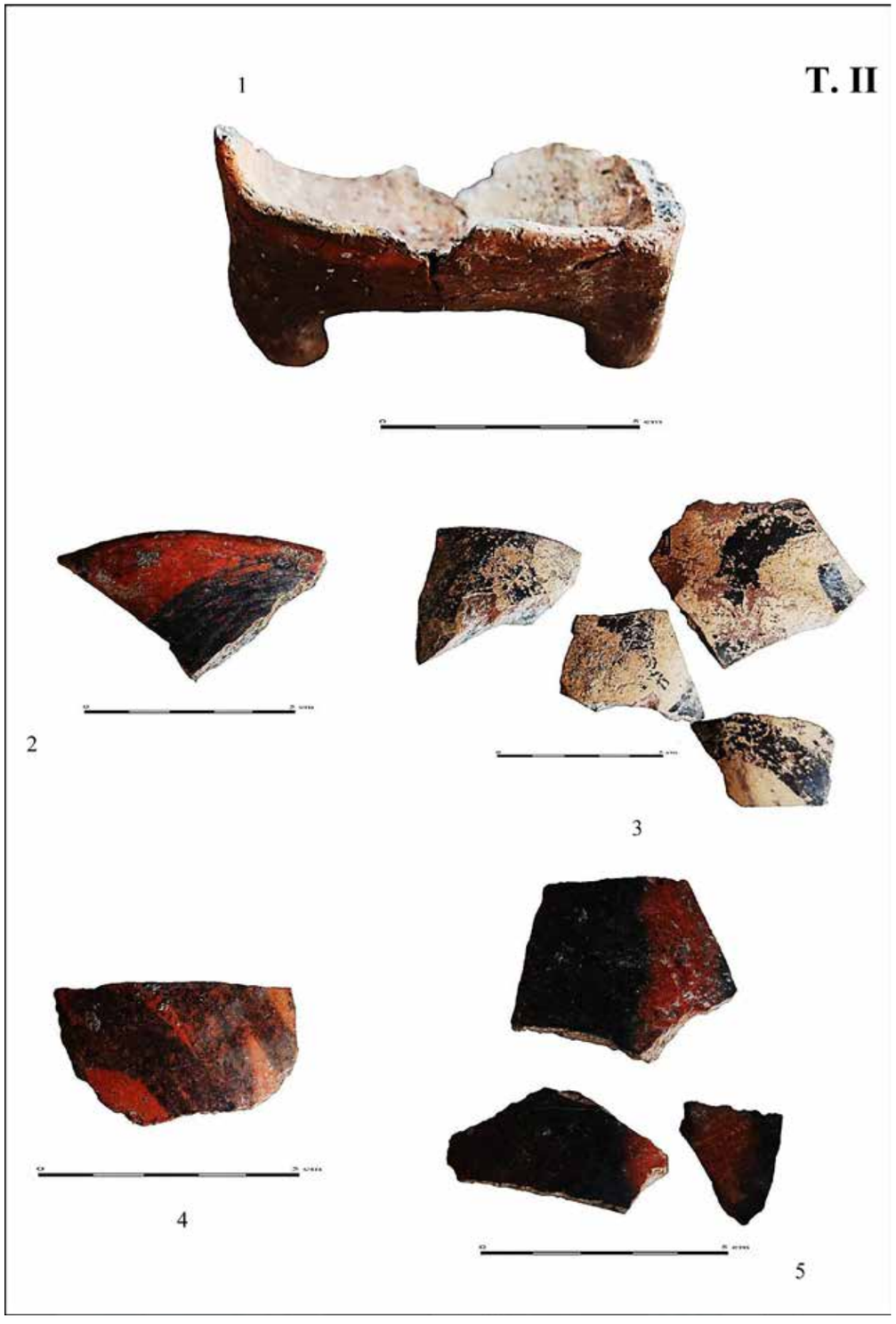
Fig. 8a

Fig. 8b





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Excavation season in 2018 at Vrbjanska Čuka tell in Pelagonia

Abstract

A new excavation campaign has been started at Vrbjanska Čuka site in 2016 and the multidisciplinary research provided entirely new information on the establishment of the tell and its social dynamism in the Neolithic, Classical period and Middle Age. The multinational team consisted of 12 different institutions from the Republic of Macedonia, Serbia, Slovenia, Switzerland, Czech Republic, Poland, Spain and Germany is focused on different aspects of the Neolithic community inhabiting this site, as well as on the depositional pits from Roman period and medieval necropolis. In 2018 the fieldwork season was focused in the determination of new architectural features in Building 2 and the opening of two new quadrants (25 and 16) in order to understand in detail the later stratums. Simultaneously the study of material culture, building techniques, geomagnetic scanning, elaboration of site plan, radiocarbon dating, processing of samples and laboratory analysis were performed as well, so the data on this complex site is significantly increased and therefore it can be thoroughly employed in the further research and explication of the society that dwelled on this tell.

Keywords: *Pelagonia, tell, fieldwork, daub structures, burials*

The archaeological site Vrbjanska Čuka is a tell established in the Neolithic and has occupation phases in the Classical period and Middle Age. It is one of the biggest tells in the northern part of Pelagonia, positioned in the vicinity of Slavej and Vrbjani villages (**Fig. 1**). Such position in a fertile valley surrounded by mountains and hills enabled continuous provision of resources for subsistence and steady social life. Consequently, a number of Neolithic and Chalcolithic tells and Bronze Age sites were established in the surrounding of Vrbjanska Čuka that indicates the region was attractive for some of the first agricultural and metallurgic societies in Pelagonia (Наумов и др. 2017).

Vrbjanska Čuka was excavated in two sets of archaeological campaigns. The first one started in 1979 and had several seasons in 1980's when the site was discovered and systematically studied as one of the first Neolithic sites in this part of Pelagonia (Китаноски 1989; Миткоски 2005). The second set started in 2016 and since than the tell has been continuously excavated and studied by new international team that besides excavation also involves geomagnetic scanning, digital topography, radiocarbon dating, archaeobotany, archeozoology, 3D modeling, study of

building techniques, use-wear, lipid and isotope analysis etc. (Наумов и др. 2016; Наумов и др. 2018). The last research season in 2018 is part of this campaign and therefore the paper will summarize mainly the results from the excavation.
The research from 2016 until 2018 excavation season indicates that the tell was approximately 4 meters high and 2500 m^2 large (**Fig. 2**). The Neolithic settlement was established on natural bulk of sand around 6000 BC and has several Neolithic, Classical and Middle Age horizons. It was consisted of more than 20 buildings surrounded by a ditch with entrance on its south-east side. Seven buildings are identified so far and made of wattle and daub with biggest one in size of 13x10 meters and consisted of massive clay installations, such as ovens, bins, platforms, cereals processing area etc. Its interior was full with grinding stones that indicates the major household activities focused on processing of cereals, mainly consisted of barley, einkorn and wheat, but also lentils and peas were part of daily diet (Naumov et al. *in press*).

The agricultural engagement is further confirmed by the large number of flints used as sickles for harvesting. The food was stored, transported, prepared and served in several types of vessels common for the Velušina-Porodin group in Pelagonia with fine pottery produced in quantity close to the one of the coarse wares. In some of them remains of animal and fish meat consummation and dairy products is confirmed while among the domestic animals the cattle was more in favor in spite of sheep, goat and pigs. The remains of dog, deer, does, foxes, trout, catfishes, snakes, frogs and mussels are confirmed, but also of various fruits and wild plants that illustrates the natural environment of the site. The large number of figurines, anthropomorphic house models, altars and ritual practices indicate the intensive symbolic engagement of the community in regard to buildings establishment and its abandonment, farming, abundance, social status and commemoration of ancestors (Наумов и др. 2018; Стојановски и др. 2018; Mazzucco et al. 2018; Beneš et al. *in press*).

Research season in 2018

One of the major aims of Vrbjanska Čuka team is to study the site from various perspectives and not only by excavation and documentation of material and building features. Therefore professionals and students from several European countries are engaged in order to understand the formation processes of the settlement, its chronology and environment, building materials and techniques, spatial organization, diet and deceases of people and animals, pottery and clay representations, production and usage of tools, as well as rituals, social components, symbolic categories and economy of the Neolithic community that established the tell, but also of those in Roman era and Middle Age that later reactivated the site. As result to that the teams from the Center for Prehistoric Research, Museum of Prilep, Institute for Old Slavic Culture, Institute Biosens, University of Bern, Free University Berlin, University of South Bohemia, Spanish National Center for Research, University of Primorska and French National Center for Research are working together in order to bring much better knowledge on this archaeological site and the societies that were involved with it.

In 2018 the majority of these teams were engaged with various part of the research. Before and after this year excavation the study on lithic tools, animal bones, organic remains, lipid analysis and radiocarbon dating were performed in different institutions and laboratories. The results from these studies will be published and presented in various occasions while this paper will mainly consider the last excavation season by describing the composite activities and asserting the major outcomes.

The fieldwork season in 2018 was performed in one month and was focused on already open trench in the very center of the tell. The trench size from previous seasons was 15 by 20 meters and in the last one it was enlarged for additional 5 meters, so now it is 20 by 20 meters in total (**Fig. 3**). Due to research directions it was necessary to open new quadrants towards west and to determine the outline of several buildings. The major focus was on Building 2, but also the remaining parts of Building 4 were intended for excavation. As result to that the quadrants 16 and 25 were open and partly 32 that provided insight into the Neolithic levels and buildings, but also the detailed information on the features regarding Classical and Middle Age stratums. Besides the work on this quadrants also the features within Building 2 and Building 7 were excavated i.e. those that belong to quadrants 18, 26, 27 and 31.

Building 2

Most of the research in Vrbjanska Čuka is focused on Building 2 that is determined in quadrants 25, 26, 27, 30 and 31, and involves study of architectonic features, building technology, material culture, archaeobotany, archaeozoology, use-wear analysis, depositional contexts etc. The various studies on this building and joint paper focused on site's architecture will be published in the future and in this occasion only major results from season 2018 will be presented.

Building 2 is one of the largest Neolithic architectonic structures in the Republic of Macedonia (13x10 meters) and has nine structures of daub unearthed so far (Наумов и др. 2018). The last fieldwork was concentrated on structures SE 47 and 322, as well as on the western wall (SE 7), northern wall (SE 40) and many postholes in the interior of the building (**Fig. 4**). Also specific depositional contexts were determined that regards the establishment and the abandonment of this building concerning small pits and grinding stones placed upside-down.

The structure SE 47 was detected in the previous fieldwork seasons, but until 2018 was covered with fallen daub from the building's northern and eastern walls. Therefore in this year the fragmented daub was systematically removed in order to obtain the entire appearance of the structure SE 47 (**Fig. 5**). After the cleaning of the area it is evident that SE 47 is large structure made of daub (1.30 x 1.10 m) consisted of platform, walls, plastered floor, massive wall applications and lateral bin. The preserved height on the southern part is approximately 35 cm that partially indicates the function of the structure.

The structure's walls are roughly 10 to 15 cm thick and have massive angled applications similar to those on the granary in the Building 1 (Миткоски 2005, Fig. 2). The walls are placed on an elevated platform flattened with thin plaster. The lateral bin (SE 285) is south from the structure SE 47 and it is made of thin clay that was entirely destroyed in fragments when the Building 2 walls collapsed. South from this bin is round structure made of whitish daub (SE 37) where two grinding stones were found. These three structures are placed in the north-eastern corner of Building 2 that indicates an area with set of architectonic features used for food preparation (**Fig. 6**).

One possibility is that the structure SE 47 could be an oven due to its massive walls, high platform, flat thin plastered floor and an area with fire remains in front of it. The lateral clay bin and round structure of whitish daub next to SE 47 could be used for storing and processing of the cereals and preparation of bread. On the other hand this structure could be also used as

a large bin due to the lack of evidence for domed upper part, common for the ovens. Also the lateral bin and similarity of the massive application with the granary from Building 1 goes in favor to this. Nevertheless, the definite function of this structure will be proposed when the entire Building 2 will be opened next fieldwork season and the features of all constructions will be compared.

The structure SE 322 is next to western wall of Building 2 and has similar character i.e. a massive construction made of daub raised on a platform with flat thin floor, thick walls and small shallow container in front of the platform (**Fig. 7**). Although its width is 1.10 m still the total dimensions can not be given as the structure is not entirely excavated and a part of it is inside the western section i.e. the one between quadrants 25 and 26. There are also remains of fallen daub that should be removed in order to have the complete outlook and dimensions of this structure.

Due to similarity with structure SE 47 it could be proposed that SE 322 is also most likely an oven or a bin due to approximately ten grinding stones in its vicinity and a large fired area. It is positioned next to western wall and close to smaller round bins SE 270 and SE 271 that encompass an area for processing or cooking of food on the opposite side of the set of structures next to SE 47. If also the structures SE 34 and SE 35 previously found in Building 2 are considered than it could be asserted that a total number of nine daub constructions were installed within this building.

This is so far the biggest number of installations in the Neolithic building in the Republic of Macedonia that apparently indicates a dynamic activities. In this context also the quantity of approximately 25 grinding stones found in this building should be considered that were placed upside-down. Along with the number of daub structures this is uncommon concentration of constructions and tools in Pelagonia and Macedonia in general that induce particular attention to this building. Although the Building 2 in detail and its function will be published in another paper after entire excavation of this unit it could be proposed that it had also a role of workshop focused on cereals processing.

Besides these structures also the northern wall and post holes found in this season are of particular interest. The northern wall (SE 40), that is positioned in south-west and north-east direction, was found in previous seasons, but in the last campaign new features were determined. Namely, another wall (SE 431) attached next to SE 40 was detected in the north-east corner of Building 2 (**Fig. 4** and **Fig. 6**). It is so far unrecorded practice of establishing double walls among Neolithic buildings in Macedonia and it could be regarded as: **i.** reinforcement of the northern wall; **ii.** remaining of the second phase of Building 2 or; **iii.** a feature related to another building founded very next to Building 2.

Unfortunately the wall SE 431 is largely damaged by Middle Age pits and can not be traced in the south-western direction, so therefore its purpose is hard to be determined in the moment. If used as reinforcement it should be asserted that such features are not identified in the discovery of other walls of this building, although they are damaged as well, and especially the eastern one. The second phase is still not yet evident in Building 2 although there are some indications for second storey that are still under discussion. If another building was attached to this one than its outline can not be determined north of Building 2 as there are remains of Buildings 4, 6 and 7 that could cover its walls and features. On the other hand the wall SE 431 could be a

part of the earlier phase of Building 7 that is synchronic to Building 2. If this is confirmed by the future excavation it would be a practice that indicate Anatolian tradition of placing buildings attached next to each other (Düring and Marciniak 2005). This is hard to confirm so far and therefore such proposal could be discussed after the entire excavation and documentation of Buildings 4 and 6, their removal and detailed research on Building 7.

The work on the western wall of Building 2 was conducted as well where the structure SE 322 and large quantity of grinding stones, pits and post holes were detected (**Fig. 8**). This wall (SE 7) was initially recorded in 2016, but in the last fieldwork season the surrounding area in the quadrant 31 was cleaned. It is consisted of several smaller holes for posts where the daub was plastered. Due to intensive digging of Roman era and medieval pits this wall is also damaged and its row of postholes and daub foundations is interrupted. Outside the wall there were no specific features determined, but in the internal part of Building 2 a variety of contexts were recorded. A semispherical disposition of daub (SE 335) was recorded between the western wall and structure SE 322, but it is still hard to confirm whether it is part of a bin or randomly fallen pieces of from the western wall of Building 2. This will be a part of the study in the next fieldwork season as this probable structure or daub concentration was cut by the section made in the 1980's trench.

The foundation of grayish daub wall (SE 360) is detected next to SE 7, but also interrupted by medieval pits. Only a small part of it could be recorded in the very base of this structure that has partially similar features with rectangular bins in Building 4. Also a small semicircular thin structure (SE 456) was indicated in the north-east corner of SE 360, but due to its poor preservation it is not clear whether belongs to this rectangular bin. Next to it large grinding stones were found that indicates that even this south-western corner of Building 2 was intended for storage and processing of cereals. There are few large post holes found as well that could be a part of building reinforcement or their later employment as pits although not much of material was found inside.

During the 2018 excavation season of Building 2 also a number of smaller and bigger holes were recorded. Their approximate number is 15 and were positioned in direction from the western wall towards the northern wall of the building (**Fig. 9**). Due to its dimensions and depth it could be proposed that some were for posts and another for piles aligned in similar direction. Its position in the more less the middle of the building indicates that some were to hold the roof and most likely along with others to divide the building in two compartments. It is not yet clear whether all post/pile holes are synchronous or were made in different periods in order to strengthen the statics of the roof. Some of them could be also (later) used as pits as a scarcity of shards was found inside. Next to one of the pits two large grinding stones were placed that could also indicate a symbolic practice. Nevertheless, this features asserts the specific character of Building 2 and along with the structures of daub emphasize the complex interior of this large construction.

Building 7

During the excavations in 2017 several new buildings were determined and among them one of the earliest documented as Building 7 (Наумов и др. 2018). As this building is covered by Building 4 and Building 6 it can not be entirely open until the total excavation of the constructions

above (**Fig. 4**). Therefore in 2018 only a small part was excavated that provided partial insight into building's structure.

The small-scale excavation was focused in quadrant 18 that demonstrates activities from the end of 1970s when the site was significantly damaged by bulldozers. This quadrant evidence the destruction of parts from Building 4, Building 6 and Building 7 that were one on the top of another. Consequently there are no architectural remains of the interior of Building 7 except the bottom level where the post holes were made.

Due to such high level of damage the small scale excavation of Building 7 was focused on the post holes. There are 14 post holes determined in south-east to north-west direction with mainly smaller dimensions, but also some with a bigger diameter. Those with bigger diameter were placed at the end and middle of the row apparently to reinforce the wall made of daub. It can be asserted that these post holes are smaller in comparison to those from the Building 2, Building 4 and Building 6 next to it. The post holes recorded in 2018 are continuity row of the small ones detected in 2017 that confirms earlier construction than that of Building 6 positioned slightly southern from Building 7.

This confirms that Building 7 was established before Building 6 and it is synchronic to Building 2 and most likely to Building 1. The future study of material and radiocarbon dating of organic remains from post holes should confirm or reject such proposal, although there is no pottery or any artifacts from Building 7 (taken out by bulldozer) that could be used for comparison. Also it should be noted that the row of post holes that should go right or left from the determined one is not found so far and therefore the northern outline of Building 7 can not be specified. There are only few post holes recorded in quadrant 18, left from the aforementioned row that could be associated with Building 7, but that will be tested in the next excavation season. Besides these post holes there is no other feature or material found inside quadrant 18 related with this building.

Quadrant 25

The major aim to open the quadrant 25 was to uncover the remaining western part of the Building 2. But due to the complexity of the upper strata the level related with the Building 2 was not reached. Therefore in this occasion an overview of the layers above the Neolithic levels will be given. In spite from the research in the 1980's when this strata except by some material was not considered in detail, the excavation in the last three seasons puts also emphasis on the levels above the Neolithic settlement. Consequently, large information was obtained for the economy and rituals in the Middle Age and partially for the Roman period.

In terms of rituals there are 6 burials found in the quadrant 25. They were in different levels and contexts although previously the proposals asserted that they were a result of practice after the usage of big depositional pits. The excavation in 2018 indicated that there are burials before and after the engagement of pits and some could be synchronic. Majority of burials are inhumation and in common Christian manner of placing the individual in the east-west position (**Fig. 10**). Consequently they can be dated approximately at 11th or 12th century AD due to material found in the same strata. Some are discarded most likely as result to digging of pits or plowing and few were not excavated in total as parts from them were deep into the

profile. There are no grave goods deposited inside the graves and also some jewelry worn on these individuals was not found that indicates the buried were not belonging to a community with higher status.

Of particular interest in quadrant 25 is a specific context consisted of several features involving burial (SE 305), large pit (SE 339), paved area with pottery fragments (SE 338), and a set of stone plate and a circle of stones (SE 295). Because of that this quadrant was partially widened towards quadrant 32 in order to detect some of the features in detail (**Fig. 11**). The big fragments of pottery positioned as substructure were related to stones grouped in ellipse that were covered by a large stone slab. Next to them a buried individual was placed and later cut by the large pit that apparently demonstrates the usage of some pits even after the burial phase. Surprisingly, after the removal of large stone slab the group of stones that was supposed to be a grave was empty and another stone plate was found at the bottom. It is evident that this set of stones, slab and leveled pottery fragments were an assemblage that was intentionally left empty. It is under discussion if the buried individual next to this assemblage was synchronic and purposefully placed there.

After the documentation and removal of this assemblage a wall made of large stones was detected as well as a plastered floor next to it (**Fig. 12**). The material and stratigraphic position indicate that it was built earlier than the context elaborated above and it could belong to Roman era. The future widening of quadrant 25 and 31 would provide more information on this issue. Nevertheless, the large pit (0.90 m wide) was apparently made later i.e. in the Middle Age that is confirmed by the material deposited inside. Besides the pottery fragments also remains of another individual were recorded that could be placed inside this large pit. This opens discussions on the function of pit that most likely was medieval storage for deposition of cereals although the presence of scattered bones raises questions on its economic or ritual character.

This large pit also provides significant information on the entire stratigraphy of the site and particularly on the Neolithic levels at it goes deep into the virgin soil and therefore damages the north-west corner of the Building 2. Due to such insight it can be noticed that Neolithic levels are far more complex and consisted of many layers that were not recognized in the previous excavations and also are different than those in the detected features in quadrants excavated so far. Remains of firing activities are documented in several levels while no remnants of buildings or daub structures could be identified in the pit's section, except those of Building 2 on the very bottom.

In regard to daub remains in quadrant 25 a large quantity of this material was found in the same level with the Roman wall. Considering its features it is apparent that it is common to Neolithic daub and therefore it is associated with building(s) from this period. They could be scattered during the digging of pits in Roman or medieval period when the Neolithic buildings were damaged in order to reach bigger deepness of the pits. This is common practice as such pits were dug in high density and damaged absolutely each Neolithic building detected in the excavated trenches. Consequently, large quantity of daub was extracted from Neolithic layers and thrown out on the levels where pits are starting.

On the other hand the presence of some later Neolithic level with buildings should not be disregarded although there is no indication of an outline that could be associated with some construction. In the excavations from 1980-s so called House 3 was recorded in the upper

Neolithic levels (Миткоски 2005), although there is no drawing or photo in the documentation that designate its area, except the section drawing that indicates its presence in the stratigraphy. Consequently, it can be proposed that a building named as House 3 in the 1980-s is actually remains of large pieces of daub thrown out during the digging of Roman and medieval pits. Surely, this should be tested in the future research as at this stage small area is excavated in order to provide final definition of these specific archaeological features.

Quadrant 16

The work in quadrant 16 has more or less similar features although there are also variations. Therefore this quadrant will not be elaborated in such detail as the previous one, but emphasis on some specific contexts will be given. After the removal of recent soil also few medieval burials were detected (SE 317 and SE 353), but not at same preservation stage as in quadrant 25. They are majorly parts of at least two individuals that were not found in common burial context, but as disjoined parts placed one onto another along some animal bones. It is under discussion if they were placed there due to some ritual or these bones were just thrown during the digging of the pits that most likely damaged some of the earlier burials (as with the case of SE 305 and SE 339 in quadrant 25 where the lower part of the individual was entirely cut by the pit).

Similar with the above mentioned case in quadrant 25 also a large stone slab was found in the north-west corner of the quadrant 16 (**Fig. 13**). There were no stones arranged around i.e. bellow this slab. Actually, this large stone was placed directly onto the daub remains from most likely damaged Neolithic buildings by medieval pits. The stone was above a small hole in between several pieces of daub, but nothing was found inside after its removal. It is still unclear whether the stone was thrown there or was intentionally placed into something that looks like flattened remains of daub (SE 442). Therefore it is intriguing that in 2018 excavation season two large stone slabs were found above empty holes. They could be easily identified as cenotaphs, but also a variety of actions could be associated with placing or throwing the large stones in particular area.

In regard to above mentioned daub remains it should be emphasized that large quantity of this material was also found in quadrant 16 on the same level as the one in the quadrant 25. It was discarded as well without any particular outline that could be associated with building, so consequently it could be proposed that this Neolithic daub remains (SE 415 and SE 442) are also thrown out from the large number of later pits that damaged Building 4.

The large pits were detected above the layer of discarded daub, but also after its removal that indicates digging of pits was common in various stages (SE 367-372). Their number is quite big and they were densely dug close to each other (**Fig. 14**). The material within is mainly medieval, but also Roman shards and large quantity of Neolithic fragments was found inside due to digging through several different strata. In the southern part of the quadrant 16 a channel in east-west direction was recorded (SE 429). Its function is unclear and cannot be related to any building activity, but it is on the same level with the pits and it was also detected in previous excavation season inside quadrant 17 (**Fig.15**).

The excavation of quadrant 16, but also of 25, ended on the very top of the latest Neolithic levels. That was planned in advance in order to continue next year with the fieldwork from the same Neolithic strata and to understand better the final phases of the Neolithic settlement. These layers are already familiar from the excavation of quadrants 17, 22 and 23 and indicate strata with large quantity of Neolithic material and most likely buildings made of dried daub (Наумов и др. 2018).

Conclusion

This paper was rather a brief report of the excavation results from the season 2018 with emphasis on the particular contexts and buildings while the material culture was not considered (**Fig. 16**). In regard to pottery, figurines, models, altars and tools the unearthed finds from this season are not significantly different than those from previous seasons and mostly the same features are determined (Наумов и др. 2016; Наумов и др. 2018). The pottery has the typology common for the Early Neolithic Velušina-Porodin group in Pelagonia without some specific declination except the large production of fine pottery with small round applications and black painted lines (Симоска и Санев 1976; Симоска и др. 1979; Китаноски и др. 1983). White painting was also detected in several contexts and of particular interest is sherd found next to the structure SE 47 that has white design similar to that of Optičari and Veluška Tumba in the central part of Pelagonia (Симоска и Санев 1975; Симоска и Кузман 1990). The number of figurines, models and altars found this season is smaller as the excavation was more focused on new quadrants in the trench where most of the fieldwork was associated with later layers i.e. Roman and Middle Age strata. Nevertheless, the tangible material is under study and papers with thorough emphasis on these finds will be published in other occasions.

The fieldwork season on Vrbjanska Čuka in 2018 also involved work on different parts on the site or various materials, but also in the laboratories. The teams from Free University Berlin, University of Primorska, Pryncipat and University of South Bohemia were working on the study of building techniques evidenced in the daub, geo-referencing, elaboration of site plan, geophysical scanning of neighboring tells and processing of samples for archaeobotanic analysis. Also the samples for radiocarbon dating were processed in the National Center of Accelerators in Seville where new dates for the earliest levels of the site were provided. The Institute Biosense has human remains from this settlement for dating as well that the specialists will furthermore use for the stable isotope analysis. The lipid analysis of organic remains on pottery was performed at the University of Bristol where a novel insight into the diet of Vrbjanska Čuka community was obtained. Some of the current results from these studies are in process of publishing while other will be also published in various journals in 2019.

Besides the current fieldwork also the study of animal bones, flint tools and pottery is scheduled for the forthcoming months. The team from Institute Biosense will work on the animal remains from Vrbjanska Čuka, but also on those from other Neolithic sites in Pelagonia. That way more thorough perspective of animal husbandry and diet on regional level will be provided that will demonstrate the modes of domestication process and diet among Vrbjanska community in relation to other settlements in Pelagonia. A team from the Spanish National Council for Research will continue the use wear analysis of flint tools and their employment in the agricultural activities. As in the previous seasons archaeobotanic analysis will be also

conducted at the University of South Bohemia. The detailed study of pottery will be performed by a team from the University of Kiel with particular focus on the technology of production of vessels from different Neolithic layers. In general the current and forthcoming research provides perspectives for entirely novel understanding of the site concerning various aspects of the first farming communities in Pelagonia.

Nevertheless, the fieldwork season on Vrbjanska Čuka in 2018 contributed in more detailed determination of some architectonic features and the stratigraphy associated with later periods. The exposure of new structures and pits in Building 2 indicates quite dynamic household area associated with processing of cereals and food production. Some of the unearthed constructions are common for the majority of Neolithic buildings excavated in the Republic of Macedonia (Толевски 2009; Фиданоски 2012; Стојанова Канзурова 2011), and apparently similar to those in Pelagonia (Grbić et al. 1960; Симоска и Санев 1975). SE 47 also has evident resemblance to some features from the granary in the Building 1 (Китаноски 1989; Миткоски 2005). But in spite of buildings referred to above, the quantity of daub structures in Building 2 is much larger and consequently asserts this construction as the biggest one so far in the Neolithic of the Republic of Macedonia. The presence of large post holes in the middle of the building and next to the outer southern wall designates its massive configuration.

Due to small number of finds in this building and placing of approximately 30 grinding stones upside down it can be proposed that the interior was cleaned and symbolically engaged with the specific deposition of grindings stones in order to emphasize the abandonment of the building. Such practices are not uncommon for the Neolithic Balkans and it is witnessed as well in the Republic of Macedonia and the site of Govrlevo in particular. The firing of the buildings prior to the abandonment is evidenced in Vrbjanska Čuka too and proposed as well as a ritual action associated with the end of life in the Building 2 (Nikolov 1989; Tringham 1991; Stefanović 1997; Tringham 2005; Фиданоски и Томаж 2010; Naumov 2013).

If compared to other sites in the region Vrbjanska Čuka tell have components that are familiar, but also some that are specific and not present elsewhere. It is apparently a tell that had dynamic social processes, but not so intense to gain continuity for several millennia like some other in the Balkans (Bailey 2000; Souvatzi 2008). With its approximate 4 m height and 2 m of cultural layers this tell had vibrant society in the Neolithic, but afterwards there was no activity for several millennia until the establishment of Roman settlements in the region. This site in the Neolithic was synchronic to majority of explored tells in Pelagonia, but had social relationship with those at Porodin, Mogila, Optičari, Topolčani etc. (Grbić et al. 1960; Симоска и Санев 1975; Китаноски и др. 1983; Симоска и др. 1979; Симоска и Кузман 1990), but also with some in the Polog, Ohrid and Korçe region, such as the tells at Stenče, Brvenica, Dolno Trnovo, Podgori, Vashtemi etc. (Здравковски 2005; Абази и Толевски 2017; Кузман и др. 1989; Naumov 2016; Stojanova Kanzurova 2018; Prendi and Bunguri 2018).

After a huge gap of five millennia the Vrbjanska Čuka tell becomes active again as most likely a Roman villa rustica or agricultural area in 2nd and 3rd century AD as indicated by the pottery features (Anderson Stojanović 1992). Later this tell was employed as a medieval necropolis and a storage area with numerous pits that is common practice onto prehistoric tells and burial mounds (Џидрова 2008; Curta 2016). This variety of Neolithic, Classical and medieval levels and huge gap between indicates that this area was attractive for farming communities in different eras, but not favored from the Chalcolithic until the spread of Roman Empire. As the prospection and excavation of neighboring tells evidences there were different sites established in the vicinity of than abandoned Vrbjanska Čuka (Наумов и др. 2017; Темелкоски 1999). The ongoing research on Vrbjanska Čuka, forthcoming fieldwork seasons as well as the future excavations in the neighboring sites will provide thorough answers for these economic or symbolic processes that brought first farmers in the northern part of Pelagonia and later initiated significant social changes for their dispersion in the region.

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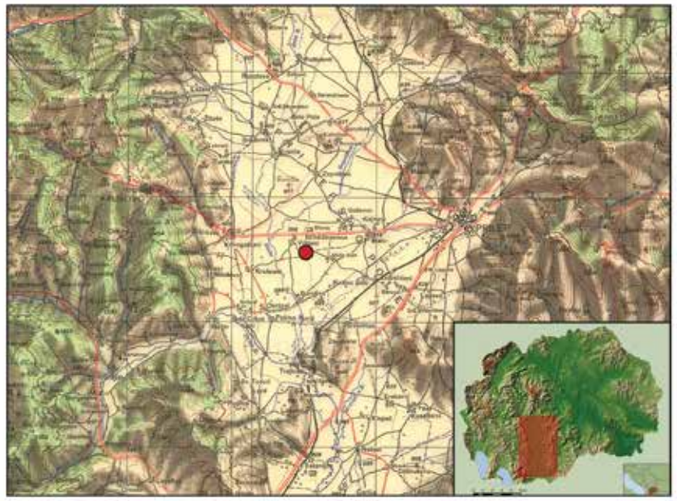

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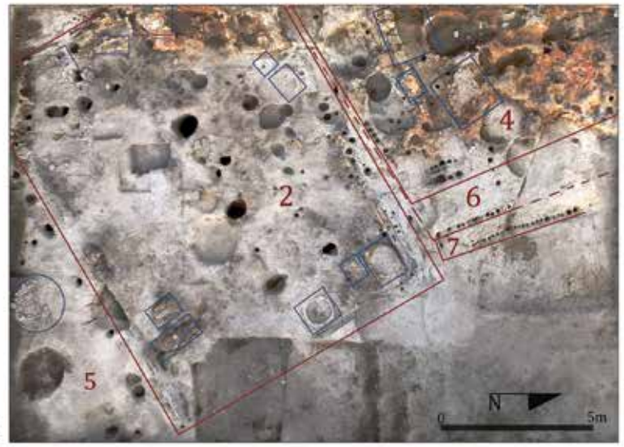

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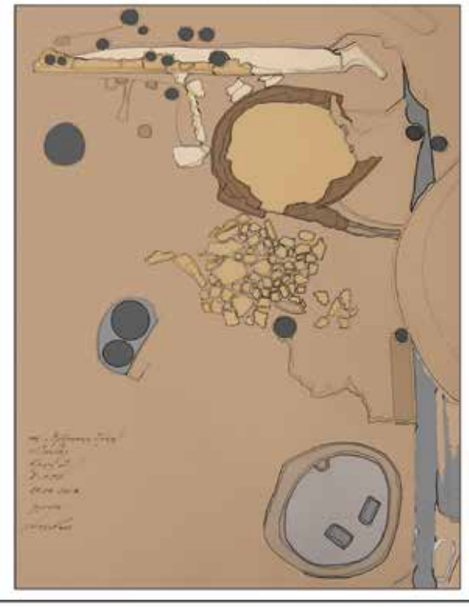

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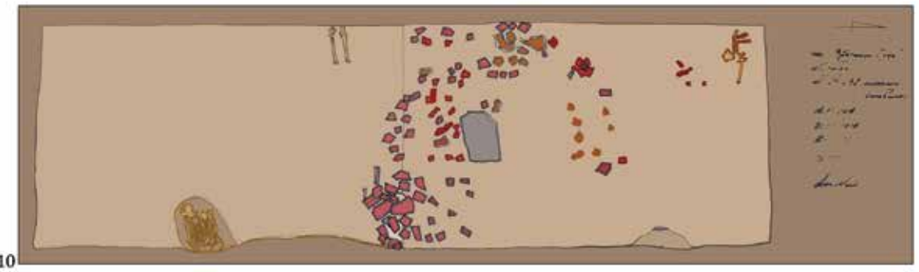

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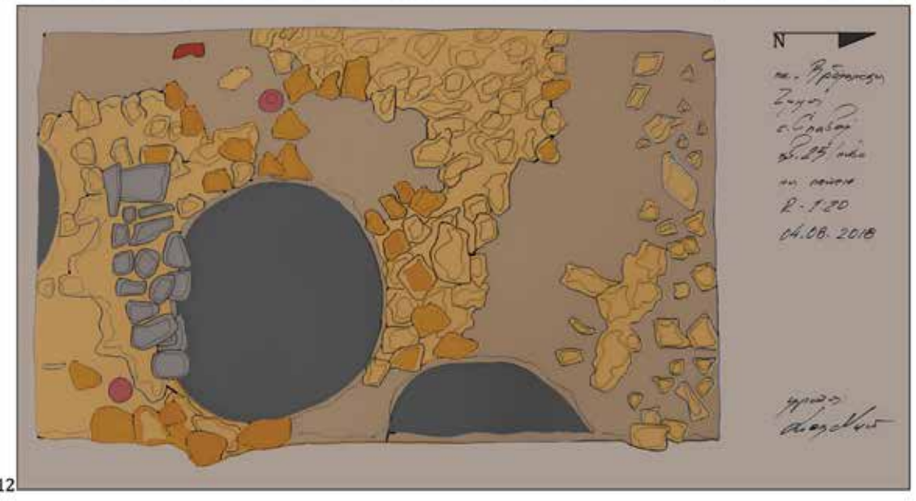

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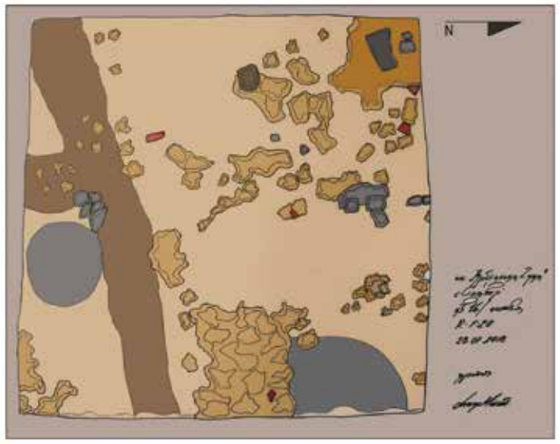

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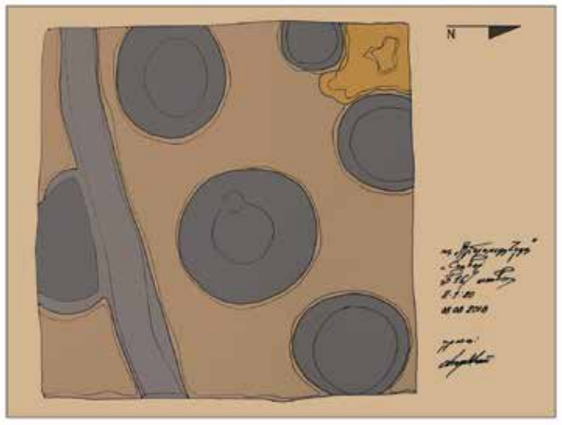

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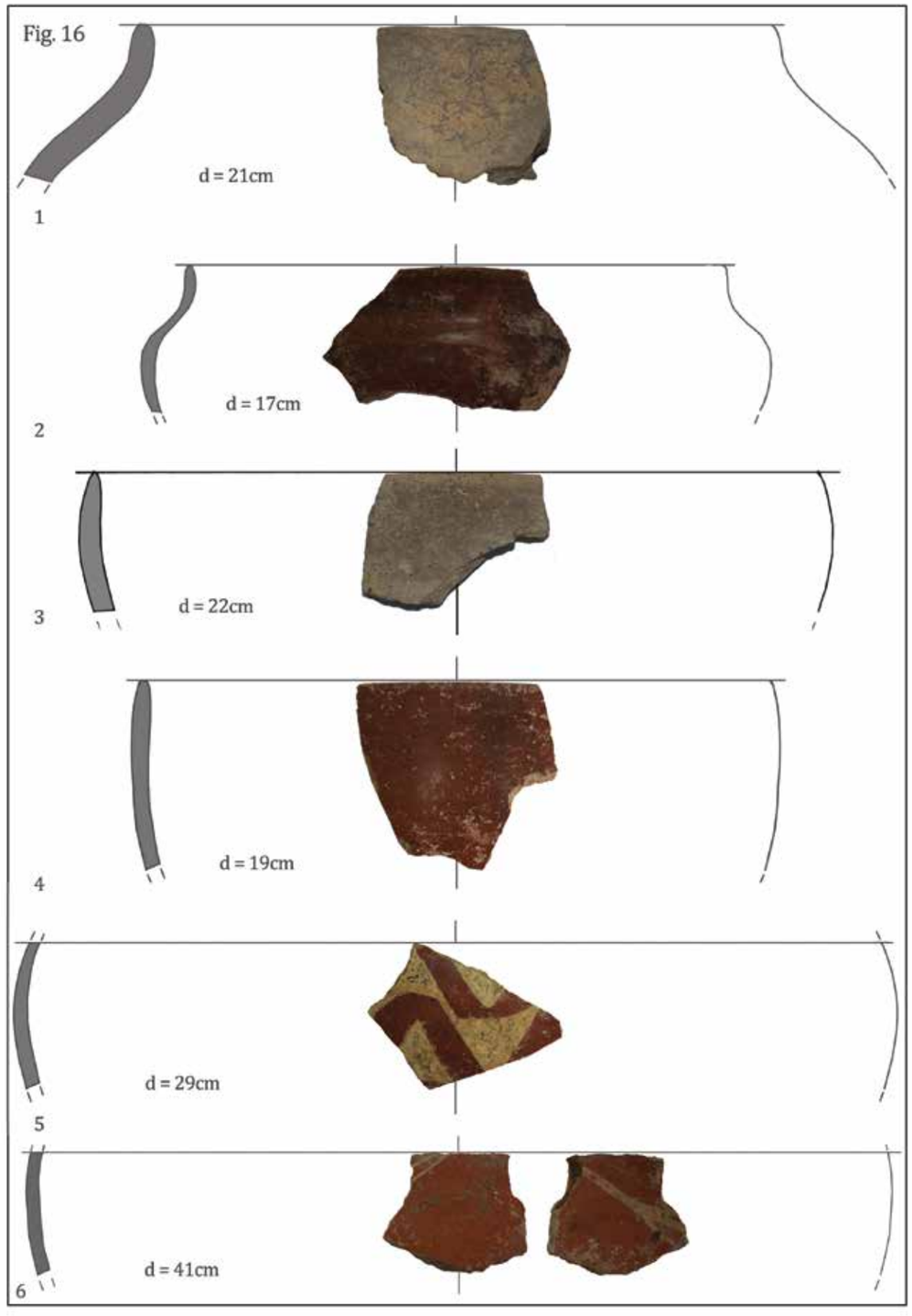

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A Study in Visibility: The Potential of GIS in the Process of Researching Neolithic Settlements in Macedonia

Abstract

This paper gives a general overview of the application of GIS in researching Neolithic landscapes in Republic of Macedonia. The discussion is done by taking a closer look at one specific functionality that most geographic information systems possess: the calculation of theoretical visibility from an observer point or viewshed analyses. The correlation between producing valuable GIS analyses and having high quality digital elevation models (DEMs) is also mentioned. Visibility analyses are a set of GIS functions that have long been part of many archaeological interpretations. They can consists of computing simple line-of-sight models starting at a single point in the landscape, to a more complex operations that take into account factors such as past vegetation, clarity between the observer and the observed point background, movement and techniques for signalization. But can these analyses offer novel insights for the Neolithic communities that dwelled in this region? Difficult to answer, however the aim of this article is initializing a discussion for a broader GIS usage in the process of collecting spatial data and management of archaeological sites, only after which the more advanced GIS analytic capabilities could be fully utilized.

***Keywords**: GIS, spatial analyses, viewshed, Neolithic*

Applications of GIS in the context of the Neolithic in Macedonia

The Neolithic is considered to be one of the most explored periods in Republic of Macedonia (Naumov et al. 2009, 9). There are numerous studies, some of which date back to the 30's, that attempt to explain some of the aspects of life in multiple regions in Macedonia during this period. Interest in the applications of geographic information systems (GIS) for collecting, storing, analyzing and visualization of spatial data related to Neolithic sites came to be only recently. In an on-going attempt to make use of open source software systems and free geodata, a limited number of digital elevation models for Neolithic tell sites were produced by the author, together with an initial spatial database of mapped sites in the region of Pelagonia (Naumov et al. 2016, Naumov et al. 2017, Figs. 1, 2). Obviously, these are only glimpses of what GIS is capable of doing when a modest amount of digitally recorded spatial variables collected from field reconnaissances and excavations are available. On the other hand, listing the lack of a good quality spatial data as the main impediment for more advanced research puts us even further away from coming to a more comprehensive reconstruction of the landscape that these Neolithic communities settled upon and interacted with.

The existing digital elevation and terrain models with acceptable precision and few mapped sites are enough to get a general feel for the settlements place in the greater landscape context. Fruitful information could also emerge when GIS is combined together with results

from archaeobotanical analyses that speak about the sites economy and geophysical scanning results that showcase the settlements dynamics and spatial patterns, such as the ones from the Neolithic sites Vrbjanska Čuka and Tumba Borotino (Naumov et al. 2017, Fig. 3). Further in this article, one specific function of most geographic information systems will be reviewed that has its roots in a more general studies of landscape visibility in Archaeology. The method discussed here has long been part of the toolkit of many prehistorians whose primary focus is the landscape in the past.

Exploring landscape visibility

In most cultures, the visual appearance of a location has the most significant impact on the individual's senses (Wheatley and Gillings 2002, 179). While hearing, touch, taste and smell offer limited spatial information (hearing), only happen within arm's reach (touch) or are much narrower and immediate (smell, taste), it is through sight that an individual experiences the shape, color, size, distance and position about a place all at once (Llobera 2007, 52). This predominance of the visual sense has been used in many societies to convey a sense of prestige, expressing a belonging to a community, establishing control over resources or as a defensive mechanism (Mlekuž 2014, 209; Murrieta-Flores 2010, 263).

Over the years, archaeologists have been criticized for prioritizing visibility analyses over analyzing the impact of the rest of the human senses. This growth in interest for exploring visibility, or even further, the concept of *visualscapes*[1], is especially true since large amount of digital elevation and terrain models became available for free and calculating the viewshed from a point became a trivial task in most geographic information systems. However, visibility is far from the only factor that determines the location of activities, monuments or settlements in a landscape. Amongst the infinite number of possible factors, research has been undertaken by many authors to investigate what role other senses play as well (Mlekuž 2004; Gell 1995).

Either way, it shouldn't be surprising that visibility analyses are still on the fore-front of landscape archaeology and are widely used in Neolithic contexts as well. They are not a novelty in the theoretical sense and have been referenced upon in many rigorous quantitive studies undertaken by leading figures in Archaeology (Fraser 1983).

Viewshed analyses in the Neolithic

Prehistorians that deal with the complexity of the Neolithic environment had an interest in visibility studies long before any computer aided methodologies were adapted in the archaeological toolbox. Mark Lake in his 'Visibility Studies in Archaeology: A Review and Case Study', separates these analyses into three categories:

- informal studies;
- statistical studies and;
- the humanistic approach towards visibility

The scientific literature is rich in examples where each of these schools of thought were used in different contexts spanning across multiple periods, from Neolithic chambered cairns, prehistoric hill forts, Roman urban studies, exploration of maritime Byzantine networks and Medieval isles.

1 Here, visualscape refers to Marcos Lloberas definition of visualscape that consists of all spatial representations of visibility generated by, or connected to, a spatial configuration.

In 'The Archaeology of Bullock Down, Eastbourne, East Sussex: The Development of Landscape', Peter Drewett noted that long mounds dated from the Neolithic were purposely situated on locations that offer greater view angle towards the river valleys. At the same time, these false crests limited the view towards the downlands which in contrast became possible only by going further uphill (Drewett 1982, 49). Though Drewett provided viewshed maps most possibly determined by eye observation in the field, his premise did not include any form of systematic sampling of background views (Lake and Woodman 2003, 690).

