

## ON IMPORTANCE OF STUDY OF THE NEOLITHIC GROUND STONE INDUSTRY IN THE TERRITORY OF SOUTHEAST EUROPE

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Study of the ground stone industry is relatively new discipline in the archaeology of the southeast Europe. Not before long our entire knowledge about this problem was related to just a few sites of the Vinča culture first of to the material from the eponymous site. The probable reason for that was that large amount of the ground stone artifacts – more than 1200 specimens had been found at Vinča while from the other Neolithic sites sometimes only a few tools of this kind were known. The material from Vinča has been studied and analyzed on many occasions, mostly only typologically but today it is the starting point for the investigation of the ground stone industry of the Vinča culture and the Neolithic in general (*Antonović D.*, 1992; 2003). Couple of years ago this material was the only ground stone Vinča culture material studied in detail. However, in the last three decades ground stone material from many Neolithic sites was thoroughly studied or at least examined. These sites in Serbia are Belovode, Blagotin, Crnokalačka Bara, Čučuge, Divostin, Donja Branjevina, Drenovac, Gradac, Grivac, Hajdučka Vodenica, Lepenski Vir, Lipovac, Naprelje, Padina, Pavlovac, Petnica, Pločnik, Predionica, Selevac, Supska, Velesnica, Vlasac, Zbradila, including new excavations at Vinča (*Antonović D.*, 1997; 2000; 2002; 2000; 2004; 2004a; 2006; *Babović L.*, 1984, 95 – 96; 1986, 96 - 97 ; *Prinz B.*, 1988; *Srejskić D.*, *Letica Z.*, 1978, 98 – 103; *Voytek B.* 1990).<sup>1</sup> Therefore, after the mentioned investigations it is quite possible today to comprehend the character of the Neolithic ground stone industry within a larger territory but also to see more clearly the importance of these investigations in the territory of the entire southeast Europe because just the stone raw materials could indicate to the greatest extent the possible intercultural contacts and influences.

The Neolithic ground stone industry in the territory of the present-day Serbia reveals from the technological point of view certain territorial characteristics. It concerns three technological circles related to the production of the stone tools. First and so far best investigated is the central Serbia – Vojvodina circle, second is the Iron Gates circle and the third is South Morava – Kosovo circle, which is so far the one investigated in a smallest degree (Fig. 1).