Even though visibility analyses did not see a massive and enthusiastic application by the processual archaeologists, there are few notable cases where they played an important role within the statistical studies of the New Archaeology. These case studies were greatly influenced by classic texts coming from the new geography which then sparked the writing of David Clarkes 'Analytical Archaeology' and 'Models in Archaeology' (Mark Lake 2003, 690). One well known example is the study of the Neolithic of the Orkney Islands undertaken by Fraser, which remains one of the most complete and thorough archaeological studies which puts visibility in its center (Wheatley 2002, 180; Fraser 1983). By taking into account the sense of sight as a part of a large dataset of environmental variables, Frazer made an observation that the location of Neolithic chambered cairns were positioned so to provide a large extent of intermediate visibility and, with caution, stated that "the cairnbuilders lived on, or used, the land within easy walking distance of the cairn" (Fraser 1983, 301).

In the late 1980's, the theoretical debate took another, slightly different route in favor of a more 'partial, situated and fragmentary knowledges as opposed to any holistic understandings of the inhabited world' (Wheatley and Gillings 2002, 181). This also caused moving away from formal methodologies and the bringing back of descriptive methods for documenting the effects of visibility in the landscape. One of the most notable studies is the exploration of the Long Barrows of Cranbourne Chase done by Chris Tilley. By considering visibility as part of an agent that is mobile and bodily engaged with the landscape, his analyzes were done by field trips to the sites, walking around them and interpolating lines of sight from multiple observer points (Wheatley and Gillings 2002, 181).

GIS, the DEM and the viewshed algorithm

As it was already mentioned, calculating the theoretical visibility from a point is a trivial task in GIS and is mostly done by:

- determining the intervisibility between two or more features in the landscape, or;
- calculating the (theoretical) visible area by producing a viewshed layer from a single location

Producing a viewshed map is the most widely used GIS analysis for representing areas of observed objects and/or landscape features in archaeological context. One of the main factors that influence the end quality of the viewshed layer is the overall quality of the digital elevation model (DEM). This elevation layer is a raster grid where each cell has an assigned altitude value. After choosing observer point and additional parameters such as radius or observer height, a straight line is being interpolated between the observer point and every other point in the raster (Wheatley and Gillings 2002, 184). As this is mostly applied on entire raster layers, the final output is in the form of a binary viewshed map typically consisting of positive (*1*) values for raster cells that are theoretically visible or null (*0*) values for cells that are not theoretically visible from the observer point.

For showcasing purposes, simplified viewshed layers were created for three Neolithic sites in Republic of Macedonia, chosen at random. Because of impediments in terms of budget and time, a freely available DEM was used for generating the viewshed layers. At each of the three sites, a point was chosen as the observer's source from which the visibility calculation was performed. For Vrbjanska Čuka, a Neolithic tell site located in Northern Pelagonia, the observer point assigned represents one of the hypothetical entrances in the tell which, based on the latest geophysical scanning, is surrounded by a ditch (Naumov et al. 2016, 22). Blockage in the form of a potential palisade that might have surrounded Vrbjanska Čuka was not taken into consideration in the test. Their most central points were chosen as observer points for the other two sites: Amzabegovo and Cerje near Govrlevo. In the examples, we added an offset of 1.7 meters for all three source points as this is the average human height. This parameter can change in different cases when of interest is the visibility from a certain structure, such as watch tower.

The final output could be represented in 2-dimensional or 3-dimensional form in most geographic information systems. Models of the view from each of the three Neolithic sites, even though prone to computing errors as by-product of the chosen DEM, still manage to give a formal way of exploring the visible areas from each of the sites (**Figs. 1–6**).

Beside the digital elevation model, the other option would be to use a Digital Terrain Model (DTM) – a vector type representation of an area that offers more points and dense samples in locations with high topographic variance (cliffs, crests). Although a number of published papers suggest that the DTM, or more commonly the vector model derived by Delaunay triangulation of location points and heights should be the preferred option, many studies opt in for the DEM as a basis to perform viewshed analyses (Wheatley and Gillings 2002, 99).

Improving the viewshed model: modeling vegetation?

The Neolithisation of the Balkans had a significant impact upon the environment mainly caused by the peoples managing of the surrounding landscape (Bailey 2000, 186). This can be clearly seen by looking at the antrachological remains (wood charcoal) found in archaeological deposits. Based on the study of vegetational history in the Balkans done by K. J. Willis, one can observe an interesting shift in woodland coverage starting in the early Holocene (Willis 1994, Marinova and Ntinou 2017, 4). The early and middle Neolithic phases seem to be characterized by changing of the tree dominants and the expansion of *Carpinus* and *Abies* wood species (Bailey 2000, 187). While these species were mostly confirmed to exist in smaller percentage during the post-glacial periods, the data shows that their number increased and now appeared to take a much wider range in the landscape (Bailey 2000, 187). As a result of cooler winter temperatures and wetland surfaces, the vegetation from this period for the territory of Republic of Macedonia is mostly distinguished by Sub-Mediterranean to sub-continental oak woodland, *Fagus* forests and coastal halophytic and alluvial hardwood forests (Marinova and Ntinou 2017, 5; Naumov et al. 2009, 13). Bailey's observation of K.J. Willis study suggests that human alteration of the woodland surfaces may have also been a factor in the range the forests took during the Neolithic (Bailey 2000, 187).

Adding vegetation data when computing visibility is a rather complex process. Many studies that model visibility do not go further to tackle the issue of blockage caused by vegetation in the landscape. However, few methods were applied by a limited number of author's that propose novel ways of dealing with the landscape complexity when attempting to model visibility. In

'Modelling visibility through vegetation', Marcos Llobera does a sample test of a new algorithm for viewshed calculation in a landscape populated with vegetation. The study has its starting point in Beer – Lambert's law of physics which examines the attenuation of light and the properties of the material the light is travelling through (Llobera 2007, 801). By extending the basic *los* (line of sight) GIS capabilities and introducing vegetation in the form of 3D models together with spatial information about its density and distribution, this procedure, though complex, is suitable for arriving at a more comprehensive reconstruction of visibility from an observers point.

Final remarks

The process of generating high quality viewshed models depends on the quality of the DEM, but in order for the viewshed layer to be valuable for researching a single site or clustered group of Neolithic settlements depends on how much quality data is available for each one of them. A well formulated archaeological question will most often 'tell' if viewshed analyses would be worthwhile investment of time and budget for a specific context. Putting this specific GIS functionality aside, we believe that a more general orientation towards utilizing what GIS has to offer in terms of data collection and management is not only possible, but much needed in Macedonia. As noted by Mark Aldenderfer in 'Anthropology, Space, and Geographic Information Systems (Spatial Information Systems)', GIS is 'theory-free' and could easily adapt to current and future trends in Neolithic archaeology. Also, the initial mapping, modeling and visualization of Neolithic tell sites done during the 2015 and 2016 field campaigns already established a basis for future work that could enrich the current knowledge of this period in Macedonia.

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Fig. 4 Three-dimensional representation of the landscape surrounding Amzabegovo together with the viewshed layer.

Fig. 5 Two-dimensional viewshed layer generated from Cerje, near the village Govrlevo.

Fig. 6 Three-dimensional representation of the dynamic topography that surrounds Cerje, near the village Govrlevo.

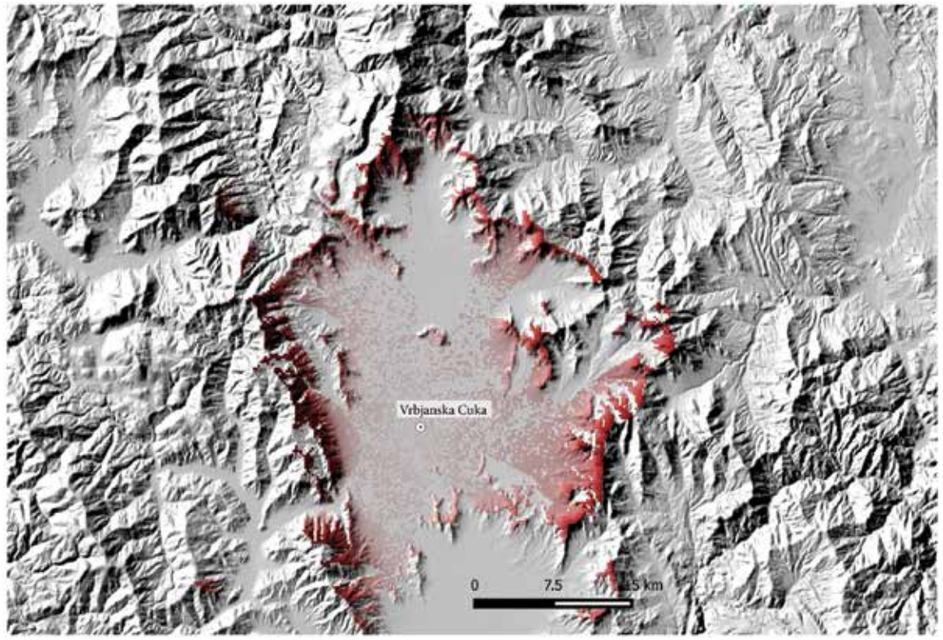

Fig. 1

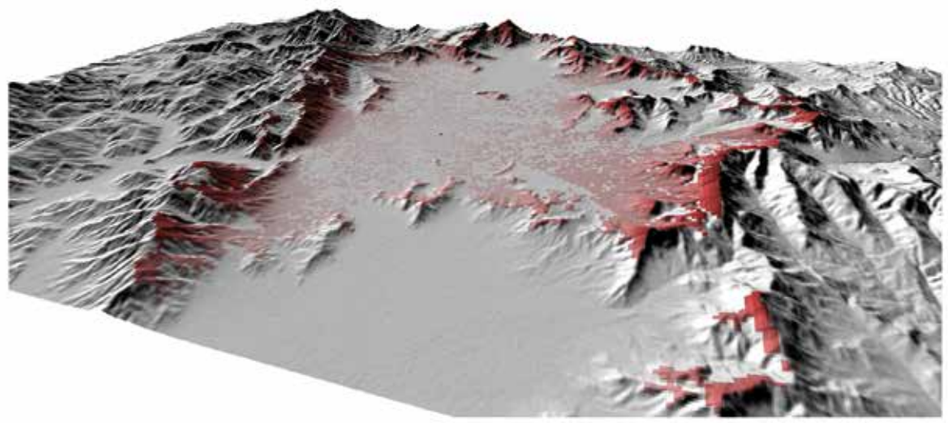

Fig. 2

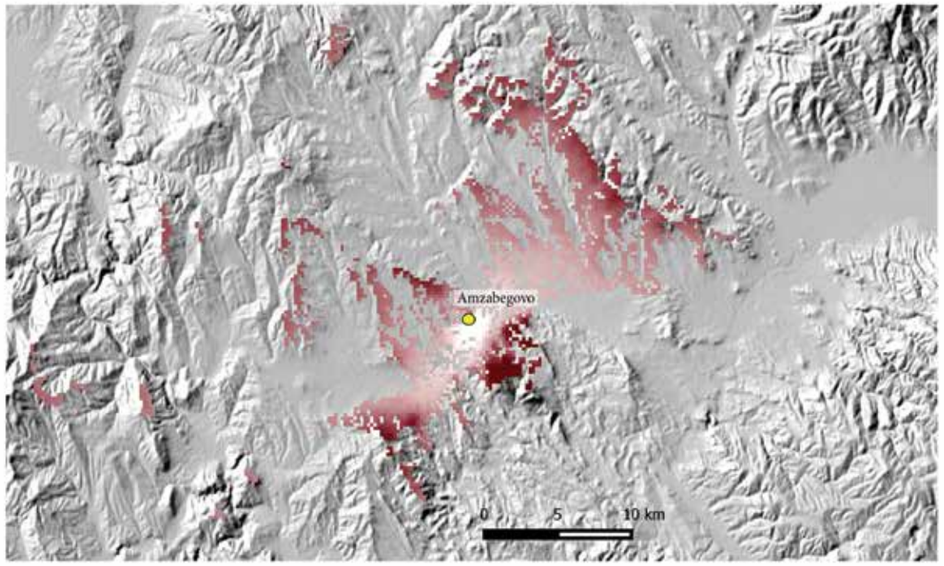

Fig. 3

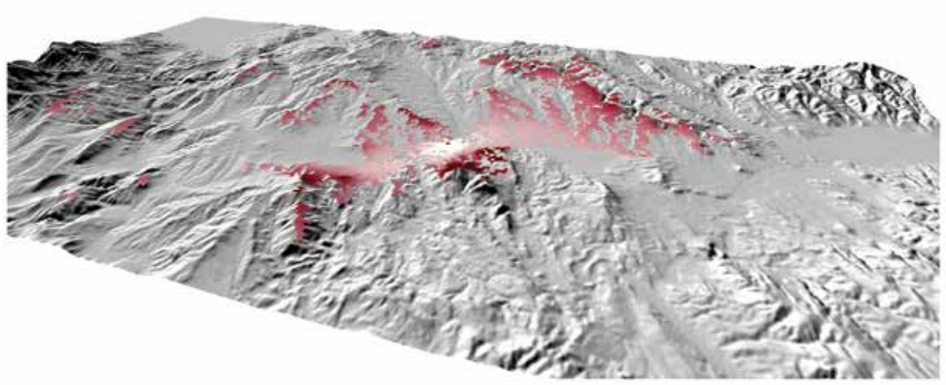

Fig. 4

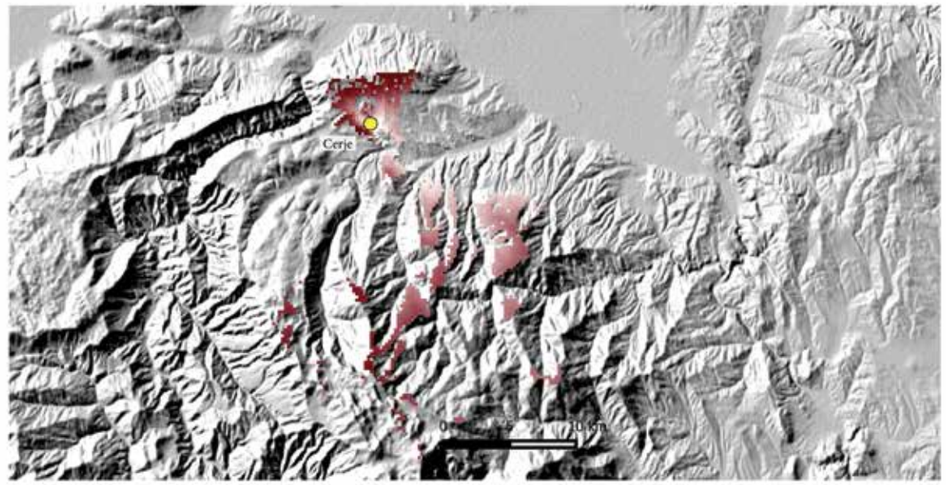

Fig. 5

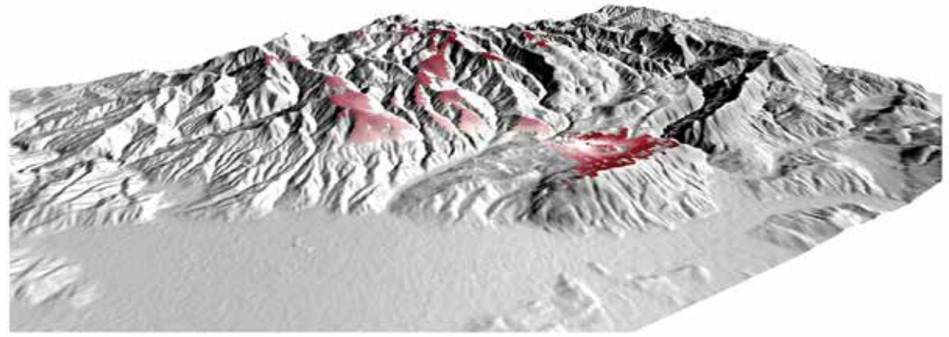

Fig. 6

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Preliminary Remarks on the Chipped Stone Industry from the Lakeside Settlement Anarghiri IXb, Western Macedonia, Greece

Abstract

The interest in the study of chipped stone artifacts in northern Greece has been increased the last decades, due to the abundance of excavations on prehistoric settlements. Together with many other aspects of the material culture, lithic artifacts have been part of specialized studies and therefore are included to recent publications. However, research in northern Greece is mainly focused on the area of central and eastern Macedonia, while a lack of studies in western Macedonia is observed, despite the number of excavated prehistoric settlements.
The present paper brings into focus the chipped stone industry of the prehistoric lakeside settlement Anarghiri IXb in the Amindeon basin (western Macedonia, Greece). The settlement, covering a period of time from Late Neolithic to Bronze Age, belongs to one of the extensively excavated sites in the area. Among other finds, a rich body of chipped stone artifacts has been recovered. Preliminary results of the ongoing study of the material are presented, regarding raw material procurement, technology and typology, with an attempt to demonstrate the strategies employed by the prehistoric inhabitants of the site and discuss correlations with neighboring regions.

Keywords: *Anarghiri IXb, western Macedonia, chipped stone industry, raw materials, tool production*

Introduction

The study of chipped stone industries deriving from prehistoric sites of northern Greece has opened a whole new area of exploration for prehistoric research in the last decades. Thus, recent studies have focused on raw material exploitation and exchange networks (Dimitriadis and Skourtopoulou 2001, 2003; Fotiadis et al. 2001; Kilikoglou et al. 1996; Kourtessi-Philippakis 2009a), technological and typological analysis (Kourtessi-Philippakis 1997, 2009b; Seferiades 1992; Skourtopoulou 1993, 1998, 1999, 2002; Tringham 2003; Tsagouli 2002), functional analysis (Skourtopoulou 2004; Tringham 2003) and contextual approaches (Skourtopoulou 2006). However, despite these noticeable advances in lithic studies, a serious gap in our knowledge regarding the area of western Macedonia (Greece) is noticed, while a limited number of preliminary reports are the only sources of information concerning lithic assemblages.

The following paper is focused on the chipped stone artifacts from the prehistoric lakeside settlement of Anarghiri IXb in the Amindeon Basin, western Macedonia, Greece. The rich material derived from the excavation provides interesting information regarding raw material selection and tool production, demonstrating the strategies employed by the prehistoric occupants of the site. However, since the study of the material is still in progress, as well as the radiocarbon dates are pending, the article will be confined to some first observations concerning the material from all excavated deposits.

The Amindeon Basin and the Settlement of Anarghiri IXb

The Amindeon basin is characterized by the presence of four lakes: Petron, Vegoritis, Chimaditis and Zazari, where important indications of early prehistoric occupation have been recorded (Kokkinidou and Trandalidou 1991). The last decades, rescue excavations and systematic survey have brought into light more than 50 archaeological sites covering a period from the Early Neolithic to late historical times (Chrysostomou andGiagkoulis2016, 6).

The research regarding the diachronic occupation of the area – and more specifically of the sites found along the shores of the four lakes and in the Amindeon Coal Mining Zone –shed light to a well-defined prehistoric sequence named as the "Culture of Four Lakes". The so called "Culture of Four Lakes" is represented by a number of Neolithic and Bronze Age settlements (**Fig. 1**). Many of these appear to have an uninterrupted occupation from the Neolithic to the Early and Middle Bronze Age. The occupation patterns so far show a preference for the lakeside areas in addition to those in the form of shallow mounds in flat areas. The foundation of settlements is related to factors such as the proximity to water and fertile soils for early agricultural exploitation. Their architecture is characterized by post framed and subterranean circular dwellings while some settlements are surrounded by a system of concentric ditches (Chrysostomou and Giagkoulis 2016, 7–8).

The settlement of Anarghiri IXb

One of the settlements that have been excavated in the Amindeon basin is Anarghiri IXb, located in the marshy area of Lake Chimaditis. It covers an area of approximately 2.8 hectares and it has an oval shape (Chrysostomou et al. 2015, 29) (**Fig. 2**).

The settlement was inhabited from the Late Neolithic I period to the Early Bronze age. However, the phase of Early Bronze Age does not preserve architectural remains due to contemporary plough action. Among the surface levels, there is evidence for occupation in the historical times (Chrysostomou et al. 2015, 29).

During the earliest LNI phase of the settlement the dwellings were either built on platforms or raised on piles in the lake. In the next phases (LNII- FN) the burnt destruction layers indicate that the settlement was on dryland from which remains of many architectural and thermal structures have been unearthed (Chrysostomou et al. 2015, 29). The occupation's layout of the earliest phases on its southeastern edge is characterized by the presence of some structures unique for Greek Neolithic settlements. Namely, parts of successive wooden fences enclosing the habitation came into light, together with the foundations of three elongated wooden trackways constructed to facilitate the access to the opposite dryland and the communication with the neighboring settlements (Giagkoulis *in press*).

The different categories of archaeological material recovered from the excavation include large amounts of plain and decorated pottery, bone and antler tools, ground stone tools and chipped stone assemblages. Among the finds there are also wooden artifacts, human and animal clay figurines, clay stamps etc. (Chrysostomou et al. 2015, 30).

The Chipped Stone Industry

The chipped stone industry of Anarghiri IXb consists of almost 11000 artifacts, a number that is referring to all excavated deposits.It is based on blade production, a category covering 71% of the total. Flakes follow with a lower representation (9%), while the rest technological categoriesappearin lower numbers (cores 1.9%, fragments 3.5%, technical pieces 3%, microblades 6.3%, waste 4.3%, projectile points 0.5%, raw material 0.1%, undetermined 0.1%).

Nearly 1800 artifacts derived from the Neolithic layers have been analyzed so far. The technological categories are represented mainly by knapping products (89.6%), while lower percentages are related to technical pieces (6.2%), cores (1.7%), debris (0.5%) and some undetermined pieces. More specifically**,** blades occur with a high percentage (81%), flakes (8.2%) and microblades follow (6.3%) with lower numbers, while the rest categories are poorly represented (flake-blades 2.8%, projectiles 1.6%) (**Fig. 3**).

Raw Materials

The chipped stone assemblage of Anarghiri IXb includes artifacts with a great variety of raw materials. The main categories refer to flint, radiolarite, chalcedony, obsidian, quartz and jasper (**Fig. 4**).

Flint is the dominant material with a 74 percentage of the total and refers to high and medium quality material which appears in many colors.

Brown and gray flints are the most frequent, covering more than half of the artifacts. Their colors vary from dark gray to light gray and from dark brown to pale brown. The majority refers to good quality semi-translucent material. These flints are present in the form of blades and retouched tools. At the same time flakes, cores and technical pieces are attested pointing to an on-site production.

Yellow and yellowish brown flints of good quality are mostly present in the form of blades and tools that show high retouch. Their presence in the settlementis rarely connected with technical pieces or cores, indicating that knapping was taking place away from the settlement's area.

Olive and black flints **–** mainly of good quality – appear in lower percentages. In the case of black flint, cores, technical pieces, flakes and blades indicate an on-site production.

Apart from the aforementioned categories, there is a small representation of lower quality cherts probably of local origin that might be used to cover temporary needs of the prehistoric inhabitants of the settlement.

Dark reddish brownradiolarite is a material that resembles Jasper (**Fig. 5**). It usually appears in the form of nodules and it can be considered deriving from secondary sources. In the settlement it is present in the form of cores, technical pieces, flakes, blades and waste which indicate an on-site production. In this category the high quality chocolate flint of Thessalian type should be also included, a material that is present mainly in the form of tools, probably as a result of exchange.

Obsidian is represented by artifacts covering 6.3% of the total. Its presence is largely connected tomicroblades and blades that were introduced into the settlement. However, there is a small number of pyramidoidal cores, flakes and some technical pieces. It looks that part of the material was imported in the settlement in the form of prepared cores and knapping was taking place in it.

Chalcedony and jasper appear in low percentages. These materials are usually present in the form of flakes and some blades. Similarly, although quartz is present in the geological background of the area, it appears in very low percentage (0.6%), probably due to the medium quality of the material. Its presence is mainly connected to flakes, few cores, waste and fragments, pointing to an expedient use of the material.

Tool typology

Almost half of the lithic material wasconverted into tools by retouch (48%). The vast majority of retouched artifacts belongs to the category of blades (95.7%) while retouched flakes (3.1%) and microblades (1.2%) are few (**Fig. 6, 7**).

The commonest tool category corresponds to blades with lateral, bilateral and marginal retouch (38.9%), which in many cases are combined with notches and denticulations. However, the majority of blades bears traces of silica gloss on one or both sides, indicating their use in harvesting or similar activities (**Fig. 8**). The number of long sickle blades is small in comparison to sickle elementson broken or truncated blades. Many of those show characteristics of resharpening at their active edges.

An interesting group of blades is comprised by those which are longer than the average, exceedingeight and sometimes ten cm in length. They are made of good quality flints and cherts. In most cases they have intense and heavy bilateral retouch and bear traces of silica gloss. Heavy retouch in long blades suggests intense renewal of the cutting edge, in some cases indicating more than one life-cycle of the artefact. Some of these tools seem to be introduced into the settlement in this form (as ready tools), pointing to a wide contact and exchange network.

The category of end-scrapers is also numerous, referring to 31%, made on long and shorter blades. In most cases they result from recycled sickle blades and elements. Some double end-scrapers and side-scrapers have also been found, still few in number.

Perforators (10.4%) are shaped with bilateral and sometimes alternate retouch on blades. Recycling occurs and covers two thirds of this category.

Truncations, notches and shouldering are in most cases part of the shaping of the tool (for hafting, better handling etc.), usually in combination with other kind of retouch, forming composite tools. Splintered piecesare present in low numbers, in some cases as part of second use of sickle elements or on wide blades and flakes. The number of burins is low too, while few geometrics are made on blades, forming mainly trapezes.

Finally, the category of projectile points includes 55 artifacts (**Fig. 9**). They are mainly shaped on blades of yellowish brown, chocolate, brown and gray flint. Moreover, there are two projectiles made of obsidian. In most cases, the projectiles are of fine shaping with bifacial covering

retouch by using the pressure technique and are tanged or tanged and barbed. Similar quality is observed in the production of the leaf-shaped points with bifacial covering retouch which are tanged. Of course, in some cases simpler forms and unsophisticated shaping is observed.

Strategies of Raw Material Acquisition and Tool Production

The aforementioned data reveal certain strategies employed by the prehistoric inhabitants of the settlement regarding raw material acquisition and tool production.

A great variety of raw materials had been used in the production of tools. The settlement relied mainly on local and regional raw materials that were accessible to the community. Local cherts, quartz, chalcedony and jasper are present in low percentages andwere used mainly as supplementary material, probably because of their low knapping quality. In most cases they are connected to the production of flakes and flake-blades with marginal retouch.

Radiolarites, a material that is present in the geological background of western Macedonia, must have resulted most probably from secondary sources in the form of pebbles. However, a fine quality radiolarite that is known as Thessalian chocolate flint could be related to more distant sources in the Pindus Mountains (Dimitriadis and Skourtopoulou 2001, 785; Moundrea-Agrafioti 1981, 43; Perles 2001, 202). At the same time, good quality flints like gray, black and olive could have been derived from northwestern mountain ranges of continental Greece (Dimitriadis and Skourtopoulou 2001, 785). Regarding these materials, the reduction sequence is in some cases almost complete, pointing to their introduction into the settlement in the form of prepared cores and demonstrating that at least a part of knapping was taking place on site.

At the same time, a different strategy isdocumented by the existence of exotic materials. In the case of obsidian, its origin – apart from the island of Milos in the Aegean – could be located in the Carpathian area, since Carpathian obsidian has been documented in some Neolithic settlements of Northern Greece, such as Mandalo (Kilikoglou et al. 1996). Future analysis could investigate the assumption that the settlement of Anarghiri IXb was part of a network related to the circulation of Carpathian obsidian. The presence of obsidian demonstrates the participation of the settlement in wider networks operating in the South, since this material could be imported through Thessaly. Additionally, the possible presence of Carpathian obsidian could point to the communication with the northern Balkans and the circulation of this exotic material in distances covering several hundred kilometers.

Similar observations could be made in the case of yellow flint, which is present in the form of tools. No evidence of on-site production is attested and the provenance of this material is not specified. The material of Anarghiri IXb does not resembles the so called 'Balkan flint' that is present in the industries of eastern Macedonia and some other sites of continental Greece (Franchthi Cave, Argissa, Sitagroi etc.). However, possible sources for yellow flint have been proposed by researchers, pointing among others to the Albanian regions (Kaczanowska and Kozłowski 2015; 72; Perles 2001, 202).

As it has already been demonstrated, the chipped stone industry of Anarghiri IXb is based on blade production. On the contrary, the presence of flakes is limited and in many cases related to the rejuvenation stages of the cores and less to their transformation by retouch. The presence

of cores indicates the on-site production of tools in many cases, a practice also evident in the existence of technical pieces, fragments and waste. At the same time, the sufficient number of crested blades indicates that a small scale production occurred on site.However, the number of cortical flakes is very small and rather rare, pointing to the assumption that core preparation in most cases was taking place away from the occupational area.

The knapping techniques that have been attested include direct percussion with hard and soft hammer and indirect percussion. Pressure technique is applied to microblade production, which is also evident by the presence of pyramidhoidal microblade cores, preferably of obsidian and high-quality gray, yellow, chocolate and black flint (**Fig. 10**).

Regarding tools, those are mainly related to everyday activities performed by the prehistoric occupants of the settlement. Cutting, slicing, scraping, drilling, food processing and hunting are some of the activities that the chipped stone tools were used forin order to realize everyday tasks. However, it is obvious that a great effort was put in the production of tools related to horticultural activities, indicating that agriculture played an important role in the settlement's economy.

An interesting pattern of tool management is maintenance and recyclingof a great number of tools (Andrefsky 2009, 71–72). Maintenance is mostly connected to the renewal or resharpening of the tool's active edge, in order to become effective again and is easily observed in the case of sickle blades and sickle elements. Tool recycling is attested too, mostly on tools of good quality flints. The majority refers to the transformation of sickle blades into end-scrapers or perforators. It looks that the raw material of the tool plays an important role in both maintenance and recycling. Usually, this practice is observed on yellow/yellowish brown flints, gray and chocolate ones, pointing to a strategy of raw material economy and intensive use of certain tool types.

Correlations with Neighboring Regions

Looking to the area of western Macedonia, common strategies of the Neolithic inhabitants have been observed regarding raw material procurement and tool management. However, the information deriving from other excavated settlements in western Macedonia is limited.

Diversity in the use of raw materials is evident in some prehistoric settlements of the region. Radiolarites are represented in Dispilio (Doulkeridou 2009, 31, Tsangouli 2002, 148–149) and Megalo Nisi Galanis (Ziota et al. 1990, 95–96), as well as Servia (Watson 1983, 122–123) and Avgi (Andreasen 2011). In most cases they derive from secondary deposits and are related to the production of flakes and blades. In the case of Avgi and Dispilio yellowish brown, gray, black and brown flints of good quality had been used in the production of tools. In Megalo Nisi Galanis blades were made of fine quality chocolate and yellow flint, but no evidence of on-site production is reported. In the aforementioned settlements, the use of quartz and few regional opaque cherts is limited, while the presence of obsidian appears in much lower numbers in comparison to the industry of Anarghiri IXb.

It is self- evident that the geological background of the area has been one of the major factors that affected the selection of certain raw materials for tools' production, with a preference

in materials of good knapping quality. Since good quality flints were not present in the immediate environment, the occupants obtained those in the form of prepared cores or from secondary deposits. They could either perform procurement trips or exchange through regional networks. In any case, the choices of the prehistoric inhabitants point to a good knowledge of distant sources and obviously the development of socioeconomic relations with other settlements of the area. At the same time, lower quality local materials were also used, but mainly as supplementary to good quality ones. On the contrary, the presence of both obsidian and yellow flint (as exotic materials) points to the existence of wider common networks and interregional communication, an observation referring also to other categories of material culture, like pottery.

Regarding tool typology, it is clear that the Anarghiri IXb assemblage is compatible with other Neolithic chipped stone industries ofnorthern Greece. Blades with extent retouch, end-scrapers and perforators are common in the assemblages of Thessaly, western, central and eastern Macedonia (Moundrea-Agrafioti 1981;Skourtopoulou 2013; Tringham 2003). The similarities on tool types and retouched artifacts among these regions is one more evidence indicating the communication between settlements. At the same time, the presence of some long blades, possibly introduced as finished products, points to the participation of the local community to extended exchange networks. Moreover, the case of projectiles corresponds to the usual types of Late and Final Neolithic (tanged, tanged and barbed) by using the pressure technique. However, the manufacture of some points requires highly developed craftsmanship and should be considered as the result of interregional communication or exchange goods.

If we turn the attention to the region of the Republic of Macedonia, the lack of studies regarding chipped stone assemblages does not allow many comparisons between the industries of cross-border area's settlements. Some existing studies are concentrated in the area of Skopje Valley, where the material from Amzabegovo (Elster 1976, 257–278) and Rug Bair (Dimitrovska 2012a, 11–28) have been a subject of specialized research.

In this territory a prevalence of local raw materials is referred. The lithic material from the Amzabegovo-Vršnik culture derived from several locations in the vicinity of Sveti Nikole. Jasper, chalcedony, flint and quartz are the commonest raw materials for the production of tools. A yellow flint that resembles the so called 'Balkan flint' is considered of local origin, since outcrops of this material have been located in the region (quarries for non-metals like Češinovo-Spančevo). Additionally, no obsidian has been found in any of these settlements (Dimitrovska 2012b, 426–428).

Less information derives from the region of Pelagonia, where diversity of raw materials for tools' production is mentioned. Quartz and quartzite appear most commonly on the sites ofthis region, as well as chalcedony (Tolevski 2009, 81).

According to the above observations, it is clear that the tool production was mainly based on local and regional raw materials, easily accessible in most cases. However, the raw materials in this area are compatible with the industries of eastern Macedonia (Greece), where chalcedony and quartz are prevailing in these industries (Kourtessi-Philippakis 2009a, 305–312). Another similarity is the presence of yellow Balkan flint, which in the case of northern Greece is

consideredas an imported material. Additionally, the absence of obsidian in the Skopje valley and the insignificant percentages in eastern Macedonia is a rather common fact (Dimitrovska 2012a, 21).

Afterword

As it has been demonstrated, the study of the chipped stone industries of Anarghiri IXb is expected to fill the gap in the area of western Macedonia where the limited available data require new studies concerning the material from this region. Anarghiri IXb is an important Neolithic settlement, which is expected to contribute greatly to the study of prehistoric lakeside settlements of the Balkans. However, the lack of specialized studies concerning the chipped stone industries from neighbouring regions – not only in northwestern Greece but also in Albania and the Republic of Macedonia – doesn't allow many correlations within Southern Balkans. In that respect, future studies should be focused on this neglected material, in order to enrich our knowledge regarding thestrategies of tool production, the role of technology and exchange networks between prehistoric communities.

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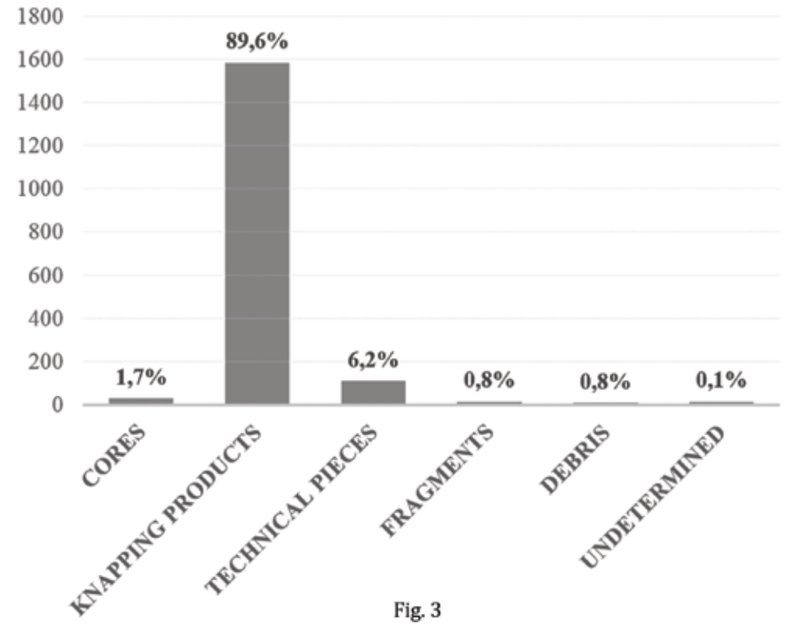
Fig. 1

Fig. 2



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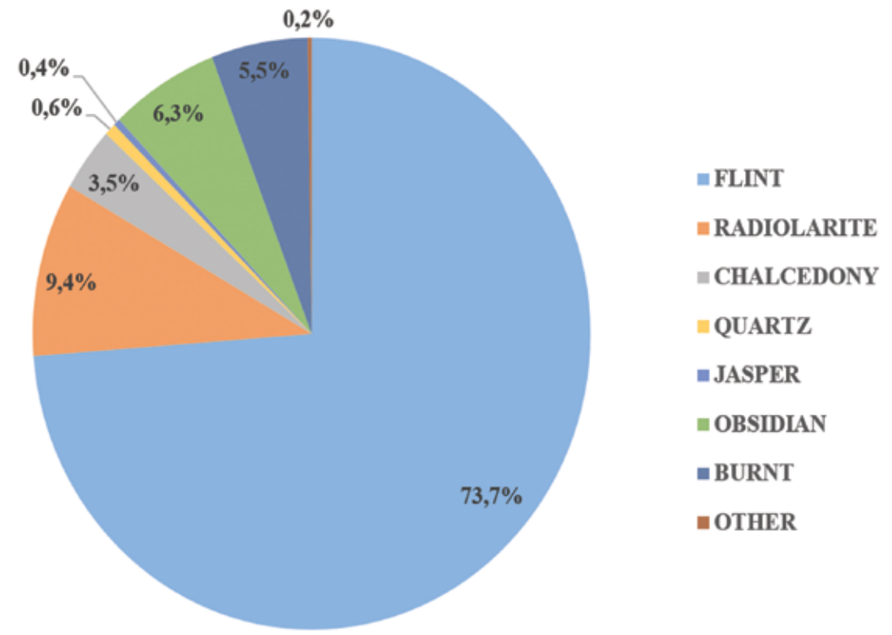

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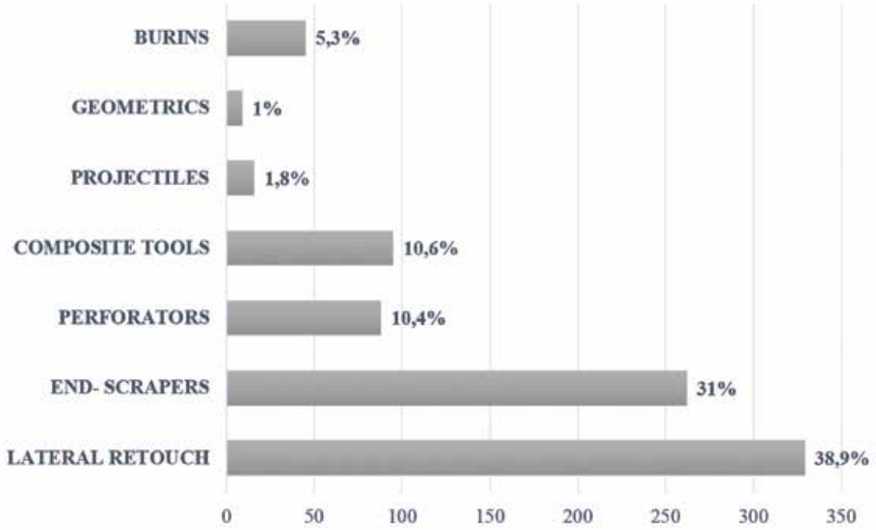

Fig. 6

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Fig. 9

Fig. 10

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From Zlastrana to Penelopa: the Neolithic sites in Ohrid region (III)

Abstract

From archaeological and art historical point of view, Neolithic in Macedonia is one of the most authentic prehistoric periods in the Balkans. With its rich material culture it is a pivot of the prehistoric archaeology in this part of Europe. So far, in Ohrid Region a relatively few sites (settlements) of all Neolithic phases have been known and researched. Those are Zlastrana in Sredoreče, Dolno Trnovo and Penelope in Ohrid, but also several other sites registered in the archaeological map of Macedonia. The research of those sites demonstrated that there were populations who lived in several larger communities in Macedonia, in current literature referred to as Amzabegovo-Vršnik and Velušina-Porodin cultures.
Considering the geographical location of Ohrid in the south of Macedonia, in a zone contacting with Velušina-Porodin culture (Pelagonia) and the zone of influence of Mediterranean Neolithic communities (known as Cardium-impresso cultures), but also based on the specific features of the material, the Zlastrana culture has been established, encompassing sites of Ohrid Region. Besides typical Neolithic flat settlements, such as those from Zlastrana and Dolno Trnovo, the unique Late Neolithic pile dwelling settlement Penelope stands out, fascinating with the magnificence of Neolithic pottery, plastic art and the numerous tools made of animal bones and stone.

Keywords: *Neolithic sites, Ohrid region, pottery, ornamentation, chronology, periodization*

The Prehistoric archaeological situation in the Ohrid-Struga region already has geographical and chronological contexts which allow a partial reconstruction of the oldest inhabitants life in a material, cultural and symbolic sense. From the archaeological excavations so far, the cultural group Zlastrana has been identified as the earliest Neolithic manifestation in this area (Кузман 1990, 35–50; Санев 1995, 36–38; Кузман 2016, 23–39) together with the site Kraloi Zagoni near the village Vraništa in Struga Plain with the multilayered Neolithic settlement Dolno Trnovo in the area 'At the Montenegrins' („Кај Црногорците") in the northern part of the city territory of Ohrid from the end of the Early Neolithic period and the beginning of the Middle Neolithic (Кузман и др. 1989, 38–39; Кузман 2017, 9–41), as well as the 'Penelopa-Ohrid' cultural group, which with its chronological vertical from the final phases of the Early Neolithic period until the developed Iron Age, in some way represents a 'native source' of all other, more or less, explored and chronologically determined sites in the wetland(s) of the lake zone, as follows: Usta na Drim (Late Neolithic), the Crkveni Livadi (Eneolithic and Bronze Age), Vrbnik between Struga and Kališta (Iron Age) and the three Bays of the eastern coast of Lake Ohrid – the Bay of the Bones, the Bay of Bombs and the Bay of the Buck (Bronze and Iron Ages), including the Ohrid Hill as the first significant Prehistoric station with 'land' architecture after the millennia long existence of the pile-dwellings habitats (Кузман 2013, 309–325, Сл. 6, 351–361, Т. I–VI).

Penelopa

The settlement occupies part of the urban area of Ohrid, more precisely in the lakeshore's districts of the town on the plain part east of the Ohrid Hill and Ohrid Fortress, that is, the area of the Catering Complex 'Letnica' and the old bus station to Ohrid district and to the Biljana Springs; parts of the new quarter Beibunar (**Map 4**) – Ohrid's spaces which in prehistoric times from the Neolithic period to the developed Iron Age represented a swamp terrain overgrown with dense vegetation, but adapted into exceptional settlement space with today preserved cultural layers rich in archaeological data and material remains of a 'Prehistoric city' built on wooden platforms with 'thorough support' from wooden piles dug deep in the marshy soil, which existed continuously four thousand years BC. So far, several points have been recorded with clues or material data pointing to the existence of those pile-dwellings (**Map 3**).

The management building for the forest economy "Galičica" on the street "Jane Sandanski" no. 18. In the excavation of the foundation space for the construction of the building in the fifties, wooden piles were emerging from a layer of clay land in which foundation parts were dug for the needs of the modern building.[1]

Hotel "Palas" west, residential block, July 2003[2]. When excavating the foundations for the construction of a residential building on the space west of the hotel "Palas", wooden piles were found at a depth of 6.0 m in a layer of sand over which a layer of clay soil with a thickness of 2.5 m and a layer of brown-grayish soil with a thickness of 2.0 m was registered. The piles are dug by mechanization, and some of have rough chopped points (**Fig. 1**). Since at that moment there was no possibility for a protective archaeological intervention to check the large excavated ditch quickly filled with water and which at the depth of 4.50 to 6.0 m in the profile seemed to be a sandpit, remained only the conclusion without other data (Кузман 2013, 321).

Complex "Ohridati", May 2006. On street "Partizanska" number 60 (today residential building), next to the northeast part of the yard of the Catering school, during excavation on a foundation space for the building in May 2006 a massive cultural layer with remains of wooden piles and numerous fragments of ceramics, stone and flint artifacts was documented. In the course of 2008, near the Faculty of Tourism, west of the previously established remains of the pile of settlement, there were also discarded wooden piles.

The old bus station "Galeb", 2006. During excavation on foundation bases (with mechanization) for the construction of complex residential buildings, numerous ceramic fragments with Prehistoric provenance have been discovered. The dugout was up to 5.0 m deep due to the unstable soil and the foundation of the stable fundamental parts. There was no confirmation of cultural layers due to the closeness of building activities and the constant flooding of water in the excavated space.

Beibunar, today the easternmost quarter of the city, which in the east is bordered by the foothills of Mount Galičica. It is a marshy terrain east of "ASNOM" street, and north of the gas station Biljana Springs and the boulevard "Tourist". In 2009, in the area of this location, planned for the construction of a new residential district, with mechanization were dug several channel probes with a depth of 5.00 m, but in those probes, apart from clay

1 Oral information of the older Ohrid citizens.
2 Space on the southeast corner of the junction of the streets "Kuzman Josifovski" and "Partizanska".

layers, mixed with thin deposits of sand and appearance of water, cultural horizons were not identified. Later, by excavating larger surfaces for laying the foundations of one of the apartment buildings, accidentally in the excavated soil waste, numerous fragments of ceramic vessels, flint artifacts and house wattle and daub were collected, which were collected as a significant movable archaeological material.

At all of these points, as well as the whole of the lakeshore bay area of the city territory, there were no surface indications and indicators (movable archaeological material or any visible architectural remains) for the existence of an archaeological landscape due to the specific stratigraphy created throughout the millennia and finally, due to the deposits of today's city and its incorporation in the composition of that stratigraphy. Among other things, there were almost no possibilities for archaeological intervention on all these indicative points, except in only one case and in very limited circumstances. And this happened only because of the application of advanced methods in construction projects. Since the foundations of the modern buildings required more stable foundations, geo-mechanical investigations were undertaken which led to deeper excavation need to reach a firm and stable ground on which solid foundations of buildings would be founded. With such contemporary research performed on the lakeshore (promenade "Macedonia" – Street "Partizanska"), it was found that till the depth of 5.50–6.50 m the soil materials were very soft and loose (lake mild facies) "with very high humidity, quite saturated with water"[3]. In the area west of the hotel "Palas" with geological explorations performed in 2004, a fragment of wooden pile found at depth of 6.80 m (**Geoing-MK Doo 1**) was extracted, and on the area near the Ohridati, and in the vicinity of the Biljana Springs, a group of wooden piles was recorded with geological drills performed by the same company (**Geoing-MK Doo 2**), recently in July 2017[4]. Otherwise, the archeological stratigraphic image that we started to form from 2003 (*Hotel "Palas", West*), more detailed from 2006 onwards (*Ohridati Complex*), shows the following features: sterile surface layer of a soil with a brown-grayish color of 0.90 m, then a layer of insufficiently compact gray clay with a thickness of 1.0 m and a layer of 1.50 m compact gray clay. The cultural layer appears at a depth of 3.40–3.50 m and is almost constantly under water (**Fig. 2**). With the inspection carried out on May 4, 2006 on the location next to the northeast part of the yard of the Catering school (a space for the construction of a collective residential building next to the street "Partizanska", in the documentation marked as Penelopa Fak Tur) it was concluded that in the deep excavated area with mechanization (370 m^2) there are remains of wooden piles vertically dug in the ground (**Figs. 3, 4, Figs. 5, 6**), massive presence of fragmented pottery, fragments of stone and flint tools, and animal bones. Then, the present circumstances allowed a sondage archaeological exploration by excavation in a probe of 3.0 x 3.0 m, but the activity could not be realized to the end of the reason mentioned above: constant flooding with water of the probe and the entire space excavated with the construction mechanization. In addition to the collected movable archaeological material and collecting from the *in situ* excavated wooden piles that were certainly the basis for a platform structure and Prehistoric architectural object for living, 'the archaeological research' (in 2008) and onwards was directed towards the deposited soil from the site at several waste points near the city: the tennis court, the east and the "Karajli field" northeast of the Gorica-Ohrid mound (a landfill from the site near the Ohridati) and in the dump site near Mauzker, northwest of the city (deposited soil from the foundation dug of the space at the old bus station "Galeb"). In 2006, a team of experts on dendrochronological analysis from the German Archaeological

3 Geo-mechanical investigations were carried out by Geoing-MK in Skopje in January 2016. I thank Dr Hristo Đorđevski, responsible research engineer, for the insight into the results of the geo-mechanical elaborate.
4 The available documentation (Geo-mechanical data, July 2017) was provided by Dr Hristo Đorđevski.