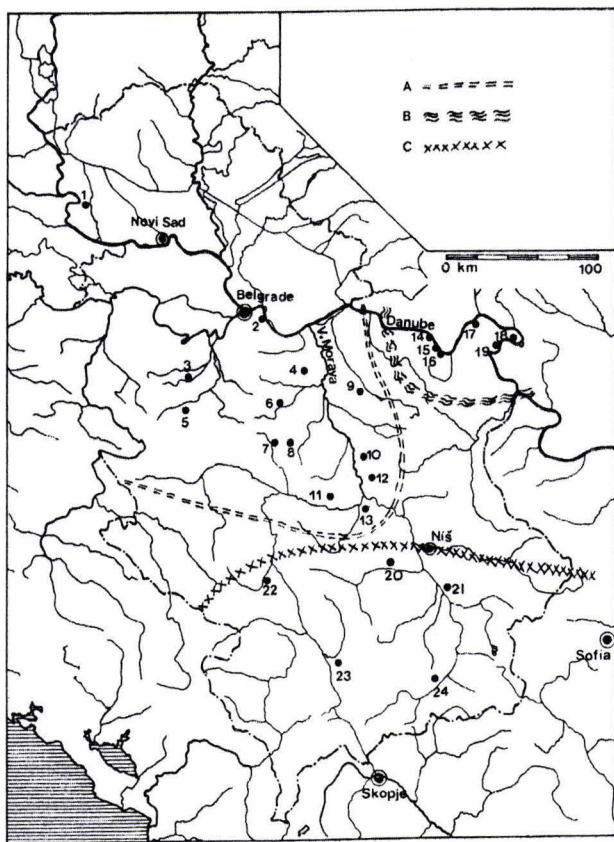


Fig. 1. Technological circles related to the production of the stone tools:  
A. Central Serbia – Vojvodina circle, B. Iron Gates circle, C. South Morava – Kosovo circle.  
Neolithic settlements: 1. Donja Branjevina, 2. Vinča, 3. Čučuge, 4. Selevac, 5. Petnica, 6. Lipovac, 7. Grivac, 8. Divostin, 9. Belovode, 10. Supska, 11. Blagotin, 12. Drenovac, 13. Crnokalačka Bara, 14. Padina, 15. Lepenski Vir, 16. Vlasac, 17. Hajdučka Vodenica, 18. Zbradila, 19. Velesnica, 20. Pločnik, 21. Gradac, 22. Naprelje, 23. Predionica, 24. Pavlovac

First circle includes the territory of the central and western Serbia, Morava valley and Vojvodina and it is related to the occurrence and evolution of the ground stone industry in the eastern Bosnia. This circle includes the best investigated sites when the ground stone industry is concerned: Vinča, Divostin, Selevac, Grivac, Donja Branjevina, Belovode, Supska, Petnica, etc.<sup>2</sup> The ground stone industry is represented here by many tools first of all adzes, axes and chisels made of characteristic fine-grained sediment and contact-metamorphic rocks of gray and gray/green color. This statement relates particularly to the central Serbia sites but stone tools were also very well represented at the Neolithic sites in Vojvodina already from the early phases of the Neolithic as it is especially well confirmed by the finds from Donja Branjevina. Disregarding the distance of many sites from the raw material sources the ground stone industry in Vojvodina makes uniform entity with the industry in central Serbia when the forms of the tools and selection of rocks for their manufacture are concerned. The ground stone industry in the central Serbia – Vojvodina circle has the continual evolution during the entire Neolithic period with standard tool shapes and selection of the raw materials for their production. The ground stone tools from the sites in the mentioned regions is usually present in the great quantity and mostly related to the woodworking.

Second, the Iron Gates circle includes Mesolithic<sup>3</sup> and Neolithic sites investigated as segment of the rescue excavations projects Djerdap I and Djerdap II: Padina, Lepenski Vir, Vlasac, Hajdučka Vodenica, Zbradila, Velesnica, Kula, Knjepišta, Ušće Kameničkog Potoka, etc. The production of the ground stone artifacts in the Iron Gates developed independently on the Mesolithic bases and thus evolving characteristic tool shapes made exclusively of pebbles hence completely distinguishing this area from the rest of Serbia. Favorable ecological conditions made possible establishing of permanent settlements based on efficient hunter-gatherer economy, which supposed distinctive kind of the large-sized hunting and fishing tools (mallets-scepters, hammerstones, pebble-axes, mallets with grooves, fishing weights). These types of tools are characteristic of the Late Mesolithic and Early Neolithic horizons at the Iron Gates settlements but some of them continue to exist as late as the Vinča period (Zbradila). The Iron Gates Mesolithic ground stone industry was not without any doubt the predecessor of the Starčevo-Vinča tools. This is confirmed not only by the already mentioned parallel existence of the Starčevo-Vinča tools with

ground edge and the Mesolithic mallets-scepters but also by the entirely different character of these two industries. The Iron Gates industry is based on the pebble, whose natural shape was only just finished off while in other parts of Serbia the tools with ground edge had often been made on larger flakes of the fine-grained rocks of characteristic gray and gray/green color achieving thus the recognizable shape, which characterizes the Starčevo-Vinča ground stone industry.