Institute from Frankfurt am Main was provided with appropriate fragments of the wooden piles collected from the excavation at the district Ohridati and taken to their laboratory. In January 2008, Dr. T. Westphal of the Institute, performed several chronological measurements of the material from Ohrid in Zurich – a laboratory for 14C analyzes, where on the basis of internal and external tree-rings it was possible to provide the viggle-matching dating. Namely, the initial results of those dendrochronological analyzes of one sample from the settlement Ohridati were as follows: the wooden ring, which had 427 dendrochronologically measured tree-rings, dates from about 5500 BC and the wooden pile itself is from a tree about 430 years old. The report also concludes: "Based on that, we can place the building, to which these piles belonged, to the oldest dendrochronologically measured houses in Europe."

Further analysis of everything related to this settlement depends only on the movable archaeological material, which, as mentioned above, is largely not contextual, but secondary and as such, it is nevertheless extremely important for the clarification of the time and circumstances in which the inhabitants of this lakeshore settlement lived. This 'base' of material data mostly consists of ceramic objects, mainly fragmented, stone and flint tools in much smaller quantities and fragmented bones of domestic and wild animals that provided means for life of some people in a long time past.

Pottery. The Penelopian pottery production available to us and which is 'systematically' collected from the aforementioned 'archaeological landfills' allows us to cover the chronological span from the end of the Early Neolithic to the end of the Bronze Age. Thus, the barbotine decoration of the Penelopa pottery is completely analogous to the Dolno Trnovo barbotine ornamentation, namely the so-called 'basic barbotine' from Dolno Trnovo (Кузман 2017, 33, T. VIII: 1,2,4,6–13; T. IX, 1–3, 8,9; T. X: 3,4) is adequate with the fragments with same decoration of Penelopa (**T. XVII: 2, 5, 6; T. XVIII: 1,2**), the Dolno Trnovo 'organized' barbotine (Кузман 2017, 36, T. XI: 1-4) with the Penelopian (**T. XVII: 7–10; T. XVIII: 3–6**), and on this comparative equality with Dolno Trnovo, the rest of the barbotine pottery can be fitted with all the other barbotine samples from Penelope, to the extent that it can be assumed that all ceramic vessels with such ornaments from Penelope were produced in a pottery workshop from Dolno Trnovo. Given that in this part of the pottery archaeological indicators the painted pottery with white color on red background is included, it is necessary to emphasize that such specimens have not been recorded in Penelopa, but here we have the remains of pottery decorated mainly with white color of dark blue and dark brown on black background, ornaments with white wide stripes, somewhere in parallel lines, and in some places radiant or angular forms on dark surfaces on the vessel's recipients (**T. XX: 1–4, 6**), then decoration with dark red to brown stripes executed in vertical parallel rows on an ocher or a light red background (**T. XX: 5, 7**), as well as dark brown or black parallel stripes on a gray or light-grey background (**T. XX: 8, 9**).

This ornamental opus lacks in Dolno Trnovo, and the closest analogous phenomena are, of course, in the Balkans Neolithic cultural groups that are part of the Balkan-Anatolian cultural complex in the Early Neolithic, as well as in the Balkan-Danubian cultural complex with the core Starčevo culture (the Dolno Trnovo and Penelopa barbotine ornamentation can be equally compared to the creative achievements of the Middle Neolithic barbotine ornamentation of the Starčevo culture) from the north and the northeast side in the communication pathway through the Vardar-Morava transversal, as well as south from Pelagonia to the Neolithic centers in Aegean Macedonia and Thessaly. Another geographical line of contacts the Ohrid region has always had – to the southwest through the Ohrid Lake to the Korča Valley in present-day southern Albania and hence to the Macedonian and Greek Aegean territories (Кузман 2017, 22). Thus, our Penelopian ornaments with white stripes on a dark background are recorded in the Velušina-Porodin pottery production, although in small quantities (Velušina-Porodin I-II) (Garašanin 1979, 110). This Neolithic Pelagonian culture, in a chronological sense, coincides with the eastern Macedonian Neolithic cultural group Amzabegovo-Vršnik I, more precisely with subphase Ic, in which within the chronological frames of the Amzabegovo-Vršnik II phase for the first time appears "pottery with dark painted motifs on a light background" (Garašanin 1979, 94; Гарашанин 2009, 248), in a procedure identical to our painted ceramic specimens with a dark red or dark brown color on a light red or light gray background (**T. XX: 5, 7–9**).

In the impressive long continuity of living in the Neolithic period along the waters of Ohrid Lake in the Penelopian bay of Ohrid city, the inhabitants communicated with the Neolithic centers of the Adriatic Cultural Complex, especially with the settlements of the nearest southern Adriatic zone, more precisely those that existed along the course of the river Mati and those from the Korča Valley. On this occasion, we will only emphasize the 'theoretical archeological phenomenon' (commercial communications and other types of connections, touches and influences) which in current context coincides with ours, that is, in the Early Neolithic, the features of the painted ceramic products consisted of monochrome, impression ornamented, 'dark on red' painted pottery and barbotine pottery (phase Kolš I) (Бенац 1989, 10–11). The situation in Penelopa is similar, thus the same phenomena have developed at the beginning of the Middle Neolithic, when, and among other, to a greater extent both here and in Kolš II "came to a mixture of the Adriatic and the Danubian-Central Balkan ceramic elements" (Benac 1989, 11). As for Dolno Trnovo (white painting on a red background), here too, with Penelopa when it comes to the earliest phenomena within the ceramic material, we will mention Vaštemi from the Korča area, where in addition to white painting on a red background, in small quantities there are also red-colored motifs on a light background, besides barbotine and impression ornaments (Korkuti 1982, 120, 125; Penelopa: **T. XX: 5, 7; T. XVIII: 1–8**). As for the South Balkan areas, with which our Neolithic centers communicated directly or indirectly through the Korča Valley in Albania or through Pelagonia in our country, it seems to us that a solid reason for this is provided by the decorative elements 'dark on light' from the already mentioned Penelopian pottery samples (**T. XX: 5, 7–9**), which coincide with the results of the archaeological researches in Achilleion (Thessaly) 'dark on light' painted pottery was found in the earliest layer, simultaneous with the Protoseskło (Ib-c) phase in Otzaki Magula, where no painted pottery was discovered (Garašanin 1979, 101). Such a decorative occurrence on pottery in the Early Neolithic period was also discovered in Nea Nikomedeia, where dark painting on a light background was more common than white painting on red or other background (Garašanin 1979, 102). These two examples are interpreted as local variants of Protoseklo and Preseskło cultural groups in Thessaly, but they are also analogous to the Penelopian archaeological situation, which with these decorative elements was probably active in the earlier phases of the Middle Neolithic.

The following data, which is obtained by Penelopa's secondary collected ceramic material, based on the typological-comparative analysis, refers to the time of the later phases of the Middle Neolithic and the beginnings of Late Neolithic (**T. XIX: 1–12; T. XXII: 6, 9**) which is rich in alternated, engraved ornamentation: triangular netted shapes filled with rhombuses and squares, semi-circularly executed wide strips filled with parallel and curved incised lines, channelures forming triangles, parallel lines with elongated and spiral lines, and dotted

ornaments of parallel, horizontal, vertical or sloping rows (Кузман 2013, T. I: 1, 5, 6, 9, 10, 12; T. II: 1). The ornamental system of Mala Trnska Tumba in Pelagonia is of this type (Симоска и Санев 1977, 217, T. II: 1–4; 220, T. III: 6, 7; 221, T. IV: 8–12, 15; 224, T. V: 16, 17) and partly Mogila-Senokos (Pelagonia) (Темелкоски и Миткоски 2006, 59, Сл. 2; 60, Сл. 3, Сл.4; 62, Сл. 7; 64, Сл. 11, 67, T. V), Cakran at Fiera from the Korča Valley in Albania with similar ornamental (primarily netted and spiral) features (Korkuti and Andrea 1975, 88, Pl. IV: 1–10; 91, Pl. VII: 1–4, 6; 97, Pl. XIII: 1–14; 98, Pl. XIV: 1–11; Бенац 1989, 11, 12. сл. 2–5) and the site of the Usta of Drim on the Ohrid Lake in Struga, Macedonia (Кузман 2013, T. VIII: 2, 3), all influenced by Late Neolithic cultures of the Adriatic cultural zone.

In our pottery production there is a really interesting phenomenon: the similarities with the ornamental milieu of Vinča material culture of specific fragments of pottery and altars that are represented by stripe shapes forming angles, quadrangles and parallel, slope and vertical channelures or engraved lines that are filled with white, red or bluish crust, and colored strips of red or dark gray, which embed the vessels of exceptional coloring (**T. XXI: 1–10**), analogous to similar ornaments with which the lower parts of the famous Vinča terracotta figurines and some ornamental elements of the later stages of the Vinča cultural group (Vinča-Pločnik I), the upper parts of the Vinča figurines and the surfaces of some cult ceramic objects are decorated (Кузман 2013, 354, footnotes 79 и 80: Васић 1932 и 1936; Garašanin 1979). With this, the Vinča cultural influences on the territory of Macedonia, beside the cultural zone of Amzabegovo-Vršnik IV and Angelci I in Eastern Macedonia, Zelenikovo I (Skopje) and Kutlina II-Rakle (Prilep) (Темелкоски и Миткоски 2008, 105; Митревски 2013, 112), towards the end of the Neolithic period also reached the inhabitants who lived on the northern shore of Ohrid Lake.

Towards the end of the Neolithic period and in the initial stages of the Chalcolithic in the Penelopa community certain impulses are seen from the presence of the rich Neolithic symbolic ceramic objects. Within the archaeological finds, the attitude towards the woman's cult and fertility is represented by a female terracotta figurine of small size (height 6.0 cm; width 3.3 cm), column-like idol figurine of man (height 9.8 cm; width 4.9 cm) and terracotta of a ritual table with a phallus (dimensions: 6.0 x 4.5 x 5.1 cm). The female terracotta figurine of dark gray clay has a schematic cylindrical head with barely indicated eyes, protruding nose and mouth, as well as a triangular facial part – a forehead and an elliptical upper part of the head covering the hair to the neck made with engraved cut channelures, with schematized upper limbs, with no designated breasts, but with a designated hips and an emphasized lower half with a certain steatopygia and a schematic sign of the genital part with an engraved line in a triangular form on the front part, while the back part has engraved triangular ornamental forms (the lower limbs are missing) (**T. XXII: 3**). This small female figure probably was an 'idol mother' with attributes that refer to eventual cult sessions performances of fertility or was a symbolic object as a personal property of a representative of the family community. There is no equivalent representation of these kind symbolic objects, but this one could be placed in the group of similar figurines of the Šuplevec-Bakarno Gumno cultural group (Crnobuki-Prilep region, Carevi Kuli-Strumica, Dolno Oreovo-Bitola and others) (Колиштрковска Настева 2005, 78 (62), 84 (68), 90 (74)).

Evolutionally observed, this kind of terracotta symbolic objects can be associated with the type of terracotta figurines, similar to that of Mogila-Senokos, Prilep region from the

Late Neolithic (Velušina-Porodin cultural group) (Колиштрковска Настева 2005, 49 (33); Темелкоски и Миткоски 2006, 69, Сл.18.), with some elements of the terracotta figurines of Vinča culture (Vinča-Jablanica) (Васић (I) 1932, T. XIII, Слика 43 a, b, c; T. XXXIII, Слика 145 a, b, c; Gimbutas 1989, 299, fig. 476), the Kosovo variant, Kosovska Mitrovica (Vinča-Pločnik phase) (Garašanin 1979, 190, XXXI, 3a, 3b), than, with more elements that can be seen in the anthropomorphic figurines of Vinča itself (Vasiћ (II)1936, T. XXI: Сл. 46 a, b, c; T. LXXXI: Сл. 303 a, b, c; T. LXXXII: Сл. 307, Сл. 308 a, b, c; Васић (III) 1936, Сл. 1; Сл. 185; Сл. 209; Сл. 291 a, b, c; Сл. 322 a, b, c; Сл. 383a,b; Сл. 442, 452, 455–459, 467–468, 471, 572; T.II: Сл. 3, Сл. 5; T. VII: Сл. 26; T. VIII: Сл. 29; T. XVII, Сл. 83; T. XXI, Сл. 106; T. LVII: Сл. 206; T. LXIII: Сл. 301; T. LXXIX: Сл. 369–370; T. LXXXVI: Сл. 403–404; T. XCIII: Сл. 433; T. XCV: Сл. a, b, c; T. XCVIII: Сл. 465; T. CXV: Сл. 535; the lower part in form of an altar: T. CXVII: Сл. 548), or with those of Tsangli in Thessaly (Wace and Thompson 1912, 127, Fig. 75 (f), Figure 76 (l)).

The terracotta phallus is made in an erection position, supported on a low stand that is raised to a larger rectangular clay table, which is also raised on a low stand of two legs with a conical shape at the front. The table on which the phallus is placed on the front face and on the side striped edges is decorated with triangular engraved (zigzag) shapes (**T. XXII: 2**). This example, of course, is an authentic work by a mature individual from the Penelopa community that speaks of erotic preoccupations as an immortal eternal topic of all societies. The phallus, apparently, for the Penelopa people was a pedestal idol symbol that speaks of the remarkable charge and wealth of the intimate spheres of their spiritual fantasy. In the Early Neolithic period, the phallus was sometimes the "neck of terracotta female figurines" (so made for the sake of increasing the regenerative power of "clay" goddesses); otherwise, independently, it represented "tree of life", "stalagmite in a cave" or cult male force in the context of the symbolism of regeneration (Gimbutas 1990, 37, Fig. 31). Developed and made independently, on a specially prepared base, in the various phases of the Neolithic period, the phallus was certainly a "stimulant of life" (Gimbutas 1990, 37), as it was probably the current Penelopa phallus within the community. The third anthropomorphic object is an example of idol object with a cylindrical shape, a column-like type of representation of this kind, which resembles a schematic phallus (**T. XXII: 4**). On the upper part of the elongated semicircular shape is represented by a face of a figurine with elliptical relief modeled eyes and a relief modeled nose between them that branches to the left and right over the eyes in the brows.

Above these in a rounded-triangular shape the upper surface of the head is represented which is flat and without any other marks. The surface under the nose, mouth, muzzle and beard are not at all stressed. The appearance of this part of the head resembles the type of terracotta figurines with "masks on the faces", because here the impression is that the figurine's face is covered with a mask. The head extends only in wide neck-pillar section (indicating that this cylindrical sample may have been an integral part of an altar-house), and on the back side, barely visible V-shaped ribbon is represented on the lower part, which most likely imitates clothing. The clay is of medium rough fabric, reddish color and liquid gray engobe on the entire surface. The earliest anthropomorphic figurines of this type (column-like figurines) were most probably made of wood, as indicated by the characteristics of these artifacts from the earliest stages of Starčevo culture, as well as the indications that derive from this kind of representations of the sites of Velušina-Porodin cultural group in Macedonia – linearity, flat surfaces and unadjusted volume. Further these symbolic objects developed their stylistic features, especially with the possibilities given by the new clay material. "At the same time, these figurines mark the last stage in the development of the closed column-like forms and

already oppose the primary statues made in naturalistic style. The details previously marked by engraving disappear or fit into the modeled basic form that is not already understood as a tectonic but rather as a visual whole. The naturalistic style, which strives for static forms and clarity, in the final phase of the Starčevo cultural group, opposed a new style that expressed the movement of the mass in space"(Срејовић 1998, 111).

We were not able to detect similarity with our figurine, but typologically approximated analogous phenomena are found in the Neolithic Pelagonia, Macedonia (Tumba Sredselo-Mogila, Early Neolithic, Gurgur Tumba near Bitola, Early Neolithic) (Симоска и Санев 1976, 36–37, сл. 104; 41–42, сл. 144; Наумов и Чаусидис 2011, 12, T. IV: 3), then Vaštemi and Dunavec (Dunvec I) in Albania (Korča Valley) (Korkuti 1995, T. 14: 4; T. 41: 5, 10–11), and east of our area can be pointed out the Early Neolithic settlement of Slatino, east of Sofia, where similar terracotta figurines were discovered that would enter the anthropomorphic representations of unassigned sex and other attributes of the human body (Николов и др. 1991, 16,17 (4u); Чохаджиев 2006, 232, Обр. 163 (2); 233, Обр. 164 (4); 248, Обр. 179 (1,5); 249, Обр. 180 (6)), from which, later in the Late Neolithic and Chalcolithic, anthropomorphic objects with representation of sexual features with a channelure ornamentation which signifies a schematic representation of the main female genitalia or with an abstract decoration adorns the body. In the wider space, north of our country, the anthropomorphic representations within the Butmir culture (Central Bosnia) are similar, thus some scholars claim that the true influence of its origin comes from the Danilo culture in Dalmatia (Batović, Korošec), others that it is a result of the influence of the Vinča culture (M. Garašanin), third that they are autochthonous spreading throughout the Balkans to the Cyclades (Grbić), fourth that the origin of the Butmir culture (as well as the Danilo and Lengyel) culture should found in the Early and Middle Chalcolithic of Anatolia, and the spread took place through Greece, Adriatic and Bosnia to Pannonia (Srejović).

Benac first argued that the base for formation of Butmir culture was the striped pottery, and later, on the basis of the new archaeological research, he was quite correct to come to a scientific conclusion: that a strong indigenous base took part in the genesis of the Butmir culture – the Adriatic component, the southeastern component with black polished ceramics and the continental component (Benac 1979, with footnotes 93–98, 450–452). We emphasized this to show that the relations of the Prehistoric Ohrid Lake area with all the other Balkan and Anatolian spaces are quite possible, and hence we can point out the approximate analogous phenomenon of the Penelopa terracotta figurine with a "mask on the face" in the context of the specimens from Butmir (Butmir II and Butmir III) with a schematic representation and assumption that they also represent idols with "masks on the faces" that served them, most likely to people who participated in various types of rituals and cult processions (Benac 1979, 438, T. LXVII: 1a, b; 3a, b, c).

The abundance of the Late Neolithic movable material is dominant in Penelopa. Probably at that time the settlement reached the highest development level. Life along the lake indicates that people maximally used the benefits that, in the foremost case, were the source of the existence of the Penelopian community. The numerous ceramic discoid plates with one, two, three, four or five small circular openings and various dimensions (**T. XXVI: 1–5**) indicates that the Penelopian people have largely engaged in fishing. These ceramic plates have been known only to the sites of the Ohrid Lake with their appearance in the chronological range from the Late Neolithic, in larger quantities at the time of the transition from Bronze to Iron Age (Кузман 2013, T. XXVII: 1–18; T. XXXI: 1–10; T. XXXII: 14–24) until the end of the Iron Age (Iron Age II, 800–600 BC),

even in the classical period – with an emphasized round profile on the edges. In the Penelopian 'landfill', a large number of ceramic spindle whorls with biconical, elongated biconical and flatened biconical forms, as well as ceramic bobbins (**T. XXVI: 6–9**), are found, although derived from the 'landfill', are appropriate indicators of the activities in domestic conditions (spinning, weaving, etc.) in the idyllic Neolithic environments. But these have no chronological consistency and appear almost continuously, in many prehistoric and historic periods.
Life on the site of Penelope Ohridska also took place in metal ages. In the Chalcolithic (Copper Age), almost in all spheres of the prehistoric economy, in addition to the presence of metal products, the characteristics of the most recent archeological indicator from the prehistoric epoch, the Late Neolithic ceramic products continued to function in the Chalcolithic (**T. XXIII: 1–12**) until the end of the Bronze Age and the transition period to the Iron Age, at least on the basis of the previous indicators (**T. XXIV: 1–12; T. XXV: 1–13**).

The stone and flint artifacts in Penelope are also present. We can divide them into three main groups: flint knapped, flint pressure flaked (**T. XXVII: 13–20**), and polished stone objects (**T. XXVII: 1–12**). The flint artifacts are blades, three-sided and four-sided, mainly retouched and one arrow (**T. XXVII: 13**). The typology of stone tools is determined according to the Neolithic stone tools of that kind found in Vinča culture, and hence, we think that our polished stone tools are typologically equal (Antonović 2003, 53). Within polished stone objects from Penelopa there are axes with a wider distal and narrower proximal end (**T. XXVII: 3, 6–8, 10–12 – type I/1**) and axes with parallel sides (**T. XXVII: 1, 4, 5 – type I/3**), then stone adzes (in the literature also known as molded axes) in which the distal end is slightly wider than the proximal (**T. XXVII: 2 – type III/3**) (Antonović 2003, 53–55, 57–58). Hand grinding stones for grain and other polished stone tools, as well as flint artifacts in various typological variants, were used in all Neolithic, Chalcolithic, and even in the other Prehistoric chronological phases of the Balkan-Anatolian sites.

For the long continuity of the Penelopa settlement, besides the exceptionally rich collection of ceramic production, stone artifacts and metal objects, the movable material made of animal bones speaks, as well as the bone material in general, which indirectly indicates the way of living of the people of this region. About 2000 animal bones were collected, secondary of course, outside any archaeological contexts, but valuable for extracting data about the life of the Penelopian people. An archeozoological analysis of 1711 bones and bone fragments was performed, by determining them by species and other segments (Fidanoska, Archaeological report on prehistoric pile dwelling settlement – Penelopa, unpublished manuscript. My gratitude to the author for the provided data). Of the total number of 966 (68.61%) bones and bone fragments belong to six forms of domestic animals (cattle 399 fragments, sheep and goat 329 fragments, pig 171 fragments, dog 61 fragments, horse 6 fragments), represented by 441 (31, 32%) bones and bone fragments of wild animals (European bison (?) 1 specimen of horn fragment, auroch or wild cattle 19 fragments, deer 281 fragments, fallow deer - 2 fragments, roe 46 fragments, wild boar 83 fragments, fox 2 fragments, wolf 2 fragments, brown bear 2 fragments, European rabbit 2 fragments and otter 1 fragment) and one bird (cormorant).

Although there are not enough archaeological circumstances, however, archeozoological analyzes allow us to conclude that within the domestic animals the cattle is dominant, in front of sheep and goats otherwise, taking into account that within the entire prehistory the ovicaprids are also significantly present in the Balkan regions. This indicates the extent to which livestock farming was present among the people of the Penelopian community. Of the wild animals, the

presence of the deer is most prevalent not only in the diet of the population, but also in the development of certain crafts, because of bones and horns various tools for serving those crafts have been produced, and also for the needs in agriculture, the most represented branch from the economy not only to the Penelopian people, but also to all Neolithic communities. Of bones were made various needles, awls and spatulae (**T. XXVI: 14, 15**) wedges, diggers, bone axes-hammers, harpoons with one, two or more spears (**T. XXVI: 12, 13**), other types of tools, but also amulets (**T. XXVI: 16–20**) and musical instruments (**T. XXVI: 21**), which illuminate some spheres (protection against accidents, magic, artistic achievements) of the spiritual life. The abundance of bone tools and decorative objects captures the great extent of the so-called bone industry in the Neolithic and subsequent periods of the Prehistoric epoch.
Finally, with a dendrochronological analysis of the appropriate samples of wooden piles from the point at the Catering School, conducted with the 14C in Zurich Laboratory (Switzerland) and the Laboratory in Frankfurt am Main (Germany), the experts found that one pile was used in 7000±55 BP (5891 cal BC), and the other, which was of pine wood, in 6540±50 BP (5511 cal BC) (Westphal et al. 2011, 75–95). This is a confirmation of the archaeological material discovered so far and its chronological determination for the beginnings of the formation and existence of the pile dwelling in the swamp, along the Penelopa Bay in Ohrid.

Translated by Lj. Fidanoski

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Map 4 Position of the Prehistoric pile dwelling settlement in Ohrid.

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Geoing MK Doo 2 Locations in which the remains of wooden piles are registered in the drilling trench; made by M. V.; controlled by Hristo Đorđeski, July 2017.

Fig. 1 Penelopa Palas, stratigraphy.

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Figs. 5, 6 Penelopa Fak Tur, level of pile dwelling settlement.

T. XVII Penelopa: wattle and daub (1); barbotine decoration (2–6); barbotine – finger decorated (7–10) and 'fine barbotine' decoration (11).

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T. XXI Penelopa: stripe painted pottery with red and white color (1–8); Penelopa Ohridati (Beibunar): stripe painted pottery with red and white color (9, 10).

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T. XXIV Penelope: Bronze Age forms of handles horizontally placed on the upper parts of ceramic vessels (1–8); horseshoes and arcade handles (9, 10); elliptical (11) and calotte protuberances (12).

T. XXV Penelope, Final Bronze Age and the transitional period: handles that overwhelm the ceramic vessel's rim (1–9); ceramic vessel in the form of a jar with one vertical handle (10); small ceramic cup (11); a fragment of a ceramic vessel with a spillway and a calotte handle (12) and a ceramic vessel with two handles (13).

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T. XXVII Penelope: stone axes (1–12); flint arrow (13); flint blades (14–19); Penelopa Ohridati (Beibunar): a flint tool – knife (20).

Мар 3

Мар 4

Fig. 1

Длабочина [m]	Дебелина [m]	Симбол	Ознака	НПВ	Опис на материјалот "АС" - класификација	⇩ - SPT проба ○ - парометрна проба ▯ - непарометрна проба
1	2	3	4	5	6	7
0,0						
-1,1	1,1	N			насип од глинив прашиновита со чакалести зрна, песок и градежен отпад	
-1,6	0,5	GFc			чакал и песок заглинет со Ф до 2см со кафено сивкаста боја	
-3,0	1,4	SW GFc			песок и ситен чакал, на места заглинет, Ф до 2см	
-3,3	0,3	SFc			песок заглинет	
-3,9	0,6	SW GFc			песок и ситен чакал, малку заглинет, Ф до 2см	
-4,6	0,7	SC			глина со песок и чакал Ф до 1см со кафено сивкаста боја	
-5,0	0,4	OL			органска прашина со песок, ниско пластична, сива боја	
-5,5	0,5	SFc			песок прашинест, замуљен со сива боја	
-6,8	1,3				ДРВЕН КОЛ	
-8,4	1,6	SFc			мешавина од песок и прашина и парчиња од дрвен кол	
-9,0	0,6	SP			среднозрнест и крупен песок со ситен чакал Ф до 1см	
-10,6	1,6	CL SFc			глина прашиновито песокливи, замиљена со сива боја	
-12,6	2,0	SW			ситен чакал и песок со Ф до 1см	
-15,0	2,4	GW			чакал и песок со Ф до 4см и ретки тенки глиновити сочиви (20см)	

Geoing MK Doo 1

Geoing MK Doo 2

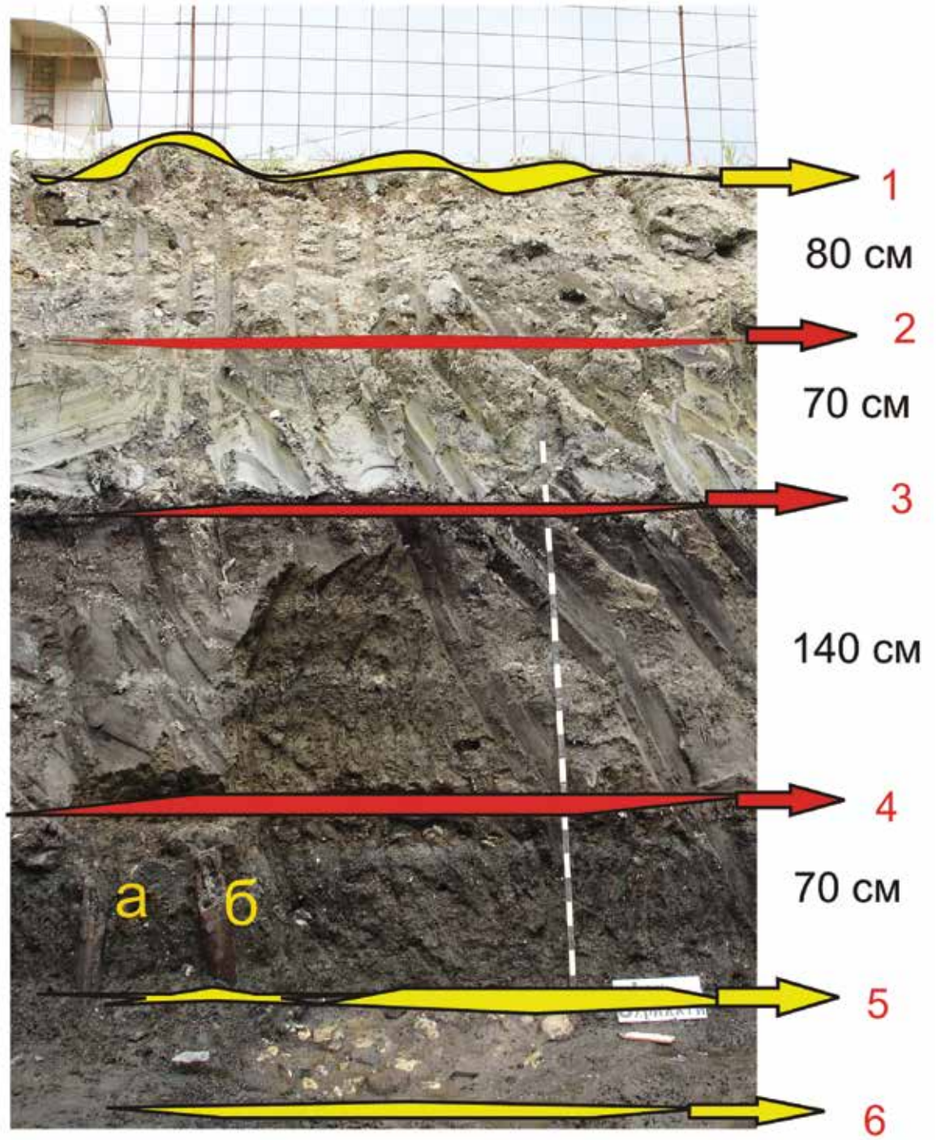
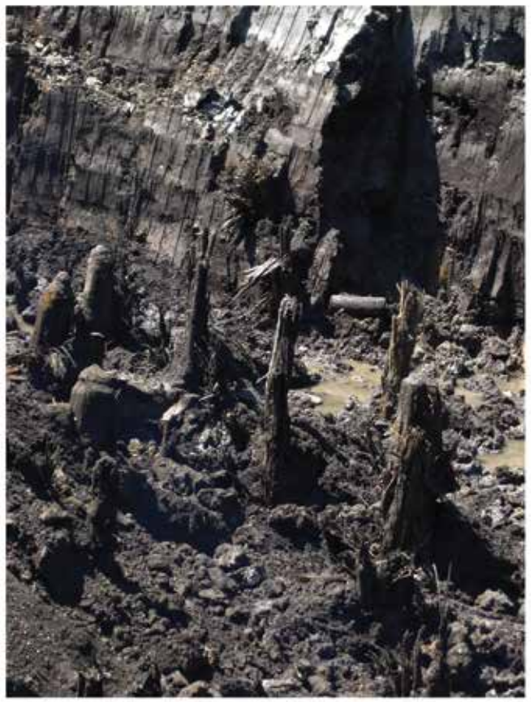
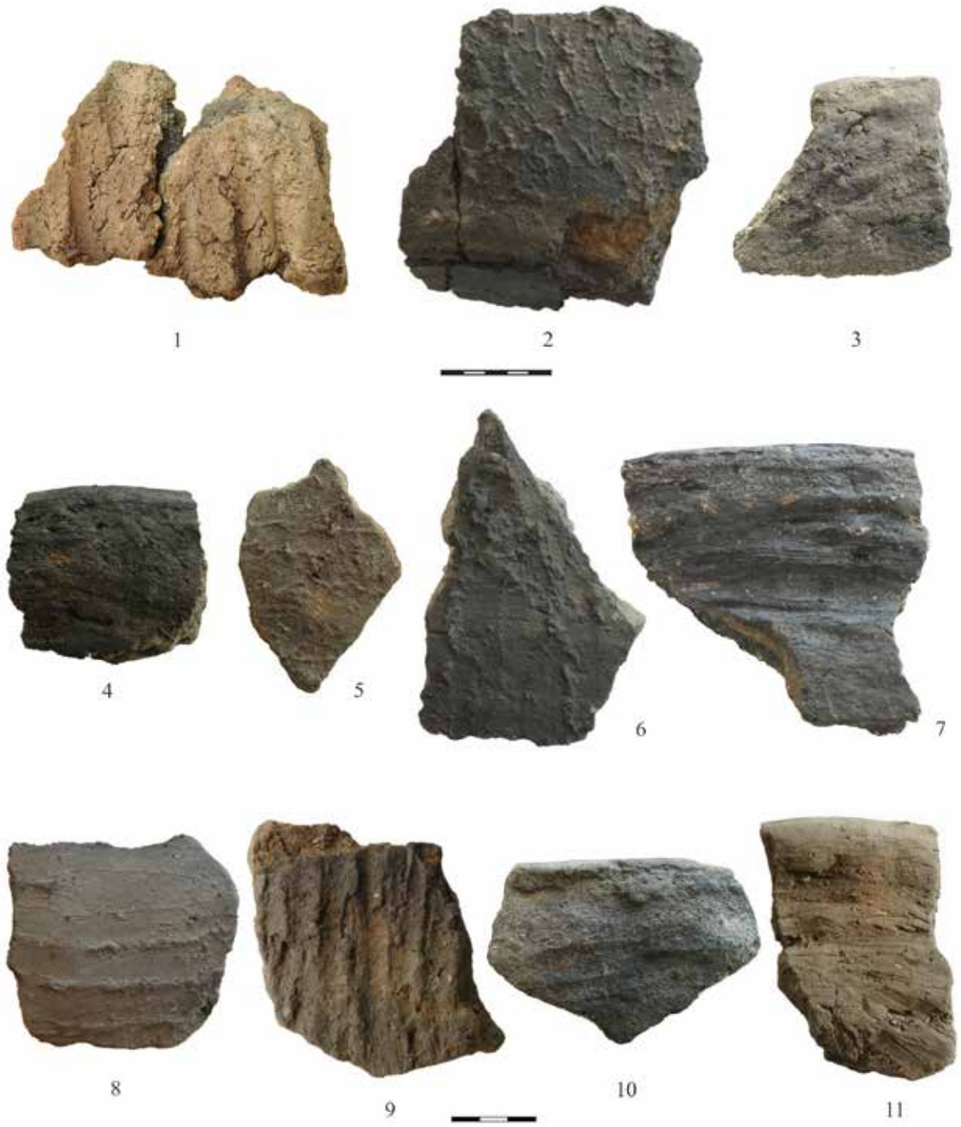


Fig. 2

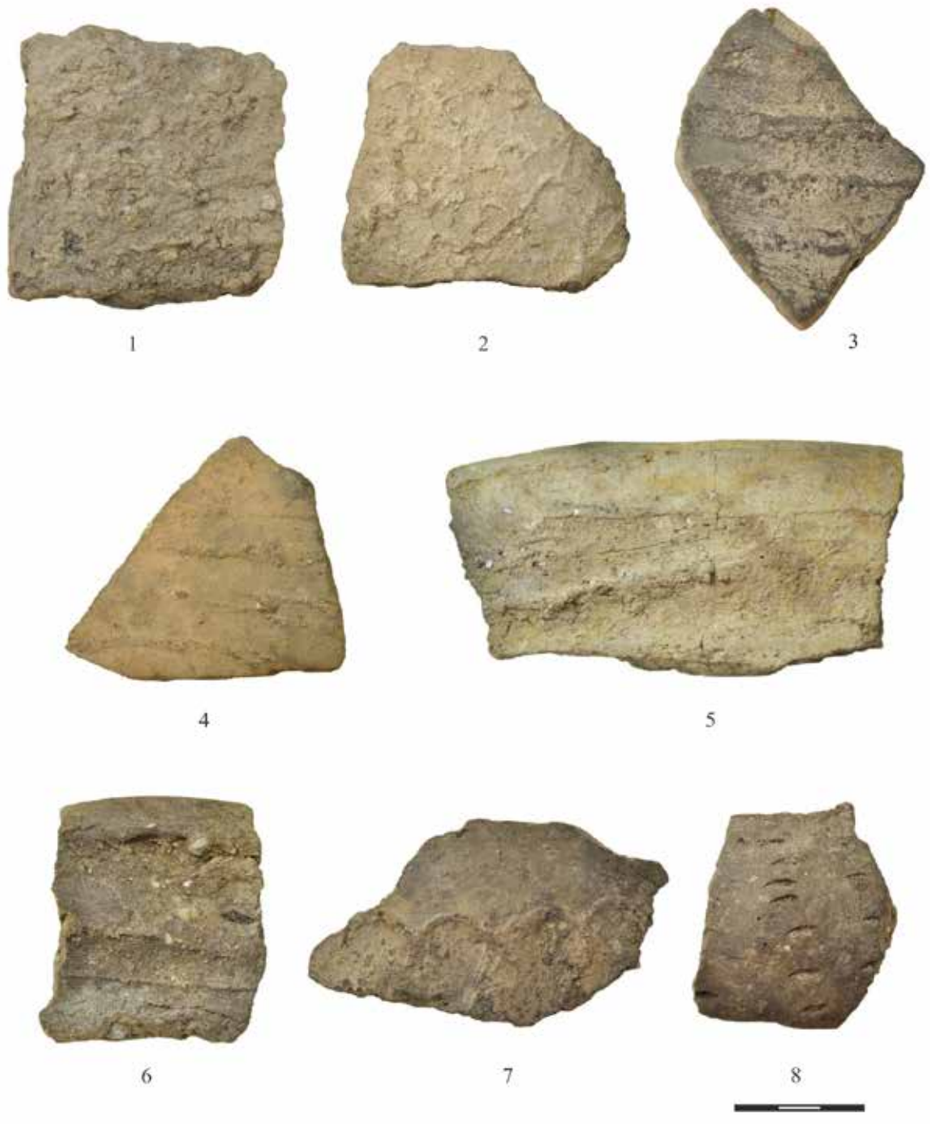


Figs. 3, 4

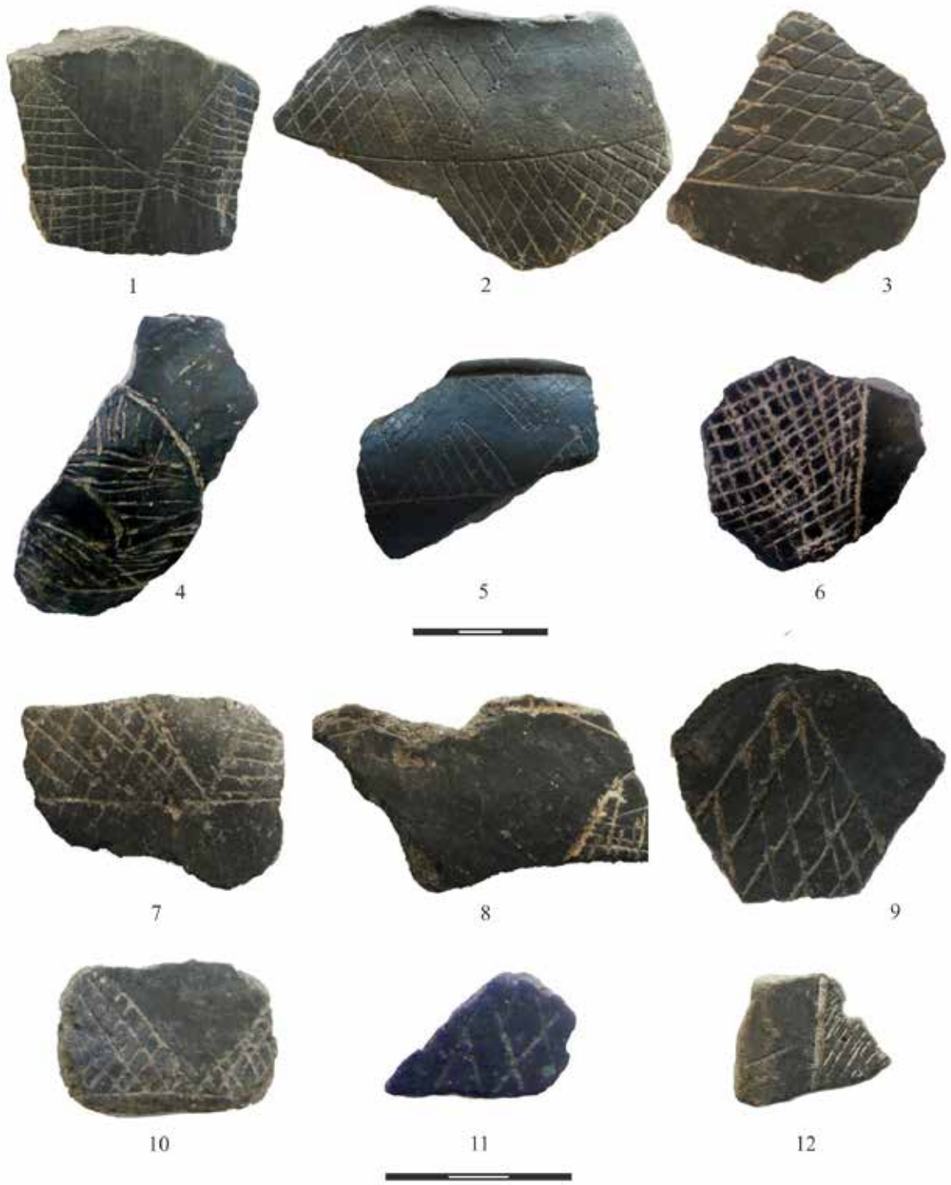
Figs. 5, 6



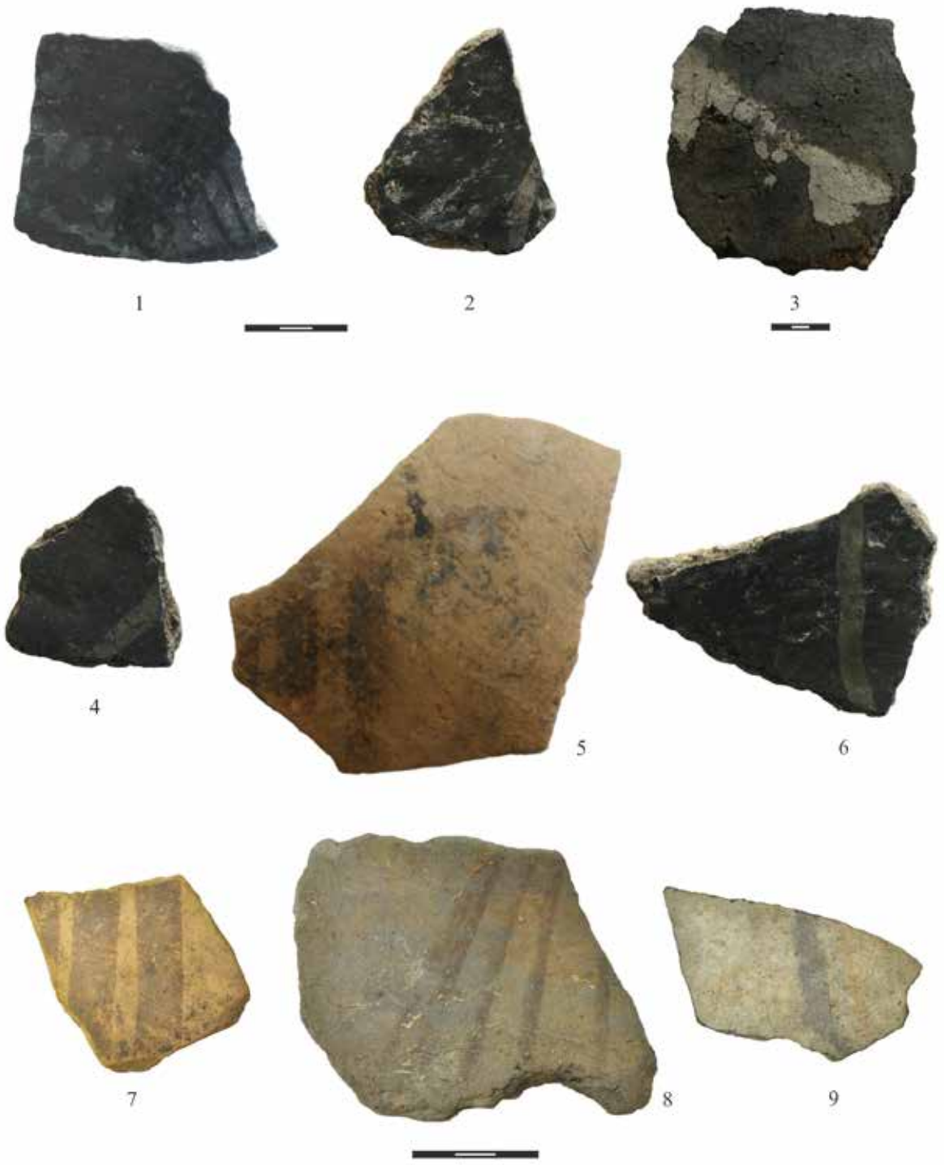
Пенелопа: куќен лепеж (1); барботин орнаментика (2-6); барботин-повлаки со прсти (7-10); орнаментика „префинет барботин“ (11)



Пенелопа Охридија: барботин орнаментика (1,2); барботин-повлаки со прсти (3-6); аркаден барботин (7); импресо-нокти (8)



Пенелопа: орнаментика со врежување (1-12)



Пенелопа: сликана керамика (1-6); Пенелопа Охридија: сликана керамика (7-9)

Пенелопа: лентеста сликана керамика со црвена и бела боја (1-8);
Пенелопа Охридија: лентеста сликана керамика со црвена боја (9,10)

Пенелопа: пинтадера (1); жртвеник - фалус (2); антропоморфни фигурини (3,4);
керамички култни садови (5-9)

Пенелопа, енеолитски период: лентести и заоблени држалки на керамички садови (1-8); хоризонтална држалка со тунелест отвор (9); седлести држалки формирани со испусти (10, 11); фрагмент од керамичен сад украсен со хоризонтален ред од калотести длапки и мал функционален испуст-држалка со тунелест отвор (12)

Пенелопа: Бронзеновременски форми на држалки хоризонтално поставени на горните делови од керамичките садови (1-8); потковичести и аркадни држалки (9, 10); елипсовидни (11) и калотести испусти (12)

Пенелопа, крај на бронзено време и преоден период: држалки кои го надвишуваат венецот на керамичкиот сад (1-9); керамичен сад во вид на грне со една вертикална држалка (10); мал керамичен сад (филџан) (11); фрагмент од керамичен сад со изливник и калотеста држалка (12); керамичен сад со две држалки (13)

Пенелопа: керамички дискоидни плочки (1-5), керамички пршлени (6-9),керамички макари (10,11), коскени харпуни (12,13), коскени алатки (14,15), коскени амулети (16-20), коскен музички инструмент (21)

Пенелопа: камени секири (1-12), кремена стрелка (13), кремени ножиња (14-19);
Пенелопа Охридија: кремена алатка-нож (20)

Ljubo Fidanoski
Museum of the City of Skopje

Again About the Macedonian Neolithic

Abstract

The Neolithic, as one of the more affluent Prehistoric periods in the Republic of Macedonia, was studied in many occasions in the past period, thus, great deal of insights, interpretations and theories were made. However, there is space for new considerations about this important period of human history, especially, bearing in mind the new, unfortunately, still modest explorations. The state and level of research of Macedonian Neolithic are questions which demand special analysis, whose results should be considered in all of the future studies.