I must mention here that stone industry from Donja Branjevina in a certain way represents the link between the first permanent settlements in the Danube basin and completely developed Neolithic cultures in this area and this link is reflected in merging of different traditions in one type of products – the ground stone tools. Ground stone tools from the mentioned site reveals when the production method is concerned very interesting technique of manufacture. The ground-edge tools were made of fine-grained rocks using the chipping technique just because of their characteristic conchoidal fracture. However, these tools because of additional grinding acquired to a certain degree the massive appearance and resembles those made of pebbles of magmatic rocks and sandstone as it was the case at the settlements in the Iron Gates. This is rather interesting attempt of the Neolithic masters at Donja Branjevina to give the appearance of more primitive tools to the objects made by more advanced technology and which according to the method of manufacture and selection of the raw materials belong to the Starčevo-Vinča technocomplex. Thus the ground-edge tools resembles in shape those found at Lepenski Vir, Vlasac, Velesnica and Padina but considering the raw materials and technique of manufacture they absolutely belong to the Starčevo-Vinča type of tools.

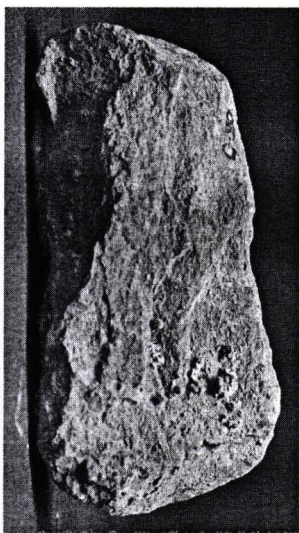
Third, South Morava-Kosovo circle represents for the time being the least investigated area when the Neolithic ground stone industry is concerned. At the sites from which the material of this kind was examined (Pavlovac, Pločnik, Gradac, Predionica, Naprelje, etc.) the ground stone tools were represented by very small number of specimens and types. In this areas even the mostly used fine-grained rocks of gray and gray/green color are not so frequent as in central Serbia and tools with ground edge were made of various magmatic and metamorphic rocks. The characteristic of these tools is small length in relation to the width so they are of rather stocky appearance.

Particularly interesting for the study of the Neolithic in the territory of Serbia is the ground stone industry from the central Serbia-Vojvodina

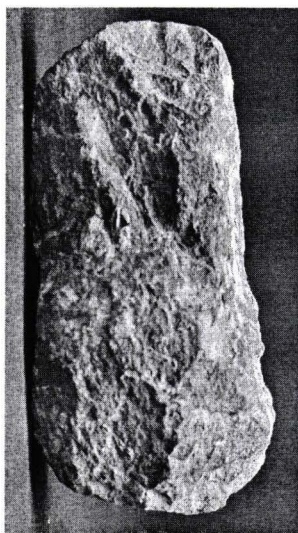
technological circle. It was noticed long time ago that in the Neolithic ground stone industry from this territory first of all in production of the ground-edge tools (axes, adzes, chisels) there is an exceptional uniformity in production. This uniformity dates already from the beginning of the Starčevo culture and it is reflected in the shapes of tools, manner of their use and especially in the selection of raw materials for their production.

When the shapes of tools are concerned it turned out that typology established for the site at Vinča is applicable to all Neolithic sites (*Antonović D.*, 2003). All shapes registered at Vinča appear throughout Serbia and there are rather rare cases of new variants of already known shapes. The standard shapes of axes, adzes and chisels appear from the earliest horizons of the Vinča culture and in already evolved shape. They all reveal that they were preceded by the long period of improvement. We must emphasize that all types of tools, which appear from the earliest Vinča horizons exist already in the material of the classic phase of the Starčevo culture and Vinča culture only inherited and improved them. This uniformity is certainly connected with the selection of the raw material and technique of production of these tools. For the production of the ground-edge tools had been chosen the rocks, which could be worked by the chipping technique. The semifinished articles were made of macroflakes, which dorsal side was additionally rounded by chipping (Fig. 2). Such method of manufacture resulted in standardization of the tool shapes as it was the case in the chipped stone industry.