Thanks to the work of many domestic and foreign experts, Macedonian Neolithic is well known by almost all aspects. But, on the basis of the new explorations, especially in the neighborhood of Republic of Macedonia, a new space for thinking, and with that more dilemmas emerge in different spheres of the reconstruction of Neolithic is set. In that context particularly the questions about periodization and chronology of Macedonian Neolithic, the quality and quantity of absolute dates, the (in)consistency in the interpretation of large collections ceramic objects (pottery, figurines, house models, etc.), the (in)sufficient knowledge about architectural elements in large number of sites, etc., are more than needed. Therefore, the reconsideration of the conditions within Macedonian Neolithic, the need of right questions about the Neolithic cultures, and everything that they represent, as well as the new methods of research, from time to time, are more than necessary.

Keywords: *Neolithic in Macedonia, history of research, material culture, interpretation, chronology, periodization*

A thing or two about the research of the Macedonian Neolithic

The topic of the past studies of the Macedonian Neolithic has been addressed on several occasions, from short, informative reviews – to quite extensive studies on the course of all types of research on Neolithic in this part of the Balkans, in various scientific publications from the Republic of Macedonia, the Former Yugoslavia, but also wider. Quite briefly, I will look at the more important research projects and the obtained data on matter, in the period from the second half of the last century to the present. But before starting the review for the mentioned period, I note that the thirties are important for the subject, bearing in mind the pioneering explorations of Fewkes, concentrated in Pelagonia, as well as those of Hartley – one of the first authors who pointed out more Prehistoric sites and his extensive work was completed within the monograph *Prehistoric Macedonia* (Heurtley 1939; Naumov 2009a, 1).

The second half of the twentieth century, crucial for the research of the Macedonian Neolithic, especially the late fifties and sixties, when a dozen of archaeologists arose, mainly from the larger archaeological schools in the former Yugoslavia, which intensively begun to deal with

this interesting Prehistoric period (Naumov 2009a, 1–3; Фиданоски 2013, 15, 16; Fidanoski 2017, 31). The research of Grbić, Galović, and P. and J. Korošec are of great importance (Грбић 1954; Grbić et al. 1960; Грбић 1968; Galović 1964; Галовић 1967; Корошец 1954; Korošec 1971; Корошец и Корошец 1973). In this period, perhaps the most significant archaeological investigations of the Neolithic sites in Republic of Macedonia were performed, and from their results several papers and two monographs were published, particularly the work of Grbić and collaborators – *Porodin* (Grbić et al. 1960) and *Barutnica* from P. and J. Korošec (Корошец и Корошец 1973). In the period after the sixties, great contribution for the Macedonian archaeology have M. and D. Garašanin, who explored almost every Prehistoric site in Republic of Macedonia at that time, thus regularly publishing the results (Гарашанин и Гарашанин 1959; Гарашанин и Гарашанин 1961; Гарашанин 1968; Garašanin 1971; Гарашанин 1975; Гарашанин 1989).

As one of the rare foreign scientists a special place in the archaeology of the Macedonian Neolithic has Gimbutas (USA), which explored the site Barutnica-Amzabegovo in the late sixties and early seventies, and for the first time (together with collaborators), published a comprehensive monograph of the site – *Anza* (Gimbutas 1976a). It contains a series of interdisciplinary analyzes, first made on a Macedonian archaeological site. The analyzes refer to the geological site characteristics, the movable and immovable heritage, animals and plants remains, the anthropological remains and the reconstruction of site's paleo-environment. The period of the seventies marks the appearance of the journal *Macedoniae acta archaeologica*, which regularly publishes the latest data on Macedonian archaeology in general.

The 'golden' age of the Macedonian Neolithic research is the period between the sixties and the nineties. Namely, in these thirty years, as collaborators of the explorations at various sites, the already mentioned researchers from former Yugoslavia, but on many occasions also independently, in the first place stand out Sanev (**Fig. 1: A**), Kitanoski (**Fig. 1: B**) Simoska (**Fig. 1: C**) and Saržoski (**Fig. 1: D**) (Гарашанин и др. 1971; Санев 1975; Санев 1978; Санев 1986; Санев 1987; Санев 1988; Санев 1989а; Санев 1989б; Санев 1994; Санев 1995; Санев 2009; Санев и Стаменова 1989; Санев и др. 1976; Симоска 1986; Симоска и Санев 1975; Симоска и Санев 1976; Симоска и др. 1979; Симоска и Кузман 1990; Китаноски 1972; Китаноски 1977; Китаноски 1978; Китаноски и Симоска 1985; Китаноски и др. 1978; Китаноски и др. 1980; Китаноски и др. 1987, Kitanoski et al. 1990; Саржоски 1961; Здравковски и Саржоски 1989; Саржоски и Здравковски 1991). These names will be recorded in the history of Macedonian Prehistoric archaeology, first of all, as the first Macedonian archaeologists who independently begin extensive archaeological investigations on a number of Neolithic, as well as other Prehistoric sites. Among other things, it should be noted that in this early period (sixties and seventies) – when the Macedonian archaeological school was founded, in which these researchers have profound significance, the Neolithic culture in Republic of Macedonia is almost completely unknown. It is safe to say that there was certain knowledge about a very small number of sites, the material culture although rich is more or less unknown, especially considering the modest data from the neighborhood and the potentials of the research methodology were limited.

The period of the seventies and eighties is the time when a key breakthrough was made in the history of research of the Macedonian Neolithic. In addition to the aforementioned researchers, Kitanoski and Simoska are focused on the Neolithic of the southwestern part of Republic of Macedonia, especially Pelagonia and Prilep region, while Sanev conducted intensive, smaller and larger archaeological investigations at many Neolithic sites in almost all regions of the country. In the same time on the archaeological 'scene' a new generation of Macedonian Prehistoric archaeologists appears on stage. Starting from the middle generation, they are: Kuzman (**Fig. 1: H**), who researched in Pelagonia and especially in the region of Ohrid (Кузман 1990а; Кузман 1990б; Кузман 1996; Симоска и Кузман 1990; Кузман и др. 1989; Kuzman 2007; Кузман 2013; Кузман 2016; Кузман 2017), Bilbija (**Fig. 1: E**) – mainly in the Skopje region (Георгиев и Билбија 1984; Bilbija 1986; Гарашанин и Билбија 1988; Билбија 2011), Zdravkovski (**Fig. 1: G**) in the eastern parts of the Republic of Macedonia (Здравковски 1990а; Здравковски 1990б; Здравковски 2005; Здравковски 2006; Zdravkovski 2006; Здравковски 2008; Здравковски 2009) while Jovčevska (**Fig. 1: F**) (Јовчевска 1990; Јовчевска 1993; Јовчевска 2006; Јовчевска 2008а; Јовчевска 2008б; Јовчевска 2013) and Mitkoski (Миткоски 2005; Миткоски 2016; Миткоски 2017; Темелкоски и Миткоски 2005; Темелкоски и Миткоски 2008) in Veles and Prilep. At the very end of the seventies, one of the most important monographs on the Balkan Prehistory – *Prehistory of the Yugoslav Countries* (*Praistorija Jugoslavenskih zemalja*), edited by Benac (1979), was presented – validating the benefits from the previous studies of the Neolithic in Republic of Macedonia and other countries of the former Yugoslavia. In this edition for the first time are formulated the two most important Neolithic cultures in the Republic of Macedonia: Amzabegovo-Vršnik and Velušina-Porodin.

The nineties are the beginning of the crisis of the Macedonian Neolithic studies. Namely, until then, the intensive research of a number of better known sites (most of them explored before) throughout the territory of the country are more or less completed, in the southwest: Gurgur Tumba-Bitola, Porodinska Tumba-Porodin, Veluška Tumba-Porodin, Tumba-Optičari, Golema Tumba-Dobromiri, Golema Tumba-Trn, Mala Tumba-Trn, Tumba-Mogila, Ali Čair-Prilep, Čuka-Topolčani, Radin Dol-Prisad, Pešterica-Oreovec, Vrbjanska Čuka-Slavej, Dolno Tarnovo and others; in the north: Tumba-Palčište, Slatina-Zelenikovo, Tumba-Mađzhari, Cerje-Govrlevo, Sretselo-Mrševci, Amam-Lopate, Na Breg-Mlado Nagoričane, Čubuk Češma-Nikuštak and others; in the central part: Mramor-Čaška, Čakovec-Resava and others; in the eastern part: Barutnica-Amzabegovo, Rug Bair-Gorobinci, Alin Dol-Nemanjici, Vršnik-Tarinci and others and in the southeast: Stranata-Angelci, Kanli Čair-Damjan, Bojkovci-Damjan, Atici-Crničani and others.[1] In this social-turbulent period, of great importance in the Macedonian archaeology have been the great surveys of the whole territory of the country, published in the three-volume edition of the *Archaeological map of the Republic of Macedonia* (*Археолошка карта на Република Македонија*) (АКРМ 1994; АКРМ 1996; АКРМ 2002). The processes of the independence of the Republic of Macedonia and the deteriorated political situation, especially in the early nineties, are taking their tax in the research of the Macedonian Neolithic – the number of explored sites has been significantly reduced, although even in this crisis period, by researchers from both generations. This situation lasts until 2000, and the period until around 2010 is characterized by a small number of explored sites, most often with archaeological researches of already explored sites, such as: Tumba-Mađzhari, Cerje-Govrlevo, Na Breg-Mlado Nagoričane, etc., and in a small part of the research of previously unexplored localities: Pod selo-Stenče, Dzuniver-Izvor, Pista-Novo Selo, Grnčarica-Krupište, etc. It should be noted that in this decade, after a long period of time, two international collaborations for the studies of Tumba-Mađzhari (between the Museum of Macedonia and the National Center for Scientific Research from Republic of France) and Cerje-Govrlevo (between the Museum of the city of Skopje and University of

1 For the data regarding the archaeological campaigns carried out on the mentioned sites and the chronology of the research, I thank E. Stojanova Kanzurova. More details about the sites can be found in the journals *Macedoniae acta archaeologica* and *Arheološki pregled*.

Primorska from Republic of Slovenia) (Fidanoski and Tomaž 2010, 63). Among other things, in this period, the results of the previous research, as well as the revision of some scientific views from the past on the subject matter, are again actualized in a collection in honor of M. Garašanin (*Hommage to Milutin Garašnin*) edited by Tasić and Grozdanov (2006), and in three monographs: *Amzabegovo, settlement of the Early and Middle Neolithic in Macedonia* edited by Sanev (2009), *Neolithic communities in Republic of Macedonia* by Naumov, Fidanoski, Tolevski and Ivkovska (Naumov et al. 2009) and *Patterns and Corporeality: Neolithic Visual Culture from the Republic of Macedonia* by Naumov (2009b).

Unfortunately, in the last period of almost a decade, that is, from 2010 to the present, the investigations continue on a very small number (already explored) sites: Veluška Tumba-Porodin, Tumba-Mogila, Vrbjanska Čuka-Slavej, Tumba-Mađzhari, Kanli Čair-Damjan, Golema Trpeza-Staro Konjarevo, and only three unexplored sites: Kremenica-Dolna Bela Crkva, Tumba-Brvenica and Čaušov Kamen-Angelci. On the other hand, the number of published scientific papers is increasing, and the number of published monographs for specific sites is seriously decreasing. A number of other important issues of the Macedonian Neolithic of the last few years should also be noted: *Neolithic anthropomorphic objects in the Republic of Macedonia* (*Неолитски антроморфни предмети во Република Македонија*) by Naumov and Čausidis (Наумов и Чаусидис 2011), *The Early and Middle Neolithic in Macedonia: Links with neighbouring areas* by Angeleski (2012), *Cerje-Govrlevo and Miloš Bilbija* by Fidanoski (2012), Grnčarica by Jovčevska (Јовчевска 2013), *Grnčarica: a Contribution to the Early Neolithic Puzzle of the Balkans* by Stojanovski (2017), *Neolithic figurines in Macedonia* (*Неолитски фигурини во Македонија*) by Naumov (Наумов 2015), *Dragiša Zdravkovski in Memoriam: cultural manifestations during the Neolithic period on the territory of the Republic of Macedonia and neighboring regions* edited by Stojanova Kanzurova (2017), the edited books *Neolithic in Macedonia* by Fidanoski and Naumov (2016; 2017), etc. Among other things, it should be noted that some of the important (already mentioned) archaeologists who intensively investigated the Macedonian Neolithic after 2000 retired (Simoska, Kuzman), and unfortunately, most of them are no longer among us (Kitanoski, Sanev, Bilbija, Zdravkovski and Jovčevska). Finally, I underline that the institutional interest about the Neolithic period in Republic of Macedonia has generally decreased in the last thirty years, especially in the last decade, and the same tendency is observed in the declining interest among the younger generation of archaeologists – prehistorians, from which only a few are occupied professionally.

Sites

The number of Neolithic sites in Republic of Macedonia can be determined as quite high, taking into account its geomorphological diversity (the large number of relatively massive mountain ranges – unfit for Neolithic populations, on one hand, and the good hydrographic network and suitable for settlement valleys and plains, on the other hand), but also its geographical position – in the southern, central part of the Balkans – at the multi-millennial crossroad between Asia and Europe. Thanks to the data from the three editions of the *Archaeological map of the Republic of Macedonia* (AKPM 1994; AKPM 1996; AKPM 2002), but also to the recent data[2], for the time being, at least 234 Neolithic sites are known. Although this number can not be considered final, on this occasion it will be accepted as such – in order to obtain a certain statistical picture for this specific subject. In this context, out of 234 known Neolithic sites, so far only 55 or not even quarter or 23.5% have been investigated to a lesser or greater extent (**Fig. 3: C**).

2 For the data about the newly discovered Neolithic sites, I thank I. Tolevski and G. Naumov.

If we divide the territory of Republic of Macedonia into nine geographical parts or wholes, a lot of interesting data can be obtained, not only for the number of Neolithic sites and for the influence of the geomorphological characteristics on Neolithic populations, but also for the possible inconsistencies in the surveys, as well as for the perception of the modern population to the Neolithic cultural heritage. Namely, the smallest number of Neolithic sites is registered in the western part of the country (**Fig. 2: G**) – only three, none of which has been researched so far. Considering the favorable for Neolithic settling, Polog Valley, in the northwestern part of the country (**Fig. 2: F**), only eight sites have been registered, of which only three (or 37.5% of them) have been investigated so far. Similar is the situation with the northeastern part of the country (**Fig. 2: D**) where, until now, only 11 sites have been discovered, of which five (or 45.4% of them) have been explored – in the territory where the natural raw materials (flint and stone) are abundant. In a similar context the number of Neolithic sites in the southeast part of the country (**Fig. 2: A**) can be set – 12, of which only five (or 41.7% of them) were investigated – a relatively small number of Neolithic sites – 'the main route' for the Central Balkans Neolithization, according to many authors (Николов 1990; Чохаджиев 1990; Тодорова и Вайсов 1993; Санев 1994; Санев 1995; Sanev 2004; Nikolov 2002; Pavúk 2007; Naumov 2009c). According to the data, the central part of the country has 16 Neolithic sites (**Fig. 2: C**), of which only four (or 25% of them) were investigated. The territory of the southwestern Republic of Macedonia (Ohrid and Struga without Pelagonia) (**Fig. 2: H**) includes 22 sites, of which only six (or 27.3% of them) have been explored. The situation is similar in Skopje region (**Fig. 2: E**), where for the time being, 26 sites are known, of which only five (or 19.2% of them) have been investigated. It is interesting that in the territory of the core of the largest Neolithic culture in the country, Amzabegovo-Vršnik – the eastern part of the Republic of Macedonia (**Fig. 2: B**) are registered 36 sites, of which only seven (or 19.4% of them) have been investigated. Ultimately, with the absolutely largest number of Neolithic sites, Pelagonia (with Prilep and Mariovo regions) (**Fig. 3: A**) in the southwestern part of the country, which includes an incredible 100 sites, from which at least 20 (or 20% of them) have been explored, is unique region.

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On the basis of the above, it can be seen that the various parts of Republic of Macedonia contain different numbers of Neolithic sites, which, in one way or another, have been investigated in a small number. Also, final answer can not be given to our assumptions about the geomorphological conditions that, according to these results, are not always crucial for the settling of the Neolithic communities, such as the southeast, northeast and northwestern parts of the Republic of Macedonia, which are expected to be abundant with sites – or our knowledge of these regions is insufficient. On the other hand, the number of the sites from Pelagonia is really exceptional, and if presented statistically – in terms of the total number of Neolithic sites from the other regions of Republic of Macedonia, contains immense 100 (or 42.7%) – or almost half of the total number (**Fig. 3: B, E**). Finally, a few more interesting data should be noted in relation to the previous investigations of the 55 explored sites. Namely, in the period between 1950 and 2000, a total of 36 (or 65.4%) were explored or almost two thirds of the sites, further in the period before and after 2000 (mainly investigated sites on several occasions) a total of 10 (or 18.2%), and finally, after 2000 (already explored sites and for the first time explored sites) total of nine (or 16.4%) (**Fig. 3: D**).

Extent and methodologies of the archaeological explorations

The earliest archaeological investigations (in the fifties and sixties) were performed in several sites from different parts of the Republic of Macedonia: Slatina-Zelenikovo (Skopje region), Vršnik-Tarinci, Barutnica-Amzabegovo (Sveti Nikole region), Porodinska Tumba-Porodin, Ali Čair-Prilep, Peštерica-Oreovec, Čuka-Topolčani (Prilep region), etc. Later, in the seventies and eighties, the number of explored sites rose sharply, and then gradually it was again reduced. From the aspect of the extent of archaeological explorations, which, among other things, depends on the type of research (sondage, systematic, protective, etc.), rather short and small (by surface) surveys are dominant. It can be said that sondage archaeological research is absolutely dominant, while systematic and protective are rare. In the later period – especially in the seventies and eighties, more detailed (systematic) investigations were carried out on certain sites, such as in Barutnica-Amzabegovo, Veluška Tumba-Porodin, Tumba-Mađzhari, etc. Given that in the country a small number of archaeologists professionally studied the Neolithic, often the working conditions were difficult, and the staff was insufficiently trained (mostly untrained workers from the places where the sites belong and on rare occasions, archaeology students or a number of archaeologists). But, despite the small extent and short duration of research, as well as the poor training of archaeological teams, the discovered material culture from the Macedonian Neolithic sites is extremely rich and authentic.

Unfortunately, the small number of specialized stuff in the archaeological explorations and the insufficient number (and interest) of students interested in Prehistoric archaeology directly influenced the quality of the research itself, in particular, the collection and the documentation of the movable material, the discovery and the documentation of the archaeological occurrences and their extent, as well as the problems in defining the stratigraphy of the sites which in Republic of Macedonia, with small exceptions are characterized by several layers (and phases) of the Neolithic, as well as manifestations of other periods. This very common complex situation must not be taken as a critique of the retired researchers, on the contrary – precisely as it was already stated (mainly the low interest of the more recent generations for the study of the Neolithic and the inability to focus to a particular site of the older generations), but should be accepted as an objective assessment of the possibilities within the archaeological research and approaches. Among other things, international co-operations, which are extremely important for practicing new methodologies and approaches in the investigations, but also for exchanging opinions – were not only scarce, they were only a few in a very long period.

In the period between 1950 and 2000, international co-operations for Neolithic sites explorations in Republic of Macedonia were accomplished only for the sites: Porodinska Tumba-Porodin, Barutnica-Amzabegovo, Rug Bair-Gorobinci, and partly (only with specialists of one or two fields) for: Tumba-Mađzhari (Moskalewska and Sanev 1988), Na Breg-Mlado Nagoričane, Čakovec-Resava and the Stranata-Angelci (Ivkovska 2009). Unfortunately, the insignificant interest of the recent generations' archaeologists for the Neolithic, as well as the tendency for investigations without international co-operations continues after 2000. International co-operations after the mentioned year were achieved only for four sites: Tumba-Mađzhari, Cerje-Govrlevo (Fidanoski and Tomaž 2010), Tumba-Mogila (Наумов и Томаж 2015) and Vrbjanska Čuka-Slavej (Наумов и др. 2016). Statistically, there are seven international co-operations in the history of the Macedonian Neolithic research, between 1950 and 2000, three are three co-operations (or 42.9%), and for the period after 2000, four (or 57.1%).

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The difficulties and problems arising during the archaeological explorations of the Macedonian Neolithic in the past seventy years have been suppressed by the extremely rich fund Neolithic material culture composed of a large number of ceramic objects (vessels, figures, house models, altars, tables, etc.) stone, animal bone, antler, tooth and shell (various tools and certain symbolic objects), as well as from relatively well-preserved (although mostly fragmented) architectural remains. Unfortunately, what is still a problem of contemporary science are the insufficiently precise data from most archaeological investigations, especially for the stratigraphy and the interpretation of the archeological occurrences – which is a direct result of (lack of) application of newer exploration methodologies and of insufficient interest for professional occupation with the Macedonian Neolithic. Here, the (lack of) interest of the higher education institutions in the education, in the past and today is most significant, not only for the problems of the Macedonian Neolithic, but also for the Neolithic in general.

Interdisciplinarity of the explorations

Interdisciplinary (often called and archaeometric) studies are another problem in the history of the research of Macedonian Neolithic sites and cultures. Namely, today a number of interdisciplinary studies within archaeological research, and later in cabinet studies, are of crucial importance: archaeology, anthropology, archaeobotanics, various macroscopic and microscopic analyzes of movable and immovable material, traceology, absolute dating, etc. Only with the help of this 'research package' more precise data on the social, economic and cultural environment of Neolithic communities from Republic of Macedonia can be obtained.

Archaeological investigations, as well as later cabinet studies of a number of specialists at the site Barutnica-Amzabegovo, are probably the only example of a successful research site. Namely, in the late sixties and early seventies, under the guidance of Gimbutas, with a precise stratigraphic methodology in the research, and later through almost all, at the time possible, interdisciplinary (cabinet) studies, a complete picture for the site was established. Probably, on the basis of this studies the general picture of the Macedonian Neolithic was formed, which certainly influenced the definition of the largest Neolithic culture in Republic of Macedonia, whose name was taken from this (and another) site. Apart from the complete data obtained on the movable and immovable material, the various analyzes of the material, the absolute dates, as well as the anthropological (Nemeskéri and Lengyel 1976), the archaeological (Bökönyi 1976) and the archaeobotanical results (Renfrew 1976; Beug 1976) are published in a complete monograph for the site, in which these extremely important results have their place (Gimbutas 1976a). Among other things, within the research of this site, studies and analyzes were carried out to a lesser extent on the site Rug Bair-Gorobinci, which was also published in the mentioned monograph (Schwartz 1976).

In the eighties, the cooperation of the Museum of Macedonia with certain specialists, mainly under the supervision of Sanev, for archaeozoological analyzes of the material from several sites (Tumba-Mađzhari, Na Breg-Mlado Nagoričane, Čakovec-Resava and Stranata-Angelci) is aknowledged. However, the results were partially published (only for Tumba-Mađzhari and the Stranata-Angelci) during that period (Moskalewska and Sanev 1988; Санев и Стаменкова 1989), but luckily, thirty years later, the results for the other analyzed material from the sites

are also available (Ivkovska 2009). After 2000, archaeozoological analyzes were made for Kartalica, Dzuniver-Izvor, Pista-Novo Selo (Фиданоска *во печат*; Фиданоска и Хаџи-Николов *во подготовка*), Penelopa (Кузман 2013, 360–361) and Vrbjanska Čuka-Slavej (Наумов и др. 2016). Anthropological analyzes of material from several Neolithic sites (Nemeskéri and Lengyel 1976; Вељановска 2000; Вељановска 2006) have been made in the period between the seventies and eighties. Archaeobotanical investigations were carried out only on the material from Barutnica-Amzabegovo and Vrbjanska Čuka-Slavej (Renfrew 1976; Beug 1976; Наумов и др. 2016), and also only for two sites the stone tools were analyzed, Barutnica-Amzabegovo and Rug Bair-Gorobinci (Elster 1976; Smoor 1976; Димитровска 2013; Dimitrovska and Boev 2011). Absolute dates, which are continuously made in large numbers for sites around the world for decades – about Macedonian Neolithic sites are rare. For a total of nine sites there are available absolute dates: with a large number of analyzes, Barutnica-Amzabegovo, and with a small number of analyzes, Tumba-Mogila, Veluška Tumba-Porodin, Golema Tumba-Trn, Čuka-Topolčani, Cerje-Govrlevo, Grnčarica-Krupište and Vrbanjska Čuka-Slavej (Gimbutas 1976b; Srdoć et al. 1977; Naumov 2009c; Fidanoski 2009; Fidanoski 2012; Stojanovski 2017; Наумов 2016). Of the more contemporary technologies applied in Macedonian Neolithic sites research, the GIS modeling of 94 Prehistoric sites (mainly Neolithic), geomagnetic scanning of 11 sites and digital topography only on Vrbjanska Čuka-Slavej should be mentioned (Наумов и Томаж 2015; Наумов и др. 2014; Наумов и др. 2016; Наумов и др. 2017).

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Previous interdisciplinary research of the Macedonian Neolithic, unlike the neighborhood and beyond, is also very rarely practiced. Apart from the early archaeological investigations that included certain (probably earliest) interdisciplinary studies on Porodinska Tumba-Porodin, in the late fifties, only a small number of other studies were carried out at relatively long intervals. The most complete interdisciplinary research was carried out at Barutnica-Amzabegovo in the early seventies, whose results are still relevant today. After almost thirty years, after 2000, interdisciplinary research has been carried out for only four other sites: Tumba-Mađzhari, Cerje-Govrlevo, Tumba-Mogila and Vrbjanska Čuka-Slavej. Statistically, it would look like this: (a) archaeological analyzes from the period until 2000 were carried out in six sites (Barutnica-Amzabegovo, Rug Bair-Gorobinci, Tumba-Mađzhari, Na Breg-Mlado Nagoričane, Čakovec-Resava and Stranata-Angelci) or 54.5% and after 2000 such analyzes were carried out on five sites (Kartalica, Zuniver-Izvor, Pista-Novo Selo, Penelopa and Vrbjanska Čuka-Slavej) or 45.5%; (b) anthropological analyzes were carried out on a total of five sites i.e., two in the period before 2000 (Barutnica-Amzabegovo and Tumba-Mađzhari) or (40%) and three after 2000 (Pista-Novo Selo, Grnčarica-Krupište and Cerje-Govrlevo) or 60%; (c) archaeobotanical analyzes were made only on two sites, Barutnica-Amzabegovo, before 2000, and Vrbjanska Čuka-Slavej, after 2000; (d) analyzes of lithic material were made only at two sites, again Barutnica-Amzabegovo, before 2000 and Rug Bair-Gorobinci before and after 2000; (e) absolute dates were mainly made in the period before 2000 (for six sites or 66.7%), and only one third of the sites – after 2000 (for three sites or 33.3%) and (f) while the aforementioned contemporary analyzes (computer modeling and measurements) have been carried out over the past few years. Regarding these issues, it can be said that insufficient investments in specialized staff, as well as (the lack of) cooperation with international partners (with which opinions are exchanged, and from which the knowledge is deepened) influenced the low number of interdisciplinary analyzes.

State of research and published results

The deposition of Neolithic archaeological material from the investigations is directly dependent on the methodological approaches used by archaeologists. In the past, the material considered to be 'representative' (for example, better preserved and larger ceramic vessels' fragments, fragments of decorated ceramic objects, complete ceramic vessels, almost without exception objects with symbolic properties, figurines, models of houses, altars, etc., tools made of stone, bone, antler, and shell, etc.) was selected and permanently deposited in Macedonian museums. The rest of the so-called 'mass material' was marked and reburied in certain places on the sites. Unfortunately, the practice of Balkan archaeologists for rejecting large quantities of 'massively present' fragments of ceramic vessels, lithics, animal bones, etc., was practiced in the Republic of Macedonia, and on rare occasions the complete material was stored and deposited. Worse still, this practice continues after 2000, and even today some archaeologists who are dealing with Prehistoric periods still do this. For these reasons, today and in the future, science will be forever deprived of important data on many elements of the Neolithic economy, social life, etc. However, this situation is changing and today there are Neolithic collections that contain the entire archaeological material from the explored parts of the sites (fully collected fragments of ceramic vessels, fragments and debitage of stone and flint, all fragments and complete animal bones, soil specimens collected from the cultural layers, organic samples of important archeological occurrences and contexts, etc.).

Considering that a relatively small number of Neolithic researchers have managed to investigate (to a large extent small areas of at least 55 sites), a modest publication of the results is expected. This is due to the inability of the researcher to pay special attention to one site, that is, directing to multiple sites and publishing reports and general reviews. Among other things, the selective collection of the archaeological material and the absence of specialized staff did not allow more detailed analyzes. Therefore, in the macedonian literature about the Neolithic almost no precise analyzes can be found for a particular category of objects. Among other things, with the retirement (and death of the majority) of the older generations of archaeologists, much of the contextual data about the deposited material and, in particular, the lack of precise documentation has been lost, thus further complicating the work of the newer generations (in case they have a desire to do something with the previously deposited material, but also from the more recent investigations). However, it should be mentioned that the original report papers for most of the explored sites have been largely published, followed by a small number of technical illustrations, as well as with a small number of illustrations from the selected, 'representative' material. This practice was used in the wider Balkans, but, unlike these reports, in the neighborhood of Republic of Macedonia, especially in Bulgaria, Serbia and Greece, comprehensive monographs on certain sites were (and are) often published. Unfortunately, in Republic of Macedonia, apart from the relatively well-represented number of research reports, the separate papers on various segments of cultural-historical interpretations and considerations on some more substantial topics, specific monographs for certain sites, as already said, were made on only three sites: Porodinska Tumba-Porodin, Barutnica-Amzabegovo and Grnčarica-Krupište (Grbić et al. 1960; Корошец и Корошец 1973; Gimbutas 1976a; Санев 2009; Јовчевска 2013; Stojanovski 2017).

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From the above it can be said that the level of research of the Neolithic collections is not at the satisfactory level, and in order to overcome this condition, great efforts are needed from the future generations, which should correct (as far as possible) this image of the Macedonian Neolithic. On the other hand, the publications of the Macedonian Neolithic in literature, which are dominated by archaeological reports, as well as a small number of reviews, attempts for cultural-historical interpretations and reviews of some more important questions, however, are much better represented than other Prehistoric periods. Unfortunately, apart from the detailed monograph for Barutnica-Amzabegovo since 1976, there is no other reference work in Republic of Macedonia that could be compared to the neighborhood and beyond. Regarding the number of specific monographs for certain sites, we have a total of six, for only three sites: one for Porodinska Tumba-Porodin (from the beginning of the sixties), two for Barutnica-Amzabegovo (from the seventies) and another one for the same site (after 2000), as well as for Grnčarica-Krupište (the two after 2000). And here, if we look at statistics, the situation is 50% for monographs before 2000, and the same for the period after 2000.

Concluding remarks

Based on the archaeological investigations and published results, in the past seventy years, the image for the Macedonian Neolithic has the most necessary elements for classification in the wider context of this period in Southeast Europe. The discovered material culture testifies the diversity of Neolithic communities in Republic of Macedonia, especially from the aspect of the authentic ceramic vessels, figurines, house models, altars, stone tools, animal bones, etc. However, we still do not have precise answers about the cultural and economic ambiance of the Macedonian Neolithic. It is directly due to a series of conditions, all interconnected: (a) relatively small-scale site explorations, especially according to the explored surface; (b) the unsuitable methodology of archaeological and cabinet research, especially from the aspect of stratigraphic data, documentation and 'reading' of archeological occurrences and the selective collection and disposal of the archaeological material – which directly affects the interpretation of the older data, but also the future studies; (c) insignificant number of international collaborations, necessary for exchange of experiences and opinions and for acquiring new knowledge; (d) the weak institutional and higher education interest in the studies of the Macedonian Neolithic that directly affects the research potential, and thus the results obtained from them; (e) the lack of specialized staff from whom results are expected to be delivered; (f) very small number of interdisciplinary studies; (g) absence of fully studied collections (regardless of which category of material culture originates) and partially analyzed archaeological material; (h) absence of published detailed analyzes of the collections; (i) the extremely small number of absolute dates for specific phases of the sites, and even less for archaeological contexts; etc. In this context, regardless of the 'representativity' of the material culture, the actual data on the life of the Neolithic man from Republic of Macedonia are still beyond our reach.

In order to get closer to the contemporary trends in Neolithic studies, more activities should be undertaken, both from an institutional and from a personal point of view. This would be possible only if there is a concrete institutional strategy or training plan, and later for detailed research of the already discovered archeological material, and further on for research of new sites. In this context, higher education centers have a special responsibility in the education of potential Neolithic researchers. Partial research gives partial answers and imprecise data. This was the situation in the Macedonian Neolithic half a century ago, and unfortunately it is today. It depends on us whether we will change our awareness.

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Fig. 1 The most influential Macedonian Neolithic archaeologists (photo archive of the Macedonian scientific archaeological society; E. Stojanova Kanzurova; and Lj. Fidanoski).
A: Voislav Sanev; B: Blagoja Kitanoski; C: Dragica Simoska; D: Saržo Saržoski; E: Miloš Bilbija; F: Trajanka Jovčevska; G: Dragiša Zdravkovski and **H: Pasko Kuzman.**

Fig. 2 Neolithic sites in Republic of Macedonia by region (maps Lj. Fidanoski).
A: Southeastern Macedonia; B: Eastern Macedonia; C: Central Macedonia; D: Northeastern Macedonia; E: South Central Macedonia; F: Northwestern Macedonia; G: Western Macedonia and **H: Southwestern Macedonia.**

Fig. 3 Neolithic sites in Republic of Macedonia by region, and by state of research (maps Lj. Fidanoski).
A: Southwestern Macedonia (Pelagonia); B: Number of registered sites: Pelagonia vs other regions; C: Researched vs not researched sites; D: State of research by periods and **E: State of research by region.**

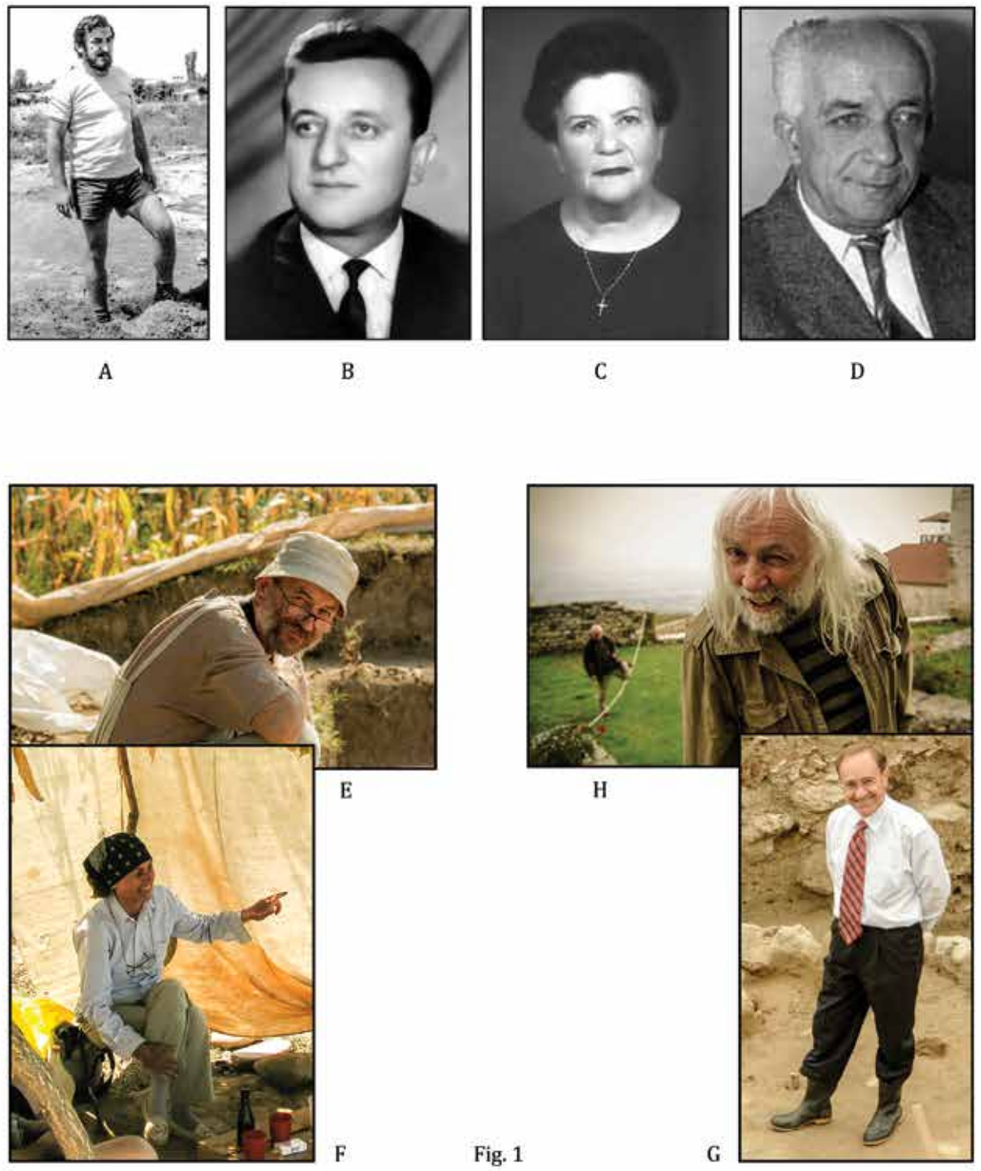

Fig. 1

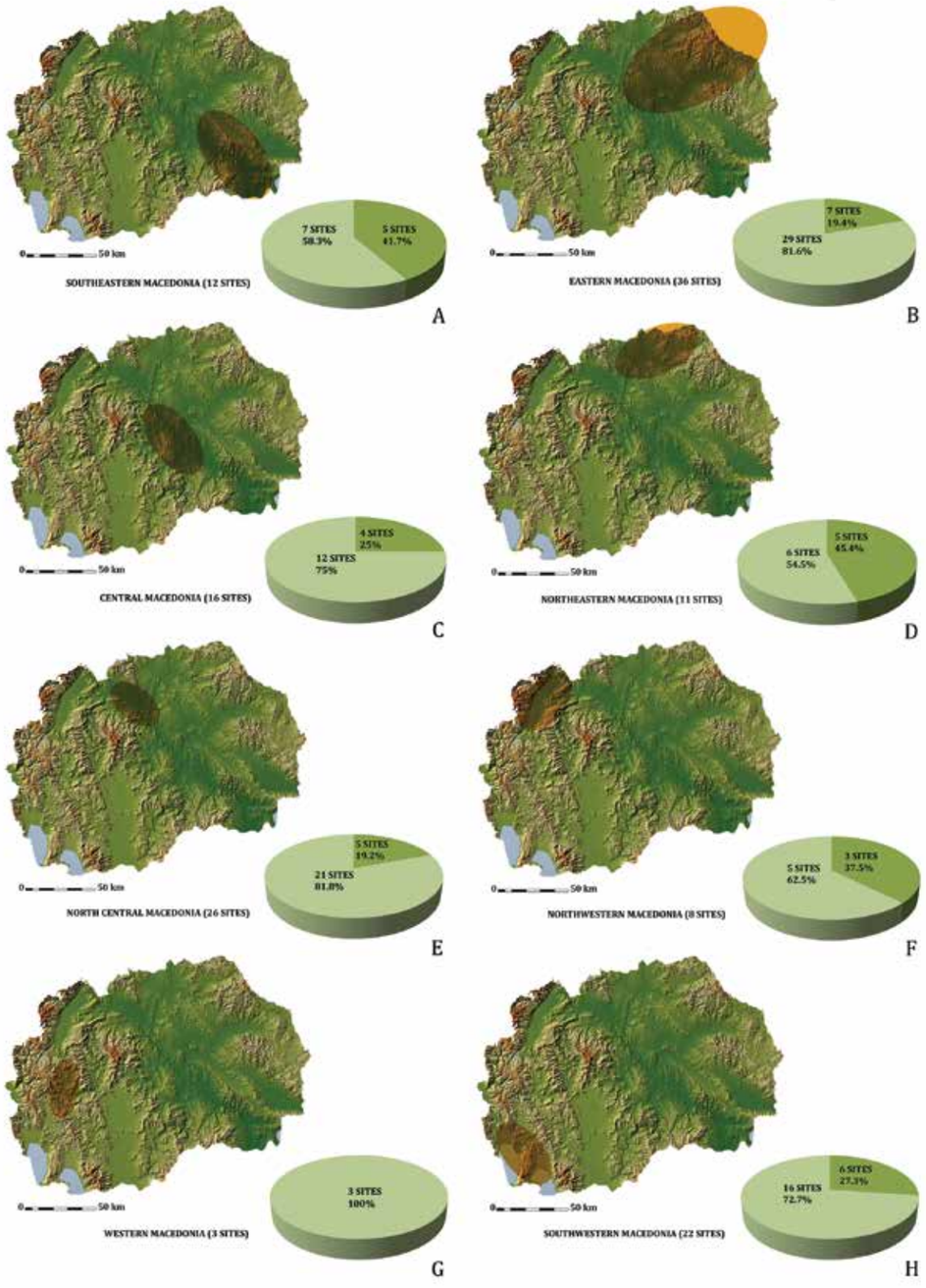
0 50 km
SOUTHEASTERN MACEDONIA (12 SITES)
7 SITES 58.3%
5 SITES 41.7%
A
0 50 km
EASTERN MACEDONIA (36 SITES)
7 SITES 19.4%
29 SITES 81.6%
B
0 50 km
CENTRAL MACEDONIA (16 SITES)
4 SITES 25%
12 SITES 75%
C
0 50 km
NORTHEASTERN MACEDONIA (11 SITES)
5 SITES 45.4%
6 SITES 54.5%
D
0 50 km
NORTH CENTRAL MACEDONIA (26 SITES)
5 SITES 19.2%
21 SITES 81.8%
E
0 50 km
NORTHWESTERN MACEDONIA (8 SITES)
3 SITES 37.5%
5 SITES 62.5%
F
0 50 km
WESTERN MACEDONIA (3 SITES)
3 SITES 100%
G
0 50 km
SOUTHWESTERN MACEDONIA (22 SITES)
6 SITES 27.3%
16 SITES 72.7%
H

Fig. 2

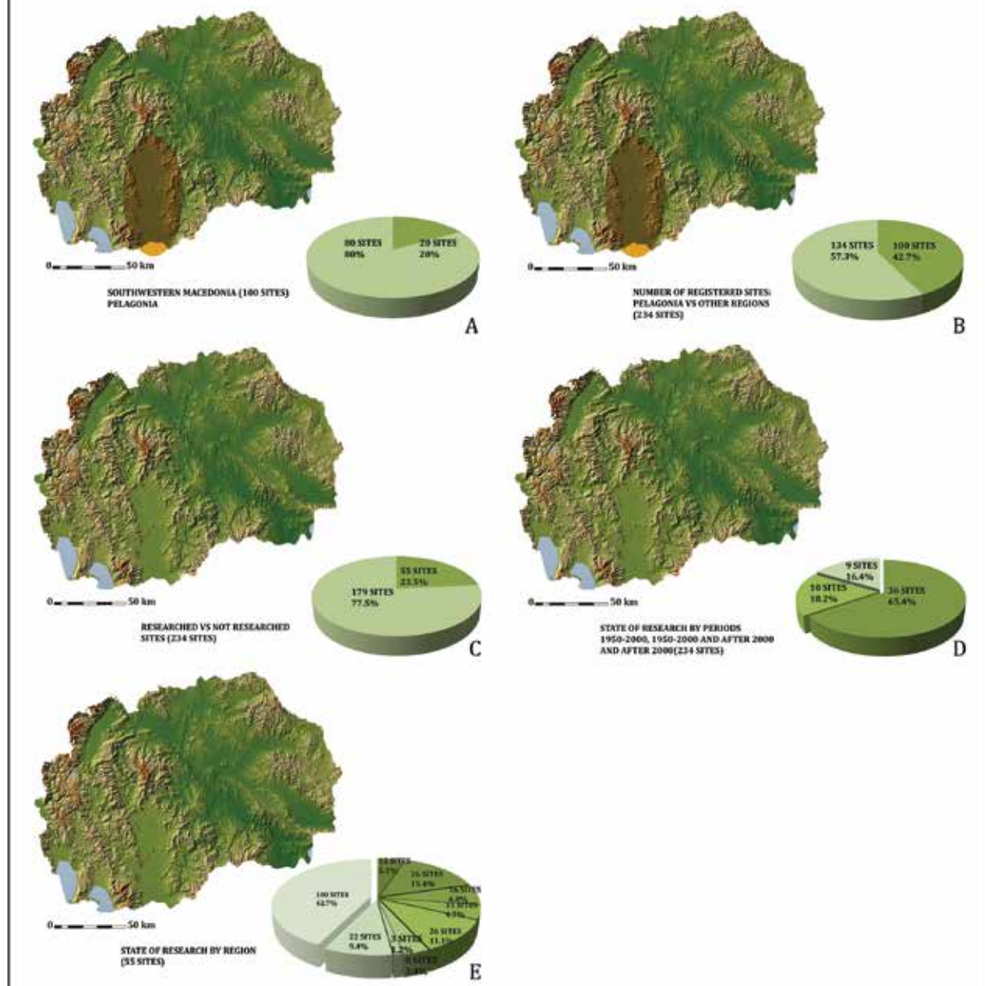
0 50 km
SOUTHWESTERN MACEDONIA (100 SITES)
PELAGONIA
80 SITES 80%
20 SITES 20%
A
0 50 km
NUMBER OF REGISTERED SITES: PELAGONIA VS OTHER REGIONS (234 SITES)
134 SITES 57.3%
100 SITES 42.7%
B
0 50 km
RESEARCHED VS NOT RESEARCHED SITES (234 SITES)
55 SITES 23.5%
179 SITES 77.5%
C
0 50 km
STATE OF RESEARCH BY PERIODS 1950-2000, 1950-2000 AND AFTER 2000 AND AFTER 2000(234 SITES)
9 SITES 16.4%
10 SITES 18.2%
36 SITES 65.4%
D
0 50 km
STATE OF RESEARCH BY REGION (55 SITES)
E

Fig. 3

Aleksandar Mitkoski
NI Institute and Museum, Prilep

Late Neolithic Settlement Ali Čair, Prilep

Abstract

Ali Čair is a new settlement located on the northeastern periphery of the city of Prilep, urbanized and densely populated. The archaeological excavations that were carried out in this area (site) determined the existence of a one-layer prehistoric settlement, whereby parts of the construction were discovered in the usual prehistoric construction technique of wooden reinforcement and wattle and daub. From the movable findings, the following are found: stone tools, anthropomorphic and zoomorphic figurines, as well as numerous fragments ceramic vessels that were made in only one texture. The color obtained during the baking is predominantly brown or grey in various shades, while the forms are of several types and variants of plates and dishes with different dimensions and purpose, and only a small number of them are ornamented. These findings can be related to the Late Neolithic ceramics of the Balkan–Anatolian complex, representing a derived variant.

Keywords: *Pelagonia, Ali Čair, archaeological excavations, Late Neolithic*

The site of Ali Čair in city of Prilep

In the new settlement Ali Čair, located on the northeast periphery of the city of Prilep in a courtyard on the street Duško Naumoski no. 12 in 1969, during the excavation of a septic tank, the remains of a prehistoric settlement were discovered (**T. I: 1, 2**). For more precise time and cultural determination of the settlement archaeological excavations were conducted, where two probes were opened: Probe I which was set in the western corner and Probe II in the south corner of the courtyard. Thereby, the cultural layer appeared only in Probe II at a depth of 1.10 m and it had a thickness of about 0.50 m which suggests that the settlement was of a one layer (Китаноски 1969, 20). In 1971, archaeological excavations have continued on this site and another 4 probes have been open at a distance of about 50 meters south and northeast of the house. No cultural layer has been recorded in these probes, so the findings that were found in them except typologically have no other meaning (**T. II: 1, 2**).

Finally, it should be emphasized that this living space was also used in the ancient period (Кепески 1979, 55). From the movable archaeological material, the most important and prevalent are the fragments of ceramic vessels, anthropomorphic figurines, stone tools, animal bones, antlers and river shells.

Pottery

The ceramics features are distinguished by a coarse fabric, mainly made of insufficiently purified clay, mixed with small stones and a large presence of mica. The rims of the vessels are: rounded, flattened, flat cut out, and thickened from the outside and inside, or gently drawn outwards.

They are mostly with circular and flat bottom; one fragment is with an elliptical cross-section, while the other one is with approximately square neck and mouth. The color produced by the firing is grey or brown in several shades and there are also two-colored vessels, outside grey and inside brown or vice versa. The black, nicely smoothed vessels appear quite rarely, one is brown and the other is with a red slide on the both inside and outside[1].

Based on the way of preparation and their purpose, the pottery could be divided into: coarse, medium and fine. The shapes of the vessels and the decoration techniques are quite limited.

According the forms, there are several types of bowls.

Plates in the form of a straight cone are usually with coarse fabric and roughly smoothed surfaces. One such fragment is decorated with two horizontal and parallel rows of circular stabs, which are filled with white incrustation (**T. IV: 1**). In another fragment with thin walls and shiny smooth surfaces, a wider flat-cut knob is placed under the rim and above it, while on the rim, an application in the shape of a 'bird head' is facing the inside of the bowl (**T. IV: 2**). In the third case there is a small rounded perforation beneath the rim.

The hemispherical plates are also of a coarse fabric with a grey-brown or only grey color produced from the firing. In one case, a tiny tongue handle is sloped from the edge of the rim on the plate and is combined with a knob application that is decorated with several impressions and oblique parallel and shallow channelures (**T. IV: 6**). In the second case, on the widest part of the bowl there is a knob application (**T. IV: 7**) and in the third, in this place there is a tunnel-like handle horizontally pierced (**T. IV: 8**). In one fragment, most likely of this type of bowls but with larger dimensions, the widest part has a larger handle with a triangular shape (**T. IV: 9**).

The carinated plates can be seen with a cylindrical neck (**T. IV: 17–19**) or the upper cone can be slightly drawn inwards (**T. IV: 10–15**) or outwards **(T. IV: 16**). This type of plates is with coarse fabric except for one fragment made out of purified clay and has a red slide on the inside/outside, while the upper cone is decorated with a channeled interlacing (**T. IV: 13**). Another fragment is decorated with a black topped technique in a combination of a double array of close opposing triangular impressions made with an instrument and placed on the shoulder (**T. IV: 14**). In several other cases, the upper cone is engraved with tiny rounded impressions filled with white incrustation (**T. IV: 10, 15**), and in one sample under the passing there is a small perforation and black topped ornamentation (**T. IV: 17**). Only in two cases, at the passing, there is one knob application, in which one is with a single bite from the upper and lower side or a tiny tongue handle, while in another case in this part of the vessel there are vertical, parallel incisions (**T. IV: 20**).

Within single, individual findings there is also the plate with an intended rim colored with a brown slide, which was made of purified clay and has thin walls (**T. IV: 5**), as well as the bowl with the plastic rib replacing the shoulder which is actually with a very rough fabric (**T. IV: 21**).

The holemouth jars are with a short or higher cylindrical neck, curved, flattened or ring-shaped bold rim and most often with an elongated body. In one case, there is a small plastic nipple placed on the shoulder while in another larger ribbon handle (**T. V: 2, 3**). There is such sample with

1 The head of the research did not isolate the movable archaeological material after the excavations, nor from the enclosed units, because of which it is very difficult to perform its precise chronological determination.

a high cylindrical neck, a carinated body and four tunnel-like handles at the passing, vertically punctured. Two smaller perforations (**T. V: 1**) are found at one fragment on the shoulder.

The jars usually have larger dimensions with a short or a higher cylindrical or conical neck and a curved rim, and in one case it is thickened by the inner side. In two cases a horizontal plastic rib is placed under the rim, and in the second case it is sharply drawn out (**T. V: 15, 17**). In several samples, there are vertical handles starting from the edge of the rim or under it, and connect the neck together with the widest part of the vessel (**T. V: 19–22**), where in one case the root of the handle is decorated with a black topped technique (**T. V: 20**). In one fragment, a larger handle with a triangular shape is placed on the neck (**T. II: 18**). There are also pots in a biconical form, with a high cylindrical neck and a flattened rim under which the tongue and saddle-like handle is placed (**T. IV: 22, 23**).

The bowls are with medium or poor fabric, smoothed or roughly smeared surfaces and with brown or grey color produced from the firing. They are usually with a high bell-shaped leg (**T. V: 6**) which in one case is decorated with wider, slanted, parallel channelures that converge at one angle (**T. V: 9**) while at the other, between these channelures a vertical row is placed from short oblique cuts that merge at a sharp angle **(T. V: 8**). In one case, a small circular perforation (**T. V: 9**) was found on the leg.

The vessel with a half opened shape is present only with one fragment that has a spherical body shape and a curved rim under which an elongated, vertically positioned and unpledged handle with a triangular cross section is placed in the upper part with small circular incisions on both sides and two sloping, parallel shallow channelures, thus resembling zoomorphic appearance on the handle (**T. V: 5**).

Also, as a single finding, we will mention the fragment of a bowl with approximately a square neck and a rim, where two horizontal, parallel rows of shallow channelures are positioned on the corner, underneath the rim, and a lot of shallow zigzag channelures under which there is a knob application with small rounded incisions on both sides, thus resembling a zoomorphic representation (**T. VI: 21**).

From the other forms of vessels with individual findings, the vessel strainer is also present with a vertical ribbon handle, the lid is with a conical shape (**T. VI: 9, 26**), and here we will also mention the fragment of an altar with a square base (**T. IV: 26a–c**).

The storage vessels are represented by a numerous fragments and are mostly with medium or poor fabric and colored in brown or grey with several shades as a firing byproduct. They have a short or high cone or cylindrical neck, while the rim is curved, flatly cut, thickened from the outer and inner side or slightly drawn outward (**T. VI: 1–8**). They usually have spherical or elongated body with vertical handles and an oval cross-section which start from the edge of the rim, where in one case the highest part is decorated with two bevels, parallel channelures that are connected together at an sharp angle, and in the lower part have en ending with a small rounded engraving (**T. VI: 1**). In one sample of the widest part of the vessel, there is a handle in the form of a larger, elongated, knob application (**T. VI: 3**). One such example with a very bad facture has a decoration on the shoulder containing vertical, parallel, zigzag channeling in a combination with triangular incisions (**T. VI: 6**).

The miniature vessels are represented with several specimens, of which one is with biconical body, with smoothed surfaces, and two smaller handles that connect the neck with the shoulder of the vessel. A knob application is found on the junction of one vessel, while in another it is placed on the neck (**T. V: 10, 11**). One such sample has semi-closed form, and another with a high cylindrical neck on which the root is in the form of a vertical ribbon handle within a knob application (**T. V: 12, 23**).

For some ways of decorating the determination of which types the vessels belong to was unavailable simply because of the high fragmentation of the findings. Here it is mainly referred to the fragment decorated with limited engraved lines with unorganized cuts (**T. VI: 12**) as well as the fragments decorated with single rows of rounded incisions separated by an engraved line or fields filled with rounded incisions of which some were filled with white incrustation. Here we will mention the fragment decorated with two horizontal and parallel lines of rounded incisions, which are filled with white incrustation, and are quite poorly made (**T. VI: 11, 16, 17, 19**) as well as the fragment decorated with horizontal, parallel shallow channelures (**T. VI: 15**).

The same applies to several types of handles: triangular (**T. VI: 14**), with a larger tongue-like addendum **(T. VI: 10, 24**), tongue-like more stressed made (**T. VI: 27**), ribbon-angled, in one case decorated with small rounded incisions filled with white incrustation (**T. VI: 13**), a horn-shaped handle (**T. VI: 23**), and a small horn-shaped handle, tilted to the right side (**T. VI: 25**).

Two anthropomorphic figurines were found (**T. XIII: 1**), as well as a fragmented zoomorphic figurine (**T. XIII: 2**), stone axes with sharpened ends, on the one or on both sides (**T. V: 24, 25, T. XII: 2, 1, 2**) flint blades (**T. XII: 2, 3, 4, 5**), antlers, river shells, and many animals bones.

At the end, I would like to emphasize that beside the site Ali Čair, in this study once again it will be considered the sites that have existed in the Late Neolithic period in the area of Prilep, part of Pelagonia and Mariovo: Kutline – near the village of Rakle, Mogila – near the village Senokos, Gradište – near the village Debrešte, Komarčani – Bučalo - near the village of Šeleverci, Tumba – near the village of Borotino, Stari Lozja – near the village of Vranče, and in Mariovo, Đeramidi – near the village Čanište, and Prčinoga – near the village of Dunje; above all the movable archaeological material from these sites was obtained as gift, archaeological surveys and archaeological research. This is primarily in terms of completion of current knowledge and obtaining a slightly clearer picture of the time of the Late Neolithic in these regions (Миткоски 2017, 120).

Settlement type

In this situation, it is very difficult to tell on which type the settlement of Ali Čair belonged to, due to the urbanization of this part of the city of Prilep. On the other hand, the head of the research, in the field book, repeatedly emphasized that the groundwater is quite high and the conditions to carry out and continue with the excavation are almost impossible. For these reasons, the possibility remains that this settlement could be mound. The settlements of these mound type i.e. artificial elevated spaces are that it is the usual type of prehistoric settlement in Pelagonia. In our region from the time of the Late Neolithic, such mounds were recorded at the sites: Mogila – near the village Senokos, Tumba – near the village of Borotino, Stari Lozja – near the village of Vranče, and Čuka-Mogilani – near the village of Pašino Ruvci[2]. The only deviation from this rule is the settlement of the site Komarčani-Bučalo and the site Gradište – near the village of Debrešte, which due to the complexity of the site makes it also difficult to define exactly on which type of settlement belonged to. The settlements in Mariovo, Đeramidi and Prčinoga belong to the type of 'gardens' which is widely spread on a natural terrace and it is positioned besides water resources, one next to Dunjska, and the other by the Kruševička River.

Living objects

Ali Čair, Prilep

With the explorations in Probe II, starting from its northeast edge to the southwest at a depth of 1.10 m a compact wattle and daub appeared in and under it, at certain distances also imprints of piles[3]. Most likely they are remnants of a structure built with wattle and daub technique (Китаноски 1969, 20). The insignificant remains of this infrastructure unfortunately do not provide any sufficient data (i.e. possibilities) for the determination of its shape, dimensions, and eventual interior disposition (**T. III: 1, 2**).

Kutline near village of Rakle

This type of objects was also recorded on the site Kutline near the village of Rakle during the probes of the archaeological excavations that were carried out in 2002, when three probes were opened (Темелкоски и Миткоски 2008, 95). More specific stratigraphic data on the development of the settlement were obtained from Probe II and Probe III, where two living horizons were defined. From the living objests, in both of the horizons, dislocated pieces of fired wattle and daub were found, as well as several piles' imprints (Темелкоски и Миткоски 2008, 95, Пл. I, Основа 1 и 2).

Site Mogila, village Senokos

With the archaeological excavations at the site of Mogila near village Senokos, which was carried out in 1970 by the National Museum in Prilep, three probes have been opened. Two types of objects for living were indentified: subterranean pit-huts and house with a square base, and a wall construction made out of wattle and daub (Китаноски 1971, 20–21).[4]

Living objects of mound type

During the excavations, eight pits were found and named as pit-huts by the head Kitanoski of which seven in Probe I and one in Probe II. Here it should be emphasized that on the northeast section of the Probe I, in which partially enters the pit 3, to the left of it (i.e. northwest), another pit emerged, which has been separated from the pit 3 by a thin sterile soil deposit (depth 0.32 m and height 1.02 m). The pit itself, which in this case can be marked as Pit 8, is with vertical walls and dimensions, according to the profile, the diameter in the upper part is 0.82 m at a bottom of 0.96 m and a depth of 1.04 m.

2 The site was recorded for the first time during the realization of the project *Archaeological sites, geosurvey of the area of Prilep, Dolneni, Krivogaštani and Kruševo*, carried out by experts from the NI Institute and Museum, Prilep in 2018.
3 In the field book there is no data on the dimensions, the layout and the disposition of the pile imprints.
4 Here it should be noted that the head of the research excavated it after removing deposits with thickness of 0.20 m because of which mixture of the horizons of living and also the movable archaeological material occurred. For these reasons, excavations as such will be taken only conditionally only as to distinguish some occurrences in the probes as well as the approximate separation of movable archaeological material.

The pits in Probe I are dug in at different depths, 1,2 and 3 to 0.76 m; the pits 4 and 6 at a depth of 0.98 m and the pits 5 and 7 at a depth of 1.30 m, while the pit 1 in the Probe II was dug in at a depth of 2.20 m.[5]

This indicates that they are not simultaneously created, but that they are accumulated on several occasions; the first one is the pit 1 in Probe II, then in Probe I, then the pits 5 and 7, after that the pits 4 and 6, and finally the pits 1, 2 and 3. The pit 1 from Probe I is in the form of a clover, where the pit 3 is double sized as well as the pit 5 which is separated from the pit 7 by partition of a sterile soil wide of about 0.30 m. The pits are usually round or oval in shape and the pit 1 of the Probes I is with a cardiac shape. They have a diameter of 1.0 m up to 2.50 m and a depth of 1.0 m up to 2.85 m. The Pits 4 and 6 are of smaller size and are probably storage or waste pits (diameter of 0.90 m and depth of about 1.0 m and 1.80 m).

The pit 1 of Probe II that has been dug into the sterile soil has unequal vertical sides and several levels in depth. At the same time, on the northeast profile, in which the pit 3 partially enters with its smaller part, it can be seen that in the middle of the profile, there is a compact ground soil with a yellowish color (height 0.26 m and a width of 0.46 m) which lies at the level of the burnt deposit at a depth of 0.60 m, i.e. 0.80 m. At about 0.18 m below it there is another deposit level. They indicate on some stages of filling (depositing or using) the pit.

Fragments of ceramic vessels were found in all of the pits, of which several anthropomorphic and zoomorphic figurines, fragmented sacrificed altar with four legs, stones and animal bones; and also large amount of horns were found in pits 5 and 7. The comparative analyzes of the movable archaeological material point to the mixing of the two components, the Adriatic and the continental Balkans.

In this situation it is very difficult to define whether these pits were used as pit-huts simply because of the high positioned level of the underground water in this part of Pelagonia; as pointed many times in the field book by the head of the excavation, especially the part of the pits' research, can be seen very precisely from the photo documentation of these explorations.

Then, as mentioned above, not all of the pits were dug at the same time, and there is also no architectural element that would have suggested that this is living object (fireplace, oven or any other object). Also, there are no records of any pile imprints (suggesting wooden reinforcement), except the few pile imprints at the level of the level 6 in Probe I, as well as those at the level of level 11 in Probe II that are quite shallow and for which the head of the excavation does not provide any recorded strict data either on their dimensions or on their relationships with the pits (i.e. pit-huts) that were detected at that level, pits 5 and 7 in Probe I, and pit 1 in Probe II. There is also no recorded data wattle and daub fragments of above ground objects' walls were found. The so-called sleeping bench, as well as some kind of climbing ladder in the infrastructure, although in the northeast profile it can be seen that in the pit 3, in its southeastern part there is a small cut that is about 0.26 m wide, and with a depth of about 0.48 m; this might be some kind of stairs that has not been confirmed in the field book by the head of the excavation. It should be mentioned that some of the pits are with a relatively large depth and others with small dimensions (eg. 2, 4, 6, and 7).

5 The research report from the excavations contain other values for the depths, for pit 1, 2 and 3 – 0.50 m, for pit 4 and 6 – 0.70 m, and for pit 5 and 7 – 1.00 m.

These pits have been found in several Late Neolithic sites, and for most of them there is a thesis that they were firstly used for clay extraction, which is very plausible, while the content of their deposit unambiguously shows that most of them in the last phase of use were used as a waste pits (pit 5 and 7) (Гарашанин 1949, 38; Batović 1979, 528–529; Спасиќ и др. 2016–2017, 45, Сл. 22 и Сл. 33).

Above ground structures

The situation with the above ground structures is very complex and unclear. Previously, several pits were mentioned that have been found at the level 6 of the excavation in Probe I, as well as those at the level 11 of the excavation in Probe II, which are quite shallow and for which the head of the excavation did not provide any data so far, either on their dimensions or on their connection with the pits (i.e. pit-huts); as I said above, the pits were detected at that level or they belong to some of the later stages of an above ground construction.

The situation is similar with Probe III. Namely, at the level 2 of the excavation or at the depth of about 0.70 m in the northeast part of the probe, was found stone structure, wattle and daub fragments and a grinding stone. According to the head of the excavation, probably in this case it leads to a construction floor. At the level 3 of the excavation or at the depth of about 0.90 m, a fireplace with a rounded shape has been found in the same probe, enclosed with a stone slabs for which it also was not provided any recorded data on its connection with the previous observation about the possibility of a construction floor or on its dimensions. According to the depths on which the floor and the hearth were found, it can only be assumed that in this case it indicates two phases – early and late.

The fact that this settlement had more horizons of living objects, in addition to the movable archaeological material, it is confirmed by the numerous pieces of dislocated wattle and daub fragments, found almost in all levels within the three probes, as well as several levels of a compact layer with a yellowish-white color hard compound soil mixed with burnt soil.

Movable findings

The movable archaeological material is mostly represented by pottery, which is mostly coarse with addition of lime and small sized stones, monochrome with grey and brown color in many hues, and there are two-colored vessels, with grey color from the outside and brown on the inside and vice versa. Very rarely there are ceramic fragments with fine fabric and polished surfaces, and in only a few cases they are colored with black slip which easily drops out: black (Đeramidi, Tumba, Bučalo, Debrešte, Kutline, Čuka-Mogilani village Pašino Ruvci); brown (Bučalo, Tumba, Đeramidi, Kutlini, Čuka-Mogilani) or red slip (Đeramidi, Prčinoga, Ali Čair). To achieve greater visual effects, the engraved ornaments were filled with white or red incrustation and in some cases the entire vessel was painted with red crusted color.

According to their forms there are many types of bowls and vessels for different purposes.

The plates with a shape of a straight cone are usually with medium and much less often with a fine fabric and polished surfaces while in some cases colored with black slip. There are fragments of bowls from Mogila and Kutline with bold rim on the inner side that have appeared in the early

stages of the Vinča-Tordoš phase and then proceed through all the stages of the Vinča group (Nikolić 2004, 9.26, 9.27b–d, f, g, h, 9.77a–c, f, j; Garašanin 1979, 187, TXXVIII: 4; Perić 2006, 243, T. I: 2, 7, T. II: 20). At one specific fragment with coarse fabric from the Komarčani-Bučalo, has a spillway on the rim (Nikolić 2004, 9.77c, 9.93; Bulatović et al. 2010, 11, T: I, 13). There are cone-shaped plates with ribbon handles, starting from the edge of the rim as well as with triangular-shaped handles, in one case vertically perforated, placed under the rim or the widest part of the vessel; and in one case they are sloping parallel incisions (Јацановиќ и Шљивар 2000, 8, T. I: 5). Several plates with coarse fabric have smaller or larger knob applications under the rim (Komarčani-Bučalo) (Perić 2006, 242, T. III: 20, 23; Санев и Стаменова 1989, 19, T. II, 2; Темелкоски и Миткоски 2008, 96, T. 2: 2; Гаршанин и др. 2009, 96, T. XXXIX: 3; Капуран и др. 2016, 119, T. I: 6).

A fragment of a cone-shaped plate with coarse fabric from Ali Čair is decorated with two horizontal and parallel rows of circular impressions filled with white incrustation, while another from Mogila beside the horizontal has a rows of sloping circular impressions (**T. IV: 1, T. VII: 1, T. IX: 1**). Conical plates decorated with single or double rows of circular impressions separated by an engraved line very often can be found on this site. In addition to these, the plates with a conical shape of Mogila can decorated with: red slip, black topped technique and one sample with larger dimensions is decorated with roughly engraved vertical and sloping lines filled with white incrustation. One fragment of this plates' type, under the rim has a small recess, while around it, there is a shallow channelure with a circular shape, while in another case there is a application with a rhomboid shape (Темелкоски и Миткоски 2006, 56, T. I: 1–4; Миткоски 2017, 130, 133; T. V: 11, T. VI: 1).

The plates with a fine fabric are usually with thin walls, polished surfaces, decorated with sloping, parallel and shallow barely visible channelures (Миткоски 2017, 140, T. XII: 4).

This type of decoration is also found on several vessels from Đeramidi, Prčinoga and Debrešte, in combination with the channelures, horizontal with vertical, spirals, zigzag vertical bands as well as in combination with a black topped technique of decoration and red colored slip in one case. There are several findings decorated with channelures in all level of Probe I from Mogila, especially in the excavation level 5, while in Probe II and pit 3 they are represented by containing only individual findings. One fragment from the pit 6 is decorated with shallow channelures forming a vulva (Темелкоски и Миткоски, 62, T. II: 11, 12, T. VI: 2, 8, 10).

This type of decoration is mostly present in Kutline I and II, Angelci I and II, Zelenikovo II, Amzabegovo-Vršnik IV and Vinča-Tordoš I (Гарашанин и Гарашанин 1961, 30, Сл. 26; Гарашанин 1973, 85, 88; Гарашанин и Спасовска 1976, 105, T. VII; Gimbutas 1976, 135, fig. 85, 2, 137 fig. 89, 1–3; Garašanin 1979, 167, Sl. 12, 2, T. XXVI: 4–6, T. XXVII, 2, 3; Benac 1979, 457, 461, T. LXVIII: 4, T. LXIX: 7, T. LXXI: 3; Санев и Стаменова 1989, 19, 20, 22, T. II: 12, T. IV: 11, T. IX: 18, T. XIV: 1–3; Темелкоски и Миткоски 2008, 98, T. 2:11, 14–17, T. 3: 4, 15, T. 4: 4, 15, T. 5: 1–4, 6, 8, 10, 11, 15, 20).

One fragment from Kutline is decorated with linear deep engraved motifs (Темелкоски и Миткоски 2008, 101, T. 5: 9). From this type of bowls we will also mention the fragment with beautiful and rich texture from Ali Čair, on which the rim is placed in the shape of a 'bird`s head' facing the inside of the plate (**T. IV: 2, T. VII: 5, 5a, T. VIII: 1, 3, 3a**). It belongs to the category of plates with protomes on the rim (Миткоски 2017, 127, T. IV: 1).

In this case, we are speaking about a plate with a distinct conical profile or with a slightly rounded walls and a flat or slightly discoid bottom. Almost all of these plates are with small and very rarely with larger dimensions. Most of them have a flat, straight rim with protomes, that are slightly extracted from it and are small in size (0.5–3 cm) and, as a rule, facing the inside of the vessel (Спасиќ и Црнобрња 2014, 187). The protomes of the rims are modeled in the form of anthropomorphic, zoomorphic or extremely styled – schematized representations, thereby almost impossible to determine if in this case it is an anthropomorphic or zoomorphic representation (Спасиќ и Црнобрња 2014, 187, 195, T. I–III: Сл. 1). In addition, two basic types can be distinguished: plates with four and plates with eight protomes, i.e. four double protomes. The earliest findings are those with four, while the plates with eight protomes are not known from the earliest horizons of the culture of Vinča, so it can be assumed that the doubling of the protomes probably dates later. Chronologically, the protome plates appeared from the very beginning of the Vinča culture and are almost unchanged in shape until its later periods. The important thing to be emphasized is that this type of plates are found in almost all of the areas of the central Balkan where the communities of Vinča culture lived together (Јацановиќ и Шљивар 2000, 8, T. II: 4, T. V: 5, T. VI: 4; Булатовиќ и др. 2010, 11, T. I: 14; Спасиќ и Црнобрња 2014, 188–190, Сл. 3).

In our country, such samples were found in the III stratum of the settlement Mogila near Bitola in Amzabegovo IV, Tumba near the village of Borotino, as well as the site of St. Atanas near the village of Spančevo, Kočani, which, according to the movable archaeological material, dates back to the transitional period between Late Neolithic and Early Chalcolithic (Gimbutas 1976, 146, fig. 101, 3, 4, Симоска и др. 1979, 25–27, сл. 62, Атанасова 2012, 47, 53, T. 25: кат. бр. 7, Наумов и др. 2017, 14, T. 5: 11).

Here it should be emphasized that among the Late Neolithic material from Pelagonia and Mariovo, there are also plates with a regular-shaped cone, where the rim of the plate tops vertical additions that can be with a loop or rectangular, semicircular or triangular shape; in some cases, on the outside, decorated with one or more incisions, and sometimes in combination with a knob application (Gradište, Debrešte, Mogila, Đeramidi, Prčinoga). At one specific fragment of Đeramidi, from the inner side of the plate, under the rectangular addition, sloped, shallow and parallel channelures joined at an angle are positioned (Миткоски 2017, 123, 131, 140, 145, T. I: 2, 11, T. IV: 14, 15, T. XII: 5, 9, 11, T. XIV: 5; Спасиќ и Црнобрња 2014, 186, T. II: 21).

Such a knob addition is also found in a fragment of a ceramic vessel with thin walls and a vertical handle that starts from the edge of the rim, from the Prčinoga site (Миткоски 2017, 145, T. XIV: 6, 6a). This is a cultural element recorded and registered in the settlement of Kutline I and II, Zelenikovo II, and Amzabegovo IV (Kitanoski 1969, 19–20, T. V: 1; Gimbutas 1976, 146, fig. 101, 1, 2; Гарашанин и Спасовска 1976, 105, T. VIII: 4; Темелкоски и Миткоски 2008, 96, T. 2: 4, Сл. 4).

Finally, we will also mention the fragment from the vessel with a conical shape of Ali Čair site, which has an ellipse-shaped rim, and a part of a ribbon handel with a small perforation from the upper side (not completely perforated), which might be some sort of a plate with a shape of a straight cone (**T. VI: 20, T. XII: 1, 4, 4a**). This type of vessel with an ellipse shape was found in Zelenikovo (Гарашанин и Спасовска 1976, 106).

The semi-circular plates are with coarse fabric and roughly smoothed surfaces except for one sample of Đeramidi, on which traces with brown colored slip could be found. Due to the firing they are mostly covered in greyish-brown or only grey color. In one case, from Ali Čair site, a small tongue-like handle, was drawn from the edge of the rim on the bowl, and it was combined with a knob application at the same time decorated with several incisions and sloped, parallel and shallow channelures; while in another case from the Kutline site, the tongue-shaped handle was perforated (**T. IV: 6, T. VII: 19, T. VIII: 2, 3**). A similar fragment of a bowl has been found in Mogila site, as well as a plate with the ring-shaped rim (Миткоски 2017, 123, 130, T. IV: 4, T. XI: 8).

At this type of plates from Ali Čair and Komarčani-Bučalo there is a knob application on the widest part with a tunnel handle, horizontally perforated, and at one fragment with much larger dimensions, the widest part contains a larger handle with a triangular form (**T. IV: 7–9, T. VIII: 8, T. X: 1, 2, 2a**). This type of handles have been found in several samples from the Mogila site, as well as the knob and small or large tongue-shaped handles (Темелкоски и Миткоски 2006, 57).

In Kutline, plates with semicircular or spherical shape and flatened or outwardly cut rim are rarely present. Usually the widest part has a knob-shaped handle, whereby in one case is with a hole in the middle, while their upper surface is decorated with deeper or shallow channelures. One fragment of this type – a plate, from Tumba is decorated with a horizontal row of circular incisions (Темелкоски и Миткоски 2008, 98, T. II: 1–18, T. V: 6, 15).

The plates with drawn inwards rims that are characteristic of the later stages of Vinča culture are found only with several specimens of Ali Čair and Mogila (**T. IV: 5, T. VIII: 1, 2**) (Vinča–Pločnik II) (Nikolić 2004, T. 9.70c, g, j, 9.71a, b; Perić 2006, 242, 245, T. I: 19, 21, 25, 26, T. II: 13, 26, T. III: 1, 4, 10, 13, 19, 22; Булатовиќ и др. 2010, 13–14, T. III: 7–9, T. V: 9).

The carinated plates are one of the most dominant forms in the ceramic vessel production, and apart from the dimensions, they differ in the manner of the profiling of the rims, i.e. whether the transition from the lower to the upper cone is sharper or milder (Garašanin 1979, 175; Nikolić 2004, 203–226, 9.15d, i, j, 9.16g, 9.17i, 9.18, d, e, 9.23c, 9.24c, 9.28g, h, 9.29, 9.33a, 9.34, 9.35b, 9.39b, d, 9.43j, 9.44a, 9.56d, 9.63j, 9.64e, i, 9.65h, 9.66e, f, 9.69a, b, c, d, 9.75j, 9.76d, f, 9,91e, 9.95b; Јацановиќ и Шљивар 2000, 8, T. I: 7, 8, T. II: 3, T. III: 2, 3, 8, T. IV: 3, 8, T. V: 1,2, 12, 13, T. VI: 3 – 9, 14, 17, Темелкоски и Миткоски 2006, 57 T. I: 6, 8, 9, 16, T. II: 10 – 12, T. IV: 5, T. VI: 5, 7, 8, 10, сл. 1 и 7a; Perić 2006, 242, T. I: 1, 4, 6, 9, 10, 13, 15, T. II: 1, 6, 10, 14, T. III: 5, 7, 14, 17, 24; Темелкоски и Миткоски 2008, 98, T. 2: 10, 14, 15, T. 5: 10, 12, 20). The biconical plates with sharp carination are present in several specimens at Tumba and Đeramidi and are characteristic for the Vinča-Tordoš I phase (Garašanin 1973, 84; Темелкоски и Миткоски 2006, 57, T. II: 10; Миткоски 2017, 138, 140, T. X: 4, T. XII: 8).

The biconical plates usually have an intermediary fabric and grey or brown color in many hues, and much less often contain red, black or brown colored slip. These types of plates have a knob application, mostly at the transition on the neck, where in one case is decorated with four small incisions grouped two by two on the upper and the lower side (Đeramidi), then there is a knob application on the transition on the neck from which in one case it continued as a plastic rib decorated with sloped, parallel incisions, and in another, the knob application is decorated with two vertical parallel incisions and three parallel semicircular lines (Komarčani-Bučalo)

(Темелкоски и Миткоски 2006, 62, T. VI: 7, 10; Темелкоски и Миткоски 2008, 98, T. 2: 9, 10, T. 5: 10; Миткоски 2017, 127, 133, T. V: 13, T. VI: 7, T. VII: 1, T. IX: 3; Korkuti and Andrea 1975, 72, T. XI: 4, 11).

Very rarely in this part of these vessels there might be a double knob; in one case on the upper side decorated with a half-cut groove and above it containing a horizontal row of large circular incisions filled with white incrustation. In such a vessel from Mogila site, there is a triple knob, where the median is larger and placed on the shoulder of the vessel (Komarčani-Bučalo) (Булатовиќ и др. 2010, 12, T. I: 7; Капуран и др. 2016, 119, T. I: 8, T. III: 6; Миткоски 2017, 133, T. VII: 3).

From the other types of handles we will also mention: the tunnel-shaped, horizontally or vertically perforated, the small horn placed sideways (**T. VII: 25**), the knob-shaped handle with a hole in the middle and a vertical row of incisions bellow it (Đeramidi), the small or larger tongue-shaped handle which in one case was slightly outwardly pressed (Komarčani-Bučalo) or the vertically perforated triangular handle, which also in one case has a continuing ribbon decorated with oval incisions from its left to the right side (Mogila) (Темелкоски и Миткоски 2008, 98, T. 2: 14; Миткоски 2017, 133, 138, 140, T. VII: 2, T. VIII: 7, T. X: 9, T. XII: 6).

We will also mention the few findings from Mogila and Kutline sites, where at the transition on the neck, oval or circular incisions are placed; a feature of the late Vinča ceramics (Спасиќ и др. 2016–2017, 31–32, Сл. 10, 9, 10). In Ali Čair and Tumba sites, in this part of the plates, which is slightly bold, there are vertical, parallel incisions, and in one vessel from Komarčani-Bučalo with a biconical shape there is a stressed shoulder, containing a horizontal row on it of circular incisions (**T. IV: 20, T. VII: 15, T. XI: 3**) (Benac 1979, 430, T. LX: 1, Nikolić 2004, 9.18e, h, 9. 29g, h, 9. 32e, h, 9. 44a, h, 9. 69h; Темелкоски и Миткоски 2006, 71; Темелкоски и Миткоски 2008, 98, T. 5: 12, 20; Миткоски 2017, 123, 136, 138, T. VI: 6, T. X: 6, T. XI: 20).

One fragment from Ali Čair site, with red slip on the outer and inner side of the upper cone is decorated with a channeled interlacing which is one of the most typical phenomena and characteristic of the Vinča decoration (**T. IV: 13, T. VII: 4, T. VIII: 2, 4**). The ceramic fragments from the Mogila site in Probe I, found in all levels are red sliped, especially with a large number of specimens in level 5, while in Probe II only in level 5 and in pit 3. Plates with red slip are: specimens with a shape of a straight cone, biconical vessels, bowls, jars, and the vessels with semi-closed shape. The red slip can be combined with channelures, as well as with black topped decorating techniques.

The red sliped ceramics were also found in the sites of Đeramidi, Prčinoga, Mogila, Zelenikovo II, horizon I in Angelci, Amzabegovo-Vršnik IV and in Vinča-Tordoš II, where the red sliped ceramics is very rare (Гарашанин 1961, 22; Kitanoski 1969, 20, T. V:2; Гарашанин и Спасовска 1976, 103; Garašanin 1979, 165, 167, T. XXIV: 4; Benac 1979, 430, sl. 23, 6, T: LX: 1; Санев и Стаменова 1989, 20; Темелкоски и Миткоски 2006, 57; Гарашанин и др. 2009, 104, T. XXXIII: 2, T. XXXIX: 4; Миткоски 2017, 133, 136, T. VII: 3, T. X: 7).

It should be pointed out that the upper cone, for this type of plates, can be decorated with single or double rows of circular incisions, sometimes separated by engraved line (Tumba); in one case it was filled with white incrustation (Komarčani-Bučalo) or decorated with a black topped

technique. At one fragment from Gradište, the upper and the lower cones were decorated with small circular incisions, while on the other side of the shoulder there are two horizontal, parallel rows of circular incisions, and small on the transition of the neck a tunnel-shaped vertically perforated handle is placed (Темелкоски и Миткоски 2006, 98, T. 2: 10).

The Mogila site is rich with biconical vessels, where in some of them the upper cone is decorated with a vertical row of small or larger circular incisions. In several cases, there are two rows of horizontal and vertical circular incisions fused at an angle; in one of the cases the upper row is divided by an engraved vertical line. This way of decoration in Mogila is present in almost all of the probes and in all of the levels, as well as in the pits 2 and 6. Here, in particular, it is necessary to separate the levels 4 and 5 of Probe I, where this material and this way of ornamentation interfere with the material of the Adriatic-Mediterranean cultural complex, and the main thing that should be emphasized is that in these levels the decoration by shallow, parallel channelures is dominant (Темелкоски и Миткоски 2006, 62, T. VI: 5; Миткоски 2017, 126, T. II: 7).

Several such findings from Ali Čair have a decorated upper cone with horizontal rows of small circular incisions commonly filled with white incrustation (**T. IV: 10, 15**) (Миткоски 2017, 130, T. V: 10, 11). The white incrustation is for the first time found in the cult objects from the horizon II on the site Stranata village of Angelci, in Amzabegovo IVb and in Reštani (Kitanoski 1969, 20, T. V: 6, Gimbutas 1976, 117; Garašanin 1979, 458, T. LXIX:1; Санев и Стаменова 1989, 23, T. VIII: 12, T. IX: 16, T. XI: 8, 9, 12).

Such findings from the site Mogila also include vertical, parallel, shallow channelures on the upper cone, on the neck and the shoulder, or only on the shoulder, and in one case in combination with a horizontal row of circular incisions. In this part of the vessel, circular, parallel, shallow, zigzag channelures can be found in combination with black topped technique. (Темелкоски и Миткоски 2006, 60, 62, T. II: 11, 12, T. VI: 8, 10).

The plates from Kutlina, also have an upper cone decorated with vertical or in combination of sloping and horizontal shallow channelures (Јацановиќ и Шљивар 2000, 8, T. III: 8, T. V: 1, 13, Темелкоски и Миткоски 2008, 98, T. 2: 14, 15, T. 5: 10, 20, Гарашанин и др. 2009, 96, 104, T. XXXIII: 1,4, T. XXXV: 2, 6, 7, T. XXXVI: 6, 10, T. XXXIX: 2, 6, 9, 11, Кузман 2013, 354, T. I: 24; Периќ и др. 2016, 247–248, T. II, III).

Here, it should be also emphasized that in many cases above the sharply profiled belly of the plates, there is a carved groove usually filled with red or white incrustation or in the same there are only traces of red crusted color (Kutline, Mogila) (Булатовиќ и др. 2010, 14). In several other cases, the shoulder of the vessel is decorated with bundles of vertical, parallel or sloped lines, sometimes filled with white incrustation or engraved lines that merge at a sharp angle (Kutline, Komarčani-Bučalo) (Nikolić 2004, 9, 18d, e; Темелкоски и Миткоски 2006, 62, T. VI: 7; Темелкоски и Миткоски 2008, 98, T. 5: 12; Булатовиќ и др. 2010, 15, T. VI: 8; Миткоски 2017, 123, T. XI: 12).

The lower cone is very rarely decorated with semicircular, parallel lines, with black topped technique (Ali Čair), small circular incisions or sloped, shallow, and parallel channelures (Gradište) (**T. IV: 17, T. VII: 12, T. XI: 2, 1**). In several such vessels from Mogila, the lower cone is decorated with a combination of engraved lines and incisions, and sometimes filled with

white incrustation with scratches on the shiny surface, or at the transition of the neck there is a horizontal row of oval incisions; below with vertical, parallel rows of shallow and narrow channelures, as well as sloped, parallel shallow channelures, with traces of crusted red color on the upper cone (Јацановиќ и Шљивар 2000, 8, T. VI: 5; Симоска и Санев 1976, 20, кат. бр. 164; Nikolić 2004, 9.14k.h).

Finally, it should be emphasized that this type of plates has also been found in Penelopa, Ohrid, Angelci I and II, Zelenikovo and Amzabegovo IV (Gimbutas 1976, 117, 133, fig. 83, 1, fig. 84, fig. 86–89; Гарашанин и Спасовска 1976, 107, T. I: 2, 3, 5, 6, T. II: 1; Garašanin 1979, 175, Sl. 13, 20; Санев и Стаменова 1989, 18, 19, 22, T. I: 10, 13, T. IV: 13–19, T. IX: 10–13, Кузман 2013, 354, T. I: 1, 2, 8, 9, 23).

Here it should be pointed out that there are also plates with plastic rib which replaces the shoulder especially present in the later stages of the Vinča cultural group in our country in Kutline II, Mogila, Ali Čair, and Gradište, Debrešte (**T. IV: 21**). On one fragment of this plate type from Mogila, the rib have oval incisions, while below there are shallow, vertical, parallel channelures (Гарашанин 1973, 93, T. II: 1; Garašanin 1979, 170, Sl. 13, 29; Јацановиќ и Шљивар 2000, 8, T. V: 12, Nikolić 2004, 9,64 e.h; Темелкоски и Миткоски 2006, 62, T. VI: 7; Темелкоски и Миткоски 2008, 98, T. 2: 5–7; Спасиќ и др. 2016–2017, 25, Сл. 10. 6, 8, 12).

The rounded plates are both monochrome brown and dark grey or double colored with grey color from the outside and brown on the inside; there are also samples with red or black slip. They usually have a well rounded profile, and a short neck that ends with a edge drawn outwardly, and a slightly stressed shoulder, which is mostly found with a small knob application, a small tongue-shaped handle, a knob-like handle, tunnel-like handle, vertically perforated, or, at the widest part, a bigger, whole handle (Mogila), as well as handles in the form of a hook (Миткоски 2006, 57, T. IV: 4; Миткоски 2017, 136, 138, T. IX: 2, T. X: 9). They are rarely decorated with one or two horizontal rows of small rounded incisions, engraved triangle filled with incisions, vertical or spirally arranged shallow channelures, placed on the neck or the shoulder, a black topped decorating technique, and traces of crusted painting are found in one fragment.

Here we will separate the fragment of this type of a plate from the site of Mogila, where the widest part of the vessel is a plastic rib horizontally set and decorated with impressions, filled with white incrustation, and above it in tgraphite technique there is a linear motive executed (Темелкоски и Миткоски 2006, 59, T. VI: 12). The decoration with graphite color is also found on several findings on the site at the village Angelci (Санев и Стаменова 1989, 22, T. X: 8).

The graphite painting technique, as well as the previous mentioned ways of ornamentation – with scratches on the smooth surface, in the area of Pelagonia and Mariovo, is characteristic for the next Chalcolithic period (Темелкоски 1999, 35, Kitanoski 1992, 231; Миткоски 2011, 131–135, T. I: 10, 11, 23, T. V: 20, T. VI: 22, T. VII: 11, T. VIII: 15, T. IX: 7, T. X: 1, 3, T. XI: 1, 19, T. XIV: 11, T. XVII: 30, T. XIX: 11, 17, 22, T. XXI: 2a, б, 13, 15, 16, T. XXIV: 1, 2, 4, 5, T. XXV: 1, 12).

A number of movable findings which have been found in Mogila, can be linked to the Chalcolithic with the Late Chalcolithic regional cultural group Treštena Stena, pointing to the fact that this living space was also used in this period of time. Unfortunately, the head of the study did not isolate this horizon of living, so that the movable archaeological material from this time is mixed

with the one of the Late Neolithic period, thereby it creates difficulties in its chronological and cultural determination (Темелкоски и Миткоски 2006, 72, Миткоски 2011, 140). For these reasons, some of the above findings might be considered to belong to this horizon of living.

Finally, it should be emphasized that this type of plates are located on the sites of: Komarčani-Bučalo, Tumba, Mogila, Kutline, Angelci I and II and Amzabegovo IV (Gimbutas 1976, 122, fig. 69; Санев и Стаменова 1989, 19, 22, T. II: 6, 12, T. IV: 5, T. V: 1–5, T. IX: 6, 7, T. X: 4, 7; Темелкоски и Миткоски 2006, 59, T. I: 11, T. VI: 12, Темелкоски и Миткоски 2008, 98, T. II: 12–13, Миткоски 2017, 136, T. VI: 4, 5, T. IX: 2).

The plates with a short cylindrical neck are quite rare and usually have good fabric, smooth surfaces, and a curved rim with a horizontal groove under it, a slightly rounded shoulder on which a small tunnel handle, horizontally perforated is placed (Prčinoga). The color produced by the firing is usually dark grey. In one fragment of Mogila, with a bold rim on the outside of the widest part of the plate, has a tunnelhandle, perforated from the upper and lower side, but not in complete, while on the left and right of it there is a horizontal row of rounded incisions in combination with sloped, parallel and shallow channelures. In Kutline, this type of plates are decorated with very shallow and barely visible zigzag channelures placed on the neck and shoulder, which often starts from a horizontal groove i.e. channelures beneath the rim itself, while on the widest part of the plate there is a knob shaped handle (Темелкоски и Миткоски 2006, 57, T. I: 13, T. VI: 2; Темелкоски и Миткоски 2008, 98, T. 2: 11, 16–18, T. 5: 2, 4, 6, 15; Вуковиќ и др. 2016, 167, T. I: 4; Миткоски 2017, 145, T. XIV: 9).

The holemouth jars are usually with an elongated or spherical body, a short or higher cylindrical neck, with a curved, flattened and in one case thickened on the inside with an inclined, cut rim. There are also pots with a conical neck and a ring-shaped stressed rim on the outside and in some cases a rib is placed horizontally along the rim, usually decorated with small circular incisions, and often a vertical rib starting from the rim was executed. One fragment of a vessel from Ali Čair, according to the shape and the position of the handles on the shoulder of the jar, is identical with the so-called vessels amphorae (**T. V: 3**) (Glišić 1964, 32, T. IIa; Периќ и др. 2016, 250, T. IV: 4).

They are usually smoothed and rarely have polished surfaces, and only in a few cases covered in red or black slip (Темелкоски и Миткоски 2006, 59, T. I: 17–19, T. II: 1, T. VI: 1; Миткоски 2017, 140, 143, 145, T. III: 5, T. XIII: 11, 14, 15, T. XIV: 1, 6, T. XV: 6–12, 14, 18; Темелкоски и Миткоски 2008, 98, T. 5: 1, 3). One specimen from Ali Čair with a high cylindrical neck and a biconical body at the transition of the neck, contains four tunnel-like handles, vertically perforated (Миткоски 2017, 130, T. V: 1), while at another fragment of the same site, there are two smaller perforations on the neck (**T. XII: 1, 1, 1a, T. XI: 2, 6**). On several fragments from Mogila, there are applications commonly placed on the widest part of the vessel or on its shoulder, with an sloped or elongated shape, inclined, and in the middle decorated with a longitudinally engraved line or application in a horseshoe shape, decorated with incisions.

Several examples from Kutline with intermediary fabric have thin walls, dark brown or black colors, smoothed surfaces and a cone neck including knee-shaped handles. One fragmented finding of this vessel type, with a handle, has a black slip decorated with shallow channelures; another similar fragment is with double black and brown slip, and is also decorated with

very shallow, barely visible transverse channelures (Санев и Стаменова 1989, 19, T. III: 6; Темелкоски и Миткоски 2008, 98, T. 3: 3, 4). I will also mention the fragmented knee-shaped handle from Ali Čair which is completely decorated with small circular incisions filled with white incrustation (**T. VII: 17, T. IX: 1, 5, T. XII: 2, 2a**) (Миткоски 2006, 59, T. IV: 1, 2; Тодороска 2016, 44, T. II: 5; Миткоски 2017, 130, 143, 145, T. III: 6, T V: 10, T. XII: 7, 10, 15, T. XIV: 7, 7a). Two such handles, one from Mogila and the other from Đeramidi, have two or three circular incisions beneath the knee in one case; and two short, sloped lines thus receiving zoomorphic character are also included (Миткоски 2017, 143, T. XII: 10). There are also vertical knee handles with a tongue-like addition on the upper part (Темелкоски и Миткоски 2008, 101, T. 4: 13; Миткоски 2017, 143, T. III: 6).

There are also jars with biconical profile, with intermediary fabric, nicely smoothed surface, higher cylindrical neck and horn-shaped handles with rounded or flattened end placed on the widest part of the vessel (Kutline, Ali Čair) (**T. VI: 23, T. XII: 1, 5**). The same appeared for the first time in the second phase of the Vinča-Tordoš II, and are quite present in Angelci I and II, Zelenikovo II and Amzabegovo IV (Гарашанин 1973, 87, T. 7: 2; Гарашанин и Спасовска 1976, 105, T. V: 1; Garašanin 1979, 172, Sl. 12, 12, T. XXVII: 2; Gimbutas 1976, 142, fig. 95; Санев и Стаменова 1989, 19, T. III: 3; T. VIII: 11; Темелкоски и Миткоски 2006, 59, T. IV: 5, Темелкоски и Миткоски 2008, 98, 101, T. 3: 6–8, Сл.5, Миткоски 2017, 123, 126, 130, 138, 143, , T. I: 13, T. III: 7, 18, T. V: 7, T. X: 5, T. XIII: 17, T. XIV: 12).

In terms of handles' presence, this type of vessels contain knob applications, sometimes with an elongated or triangular shape, usually placed on the neck or the shoulder, with a slightly smaller vertical handle, with a small horn set sideways, a small tongue handle, or on the neck a triangular shaped handle is found (Mogila) or with a tunnel-shaped handle, horizontally perforated (**T. IX: 2, 4**) (Komarčani-Bučalo) (Темелкоски и Миткоски 2006, 59, T. VI: 1; Темелкоски и Миткоски 2008, 98, T. 3: 8; Миткоски 2017, 136, T. VII: 6, T. IX: 5, 6). There are also vertical ribbons that start from the edge of the rim; in one case with a circular impression on the top, and in another, the handle on the upper side is decorated with three small circular incisions. The presence of ribbon handles starting from the rim of the vessel is, of course, in a general relative chronological constellation considered as a very late occurrence within the Neolithic and the same announces the next Chalcolithic period. Their presence can be found in Kutline II, Mogila, Komarčani-Bučalo and in Ali Čair (Kitanoski 1969, 19–20; Темелкоски и Миткоски 2008, 98, T. 3: 1, Миткоски 2017, 140, 145, T. III: 4, T. XIV: 1).

This type of vessels is present in Kutline and Angelci I and II (Санев и Стаменова 1989, 18, 22, T. I: 4–9, 11, 14, T. IV: 10, T. VIII: 5, 7 T. X: 6; Темелкоски и Миткоски 2008, 98, T. II: 19–22).

Some of the holemouth jars are decorated with large or small circular incisions; some are separated by an engraved line, in one specific case, filled with white incrustation, with engraved sloped, parallel, as well as vertical, parallel lines of nail impressions (Mogila) (Темелкоски и Миткоски 2006, 60, T. VI: 1). The ornamentation with double rows of small circular incisions, which are separated by an engraved line in Mogila is the most present in Probe II, particularly in its levels 3, 4 and 5, while in other excavations as in Probe I, these ornamentation is present only with individual findings. Several fragments of vessels with a higher quality of manufacture have polished surfaces and sometimes are covered in black or brown slip, decorated with horizontal, vertical or sloped, parallel barely visible channelures

or combination of them (Prčinoga, Mogila, Kutline). One such fragment from Kutline has a high cylindrical neck within a decoration of horizontal ribbed channelures which are typical only for Vinča-Tordoš I phase (Garašanin 1979, 167; Темелкоски и Миткоски 2008, 98, T. 5: 3). One fragment from the site of Đeramidi, with a biconical body and a larger tongue-shaped handle at the transition of the neck, on the upper and the lower cones are placed vertical stressed ribs decorated with finger impressions is interesting, and in Kutline this rib is positioned on the widest part of the vessel (Темелкоски и Миткоски 2008, 98, T. 3: 3, 4, T. 5: 1, 7; Кузман 2013, 354, T. I: 5; Миткоски 2017, 143, T. III: 5).

Another fragment from the site Komarčani-Bučalo, has a decoration with the so-called 'kerbschniff' technique on its neck – incisions executed by a sharp tool with triangular point (Миткоски 2017, 136, T. VII: 5). This technique have been very popular and often applied to the ceramics of the settlement Angelci as well as the ceramics from the layer 2 on the horizon I at the site Vršnik, and also among the material from Vinča from Amzabegovo, but in a much smaller number. One fragment, decorated with this technique, was found in the III stratum of the settlement Mogila near Bitola (Гарашанин и Гарашанин 1961, 21, Сл. 20; Симоска и др. 1979, 25, сл. 61; Санев и Стаменова 1989, 19, 20, T. II: 5; T. IV: 5, 13, T. V: 1, 2, 4, T. VII: 9, 10, T. XIV: 6, 7).

Here I will also mention a fragment of the lower part of a vessel with a rounded and flat bottom, from Debrešte, decorated with three rows of sloped, parallel, small circular incisions that are fused at an angle (Benac 1979, 461, T. LXXII: 7).

The jars are generally with larger dimensions with a short (Prčinoga) or a higher cylindrical or conical neck and a rounded rim; in one case they thickened in the inner side. One fragment with a fine fabrci, short neck, and a polished surfaces from Kutline, on its neck and shoulder has a decoration of wider, vertical, parallel and shallow channelures (Темелкоски и Миткоски 2008, 98, T. 5: 11). In two cases, a horizontal rib is placed under the rim, where in the second case it is sharply drawn outwards, and in one case has a plastic application with a 'S' shape placed on the widest part of the vessel (**T. V: 15, 17**). On several examples, there are vertical handles starting from the edge of the rim or underneath it, merging the neck with the widest part of the vessel, where in one case the handle in the root is decorated in a black topped technique (**T. V: 19 22, T. X: 2, 1, 2, 5, 9**). In some jars, the ribbon handles are placed on the widest part of the vessel, while the neck of one fragment contains a larger handle in a triangular shape (**T. V: 18, T. VII: 18, T. X: 1, 5, 5a, T. X: 2, 4**). There are also vessels with biconical shape and a high cylindrical neck, flattened rim, where in one case there is a tongue and saddle-shaped handle (**T. IV: 22, 23, T. X: 1, 1**) (Санев и Стаменова 1989, 18, T. X: 5, T. XIV: 1; Темелкоски и Миткоски 2006, 59, 68, T. II: 6, 7, T. III: 11; Темелкоски и Миткоски 2008, 98, T. 3: 5, T. 4: 5; Миткоски 2017, 130, 145, T. V: 2, 4, T. XIV: 4, T. XV: 13, 17).

The bowl (or beaker) is usually with a intermediary fabric, roughly smoothed surfaces, and very rarely has a polished surface. The color firing is mostly grey, grey-brown or black, sometimes the coloring can be doubled – outside black while the inside covered in brown color; there are also cases where the vessel is with unequally color intensity. On one fragment there is a combination of red and black slip (Темелкоски и Миткоски 2006, 64, T. II: 16, T. III: 1, 2, Миткоски 2017, 130, 136, 143, T. III: 1, T. V, 6, T. VIII: 6).

The bowls can have a tall bell-shaped hollow leg, and can be found on the sites: Ali Čair, Komarčani-Bučalo, Đeramidi, Mogila, Kutline I, Angelci I and Amzabegovo IV; they are mostly characteristic for Vinča-Tordoš I (**T. V: 6**). One fragment from Kutline is with thin walls and polished surfaces, covered in red slip, and decorated with linearly executed channelures (Гарашанин 1973, 84, T. 7: 2; Gimbutas 1976, 128, fig. 78; Garašanin 1979, 165, 170, Sl. 12, 3; Санев и Стаменова 1989, 20, T. VI: 1–3; Темелкоски и Миткоски 2008, 98, 101, T. 3: 12).

There are also bowls with thickened shape and lower legs (bottoms) (Đeramidi, Mogila), as well as bowls with solid legs (Mogila, Komarčani-Bučalo) (Миткоски 2017, 140, T. XIII: 16). This transition in the shape of this type of vessels in the context of chronological separation is clearly defined in the analysis of the archaeological materials in the settlements belonging to the Late Neolithic cultural group of Vinča (Гарашанин 1973, 87; Garašanin 1979, 175, T. XXVIII: 2; Темелкоски и Миткоски 2008, 98, 101, T. 3: 13).

The bowls are rarely decorated with black topped technique, as well as with engraved triangular and rectangular fields filled with an impressions organized in the form of a chess field (Nikolić 2004, 9.42a, c, 9. 46a; Темелкоски и Миткоски 2006, 64, сл. 4 б, в; Темелкоски и Миткоски 2008, 98, T. 3: 13; Миткоски 2017, 126, 143, T. II: 12, T. III: 13). Two fragments of the Mogila site and one from Kutline at Rakle, has a decoration of a vertical, parallel and shallow channelures on the leg; in a third case from Ali Čair the leg is decorated with wider, sloped, parallel channelures, fusing at an angle (**T. V: 9, T. VII: 14, T. XI: 2, 8**) (Темелкоски и Миткоски 2008, 98, 101, T. 3: 12).

One fragment from Mogila has two perforated stylized figures on its leg and another fragment from Ali Čair in this part of the vessel has a small circular perforation (**T. V: 9**) (Dimitrijević 1979, 284, T. XLIX: 11; Темелкоски и Миткоски 2006, 66, T. II: 17). Here it should also be emphasized that another almost completely preserved bowl from Mogila, has perforated stylized figures on its leg. The excavations' levels in which the bowls have been found, despite the Late Neolithic, there is also a Chalcolithic material, thus leaving the possibility that they could have belonged to this period continue to remains (Миткоски 2011, 134, T. XVI: 17).

At the end, I will mention the thin, solid and high leg with a flat and slightly stressed bottom which body extends towards the recipient, from Tumba, which is ornamented with horizontal, straight thin lines and originates from a vessel with a coarse fabric (**Наумов и др. 2017, 14, T. 5: 6**). These vessels usually have a conical or hemispherical recipient; this is the reason that they are considered as some kind of lids with a longer handle and a deeper recipient. This vessels appear in a series of variations and it is characteristic for the Butmir culture group, more precisely for all of its three phases. The tall leg with an extended base is an imitation of the Kakanj bowls shaped vessel on a high hollow leg (Benac 1971, 116, 125, T. XXXIII: 3, 6, T. XLV: 8, 9, 12; Benac 1979, 431, T. LXII: 1).

The vessels – amphoras are mostly with a higher cylindrical or conical neck, in one case decorated with vertical shallow zigzag channelures (Đeramidi) while the neck and the shoulder are decorated with shallow channelures that are forming spirals (Gradište). One fragment of the neck contains vertical handles and traces of red slip from the outside and black on the inside. This type of vessels contains vertical handles with a thorn-shaped application in the handle's root, as well as a larger tongue-shaped handle with the same application on the upper site (Đeramidi) (Миткоски 2017, 131, 143, T. I: 1, T. IV: 12, T. XIII: 6, 7, 9).

Storage vessels are present by a numerous fragments and are usually with intermediary or coarse fabric and brown or grey firing color in several hues. Usually they are of a larger dimensions with thicker walls, short or higher cone or cylindrical neck, and the rim is rounded, flat or cut inward, sometimes thickened from the outer and the inner side, or slightly drawn outward (**T. VI: 1–8, T. XI: 2, 5, 10**). One fragment of this type of a vessel from Komarčani-Bučalo has a small perforation beneath the rim (Гарашанин и др. 2009, 97, T. XXXVI: 4; Темелкоски и Миткоски 2006, 66, T. III: 6–10; Темелкоски и Миткоски 2008, 101, T. 3: 21, T. 4: 1, 2, 6, 7; Миткоски 2017, 130, 136, T. IV: 3, T. VIII: 3).

They usually have a spherical or elongated body, with conical, biconical or semi-circular form. In several examples there are vertical handles with an oval cross-section that start from the edge of the rim, where in one case it is decorated with two sloped, parallel channelures at its highest part, merging at a sharp angle and ending with a small circular engraving (**T. VI: 1, T. VII: 14, T. VIII: 2, 6**). There are also vessels where such handles are placed on the shoulder of the widest part of the vessel; in one example of Mogila, a tongue-shaped handle was extracted from the rim (**T. VI: 7, T. X: 2, 7**). Vertical knee-shaped handles with tongue-shaped addition are also present; starting from the root of the handle, where in one case the upper part is decorated with shallow, parallel zigzag channelures (Đeramidi, Prčinoga). There are also tongue-shaped handles that can be rounded or triangular, then the tongue and saddle-shaped (Gradište), as well as a tongue-shaped handle that ends with a triangular end, root being perforated (Đeramidi) (Санев и Стаменова 1989, 22; Темелкоски и Миткоски 2006, 66, T. III: 5–10, Темелкоски и Миткоски 2008, 101, T. 4: 5, 9; Миткоски 2017, 143, 145, T. XII: 7, T. XIV: 7, 7a, 8).

On one sample of Ali Čair, the widest part of the vessel is also a handle in the shape of a bigger, elongated knob application (**T. VI: 3, T. IX: 2, 3**). The massive triangular handle is also present, so far by now it is only recorded on only few sites in the Prilep part of Pelagonia and Mariovo, where it can be considered as a local feature (Темелкоски и Миткоски 2008, 101, T. 4: 8, 7; Миткоски 2017, 130, 136, 143, 145, T. III: 9, T. IV: 8, T. V: 9, T. IX: 6, T. XIV: 10).

The storage vessels are rarely decorated except for one fragment with a fine fabric that was decorated with shallow, parallel zigzag channelures (Đeramidi, Kutline); in another fragment of Ali Čair, the shoulder is decorated with vertical, parallel zigzag channelures in combination with triangular incisions (**T. VI: 6, T. VIII: 2, 5**); in a third example from Prčinoga, a knob is applied on the neck, while horizontally above it and below it, contains parallel shallow channelures. One fragment from a vessel with a spherical body from Mogila is decorated with very wide, vertical, parallel channelures; on another fragment with a biconical shape from the same site, large, parallel and oval-shaped impressions can be found on the carination (Темелкоски и Миткоски 2008, 98, T. 5: 11; Миткоски 2017, 130, 136, 145, T. III: 8, T. IV: 3, T. VIII: 3, T. XIV: 4).

I will also mention a fragment from Komarčani-Bučalo, where the upper half of the vessel is with smoothed surfaces, and the lower half, the stomach, is decorated with pinching arranged in horizontal rows (Миткоски 2017, 143, T. VIII: 3). Here it should be emphasized that this way of decoration is also located in-between the movable archaeological material from the Middle Neolithic settlement Vrbjanska Čuka in the village of Slavej, and the settlement Krušeanska Čuka near the village of Vrbjani, containing a numerous samples from the Middle Neolithic period, especially from the II and III horizon of the living objects (Темелкоски 1999, 33; Миткоски 2005, 42, 43, T. XIV: 9).

The vessels with a semi-closed shape are usually with a rounded rim under which, in one case a small perforation can be found. They are mostly with intermediary fabric and roughly smoothed surfaces, and very rarely with a polished surface. A huge number of samples are decorated with a single or multiple vertical, parallel rows of circular incisions, where in one case they are in combination with a horizontal groove, while in other several cases they contain only single rows of circular incisions separated by an engraved line or fields with rounded engravings of which some are filled with white incrustation (Komarčani-Bučalo, Mogila) (Темелкоски и Миткоски 2006, 59, T. III: 4, 5; Темелкоски и Миткоски 2008, 98, T. 3: 11; Миткоски 2017, 126, 136, T. III: 19, T. VIII: 2).

One fragment is very interesting from Ali Čair, with a semi-closed shape and a spherical body on which is placed an elongated, vertically set and unperforated handle, with a triangular section in the upper part, small circular incisions on both sides, and two sloped, parallel shallow channelures, thus providing the handle a zoomorphic shape (**T. V: 5, T. VII: 6, T. VIII: 2, 1**) (Булатовиќ и др. 2010, 29 T. V, 11; Миткоски 2017, 130, T. IV: 5). One fragment of this type from Komarčani-Bučalo, with thin walls has a small tongue-shaped handle, placed under the rim. In Mogila, the vessels with a semi-closed shape are rarely decorated with rows of small impressions or circular incisions, sometimes separated by engraved lines (Темелкоски и Миткоски 2006, 60, T. III: 4).

The only unique phenomenon is the vessel whose upper part has a rounded biconical profile and a cylindrical lower part called 'Canopus' (Benac 1979, 436, Sl. 23 III no. 29, T. LXV: 7). Double knobs are applied at the transition of the cones' joint spot. They are usually with intermediary fabric and brown or dark grey to black color, with smoothed surfaces and only in one case with traces of red slip. So far, these vessels are only recorded on the sites of Komarčani-Bučalo and Mogila, Senokos where in Probe I are in almost all levels as in pit 1, while in Probe II, only in levels 4 and 7 are present (Темелкоски и Миткоски 2006, 59, 62, 64, T. III: 3, сл. 4а, 7б, 8). The few fragments with intermediary fabric and dark grey color decorated with rectangular fields filled with impressions organized in chess fields; found in pit 6, most likely originate of this type of vessels. One fragment with roughly smoothed surfaces and a brown color was decorated with bundles of roughly engraved lines that merge at a sharp angle. This type of vessels is mostly present in Butmir in its II and III phase (Benac 1971, 128, 135–136, T. XLVI: 9, T. LXI: 3, 4, T. LXVII: 1; Benac 1979, 462, T. LXXII: 2).

There were also vessels with an elongated body and a slightly drawn outwardly rim, in one case with larger elongated knob applications on the neck, as well as the smaller vessels, usually with a short or a taller neck, spherical body shape and a slightly rounded sloping rim with a fine fabric and traces of black slip (Đeramidi) (Миткоски 2017, 143, T. XII: 1, T. XIII: 10).

The miniature vessels occur in a variety of shapes and probably represent an imitation of the vessels with more practical dimensions. They are usually with intermediary fabric and very rarely are covered with black or brown slip (Mogila, Tumba, Kutline). One of these vessels with a conical shape, on its inside has a traces of red crusted color. They are rarely decorated, in one case at a miniature vessel with a higher cylindrical neck and a spherical body, there are vertical, parallel incisions placed on the widest part; on another miniature vessel with a biconical shape, besides the incisions on the junction, there are knob applications, and above them are short incisions fused at a sharp angle (Mogila); and lastly at one miniature vessel from Kutline, the

neck is decorated with horizontal rows of sloped, shallow channelures (**T. V: 10–12, 23, T. IX: 1, 10, 11, T. XI: 2, 7, T. X: 2, 6**) (Темелкоски и Миткоски 2006, 66, T. II: 8, сл. 9; Темелкоски и Миткоски 2008, 101, T. 3: 14–20; Миткоски 2017, 130, 138, T. V: 5, T. X: 8).

Finally, it must be mentioned one fragment from a very interesting vessel from Ali Čair. The vessel is with a square neck and rim, where at the corner, under the rim, two horizontal, parallel rows of shallow channelures are placed underneath and under them many, very shallow zigzag channelures, and a knob application with a small circular incisions below them on the both sides, thus creating a zoomorphic appearance (**T. VI: 21, T. VII: 11, T. VIII: 2, 7**) (Кузман 2013, 354, T. I: 8, Миткоски 2017, 130, T. V: 3). Here we will also mention the fragment from a vessel with a narrow conical bottom and an undefined shape of the location Ramnište[6], for which there is a supposition that it was used for a salt processing (Спасиќ и др. 2016–2017, 26, Сл. 14, 1, 2, and footnote 49).

From the other types of vessels with individual findings, the most common is the vessel with a vertical ribbon handle (Ali Čair, Komarčani-Bučalo, Prčinoga) as well as the lid with a conical shape (**T. VI: 9, T. XI: 2, 4, 9**) (Benac 1971, 133, T. LIX: 4–6, T. LXII: 9–12; Nikolić 2004, 9.40f, g, h, i, 9.77h, i; Темелкоски и Миткоски 2006, 66, T. III: 13; Миткоски 2017, 136, 143, 145, T. VII: 7, T. IX: 7, T. XIII: 13, T. XIV: 3, T. XV: 15).

The few lower and higher legs found in Mogila, with a intermediary fabric and a brown, grey-brown color, indicate that in this settlement vessels on four legs were also used (Гарашанин и Гарашанин 1961, 24, Сл. 26). Here we will also mention the pinched handle from Ali Čair which is associated with the late phases of the Late Neolithic (**T. XII: 3**) (Гарашанин 1979, 176; Булатовиќ и др. 2010, 27, T. III: 12).

Finally, it should be emphasized that for some ways of decoration, due to the fragmentation of the findings, it cannot be determined to which types of vessels belong to. The processes of decoration of single findings includes horizontal ribs decorated with finger impressions, as well as the linear motives made with shallow engravings that can be associated with the linear or stripped ornaments of the Korenovka culture (Dimitrijević S., 1979, 309, T. L: 4, 5, T. LI: 2). This process of decoration could be found in (Komarčani-Bučalo, Mogila, Prčinoga (Миткоски 2017, 136, 145, T. IX: 4, T. XIV: 11). One fragment from Stari Lozja in the village of Vranče with several other fragments from Mogila, are decorated with engraved triangles, formed by wider and shallow channelures which are filled with large circular incisions (Benac 1979, 433, T. LXIII: 5; Миткоски 2017, 138, T. X: 11; Abazi and Tolevski 2017, 112–113, Pl. 5: 9).

Several fragments of vessels from Mogila and Ali Čair are decorated with ribbon filled with circular or elliptical incisions (**T. VI: 16, T. VII: 10**). The dominance of that ornament in the early stages of the Vinča culture (Vinča A–C and especially for Vinča D1) contributed to the emergence of the term 'ribbon pottery', for which otherwise is considered to represent a local tradition in the Central Balkans (Јовановиќ 1968, 149; Јацановиќ и Шљивар 2000, 8, T. I: 4, T. II: 6, 7, 8, T. IV: 6, T. V: 4; Спасиќ и др. 2016–2017, 32).

A smaller part of the vessels from Mogila are decorated with semi-circular impressions, as well as those in Butmir Phase I to III (Benac 1971, 120, 129, 136, T. XXXIX: 1, T. LII: 8 T. LIII: 3 T. LXIV: 12).

6 The southwestern half of the site of Komarčani-Bučalo by the locals from the village of Šeleverci is also named Ramnište.

One fragment decorated with engraved motives of fish bone filled with red crusted color originates from the site of Mogila (Темелкоски и Миткоски 2006, 60, сл. 5; Benac 1971, 120, T. XXXIX: 9) and another with a barbotine also originates from the Probe II, excavation level 11.

Cult objects

In addition to pottery, a numerous objects have been found related to the spiritual life, cult and religion of the communities that inhabited the Prilep part of Pelagonia and Mariovo. Above all these are anthropomorphic and zoomorphic figurines, fragments of altars, fragments of anthropomorphic vessels, the fragmented cult bread, as well as a fragment of a house model.

Anthropomorphic figurines

In the classification, as special phenomena, the figurines with a 'bird face' are distinguished with a pronounced nose produced by a plastic extraction. One specific figure from Kutline has a plastic-shaped hairstyle, and a pronounced mouth with a spherical application, while other plastic-made are with almond-like eyes. Here it should be emphasized that this type of figurines are typical of the Fafos Ia phase, while being exceptional in the Fafos Ib, which is chronologically close to the Gradac phase. In Macedonia, this type of figurines have been recorded in Zelenikovo II, in the Vinča layer from the settlement Mogila near the village Senokos and Kutline I and II (Glišić 1964, 39, T. V: 8–10; Gimbutas 1976, 217, fig. 116, 221, 166–169; Гарашанин и Спасоска 1976, 105, 110, Сл. 3; Garašanin 1979, 187, T. XXXI; Темелкоски и Миткоски 2006, 69, T. VII: 14, 17, сл 17б; Темелкоски и Миткоски 2008, 101, Сл. 7; Миткоски 2017, 123, 127, 131, 133, 143, T. I: 6, 8, 10, T. III: 15, T. IV: 9–11, T. XII: 2, T. XVI: 1–4).

From Kutline we will mention the two-part figure with a flattened body and a slightly pronounced pregnancy with a printed navel, plastic-shaped breasts, and a necklace around the neck, which is found only in a female anthropomorphic artifacts, including the houses models in the Skopje region (Колиштркоска Настева 2005, кат. бр. 46, 66, 73; Миткоски 2008, 93, T. I: 1, Наумов 2015, 130, сл. 2, 17). From this site I will mention both fragmented legs with very realistic fingers, with six fingers designed on one of the legs and a chanel for reinforcement in the upper part which additionally highlights the significance of this specific finding (Миткоски 2008, 93, 103, T. I: 1, сл. 8; Наумов 2015, 131).

Particularly interesting is an anthropomorphic figure from Ali Čair, primarily because its knees are perforated, and two vertical engraved rows fused at an angle are placed on the back; thus making very difficult to define whether this case is about the spine or for a decoration purposes (**T. XIII: 1, 1а, 1б, 1в**) (Темелкоски и Миткоски 2001, 60, T. I: 2, сл. 16). This is unusual for the Neolithic figurines and can be distinguished as a new occurrence in the Late Neolithic (Наумов 2015, 87, T. 23: 1; Миткоски 2017, 131, T. XVI: 4).

In another figure from Mogila, the impression of an embroidered skirt in the genital area is especially interesting (Колиштркоска Настева 2005, кат. Бр. 23; Темелкоски и Миткоски 2006, 69, сл. 17б; Наумов 2015, 87, T. 23: 3), it is also characteristic for the Chalcolithic figurines of Pelagonia (Чаусидис 2009, 201), and at a third one from Đeramidi, the right leg of the two-parted figurine which is in a sitting position has a knob application on the hip (Миткоски 2017, 143, T. IV: 11). The flattened addition on the buttocks, as well as the cone-shaped figurines of

Mogila, again can be treated as a feature inherent to the final stages of the Neolithic in Macedonia (Колиштркоска Настева 2005, кат. Бр. 32; Наумов 2015, 87, Т. 23: 5). Very interesting are the two figurines from Mogila and Komarčani-Bučalo, presented in a sitting position with a stressed stomach, as well as one upper half of the figurine with a flattened body from Komarčani-Bučalo, with a preserved right hand that is bent and laid on the chests where the fingers are indicated by the palm being engraved (Темелкоски и Миткоски 2006, 69, Т. VII: 14, 17). A similar figure was found in Mogila, in the pit 3, and in the site Tumba, village Mogila, Bitola (Симоска и др. 1979, 27, сл. 65).

Zoomorphic figurines

Here I will mention the few zoomorphic figurines from Mogila and Ali Čair, from which I will particularly separate the elongated head of an animal made of whitish stone from Mogila (**T. XIII: 2**) (Garašanin 1979, 173, сл. 12, 15; Темелкоски и Миткоски 2006, 69, Т. VII: 16; Миткоски 2017, 127, Т. III: 20; Кузман 2013, 367, Т. IX: 7).

Altars

From the cult objects we will mention the several fragments of the altars from Mogila, Đeramidi and Ali Čair with a shallow recipient of three or four column-shaped legs (**T. IV: 26, 26а, 26б, 26в, Т. XII: 2, 6**). Such fragments from Kutline are decorated with deeper engraved linear motives (Галовиќ 1967, 144, Т. VII: 1–3; Темелкоски и Миткоски 2006, 68, Т. VII: 15; Миткоски 2017, 123, 127, Т. IV: 2, Т. XI: 16–18).

Zoomorphic altars

In this case, this is a fragmented zoomorphic altar in the form of a pig found at the site Komarčani-Bučalo. The head of the pig has a spherical shape, nicely preserved, with short ears and a small muzzle, without stressed eyes and mouth as part of the recipient. It has a fine fabric and a brown color (**T. IX: 8**) (Миткоски 2012, 10, Т. III: 8).

The presentation of pigs, within cult objects, is very rare. A head of a pig has also been found in Amzabegovo, which is considered to be one of the more representative examples (Gimbutas 1976, 234, fig. 196), then there is a bigger head of a pig with a short muzzle stressed nostrils, mouth, incised eyes and short ears – found in the yard of Božin Nikolov in the village of Leskovica, Štip (Санев и др. 1980, кат. бр. 107). In the horizon II, on the site Stranata near the village Angelci, a fragment of zoomorphic vessel have been found, on which a head of a pig was presented in the relief. It was placed under the vessel's rim so that its shape remains unclear (Санев и Стаменова 1989, 23, Т. XII: 6). Presentations of pigs have been found on other Neolithic sites (Minichreiter 2007, 98, 142; Георгиев и Ангелов, 1957, 111, Обр. 68, 4). The pig, in addition to the sheep and the goat, is domesticated throughout the Early Neolithic and represents a symbol of fertility. In Europe numerous representations of pigs have been found, also the symbolic meanings, as well as the domestication, according to the assumptions, arrived from Anatolia.

From the cult objects with individual findings there are also: fragment from a house model from Komarčani-Bučalo (Миткоски 2017, 136, Т. IX: 9), then the fragmented 'cult bread' with

a rectangular shape from Mogila, as well as the fragments of anthropomorphic vessel from Kutline and Mogila (Галовиќ 1967, 144, Т. V: 5; Миткоски 2016, 121, Т. VII: 5; Миткоски 2017, 123, Т. XI: 5).

At the end, I will also mention a lid fragment from Komarčani-Bučalo**,** with a conical shape, a intermediary fabric and a black color, with an application of anthropomorphic figurine with a pubic part designed with an engraved vertical line, placed on the upper part. The lid of the narrower side is decorated with rows of circular engravings separated by an engraved line and filled with white incrustation. This is a rare and so far, the only such finding in the area of Pelagonia, Mariovo, and beyond this area and period.

Among the movable archaeological material there are elements characteristic for the Late Neolithic period that belongs to the Adriatic zone of the eastern Mediterranean cultural circle. Most of the findings have been found at the site Mogila, Senokos; moreover a huge number of analogies are obvious with the complex of the Neolithic culture Smilčić, which is defined as later stage of the Early Neolithic (Batović 1979, 504).

This type of findings in Mogila is characteristic for the earliest horizon of living, and even more interestingly, the same with a smaller number of samples are also present in the later horizon of the living (levels 1 and 2) mixed with the movable findings characteristic for the late phase of the Late Neolithic. This means that, unlike the Adriatic culture circle where this way of ornamentation is characteristic only for the II degree of the Early Neolithic; for the Smilčić cultural circle, the ornamentation from Pelagonia and Mariovo, existed almost throughout all phases of the Late Neolithic, and as a confirmation are the findings from the site Usta of Drim (Тодороска 2016, 43–44, Т. II, Т. III). This type of decoration with individual findings is also present on the sites Ali Čair, Komarčani-Bučalo, Čuka -Mogilani village Pašino Ruvci, Gradište, and Đeramidi.

From the forms of the vessels mostly present are plates with a conical and semispherical shape, biconical plates, bowls (beakers), vessels with cylindrical neck and spherical body, as well as the vessels with the semi-closed shape. They are usually with intermediary or fine fabric, with large admixtures of mica and small stones with smooth surfaces; while vessels with fine fabric, polished surfaces, and only in a few cases black or red sliped are not so common. The color produced by the firing is grey or brown in many hues, and there are also two-colored vessels. The decorative techniques and motives are diverse, whereas impressions are dominatnt. In addition, they have been made out of the edges shells or by other tools.

With shells were produced two kinds of motives; in the first case the double fingerprints connected at one end, and separated at another end; these are the so-called 'arrows', performed with en edge of a shells (Batović 1962, 80, сл. 2, 4 и сл. 55, 58, 60; Batović 1979, 504, Т. 1: 5). One fragment from Đeramidi is decorated with a *cardium* shell (Миткоски 2017, 140 Т. XII: 13). There is a possibility that some of these motives can be produced by another tool.

This ornamentation of Mogila pottery have only been found in Probe I, as well as in several pits: 1, 3, and 6; the vessels that encountered this kind of decoration are almost regularly plates with conical shape. In one case we have a combination where two rows of double arrays of shallow opposed 'arrows', horizontal and vertical, merging at right angle; in another case there is only

a horizontal dual row of opposing ‘arrows’, as well as a single row of ‘arrows’ filled with white incrustation.

There are also vessels where the ‘arrows’ are combined with incisions usually performed with a tool. In most cases they are very shallow due to which it is very difficult to determine the type of incisions; the reason for this is the coarse fabric of the vessels. The most common is the combination of horizontal rows of ‘arrows’ with horizontal rows of triangular or smaller incisions, and in some cases there is a combination of triangular incisions, in between two rows of two parallel lines of very small incisions. There are also rows of ‘arrows’ in combination with circular incisions; some of them are filled with white incrustation (Темелкоски и Миткоски 2006, 59, T. VI: 3, Batović 1962, 82, сл. 53). In the second case, it is a zigzag motive that was produced and invented out of the development of the motive ‘arrow’, i.e. simply connecting one end of the repeated fingerprints with the previous and the other with the next imprint (Batović 1962, 82, сл. 5, 1, 3, 5, 6 сл. 7, 3, сл. 8,4, 51, 54, 61, 68–70; Batović 1979, 504, T. LXXVIII: 6).

The vessels with these ornaments are dark grey in color, with intermediary or coarse fabric, where the incisions are difficult to distinguish, except for one fragment containing traces of black slip. Zigzag motives were produced with a shell or some other kind of a tool. Most commonly, there is only one line of zigzag motive or a combination of two horizontal or vertical, parallel lines. The vessels with such a decoration are usually plates with conical or semispherical shape, and are very rarely found within biconical vessels; in one case from Komarčani-Bučalo, this decoration is positioned on the shoulder of the vessel with rounded biconical profile. In Mogila, this type of decoration was found in Probe II, while with individual findings appears in Probe I, levels 1 and 3, as well as in Pit 1 (Темелкоски и Миткоски 2006, 57, T. V: 12, T. VI: 11). This type of decoration with individual findings is also found among the material from the sites Gradište, Čuka-Mogilani, Tumba Bara village Porodin, and Usta of Drim (Симоска и Санев 1976, 42, кат. бр. 147в, Тодороска 2016, 44, T. II, 1, T. III: 9, 10, Миткоски 2017, 143, T. III: 2).

As separate groups are the motives that are produced with variety of incisions, which can be with an approximately rectangular, triangular, semispherical, elliptical or spherical shape (T. VII: 13, T. XI: 1, 4). They are usually made out of bones, wood or stone objects (Batović 1962, 82, сл. 6, 3, 4; 9, 1, 3; 10, 1, 2; 11, 4; 34–49; Batović 1979, 504, T. LXXVIII: 7). The forms of the vessels with such a decoration are quite limited; primarily plates with a conical, semispherical and biconical shape, as well as the larger vessels with an elongated or spherical body. They are usually with intermediary fabric, and dark brown or brown color. In this case, it is a combination of motives most commonly produced with one row of incisions, while the others are produced with another object and the same process repeatedly continues in a certain rhythm. In Mogila, such findings have been found in Probe I, in levels 1–3, 5 and 6; in Probe II in level 6, as well as in the pits 3 and 6. Most often the fabric is very coarse, with a heavy presence of lime and small stones, and the motives are very difficult to distinguish. Very rarely these are vessels with a fine fabric, polished black sliped surfaces, or in a combination of a black topped decorating technique, where the upper half of the biconical vessel is red covered. In some cases, the incisions are filled with white incrustation (Темелкоски и Миткоски 2006, 59, 68, T. II: 15, T. VI: 4, 9, сл. 13).

Findings with this type of decoration are also found on the site Tumba Bara village Porodin (Симоска и Санев 1976, 42, кат. бр. 146, 147а, б). In several fragments of vessels there is a combination of the following decorating techniques: the double row of shallow opposing

triangular incisions, made with shells, or some kind of a tool in combination with the black topped decorating technique. Such a combination of the two techniques have been found in the fragments of the vessels with biconical shape from Ali Čair and Đeramidi, where the bottom of the vessel from the second site is red slipped (**T. IV: 24, T. VII: 3, T. XI: 1, 1**) (Темелкоски и Миткоски 2006, 59, T. VI: 3, 4, 9; Миткоски 2017, 127, 143, T. V: 13). On one fragment of a vessel with a biconical shape from Komarčani-Bučalo, the lower cone is decorated with motives in the shape of a wheat spike made out of bone tool (Batović 1979, 499, T. LXXV: 4; Миткоски 2017, 133, T. VII: 4).

Finally, it should be emphasized that several vessels with larger dimensions, thicker walls, and coarse fabric are decorated with a ‘broom’ ornament. They are usually in two colors, mostly with a dark grey color on the outside, and with a brown on the inside surface. In our country, this way of ornamentation have been found only on the findings from the site of Mogila, Probe I, excavation levels 3 to 5 (Batović 1979, 506, 509, Темелкоски и Миткоски 2006, 66; T. III: 9). This way of decoration is mostly present on the individual findings from the Late Neolithic, more precisely for its II stage, and characteristic of the III stage, probably the transitional period from the Early to Middle Neolithic (Batović 1979, 490, 506).

The ties with the cultures from the Adriatic zone have continued in the time of the Middle Neolithic, especially in the Danilo culture sites, and later in the period of the Late Neolithic on the sites of the so-called Hvar-Lisičići culture group; although the number of the findings on which the analogies were established, within this cultural group is significantly lower (Batović 1979, 592, 594, 599, T. XCI: 2, 13, T. XCII: 7, 8, 9, T. XCIV: 10, T. XCV: 2, 7).

Here, primarily dominatnt are the vessels with the decoration of spiral motives, rhomboids and other ways of decorating, typical for the Danilo culture group; it should be emphasized that most of them originate from Mogila, Senokos (Benac 1979, 458). Mostly present are the forms: plates with biconical shape, bowls (beakers), vessels with semi-closed shape, as well as vessels with a cylindrical neck and a spherical body. They have smoothed surfaces, with a grey or brown color in many hues, and there are two-colored vessels with dark grey color on the outside and brown on the inside, or vice versa.

Particularly interesting are the plates with a biconical shape in which the upper cone is bigger and slightly curved outward; in some of them the bottom is decorated with a variety of linear motives, and there is a possibility that some of them have been used as lids. In most of these vessels, above the transition of the neck there is a horizontal groove (Mogila, Komarčani-Bučalo). Here it should be noted that the decorated bottom is also present on several plates with a conical shape. The plates are usually with nicely smoothed surfaces; some red or black slipped, decorated with channelures and engraved linear motives, filled with red or white incrustation – because of the contrast and a greater effect (Korošec 1959, 67, T. XC: 2–4, 7; Batović 1962, 62, Sl. 15; Batović 1979, 592, T. XCI: 13; Korkuti and Andrea 1975, 69, Pl. 6; Симоска и Санев 1977, 228, T. I: 1, T. IV: 13; Batovic 1979, 462, 542, T. LXX: 11, T. LXXXIV: 7, Санев и Стаменова 1989, T. XIV: 4; Темелкоски и Миткоски 2006, 66, T. I: 7; Миткоски 2017, 126, T. II: 2).

One fragment of a vessel from Mogila is also decorated on the inside with engraved linear motives. This way of ornamentation in Danilo was found on several plates with a conical shape (Korošec 1959, 67, T. LXXVII, T. LXXVIII: 1, T. LXXIX: 1, 2, 3, T. LXXX: 1; Batović 1979, 599, T.

XCV: 2). Here I will mention the few biconical vessels decorated with semispherical channelures placed on the upper cone (Mogila, Komarčani-Bučalo) (Korošec 1959, 60, 82, 98, Sl. 6,4, Sl. 10, 2; Симоска и Санев 1976, 42, кат. бр. 146; Batović 1979: 593, T. XCI: 2; Темелкоски и Миткоски 2006, 62, T. V: 11; Кузман 2013, 354, T. I: 13).

The bowls (beakers) are with a hollow cone or with a solid leg (bottom) (Mogila) and are decorated with spiral channelures and linear motives, or rhomboids shaped with broader and shallower channelures, and some are filled with red or white incrustation (Tumba, Komarčani-Bučalo). Some of them have stylized handles – applications, as well as a vertical rows or knob applications, often covered with red crusted color (Миткоски 2006, 64, T. II: 18, 19, сл. 3; Миткоски 2017, 126, 138, T. II: 6, 9, T. III: 11, 14, T. X: 1). On one specific fragment of a bowl from Ali Čair, the leg is decorated with short sloped incisions, merging at a sharp angle (**T. II: 8, T. XI: 1, 2**) (Korošec 1959, 69, T. LXXXIII: 3), at another fragment from Mogila, there is a combination of wider channelures with traces of red incrustation and small circular incisions, filled with white incrustation.

The spherical shape vessels with a drawn inwards rim, as well as those with a cylindrical neck and body, are usually decorated with spiral channelures or engraved rhomboids, usually filled with red and white incrustation, which mostly occurs in Danilo at the end of its III phase (Komarčani-Bučalo, Mogila) (Batović 1979, 542, 614, T. XCV: 7; Темелкоски и Миткоски 2006, 59, T. V: 4, 6–9, сл. 3а, Миткоски 2017,126, T. II: 1, 8, 10, 13). In Mogila, in pit 2, a vessel with a semispherical shape, smoothed surfaces, decorated with engraved spirals have been found just like in Danilo (Korošec 1959, 83, T. XXXVII: 4).

I will also mention the fragments that are decorated with engraved lines filled with unorganized short lines. These are motives characteristic for the Danilo, as well as for the Hvar-Lisičići culture group (Benac 1971, T. LIV: 5, T. LV: 2). This type of decoration is mostly present by individual findings from Ali Čair and Mogila; one of these fragments originates from pit 1, with traces of white incrustation, and another one from Probe I, excavation level 7 (**T. VII: 16, T. XI: 1, 3**) (Korošec 1959, 65, 103, T. XXXVII: 2, T. XXXVIII: 8; Korkuti and Andrea 1975, 78–79, T. XXII; Темелкоски и Миткоски 2006, 68, сл. 12; Миткоски 2017, 130, T. IV: 7).

Several fragments of vessels, mainly plates with a regular cone shape, then a conical plate with a cylindrical upper part, in one case with a circular transition, with a vertical, shallow and parallel channelures below it, a semi-closed vessel with a high cylindrical neck, decorated with triangular fields filled with wide network organized in a chess filed, mostly filled with white incrustation. In one case of a fragment from a plate with a flat cone, besides the white incrustation, there are also traces of red crusted color. Another fragment from the upper part of a vessel with a semi-spherical shape, with a rounded rim, and smoothed surfaces is decorated with shallow wide channelures, forming triangular fields organized in a chess field (Темелкоски и Миткоски 2006, 57, 59, T. I: 10, Сл. 2; Миткоски 2017, 126, T. II: 8, T. III: 12, 22).

The mentioned motives are characteristic for the Early Neolithic settlements in southern Kosovo, especially in Reštani, where the presence of these motives is seen as a consequence of the impact of the Adriatic; the Danilo cultural group, in a relative chronological sense has a relation to the third phase of the Danilo and Butmir I phase culture. On the other hand, in relation to the Vinča culture, the motives originated from the Vinča-Tordoš period (Benac 1979,

456–460, 465, T. LXVIII: 5, 7–9, T. LXIX: 6, T. LXX: 1, 4, 5, 8, 9; Гарашанин 1998, 84, 85). Such ornaments have been found in many findings from Trn and Cakran (Korkuti and Andrea 1975, 68, 73–74, T. IV, T. VII: 2, 3, 4, 6, T. XIII, T. XIV).

Here I should also mention the several massive solid cone legs from Mogila, and Komarčani-Bučalo, belonging to the cult rhyton vessels on four legs, with a semi-spherical sloped recipient and a vertically laid handle under the rim; representing the one of the most important characteristics of the Danilo-Kakanj complex (Benac 1971, 108, 565, Темелкоски и Миткоски 2006, 71, T. VII: 13, Сл. 10). The legs of the rhyta are very simple and almost not decorated, one with engraving, the other with incisions, while the third one with the black topped technique; the same as those found in Mala Tumba, Trn, Cakran, and those discovered in continental Bosnia. This data completed and compliments the opinion of Benac, who argued that two groups of rhyta can be separated: the Adriatic, which is quite decorative and the Balkan, with a poor ornamental system (Benac 1971, 109, T. XXXVI: 1, 2, Korkuti and Andrea 1975, 78–79, T. XXII; Benac 1979, 397, 458, 462, T. LVIII: 1–3, T. LXX: 10, T. LXVIII: 6, Batović 1979, 559, T. T. LXXXV: 1, Симоска и Санев, 1977, 230, T. V: 19).

We will finish this listing with the bell-shaped female figurine and stylized animal handles – the applications on vessels with some traces of red crusted color, two very important features of the Danilo culture, that are mostly characteristic for the latest period of this culture, as well as in the Croatian phase (Batović 1979, 542, 544, 548, 549, 604, 614, T. LXXXIV: 12, LXXXV: 2, T. LXXXVII; 2, T. XCII: 9; Темелкоски и Миткоски 2006, 71, сл. 14, T. IV, 10; Миткоски 2017, 126, T. II: 3, 4, 11, T. III, 16).

At the end, I will mention the bone axe from Mogila, with an opening hole for handle insertion that finds analogies in similar findings from the pile-dwelling settlements Penelopa, Ohrid, and Usta of Drim, Struga (Benac 1979, 464, T. LXXI; 7, Кузман 2013, 361, 365, T. VI: 19, 20, 33, T. X: 24, 25; Миткоски 2017, 126, T. III: 21).

There is also one fragment of a vessel from Mogila with a spherical body, in a secondary use, and approximately oval shape, and in part, additionally, flattened sides with five perforations distributed along the edges of the fragment. It resembles the so-called 'sun wheel' teracota that initiates a strong spiritual connection with the Adriatic cultural area (Benac 1979, 462, 541, 612).

Of the other findings, I will also mention the stone tools found on all of the previous above mentioned sites. They are usually made of stone with greenish, grey or greyish-green color; some of them are with nicely smoothed surfaces, rounded or flat, cut bottom, and with a blade sharped from one or both sides (**T. XII: 2, 1, 2**). In one case, a tool with a transverse opening hole for a handle was discovered (Komarčani-Bučalo) as well as a fragment of a mace from the same site (Темелкоски и Миткоски 2006, 68, T. VII: 5–7; Миткоски 2017, 123, 133, 136, 143, 145, T. 5, 9, T. IV: 13, T. VII: 8, 9, T. IX: 10–12, T. XIII: 1-5, T. XV: 1–5). I will also mention the few bone tools (Темелкоски и Миткоски 2006, 68, T. VII: 10, 11, сл. 16б).

More flint tools with grey or light brown color were registered, and as a rule, retouched by both sides (**T. XII: 2, 3–5**) (Темелкоски и Миткоски 2006, 68, T. VII: 8, 9; Миткоски 2017, 123, 126, 136, T. I, 15, T. II, 14, T. III, 10, T. VII, 10–11, T. IX: 13). With several individual findings, presented are vertebrae, spherical plate, stone sling bullets and biconical sling bullets (Komarčani-Bučalo,

Tumba, Mogila), the stone amulet (Gradishte), as well as several more antler, shells, and many bones of animals (Kitanoski 1969, 20, Темелкоски и Миткоски 2006, 68, T.VII: 1–4; Миткоски 2017, 133, T. I: 7).

Based on the previously mentioned above, it can be concluded that the area of Prilep part of Pelagonia and Mariovo, a good place for residence through all of the phases of the Late Neolithic; also confirmed and proved by the movable archaeological material. It should be emphasized that most of it is obtained through archaeological surveys and a gift, indicating that after the eventual archaeological explorations on the mentioned archaeological sites, the possibility to correct some conclusions about certain problems, presented on this paper still remains.

About the dating of the material from Ali Čair; although a detailed analysis of movable archaeological material was completely evaluated, at the end there was a place only for general conclusions. This is primarily due to the fact that, as it was stated at the beginning of this study, the head of the research did not isolate the movable archaeological material after the excavations, nor from closed units; this is the main reason why it is so difficult to create a precise chronological determination. However, the initial observations indicate that this site was used in almost all of the phases of the Late Neolithic. As we saw, the pottery was made by more or less the same unified fabric, and the shapes beside the biconical vessels, include the high legged bowls, holemouth jarss, jars and storage vessels, some of them decorated with incisions, thus allowing to corelate the Late Neolithic pottery of the Balkan-Anatolian complex, representing an allocated, distinct variant (Санев 1995, 77).

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The Late Neolithic in Pelagonia and Mariovo, unlike Eastern Macedonia, is still not well known. This is primarily due to the small number of explored settlements. So far, two regional cultures have been confirmed in these areas, which are closely related to the Adriatic cultural circle: the Trn cultural group in Pelagonia, and Usta of Drim (Симоска и Санев 1977, 232; Санев 1995, 45). Here, of course, should be mentioned the above assumption of the existence of earlier cultural group similar to Larissa in Thessaly, which is supposed to fill the void between the Velušina-Porodin, and Trn culture group. (Гарашанин и Спасовска 1989, 30–31; Санев 1995, 45). In addition to this, certain clues gives the pottery of the earliest layers of Čuka, near the village Topolčani (IIб-III) and Mogila (III) near Bitola (Китаноски и др. 1978, 19-23, T. VI–VIII; Симоска и др. 1979, 25, сл. 60). However, from the initial analyzes it can be concluded that the entire Late Neolithic material found at the archaeological sites in Pelagonia and Mariovo showed mutual unity, both culturally and chronologically, although they are geographically distinct (Миткоски 2017, 153). Comparative analyzes pointed to the mixing of two components, Adriatic and continental Balkan.

Cultural elements characteristic of the later phase of the Early Neolithic, as well as for the Adriatic Middle Neolithic cultures are present in the older phase of Mogila, Senokos, while in its later Neolithic phase, there are cultural elements characteristic of the later Adriatic Neolithic cultures, predominantly of the so-called Hvar-Lisičići cultural group, thus suggesting again about the re-emergence of the population from the Adriatic zone in these areas; when the settlement on Drim River was likely to be formed, as well as some of the settlements in Pelagonia and Mariovo – it firstly must be confirmed with future archaeological research (excavations) (Темелкоски и Миткоски 2006, 75).

On the other hand, in the Late Neolithic in the Balkan Peninsula interior, the Vinča culture was in the phase of development. Cultural elements characteristic from this continental culture in Mogila near Senokos, are also present in a large number, which means that in the later Neolithic phase, there is an interference of the two components: the Adriatic and the continental Balkan, where the second prevails; although it should be emphasized that this kind of mixing of the both cultural components is documented also in the earlier phase.

This intertwining occurs in the settlements that belonged to the cultures of the so-called Transitional zone (Butmir, Reštani, Usta of Drim) (Benac 1979, 468, 469). Cultural elements characteristic of this continental culture, with numerous findings, are also recorded in all of the previously mentioned sites: Kutline near the village of Rakle, Ali Čair, Prilep, Gradište near the village Debrešte, Komarčani-Bučalo near the village Šeleverci, Tumba near the village Borotino, Stari Lozja near the village Vranče, Čuka-Mogilani near the village Pašino Ruvci, Đeramidi near the village Čanište, and Prčinoga near the village Dunje (Миткоски 2017, 154).

Considering the fact that in addition to the Late Neolithic settlements from Mariovo there are still a certain number of settlements, primarily located in the Pelagonia Plain, and which as we have seen above, have many common features, especially in the movable archaeological material, it would be logical for their inclusion in a special regional, cultural group Mogila-Ali Čair. Such thesis had been suggested earlier, elsewhere (Миткоски 2017, 154).

Although with the latest detailed analyzes of the already known movable archaeological material, as well as the new one obtained first of all through the archaeological surveying and gift, it was suggested that it would be good for this Late Neolithic regional cultural group to be joined by the site of Mala Tumba near the village of Trn, i.e. Trn cultural group; taking into account the geographical connection as well as the similarity in the movable archaeological material, so that this new regional cultural group would be completed and would be named as a regional Late Neolithic cultural group Mogila- Trn-Ali Čair. Although here it should be emphasized that in Trn there is no interference of the two cultural components, as in the case with the other cultural groups in the transitional zone; but also the fact that only small protective excavations were made on this site should be stressed.

On the other hand, on the basis of movable archaeological material's analysis there is a conclusion that the settlement Mogila near the village Senokos, was formed earlier than the settlement of Mala Tumba near the village of Trn, and as we have seen, this is confirmed by the numerous movable findings that can be related to the complex of the Neolithic findings from the Smilčić cultural circle, which are missing in Trn. Identical ornamented ceramic fragments were also recorded in the settlements Tumba Bara near the village of Porodin, and Golema Tumba, near the village of Trn, and with a several findings in Ali Čair, Komarčani-Bučalo, Tumba, Gradište, Čuka-Mogilani, and Đeramidi, which indicates that the number of settlements in Pelagonia, have belonged to this cultural circle is extremely higher (Симоска и Санев 1976, 42, 43).

The rest of the movable archaeological material from Mogila, Senokos, which is related to the **continental Balkans cultural groups**, suggests that it existed in these regions and through all the other stages of the Late Neolithic, touching the end for its life to continue in the next Chalcolithic period. The third site, Ali Čair, Prilep, marks the very end of the Late Neolithic (Миткоски 2017, 154). This at the same time would mean enriching the knowledge of

the already defined cultural group of Trn, as well as expanding the territorial prevalence in the sense that now the area of Prilep part of Pelagonia, and in particular, Mariovo, are also integrated into the same area, which were recently unknown to the scientific community. The territorial prevalence of this regional cultural group, for the time being, is premature to be already determined and it would be defined with future archaeological acknowledgment and, above all, systematic archaeological explorations.

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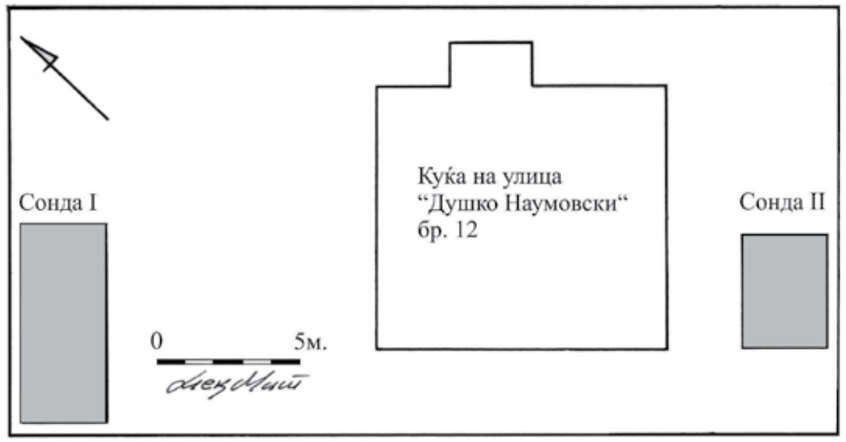

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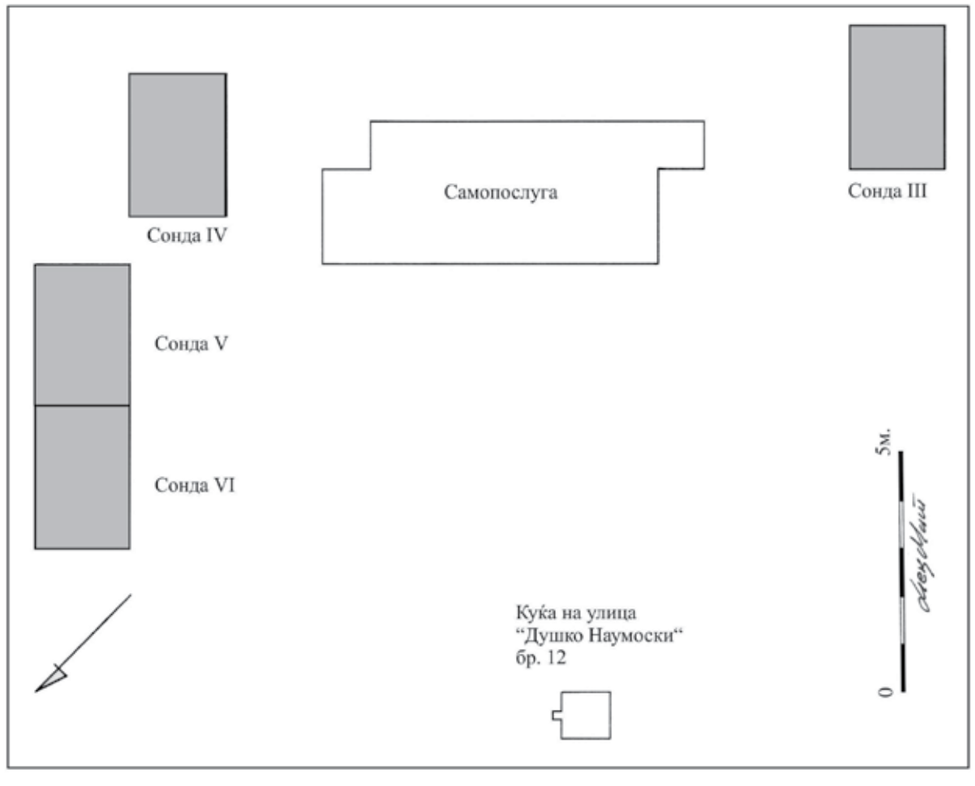

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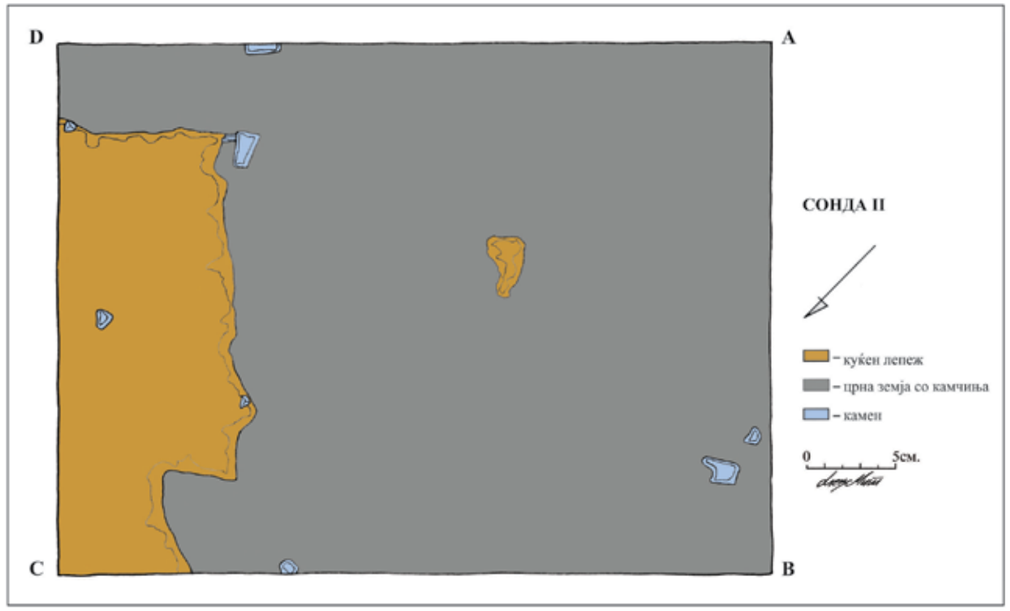

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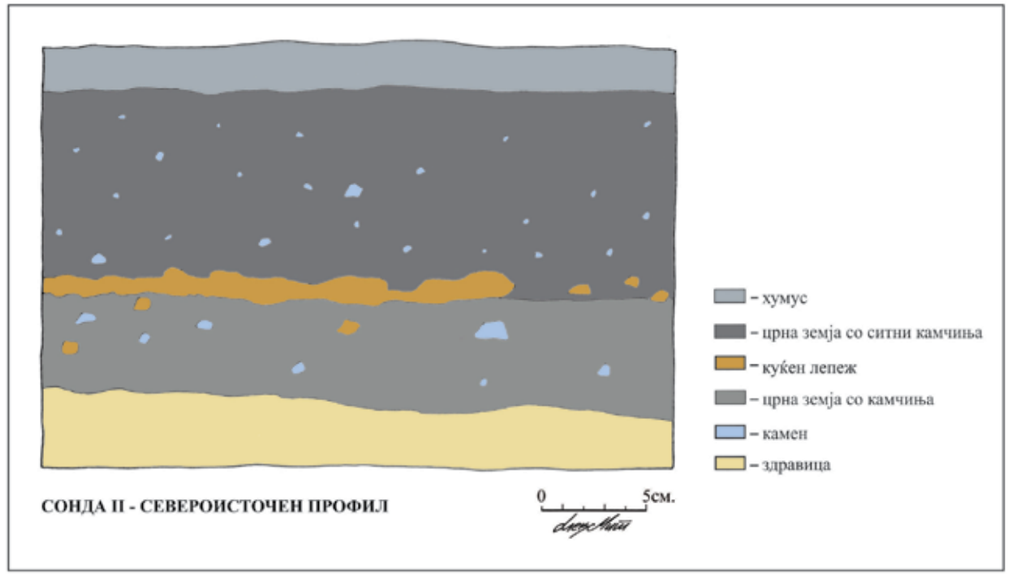

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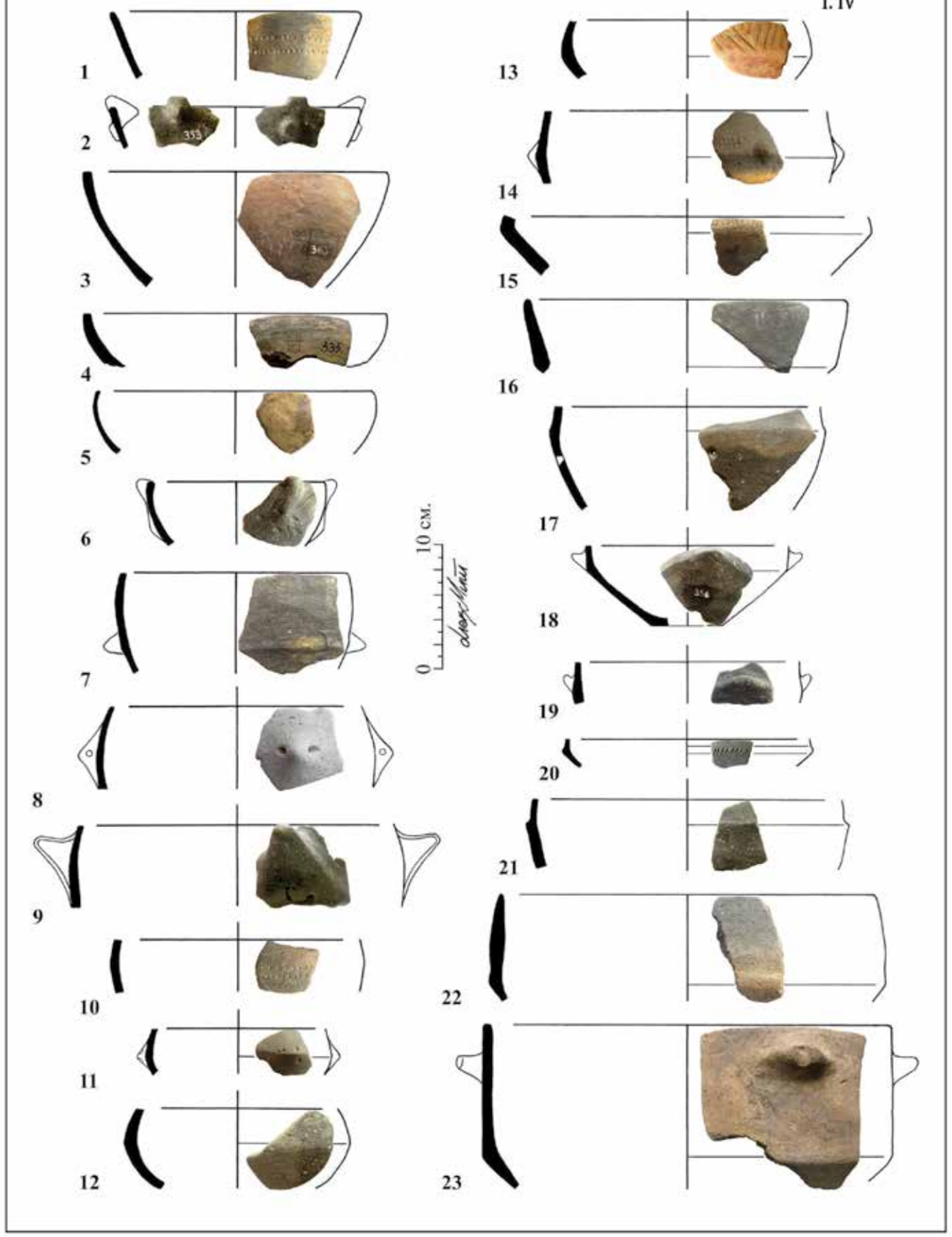
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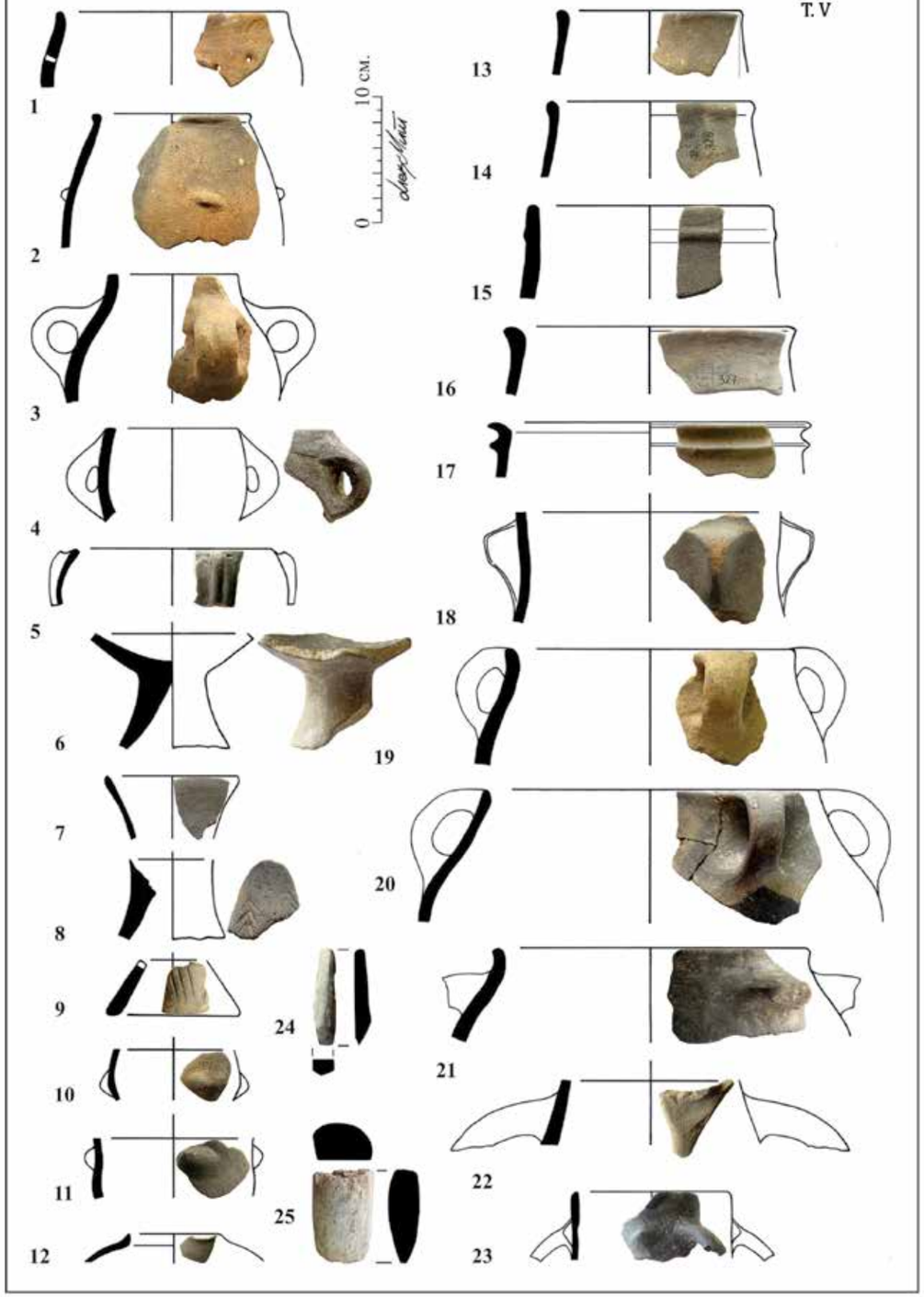
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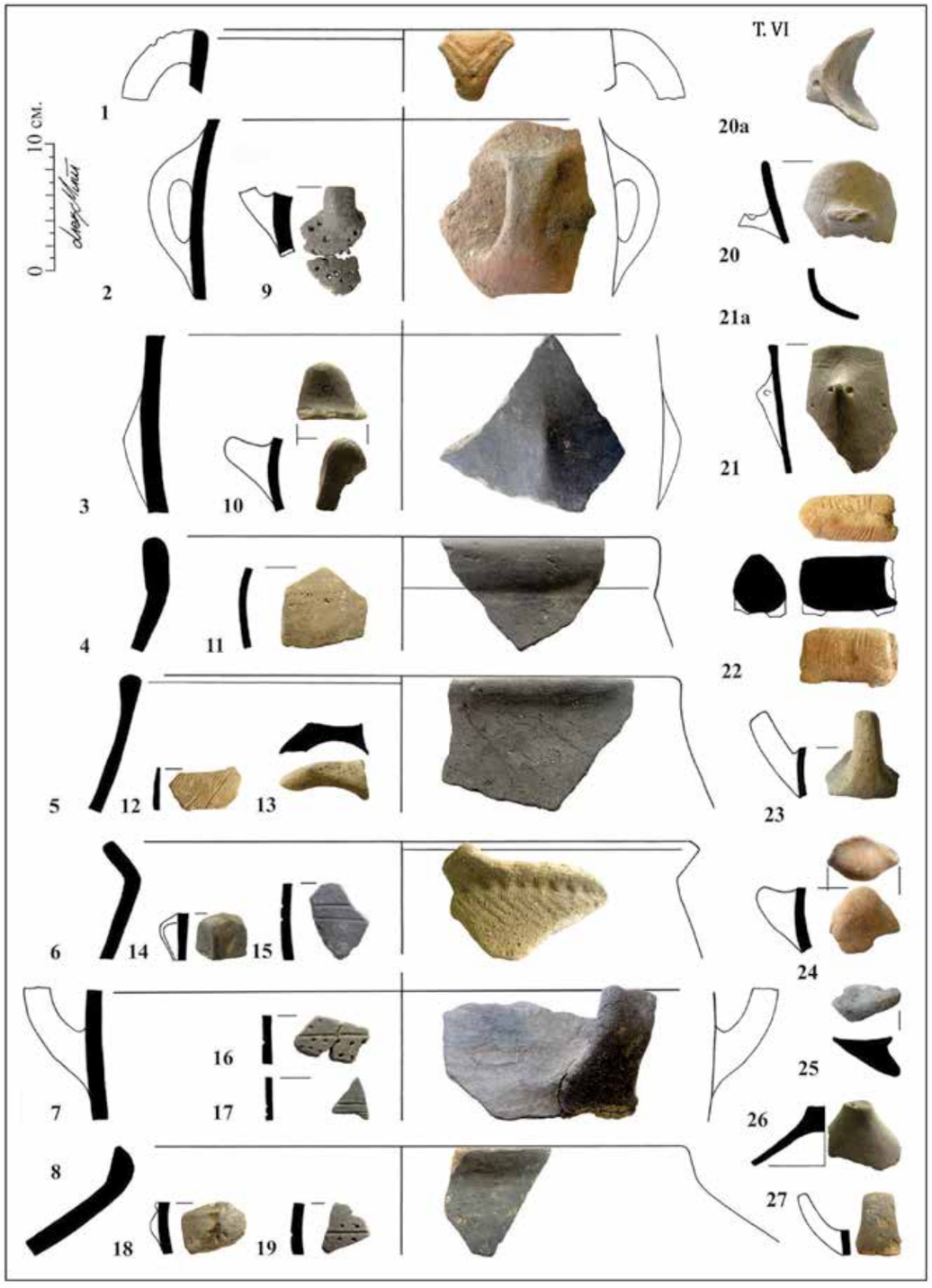
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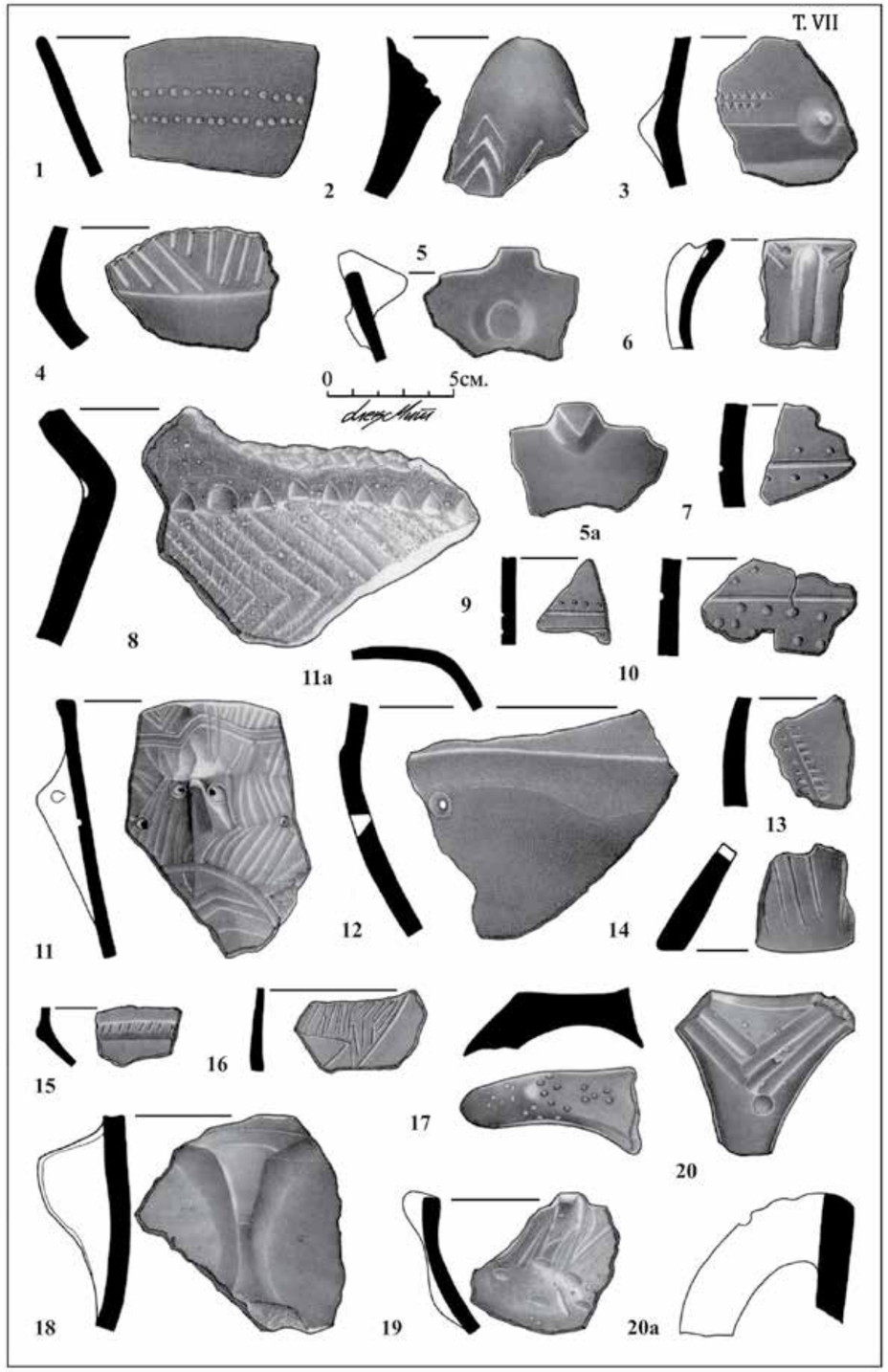
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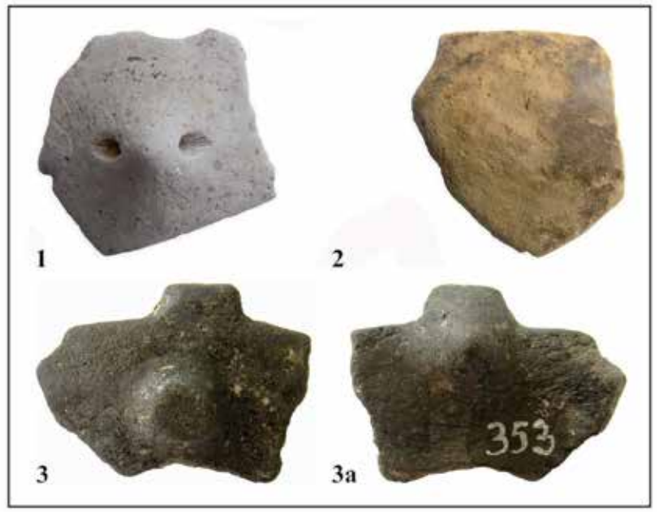

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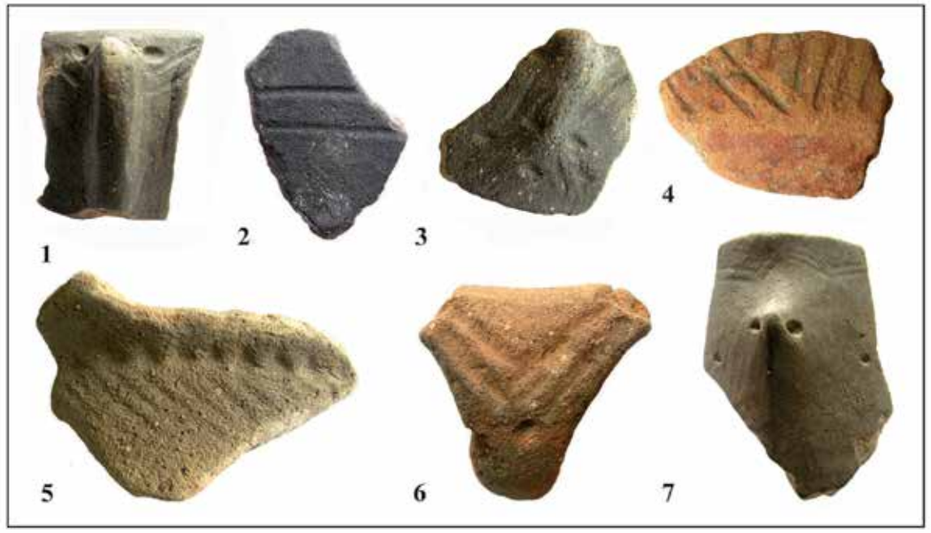

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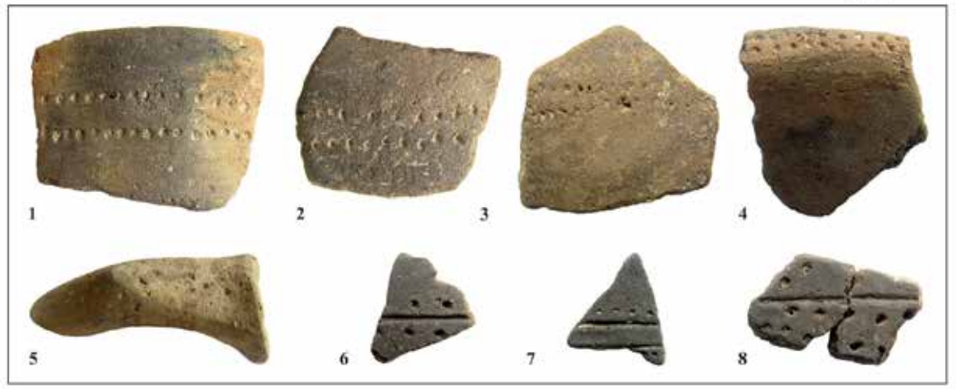

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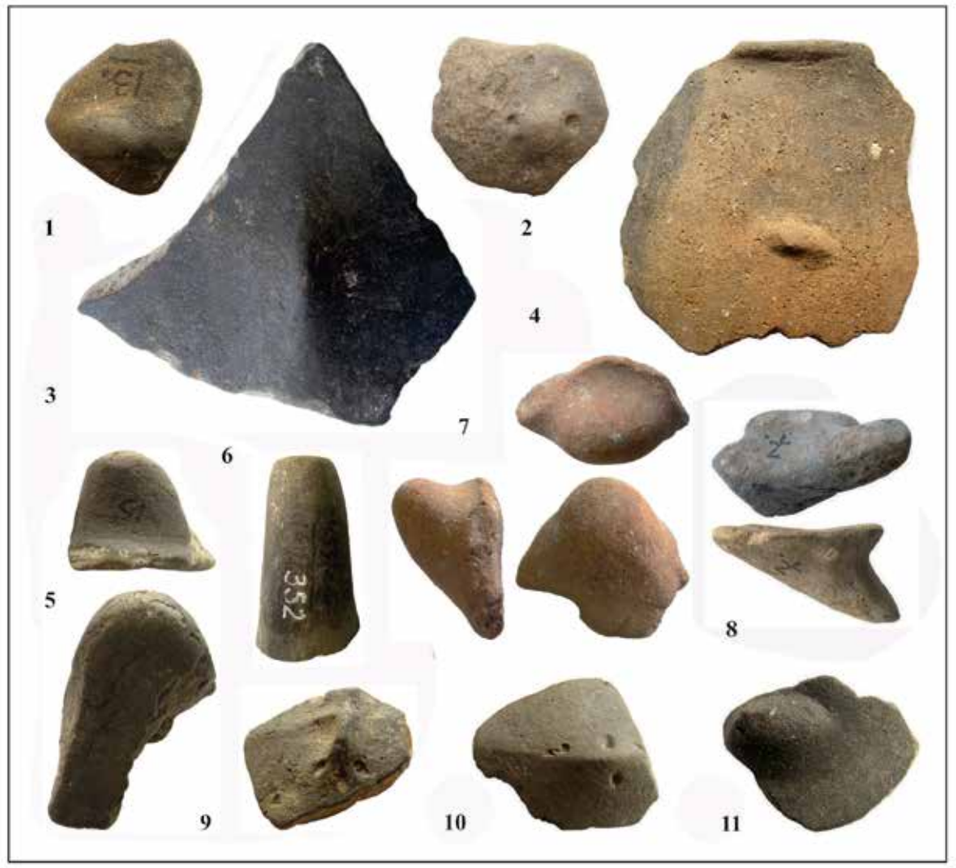

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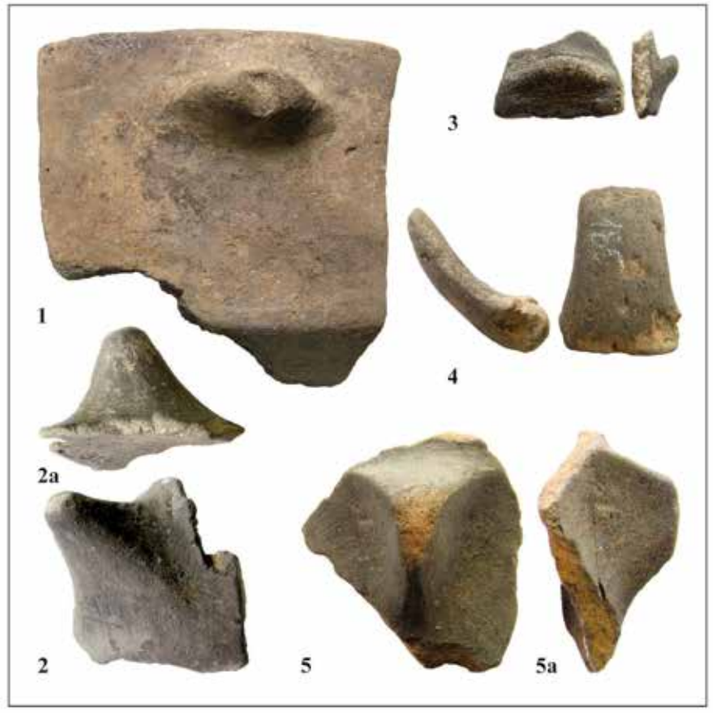

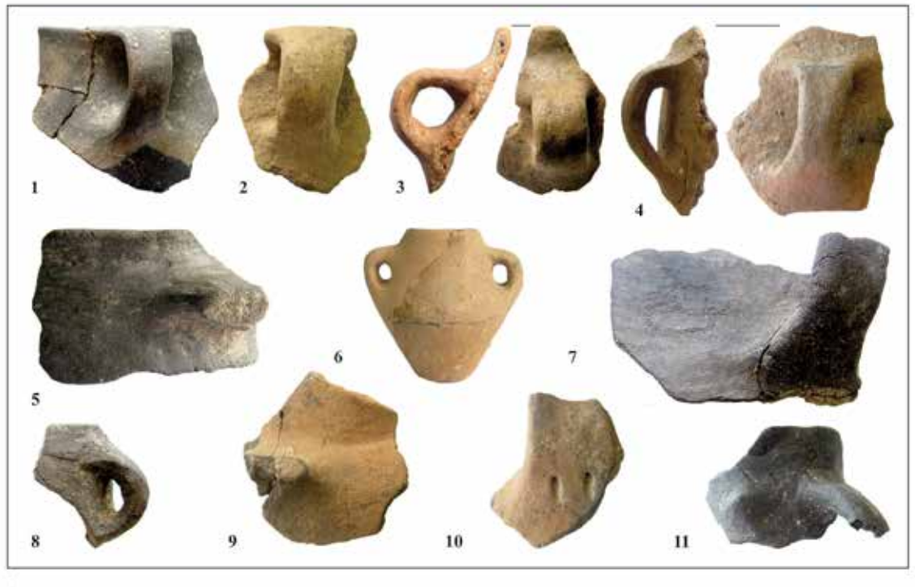

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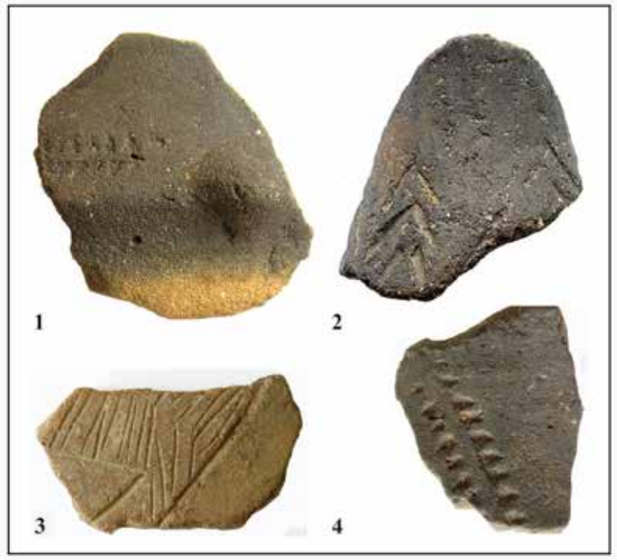

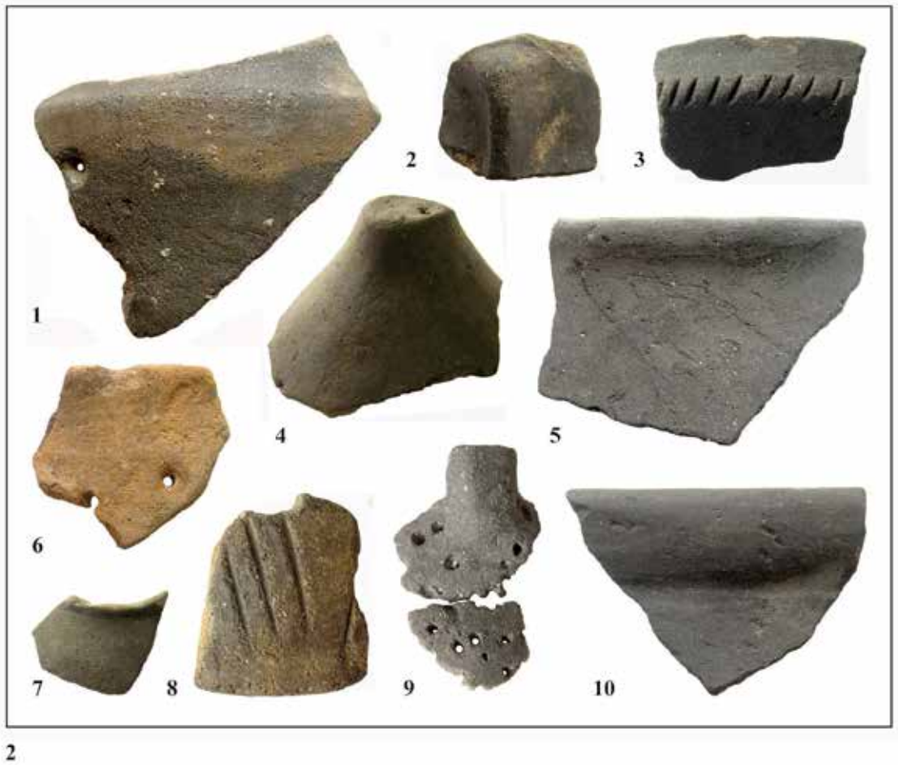

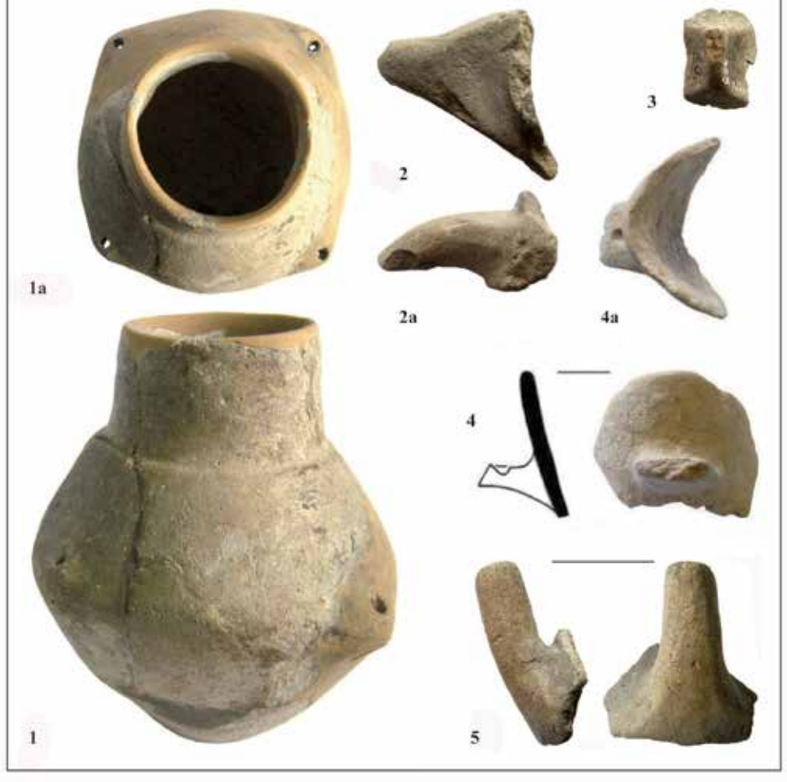

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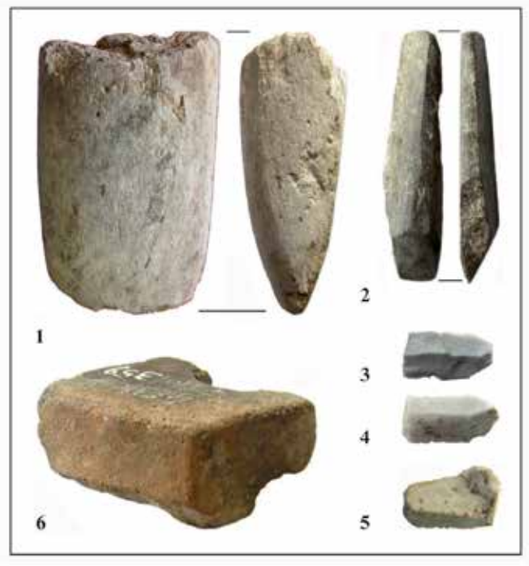

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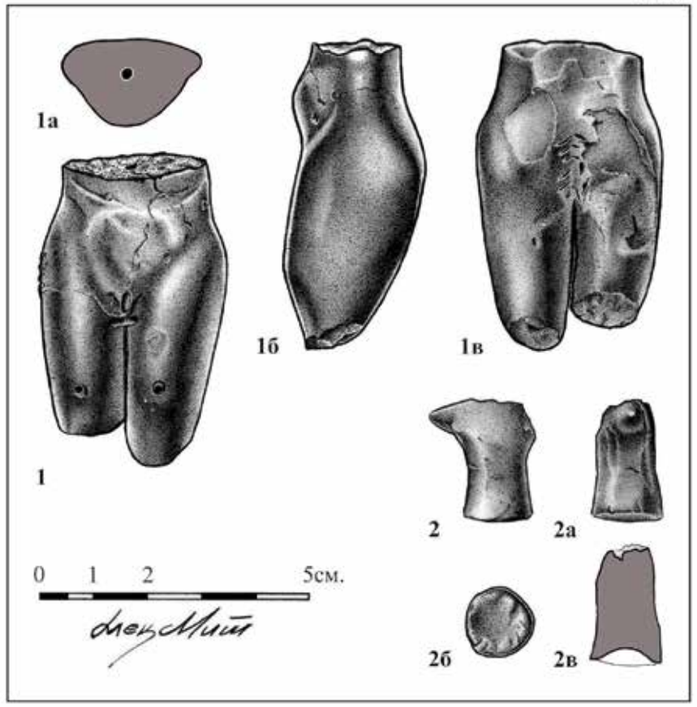

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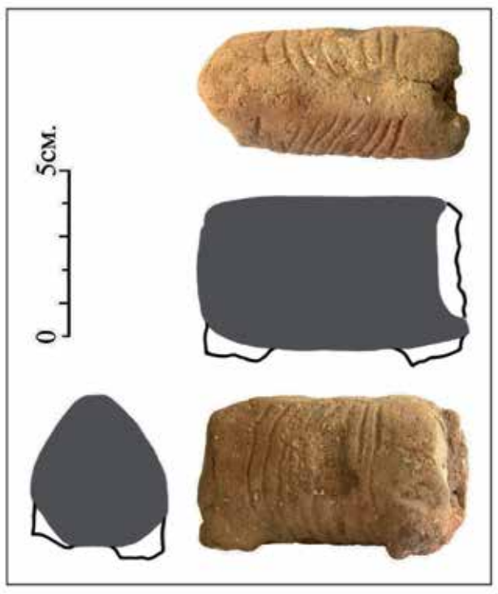

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Milan Mitovski
Directorate for Protection of Cultural Heritage

The Beginning of Prehistoric Metallurgy in Republic of Macedonia

Abstract

Archaeometallurgy is a relatively new scientific branch and its interest in Macedonian archaeology is not particular. In that context, the study of emergence and development of prehistoric metallurgy wasn't in the focus of the scholars that are interest in Neolithic period particular or prehistory in Republic of Macedonia in general. The aim of this text is to present relevant data from archaeological sites Amzabegovo and Dzuniver which indicate that the emergence of metallurgy on the territory of Republic of Macedonia can be traced during Neolithic period. It follows the identical evolutionary and development patterns of metallurgy across the Southwestern Asia and Central Balkan, thus supporting the *Ex Balkan Lux* paradigm for the extractive metallurgy as an innovation.

Keywords: *Prehistoric metallurgy, Late Neolithic, Republic of Macedonia, Amzabegovo, Dzuniver, beads, copper slag.*

Introduction

The invention of the extractive metallurgy and its origin are among the essential issues in prehistoric archeology. Taken in a broader framework, the adoption of the metallurgy by the prehistoric communities is recognized as a crucial for the emergence of complex society. The metal as well as the invention of metallurgy is seen as an accelerator of progress, the second major revolution after the Neolithization. Two basic theoretical concepts (hypotheses) concerning the beginnings, emergence and spread of extractive metallurgy collides: the first advocates the diffusion and gradual (successive) spread of metallurgy from the Fertile Crescent to the West, similar to Neolithization, while the second concept stands for an autonomous and independent emergence and development of metallurgy, particularly in the Balkans and Southeastern Europe, aroused in different places independently and/or simultaneously (Renfrew 1969, 12–47; Gale et al. 1991, 49; Pernicka et al. 1993, 3; Gale et. al. 2010, 102; Radivojević et. al. 2010, 2775). Recent archaeological and analytical investigations (optical, chemical and provenance analyses) conducted on the archaeological material excavated from the site Belovode in Eastern Serbia, provides the earliest stratigraphic evidence for copper smelting - extractive metallurgy to date, which took place 7000 years ago (Radivojević et al. 2010, 2775–2787). Although the emergence and development of prehistoric metallurgy began in different regions and different times, the later evolution and progress have uniformly path, with similar phases. It depends on several decisive factors: availability and quantity if raw material – ore, the requirements of the society for new material and the conditions of agricultural economy – increasing complexity of the late Neolithic farming cultures (Strahm and Hauptmann 2009, 116).

Archaeometallurgy as part of modern archaeology is a rather young scientific branch. As such, its interest in Macedonian archaeology is not particular, especially compared with

other neighbour countries. Data that are related with the beginnings and development of mining and metallurgy can be divided into: historical sources and specialized publications that primarily derive from the rapid development and application of physical and chemical analytical methods and techniques of archaeological interpretation, which are of recent date (XX century onwards). Unfortunately, although historical sources are full of information concerning the abundance of rich ore deposits in Republic of Macedonia (especially in antiquity), not a single serious study was completed. Also, the prehistoric metallurgy as a topic wasn't in the focus in several recent capital publications concerning the Neolithic period particular, or prehistory in Republic of Macedonia in general. So, the aim of this text is to try to complement the gap in Macedonian prehistory and to show that the beginnings of metallurgy can be traced in the dawn of human organized and settled existence, thus following the comprehensive evolutionary and technological processes on the fast territory of Central Balkan in the Neolithic period.

Evidence for the earliest metallurgy in Republic of Macedonia: Amzabegovo and Dzuniver

Copper minerals (malachite, azurite and native copper) were the first raw material used for mining (extraction) and further production of the earliest metal artifacts. They were used primary for ornamental purposes (elaboration of jewellery and as pigments), due to their aesthetic and colour values (Bar-Yosef and Porat 2008, 8548–8550; Radivojević and Kuzmanović-Cvetković 2014, 9). The earliest artifacts made of copper minerals were discovered in Pre-Pottery Neolithic (11.600–8200 cal. BC) sites across Anatolia, Southwestern Asia and Levant (Wertime 1973, 878, Muhly 1989, 1–11; Stech 1990, 59–60; Gale et al. 1991, 51; Ozdogan and Ozdogan 1999, 13–22; Ulf-Dietrich 1999, 31–36; Ufik 1999, 23–30; Hauptmann 2007, 257; Roberts et al. 2009, 1013; Radivojević et al. 2010, 2776). Also, artifacts made from native copper and copper carbonate minerals (malachite and azurite) were found in settlement deposits in certain Early and Middle Neolithic sites across the Central Balkan (Srejović 1969, 173; Jovanović 1971, 18; Глумац 1983, 135-141; McPherron and Srejović 1988, 457-462; Gale 1991, 40; Gale et al. 1991, 51; Borić 2009, 191). Depending on the nature of activities involved in mineral processing, the artifacts were manufactured using two different methods: simple lithic technology for bead production (cold processing) and more advanced technology – pyrotechnology (using heat), which denotes high-temperature processing (hot processing) (Ozdogan and Ozdogan 1999, 13; Radivojević and Rehren 2015, 200–237). The further development and experimentation with the pyro technology contribute toward the invention of extractive metallurgy, which took place in the Balkans around 5000 BC corresponding with the beginnings of the Gradac phase of the Vinča culture (Garašanin 1979, 153–154, 174; Jovanović 1994, 1–10; Šljivar 1996, 97; Borić 2009, 194; Radivojević et al. 2010, 2775–2787). These events laid the solid foundation for additional and extraordinary progress of the independent and multiple appearances of metallurgical cultures in the next Eneolithic period, thus supporting the *Ex Balkan Lux* paradigm for the extractive metallurgy as an innovation. According to its technological prosperity and quantum of findings, the metallurgy in Balkan from this period completely surpasses the simultaneous metallurgical cultures in Anatolia, Palestine, Cyprus and Aegean. Despite the emergency of extractive metallurgy, during the V millennium BC, the exploitation of the local sources of copper ores in the oldest mines in the world, Rudna Glava and Ai Bunar, is confirmed (Renfrew 1969, 12–47; Ottaway 2001, 88; Gale et al. 2003, 122; Radivojević et al. 2010, 2776).

Macedonian copper ore deposits

The territory of Republic of Macedonia is rich with different types of ore deposits (**Map 1**). The principal metallogenic zone that occupies its territory are the following: Dinaric, Macedonian-Serbian and Rhodope. In addition, four facial and structural areas are defined and created: Serbian-Macedonian massif, Vardar zone, Pelagonia massif and West-Macedonian zone. The occurrences of copper and copper ore deposits are found predominantly in the Vardar zone and the Serbian-Macedonian massif, i.e. in central and eastern Republic of Macedonia (Филиповски 1974, 53–54; Чифлиганец 1993, 8–9).

The exploitation of copper ores during the period of the primary metallurgy was related to surface deposits, regardless of their size. With their physical and chemical characteristics, they remarkably distinguish from the local environment. According to their specific features as well as the metallurgical point of view, the copper ores can be distinguished into sulphide ores, oxide copper ores and native copper. For the prehistoric prospectors and metallurgist most precious and technologically suitable were the oxide copper ores as well as the occurrences of native copper. Oxide copper ores (cuprite, malachite and azurite) can be found in the oxidation zone of sulphide copper deposits or near the surface of terrain. These kinds of ores are extremely rich with copper, containing up to 20 %. Similar to oxide ores, the native copper occurs occasionally only as mineralogical curiosity. Native copper can be found near the surface of terrain forming thin veins or occasionally larger masses. It is most suitable raw material for prehistoric copper metallurgy (Jovanović 1971, 16; Jovanović 1982, 61–65; Durman 1983, 6, 10; Janković and Krajanović 1990, 21–22; Чифлиганец 1993, Antonović 2009, 166).

As a result of extensive and intensive detailed field research on the territory of the Republic of Macedonia, a total number of 82 occurrences and copper ore deposits were registered (**Map 2**). The most important mine ore fields and zones, within the most valuable copper bearing deposits are: Bučim-Damjan-Borov Dol mine ore field (deposits Bučim and Borov Dol), Kratovo-Zletovo metallogenic zone (sites Plavica and Zlatica), the region between Gevgelija and Demir Kapija (Negorci, Iberli, Karataš), Strumica-Dojran metallogenic zone (Šapderezi, Mrdaja, Dobrolos, Kazandol and Ciganski Potok), the Kadilica deposit in Eastern Republic of Macedonia, Duduica-Kožuv mine ore field (deposit Dudica) and Berikovo-Padalište mine ore field with sites Kolari, Berikovo, Padalište, Judovo, Germol-Šar Planina, Čelopek, and others (Чифлиганец 1993). All of the above-mentioned ore zones and deposits posses the features that can be related with the beginnings of prehistoric mining and metallurgy. Solving such important archaeometallurgical problems can be achieved only with utilization of provenance analysis. Respectively, trace element concentration, chemical composition and lead isotope rations of copper ores and copper-based artifacts from separate prehistoric period, represents an important method to determine the potential copper ore deposit exploited at the beginnings of metallurgy in Republic of Macedonia.

Archaeological site Amzabegovo (Barutnica), Sveti Nikole

The archaeological site is located in the centre of the valley Ovče Pole, on the east from the river Vardar. The settlement has occupation horizons and phases that can be dated from Early till the Late Neolithic according to the periodization established and adopted in Republic of Macedonia's prehistory, and represents an eponymous site of the Amzabegovo-Vršnik cultural

group in Eastern Republic of Macedonia. In the upper layers of the site, archaeological remains of roman *villa rustica* are recorded. The settlement is located 2 km southwest from the village Amzabegovo (Stari Hamzali), on the left side of the Kočani-Veles railway line and about 700 meters south of the road Veles-Štip. In literature the site is recognized under the name Amzabegovo or simply Anza. The terrain is in a form of mild terraced slope with an area of 500 meters in the east-west direction and 250-300 meters in the north-south direction, which is the final part of the ridge that descends from the massif Djurishte. In the immediate vicinity of the site is the riverbed of the Sveti Nikole River. In 1958/59 the site is enormously damaged by planting a protective belt of acacia trees. This action initiated a realization of protective archaeological excavation and collaboration between Archaeological Museum of Macedonia and Faculty of Philosophy in Ljubljana. In 1969/70 a systematic excavation from a binational Macedonian-American archaeological team was organized and conducted, which determined the stratigraphic sequence of the settlement with its chronological and cultural characteristics. Remains of a settlement with four occupation phases were discovered that contain the overall chronological and cultural evolution from Early till Late Neolithic period. Although there is inconsistency concerning the chronological determination of the occupational horizons and their cultural provenance, however, almost all academic researchers in one way agree that the last phase of the settlement occupation belongs to the Late Neolithic (Гарашанин и др. 1971, 37–41; Корошец и Корошец 1973, 7–69; Gimbutas 1974, 27–66; Gimbutas 1976, 1–77; Санев и др. 1976, 35–38; Garašanin 1979, 84–106; Санев 1995, 25, 29–32; Санев 1996, 344–345; Mitrevski 2003, 23–24; Sanev 2006, 147). The data from the radiocarbon dating and the stratigraphic and typological evidence permit the following chronological division: Early Neolithic, Anza I (Ia-Ib) 6100–5800 BC, Middle Neolithic, Anza II–III 5800–5300 BC and Late Neolithic, Anza IV (IVa–IVb) 5300–5200 BC (Gimbutas 1974, 32-35; Gimbutas 1976, 29; Garašanin 1979, 85; Санев 1996, 345; Наумов и др. 2009, 50).

Artifacts made of copper or copper minerals: through the stratigraphic sequence of the settlement stone implements (axes, chisels, wedges) manufactured from the so-called "green stone" were found. It mainly refers to serpentine from local provenance - the northern and eastern slopes of Mount Bogoslovec. Besides these artifacts, a large number of ornaments (pearls, pendants) or amulets made also from the so-called "green stone" are recorded throughout all settlement phases with a particular concentration in Anza I, but it must be emphasized that we do not have specific findings and stratigraphic evidence with an explicit archeometallurgical context. The explanation for the use of the so-called "green stone" and green ornaments lies precisely in the green color that imitates the color of the young leaves that symbolize the growth, embodying the desires for successful sowing and fertility. Ornaments made of green mineral are also characteristic for the early Neolithic cultures in Bulgaria. The scholars who are interested in this issue, proposed a separation of a particular horizon or culture, the so-called nephritic culture in the Balkans, based on the findings of this green mineral or its imitations in numerous early Neolithic settlements. These artifacts that can be connected with the preliminary phase of the development of metallurgy, were also found on the archaeological site Rug Bair, Gorobinci (Gimbutas 1974, 50–52, 60; Gimbutas 1976, 178–184, 242–256; Kostov 2007, 9–16, 103; Bar-Yosef and Porat, 2008, 8548–8550; Antonović and Stojanović 2009, 188; Dimitrova 2012, 425–432).

Residue from heat treatment (melting) of copper minerals: according to the current level of research, the earliest evidence for the beginnings of extractive metallurgy in prehistoric cultures on the territory of Republic of Macedonia, originate from the last occupation phase of

the site Amzabegovo-Barutnica. In the square VII, stratigraphic unit 73-a, copper slag was found, dated in the Late Neolithic, phase IVb (5300–5200 BC). The appearance of copper slag at the beginnings of the extractive metallurgy in a wider Neolithic context should not be surprising. In the Balkans, exactly in the late Neolithic, this kind of technological level is not an exception, but a strongly defined system. Slag, crucibles and metallurgical installations have been found in a number of archaeological sites: Vinča-Belo Brdo, Divostin, Belovode, Pločnik, Selevac, Phafos, Gornja Tuzla, Usoe and Promahon-Topolnica (Jovanović 1971, 18, 22–23; Сталио 1973, 159; Jovanović and Ottaway 1976, 104–113; Глумац 1983, 135–141; Durman 1983, 12; Čović 1984, 118; Glumac 1988, 457–462; Glumac and Tringham 1990, 557–562; Gale 1991, 40; Gale et al. 1991, 51; Тодорова 1994, 5; Шљивар и Јацановић 1996, 55-59; Шљивар и Јацановић 1997, 192-193; Pernicka et al. 1997, 46; Antonović 2002, 36–39; Šljivar 2006, 95–99; Koukouli-Chryssanthaki et al. 2007, 48, 58; Vajsov 2007, 102; Borić 2009, 191–246; Radivojević et al. 2010, 2775–2787). The appearance of extractive metallurgy from self-reactive copper minerals can be set in the Innovation phase/Developed phase (extractive metallurgy) from the division and the developmental stages of metallurgy in the Old World and Anatolia (Strahm and Hauptmann 2009, 119), the Stage of production of massive copper tools/ Phase of mechanical processing and initial metallurgy of the copper according to the division of the development phases of the metallurgy in Serbia and the Central Balkans (Jovanović 1971, 60; Antonović 2009, 167) and Protometalic period/First metallurgical period according to the division and development phases of the prehistoric metallurgy in Bulgaria (Тодорова 1986, 145; Тодорова 1994, 6; Pernicka et al. 1997, 43–49). Copper slag found in unit 73-a, from Amzabegovo presents the earliest stratigraphic evidence for copper smelting – extractive metallurgy on the territory of Republic of Macedonia. Because the archaeological excavations were conducted during the last century with rather old archaeological and analytical methodology", we can only indirectly assume that copper slag from Amzabegovo is concurrent or even predates the earliest known evidence for copper smelting found in Belovode, Serbia (Radivojević et al. 2010, 2775–2787).

Archaeological site Dzuniver, v. Izvor near Veles

The archaeological site is located 200 m east from the village, on a mild, flattened terrace that descends to the right bank of the river Izvorčica. According to the current research and the conducted field surveys, the site was inhabited during the middle and late Neolithic period. The settlement is spreading on the higher terrace called Kartalica which is much larger. With its local features Dzuniver entirely dovetail within the Eastern Macedonian Neolithic (Петачки 1996, 78; Јовчевска 2006, 39–53; Јовчевска 2008а, 109–114; Јовчевска 2008б, 10–15).

Artifacts made of copper or copper minerals: among the archaeological material excavated from the settlements layers dated in the Late Neolithic, according to the director of the excavation team, several copper (malachite) and green stone beads were found (**Figs. 3, 4**).

Residue from heat treatment (melting) of copper minerals: not found.

The appearance of copper beads in the late Neolithic context is closely related with the beginnings of metallurgy in Republic of Macedonia and the Central Balkans in general. The practice of processing native copper or its minerals for elaboration of jewelry or for decoration in a form of pigments, represents a main feature of the initial stages of the development of metallurgy. This phase is determined in any serious and comprehensive study for the

developmental stages of metallurgy generally or individually for a particular region or period. According to the quoted above, the appearance of beads manufactured from native copper or copper minerals are closely connected with the Preliminary phase/Nonmetallic Period (before ca. 8200 BC) from the division and the developmental stage of metallurgy in the Old World and Anatolia (Strahm and Hauptmann 2009, 118–119), the Premetallic phase/research and classification degree according to the division of the development phases of the metallurgy in Serbia and the Central Balkans (Jovanović 1971, 60; Antonović 2009, 166–167) and Phase 1/Protometalic period according to the division and development phases of the prehistoric metallurgy in Bulgaria (Тодорова 1986, 145; Тодорова 1994, 6; Pernicka et al. 1997, 43–49). This initial phase is frequently called "metallurgy of jewelry", due to the level of technological processing of the native copper or its minerals. Processing of the raw material involves simple repetitive forging (cold processing), thus using the technological experience from the Neolithic stone industry which includes heating and annealing, in order to improve the properties of the raw material for easier forming into smaller artifacts. The overall operation deploys with an average temperature well below the melting point of the copper or any metallurgical reaction. The green (copper) ores were mainly grind for cosmetic or decorative (as a color) purposes. Apparently, the goal was not to utilize the entire spectrum of properties of the material; instead, the new material was used only for production of traditional items such as jewelry or needles. That's why it is called the Preliminary Phase. This stage is not actually part of the periodization and the evolutionary (developmental) phases of metal production, because its purpose is not the extraction of the metal. Instead, it demonstrates a widespread acceptance of the new fabric - the raw material (Jovanović 1971, 60; Bar-Yosef and Porat 2008, 8548; Strahm and Hauptmann 2009, 118–119). Hence, there is a high probability that the beginnings of utilization of raw materials with green color for making jewelry and pigments (in this case native copper, malachite, nephrite, serpentine), and indirectly with it the beginning of mining and respectively preliminary metallurgy, represent exceptional Neolithic tradition rooted in the inception of agriculture and the Neolithic way of life. The general conclusion is that the Neolithic populations possessed a technological foreground (embodied trough the mining of nonmetals and the use of the symbolic green color in the building of social identities in the community) that was easily used for adoption of the metallurgy using the concept of invention and innovation (technological invention may appear or disappear many times before it is finally established and accepted from the community i.e. before becoming an innovation). The appearance of the processed copper or its minerals in Pre-Pottery Neolithic context from archaeological sites across Anatolia and Southwestern Asia is rather interesting. Considering that the most of the population that inhabited Balkans during the process of neolithization, according to the DNA markers derive from Anatolia, then, we can assume that exactly these population have the mineralogical knowledge of processing green minerals in a stage of invention (Ottaway 2001, 88, 93; Bar-Yosef and Porat, 2008: 8548–8550; Наумов и др. 2009, 27). These same values, as a constituent element of the Neolithic package, later spread to the area of Southeastern Europe and the Balkans where the metallurgy from invention became an innovation (extractive metallurgy) and the main feature of the next late Neolithic and Eneolithic period.

Conclusion

There are scarce, but strong evidence for emergence of prehistoric metallurgy on the territory of Republic of Macedonia during the Neolithic period. That should not be surprising having in mind the conditions and current state of research concerning the beginnings of metallurgy in neighboring countries, especially Serbia and Bulgaria. The territory of contemporary Republic of Macedonia as well as the prehistoric cultures that developed here comprises all important prerequisite for the emergence of new cultural and historical period: climate, geological and mineralogical factors, resources, technology and trade (Craddock 1999, 175–177; Govedarica 2011, 47–51). As we noted before, Republic of Macedonia is rich with copper and other ore deposits, and has similar geological sources and background with neighboring countries where the oldest copper mines in Europe, Rudna Glava and Ai Bunar, were discovered. On these mines, the extraction of the copper ores is determined within the Gradac phase of the Vinča culture for Rudna Glava (dated 5400/5350–4650 cal. BC) (Jovanović 1971, 18; Jovanović et al. 1982, 59, 92; Jovanović 2009, 144; Borić 2009, 205–206) and Marica III-Karanovo V phase from the early Chalcolithic period according to the periodization widely adopted in Bulgarian archaeology (dated in V millennium BC) (Chernykh 1978, 203). The presence of prehistoric metal artifacts found in archaeological context chronologically determined in Late Neolithic are validated too (finds from Anza and Dzuniver on this level or research). In the next prehistoric periods, Eneolithic and Bronze Age, the number of metal artifacts drastically increase, thus following the path with the similar cultural complexes or cultural groups involved in extractive metallurgy in Southeastern Europe and Balkans.

In order to obtain more reliable data related with the beginnings and further development of prehistoric metallurgy in Republic of Macedonia, it is necessary to apply an interdisciplinary methodological approach which comprises utilization of natural science (spectral, metallographic, lead isotopic and microscopic analyses). This implies application of provenance (lead-isotopic) and compositional analysis of the protentional ore deposits exploited in prehistory as well as provenance and compositional analysis of metal objects (artifacts) connected with the prehistoric metallurgy. The first step present implementation of spectrographic analysis which are connected mainly with the chemical composition of the objects, with hope that they could be classified according to the source of their ore and raw material. Respectively, trace element concentration, chemical composition and lead isotope rations of copper ores and copper-based artifacts is an important method to determine the copper smelted as well as the potential deposits explored at the beginnings of metallurgy in Republic of Macedonia. The obtained reliable data will be categorized into clusters and compared with relevant clusters derived from analysed copper base metal objects and potential ore deposits from territory of Serbia and Bulgaria.

Second but not less important issue is related with establishment of international collaborative fieldwork excavation project with experts in archaeometallurgy on the archaeological site Amzabegovo (Barutnica), near Sveti Nikole, with purpose to determine the origins and the beginnings of extractive metallurgy in Prehistoric Republic of Macedonia. Also, essential is to conduct a geological survey on protentional deposits with purpose to collect representative ore specimens for analyses. The results from geological fieldwork, laboratory and archaeological research in order to study the ore sources of prehistoric copper as well as spectrographic and compositional analysis of the metal artifacts, aimed for a greater understanding of the social contexts of early metal production, the degree of specialized production, and the extent to which access to a new (and often exotic) material, enhanced social status.

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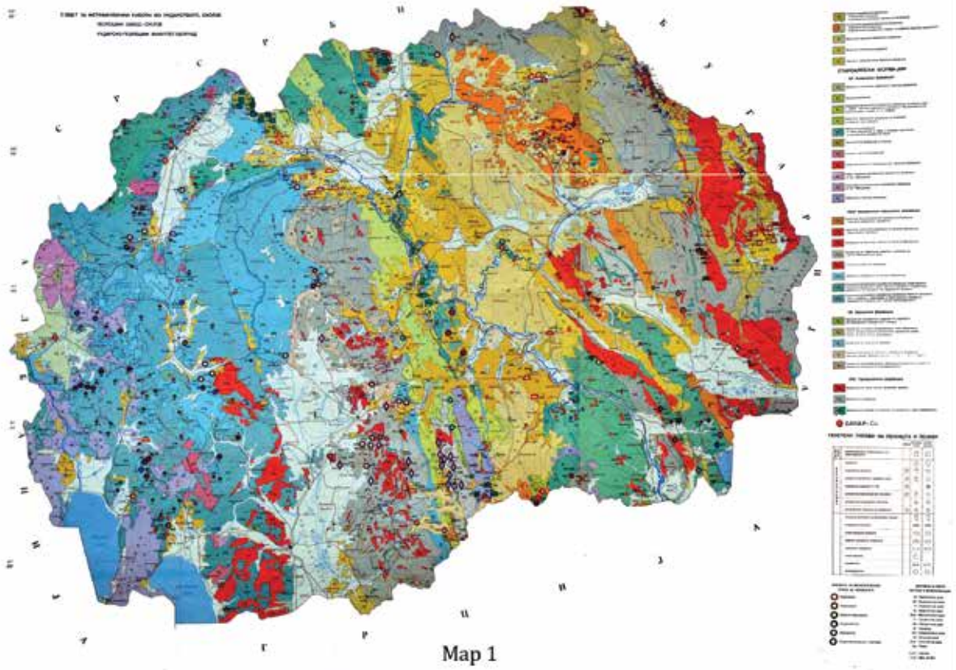
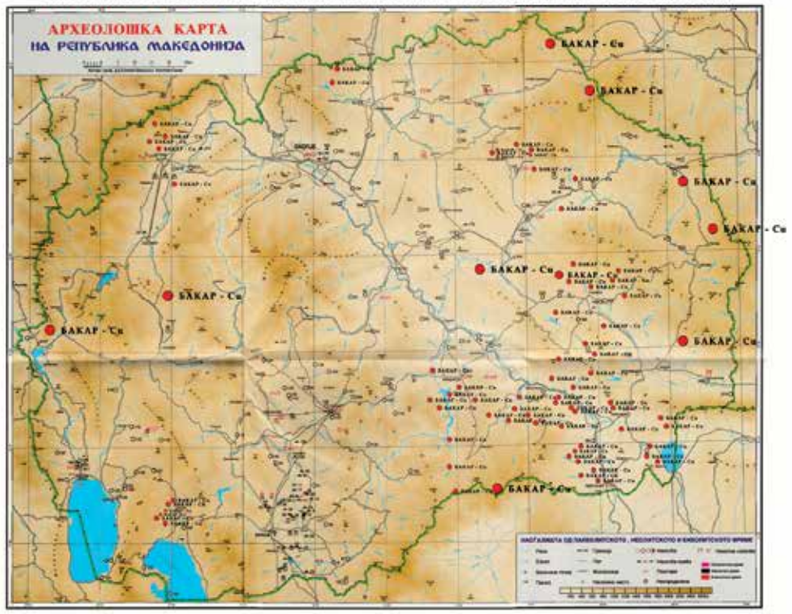


Map 1

НАОЃАЛИШТА ОД ПАЛЕОЛИТ, НЕОЛИТ И ЕНЕОЛИТ СО ПРИКАЗ НА ДЕПОЗИТИТЕ НА БАКАР



Map 2

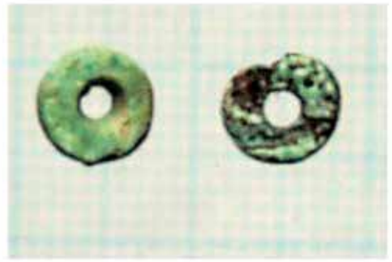


Fig. 1a-b

Fig. 2

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‘Dark Grounds’ of Science: Golden ratio and other Geometric Elements connoted with (hyper) Euclidean Geometry on Macedonian Artifacts

Abstract

Investigating the *dark grounds of science* by means of Chalcolithic artifacts demands an interdisciplinary approach which examines the use of mathematical methods for the construction of geometrical symbols in order to excavate the origin of their symbolic meaning: the explicit notches on a so-called ritual bread (Vrbjanska Čuka, ca. 5500 BC) can be identified as construction of both, the acute and obtuse golden triangles. These geometrical elements found in spiritual and erotic contexts often interpreted as symbols of trascendence will be examined in reference to Euclidean and hyper-Euclidean geometry. The further evolution of geometrical thinking can be recognized on highly elaborated geometrical decorations on the bottoms of Chalcolithic figurines from the Šuplevec-Bakarno Gumno culture (5th millennium BC). They reveal together with underwear designs in the shape of equilateral triangles preliminary studies for Euclidean Geometry and simple construction methods of the golden mean.

Furthermore the fundamental role of female artistic research in the development of an epistemic language on the ‘dark grounds‘ of mathematics and science as well as possible metaphysical concepts shall be examined. This assumption may initiate a re-evaluation of Chalcolithic artistic research and its relevance for the development of science and art in antiquity and open speculations supported by the current attempts for the reconstruction of a female ontology in philosophy.

***Keywords**: Chalcolithic figurines, cult bread, golden section, vesica pisces, pygēometry, Pelagonia*

Introduction

Geometric decorations such as circles, triangles, spirals rhombs and zig-zag lines let arise the question: what is the meaning of these shapes ?

Philosophical investigations on art research concerning higher dimensional representation formsand the origin of geometry lead beyond the „Geometrical style“ of Greek Early Iron Age (1.100–700 BC) to embodied forms of geometry: Especially Chalcolithic figurines (4.800–2.500 BC) with geometrical content shall be examined here in terms of their pre-scientific value. The clay figurines modeled of well purified clay (baked at a high temperature from 900°C to 1000°C) are stemming from excavations carried out throughout sixty years of Macedonian archaeology (Koliштrkoska Nasteva 2007, 13). They belong to a group of artifacts following up Neolithic figurines (6500–4800 BC) which were famously excavated during the second half of last century in Eastern Europe (Gimbutas 1962) and in Anatolia (Mellaart 1967).They were subject of occasionally keen debates between theoretical interpretations from fertility symbols within

a ‘Goddess cult’ to artifacts which serve as mere mediators in social relation among individuals and communities – up to multi-relational interpretations as suggested by Naumov (2014).

The following interpretations are relying on Husserl’s phenomenology who made it clear that psychology is not a matter of empty ‘a priori speculations’ if a parallel between a pure and a priori psychology and a priori natural science such as geometry is drawn (Husserl 1927, 14).

What else is then knowledge theory then the theory of geometrical knowledge? (Husserl 1939, 219)

Thus the investigation uses an interdisciplinary approach which combines art research, anthropology of the arts, geometry, hermeneutics and philosophy considers Husserl’s quest for a re-activation of the primordial activities enclosed in basic mathematical notions and within pre-scientific materials. Without them he argued, geometry would be a senseless tradition. He assigned *ideal objectivity* to ‘mathematics which can be understood in principle by all human beings, firstly for actual and potential mathematicians of all peoples and periods’. But yet this mathematical evidence is a methodic ideal *more geometric* which has to be excavated from its dark misunderstood ground (Husserl 1939, 216).

Protomathematics in Neolithic Pelagonia

Thus the research connects to protomathematics or ethnomathematics – terms for mathematics within communities from all continents and periods which do not use letters, which became a fertile field of investigation in the past decades. Especially symmetry analysis and pattern research turned to the very roots, the origins of ornamental art in the Paleolithic and Neolithic (cf. Washburn 1983, Jablan 1995, Abraham 2011) Patterns were recognized to be employed as visual metaphor in the representation of the essential principles of a culture (Naumov 2010). Other mathematical findings such as the later well-known problem of squaring of the circle was discovered to be solved in the Neolithic on painted compositions on vessels from Balkans and Anatolia (Tasić 2005).

Acheulean findings of symmetrical bifaces with length/breadth ratios in the golden section provided evidence that *Homo erectus* of 700.000 years ago had a geometrically accurate sense of proportion and mathematical transformations (Pope et al. 2006). The golden ratio is defined by Euclid: A straight-line is said to have been cut in extreme and mean ratio when as the whole is to the greater segment so the greater (segment is) to the lesser (Euclid book VI, p. 156)

Also the striking beauty of some Macedonian Neolithic objects is largely achieved due to proportionality with mathematics and thus confirming the concepts of beauty of ancient philosophers several millennia earlier (Fidanoski 2016, 141). In addition to this some primal geometrical elements on Neolithic and Chalcolithic artifacts shall be examined with focus on geometrical signs on the buttocks of Chalcolithic figurines – in regard to what later became Euclidean geometry as preserved in the *Elements,* the 13 books of Euclid edited by Theon (ca. 335–405) with the assumed help of his daughter Hypatia of Alexandria (ca. 350–370).

Art as expression of societal belief systems

As example for the similarity of contemporary arts and Neolithic representations such as the anthropomorphic house ‘Altar’ terracotta **(Fig. 1b**) shall be compared with the ‘Fat House’ (2015) by the Austrian artist Wurm (**Fig. 1a**). Wurm renders ironically the American life style of our contemporary society in the shape of a house merged with a Marshmallow. Also Wurm’s ‘fat car’ sculptures display the union of the car and his owner by merging shapes of two different spacial domains. It reflects the mantle – cf. Greek. hylê which Plato used as one word for space and matter . The same applies to the Neolithic woman-house-oven sculpture, where the outer sphere of the person is depicted in union with the persona merging three different layers of physical reality reflect the new settlement ideology: celebrating the house, the oven and the bread as latest techno-alchemistic achievements. The spectator may still recognize the pride in the female face of the chimney on the roof of the house – is it the portrait of the house owner?

As the French artist Duchamp famously said, understanding of the word ‘art’ is ‘the creative act not performed by the artist alone; the spectator brings the work in contact with the external world by deciphering and interpreting its inner qualification and thus adds his contribution to the creative act. Interpretation requires ‘a transference from the artist to the spectator in the form of an esthetic osmosis taking place through the inert matter, such as pigment, piano or marble’ (Duchamp 1957, 77–78). Art is made by the soul and therefore art and must be read with the soul. Cassirer emphasized in his philosophy of symbolic forms ’energies of creation’ as inevitable stored information. Every mental, intellectual form represents an envelope which encloses the esprit (Cassirer 2009, 69, 134).

The *ritual bread* – explicit construction of the golden section

Let us switch from the house to the bread: Originating from several sites in Pelagonia and Mariovo, twelve clay objects in literature referred to as ‘cult breads’ are stored in the prehistoric collection of the National Museum in Prilep (Mitkoski, 2016, 119). The here mentioned particular ’ritual bread’ from Vrbjanska Čuka (middle of 6th millennium BC) is with size ca. 20 cm ø the biggest of all and was found inside the settlement, but without particular context (**Fig. 2b**, Mitkoski 2016, T. V: 1, 135). To date it was proposed that the incised lines could represent a pubic triangle just like triangles are marking the pubic region on many figures.

But the geometrical comparison with a pentagon with exact geometric construction of both golden triangles (**Fig. 2 a**) shows that these triangular notches on the bread shape exhibit he explicit construction of the golden section in a very sophisticated manner: In order to study of the lines on the bread the same were drawn on the pentagram. A superposition of the two pictures proved that lines on the bread-shape are forming the two golden triangles, the acute 72°–72°–36° and the obtuse 36°–36°–108° triangle. They are the basic building shapes of Penrose tilings (Penrose 1974). Their composition into ‘kites & darts’ shapes are paving the plane in an irregular infinite pattern in the golden ratio $(\sqrt{5}\pm1)/2$. The figure of the five lines on the bread is actually the generating principle of the Penrose pattern (cf. de Brujin,1981).

The same mathematical hints appear in the Egyptian *Isis and Osiris myth* which contains the description of the evolution of matter (Isis) by means of partitions of the pentagon (Osiris), golden triangles forming the 3D representation of the Penrose Kites and Darts (Quehenberger

2013, 319–334). Later the same shape appears also as riddle of 5th element in Plato's Timaios assigned to the shape of the Universe. It could be visualized as 5-dimensional representation of the Poincaré homology sphere which meets Poincaré's the dodecahedral Universe model (Quehenberger 2016, 177–192).

Living knowledge?

Hence it may be assumed that the artistic research in Pelagonia investigated the same shapes which were preserved in Egypt in the oral medium of the myth. Maybe there was already a narrative for the sign of the bread too which got lost or more likely the geometrical exercise precedes the creation of a myth, which was considered as' completion of the logos' (Plutarch 1936, 327). Ubiquitous similar creative developments indicate a kind of ‚polyphibic' knowledge creation which seems to be mentally connected with the environment that implies immediate direct knowing (cf. Ljubec 2017, 62). Hints for such a living knowledge may be found in the achievement of medicine (as also found in the world of animals) or in the shape of living cells in some Neolithic settlements (cf. Souvatzi 2007). Also the concept of the young Lady as living knowledge seems to be a viable framework for understanding of Chalcolithic art concerning perception and life in the biopolitical sense (von Samsonow 2018).

Why should the bread be holy?

Besides spinning and weaving it was obviously the first ‚alchemistic' deed which was perhaps celebrated with bread-shaped sculptures. If we rethink the required complex chemical procedures, ‚atomizing' the corn and the ingredients: corn (from the earth), water, fire and (hot) air we derive the four elements. Similarly the Chinese Wu Xing system which lists wood, fire, earth, metal and water and is still prominent in Chinese cuisine and medicine. The elements gained high scientific significance since Ionian nature philosophy and play an important role in Pythagoras' *tetraktys* concept wast which visualized by Plato in the shape of regular solids. The expression *stoicheion* (στοιχεῖον) for elements derives its meaning from 'a row, line, or rank' of bodies and was used by the first atomists in the science of nature or physics. Moreover the connection between the bread geometry can be drawn by the fact that ‚stoicheia' was the term used for the book title *Elements* of Euclid which belongs to the science of geometry (Crowley 2005).

Outlook to Chalcolithic figurines with Euclid's geometry elements

The explicit depiction of the Golden ratio from the ritual bread finds further application on Chalcolithic clay figurines from Chalcolithic, Šuplevec-Bakarno Gumno culture. Together with decorations such as circles, triangles, spirals rhombs and zig-zag lines the geometry elements are mainly engraved on the most delicate parts of the female bodies: Therefore term pristine pygēometry (pygē, Greek: buttocks) seems suitable for those geometrical experiments executed on the charming bottoms. Highly individualized shapes and obvious female fingerprints found on some figures (Kolištrkoska Nasteva 2005, 13) confirm the hypothesis, women in Paleolithic societies produced images of themselves (McDermott 1996). It can be assumed that women who were making the pottery for everyday use had fun to model their own shapes with particular mathematical content: the Golden ratio form the bread to the hyperbolic shapes of the female body indicated the idea of a hyper-Euclidean geometry as derived from the Penrose Pattern (Quehenberger *forthcoming*).

Here in short some examples shall be given: Fig. 3b is decorated withthree overlapping circles on the buttocks which remind explicitly at the construction of the golden mean, namely at the Hofstetter 4-step construction of the golden ratio by ruler and compass only (Hofstetter 2004). This construction method only uses three points in the distance of the golden ratio on one line which arises from the intersection of four circles recognizable on Fig. 3b. Various shapes in this style were found with similar decorations, cf. some with two overlapping circles (Kolištrkoska Nasteva 2005 fig. 89, 105) resemble another simple construction method of the golden mean (Hofstetter 2002). Others were found with blank polished buttocks and decoration around (Kolištrkoska Nasteva 2005 fig. 91, 107) or circles with concentric lines (Nasteva, fig. 93,109).

Other artifacts in the same context with exact rhomb shape decorations (cf. Kolištrkoska Nasteva 2005, Fig. 56, 72) lead to the assumption that the artists constructed them by the same method using two intersecting circles with radius 1, where the center point of one circle lies on the other circle. This shape is known as "Vesica Pisces" which contains two kinds of rhombic shapes in the length $\sqrt{2}$, $\sqrt{3}$ and $\sqrt{5}$. The length ratio $\sqrt{5}$ is inherent in the formula for the Golden section $(\sqrt{5}\pm1)/2$ as shown on the ritual bread above. The same rhomb constitutes the Rhombic Penrose pattern, where the rhombs are arranged in an irregular 5-fold or 10-fold pattern – which is actually a 2-dimensional slice of the 5-dimensional space.

Thus we recognize this construction method for the rhomb as a root for otherwise seemingly unrelated areas of knowledge: the divine feminine, and the symplectic geometry of Penrose rhombus tilings (Prato 2007). The number five became later personified in the Sumerian/ Babylonian Goddesses Inanna/Isthar and many other names (presumably starting in the 4th millennium,) and furthermore reached the 'official grounds of science' when it was chose as secret sign of the Pythagoreans (6th century BC). Also the letter „E" used as archaic Greek invocation to the Gods used indicates the high significance of the number five (Plutarch 1936, 194).

Euclid's 1st proposition – a sewing pattern?

While loin cloth, which is believed to be one of the earliest forms of human clothing does not require expertise in pattern cutting thongs as found in the same catalogue of the 'Prehistorian Macedonian Ladies' are elaborate objects shaped to fit the body (cf. Kolištrkoska Nasteva 2005, figs. 23, 75, 77, 39, 91, 93) One wears as the back side of the figure reveals a G-string type of underwear (**Fig. 4b**) which looks even after ca. 6.500–6.000 years still fashionable.

A triangle seems so banal for us that we usually don't consider its construction. Actually only the trained eyes of a seamstress might recognize the pattern shape (**fig. 4b**) as equilateral triangle.

Fig. 4a depicts two intersecting circles which is exactly Euclid's 1st proposition: To construct an equilateral triangle on a given finite straight line (Euclid, book 1,8). From this construction method of the equilateral triangle the use of circles as bottom decorations and further geometrical investigations may have evolved logically similar to the edifice of Euclid's Elements. This indicates the role of geometry is a prerequisite for designing cloths and reflecting the proportions and space configurations. Also the philosopher and polymath Johann Heinrich Lambert (1728–1777) the forefather of non-Euclidean geometry was working as a child in the tailor studio of his father (Strick 2017).

Geometrical development on a plane of immanence‘?

The etymology of Geometry – from Greek: γεωμετρία; geo – orig. Gaia ‘earth’ – metron ’measurement’) and mythology provides hints for the connection of the two bodies, the earth and the girl: Gaia’s daughter Mnemosyne is the mother of the nine Muses of which Polymnia, the protector of the divine hymns and mimic art who invented geometry and grammar. Hence for the same period which is discussed here a pictographic-ideographic system was recognized as ‘principle of logographic writing’ on the Balkans also found on body shapes (Haarmann 1995, 32).

Deriving knowledge form creativity applied on textile production finds its very roots in the Greek word ’episteme’ which is a composite of ‘epi’ – means ‘above’, ‘upon’ and ‘stemon’, which was in antiquity the ’elevator’ or the vertical thread of the loom which indicates the genesis of dyadic mathematics from weaving technics. (Harlizius-Klück 2004, 13). Following Harlizius-Klück’s argumentation Chalcolithic art research may be also understood as ’plane of immanence’ as coined by Deleuze and Guattari for prescientific and pre-philosophical domains of genesis and becoming, which anticipates geometry mathematics and metaphysics. Also the transcendental field as defined by consciousness can be the plane of immanence for a terminology which was not yet built (Deleuze and Guatarri 1996, 52–90). We should not underestimate the creation of new symbols which seems to transmute an immense intellectual energy from a relatively diffuse form into a concentrated form: what was indicated and implicitly posited in the new symbols had only to be raised to full explicit knowledge (Cassirer 1957, 401–402).

Conclusion

The Neolithic artifacts with explicit depiction of geometrical elements provide the afore missing knowledge creation which precedes Ancient Greek culture and suggests that the basics for western civilization was conceived in its hinterlands. Embodied pristine *pygēometry* reveals with its construction methods for the golden ratio and the basic development of what later became Euclidean geometry. The evidence of the geometrical construction methods identified on the magical clay figurines should finally honor the artists from the Šuplevec-Bakarno Gumno culture as well as from the Pelagonia region for their major contribution to protomathematics. However, there are many more examples of artifacts with mathematical signs which could not be considered in this preliminary article. Chalcolithic art research opens a new field of research which should eventually find its place in the canon of science history. Otherwise the sudden pop-up of knowledge in what we call classical Greek period, the concept of harmony and the theory everything in Pythagorean and Platonic philosophy based on symmetries, cannot be explained. By considering this pre-scientific art research 5000 years prior to the Milesian school as epistemic source the 19th century idea of the ‘beginning of science‘ with natural philosophy becomes out-dated.

The here given examples are first indications for a pristine development of Euclidean geometry which requires further research.

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List of Figures

Fig. 1a Contemporary art: ‘Fat House’, Erwin Wurm, 2015, photo Skulpturenpark.
Fig. 1b 43. Altar, terracotta, Tumba, v. Porodin, Bitola region, Middle Neolithic Velušina-Porodin culture, H. 25.5 cm, inv. No. 55. Institute and Museum – Bitola; M. V. (Koništrkoska Nasteva 2005, 59).

Fig. 2a Pentagon with vertical parallel lines (red) and 72° lines (green, blue) and 36°line (orange, green) indicating both golden triangles b) „ritual bread“, clay, size ca. 20 cm ø ca 6 cm vide.
Fig. 2b Vrbjanska Čuka (Mitkoski 2016, 135) displays the same lines as drawn in Fig. 2a.

Fig. 3a Hofstetter 4-step construction method of the Golden Ratio (Hofstetter, 2006, Fig. 1) **Fig. 3b** Female figurine, terracotta, Pilavo, v. Burilčevo, Kočani region, Chalolithic, Šuplevec-Bakarno Gumno culture, H. 10.2 cm, inv. No. 1/II. Museum of Macedonia – Skopje (Koništrkoska Nasteva 2005, 106, Fig. 90).

Fig. 4a Construction of the equilateral triangle by two intersecting circles.
Fig. 4b Standing Figurine, terracotta, Krušeanska Čuka, v. Vrbjani, Prilep region. Middle Chalcolithic, Šuplevec-Bakarno Gumno culture, (Serbia, western Central Bulgaria) H. 14 cm, inv. No. 1885 (Koništrkoska Nasteva 2005, 110, Fig. 94).

Fig. 5 Figurine (# 94) Šuplevec-Bakarno Gumno (Serbia, western Central Bulgaria) of flat body with special hole for inserting head. The arms and the left breast are broken-off. The pubic area is indicated with a notch. The legs are marked with incised line and end with modeled feet. The entire surface is adorned with engraved slanting and horizontal linesdepicting the clothing or body painting. (Koništrkoska Nasteva, 2005, 110).

Fig. 1a

Fig. 1b

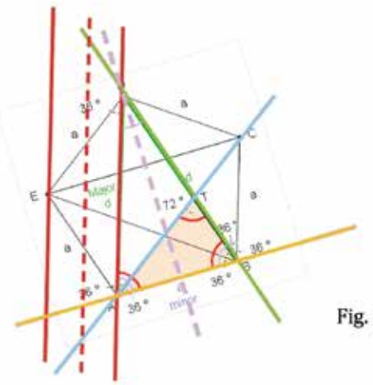

Fig. 2a, b

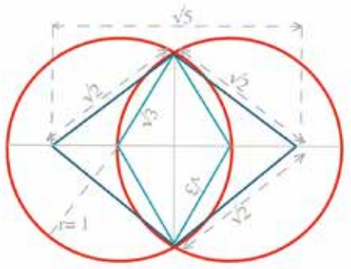

Fig. 3a, b

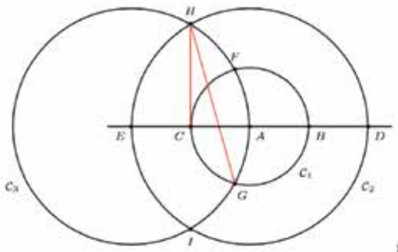

Fig. 4a, b

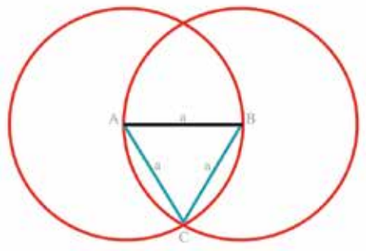

Fig. 5a, b