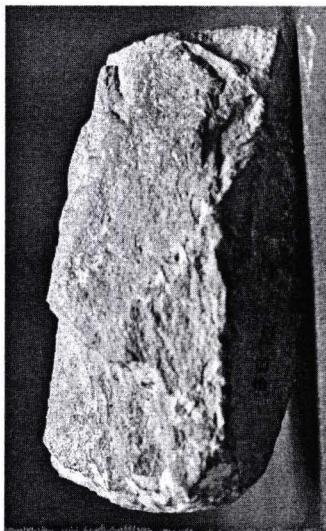
The most numerous ground stone tools – ground-edge tools – had been mostly used for woodworking usually as adzes and wedges, i.e. as tools for shaping wood into final products. The tools with traces of use characteristic of axes, i.e. tools used for felling trees are exceptionally rare. We must emphasize that it turned out, according to the traces of use, that ground stone tools were not primarily used in agriculture so the previous claim that this type of artifacts is the characteristic of the Neolithic as the agricultural tool should now be forgotten. Such way of use of the ground stone tools is much clearer when we take into consideration that Neolithic cultures in the territory of Serbia developed in the dense forest environment (*Janković M.*, *M.*, 1984) so we could assume that wood was one of the main raw materials used for large assortment of objects and as building material (*Antonović D.*, 2006, 128; *Bogdanović M.*, 1988, 71 – 72; *Stalić B.*, 1984, 34 – 41; *Todorović J.*, *Cermanović E.*, 1961, 9 – 16).



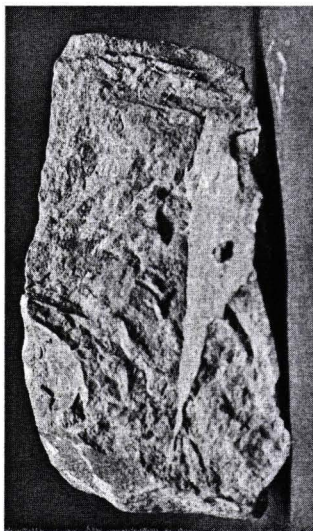
A.



B.



B



C

Fig. 2. Ventral (A, D) and dorsal (B, C) sides of the semifinished ground-edge stone tools of the Starčevo-Vinča technokomplex. Tool in A-B is 7,5 cm long, and in C-D is 7,2 cm.

Both objects were found in the Late Vinča horizon at Vinča (excavation in 2002).

The raw materials particularly characterize the ground stone industry of the Starčevo-Vinča technocomplex. Distinctive uniformity could be noticed when they are concerned. The intensive use of fine-grained rocks of various nuances of gray and gray/green color starts from phase Starčevo II. These are the rocks of different origin but of identical physical and technical characteristics like kornites, metasiltstones, fine-grained sandstones, metadiabase, metabasalt and various kinds of fine-grained schist – spotted, green, epidote, albite-epidote, chlorite-epidote, epidote-amphibole, quartz-albite-epidote, quartz-epidote. These rocks give characteristic and recognizable appearance to the Neolithic ground stone industry in the most of the territory of Serbia. The use of other rock types would occur in some phases of the Vinča culture evolution but it would never disrupt the precedence of the characteristic gray/green rocks. The only one more significant break in the continuous evolution of the ground stone industry and in established selection of raw materials is the occurrence of light white rocks in the Late Vinča horizons<sup>4</sup> that also became the characteristic of this period. The tools of light white rock are present in the greatest quantity in the central and western Serbia while in other parts of the country they occur rarely and possibly represent an 'exotic' raw material, which was obtained through exchange (Bukner B., 1975, 12; Borić D., 1996, 80 – 81).

In the light of these new data it proved to be necessary and very useful to study the ground stone material from the Neolithic sites throughout the southeast Europe. It is not known for the time being whether three technological 'circles' (central Serbia – Vojvodina, Iron Gates and South Morava-Kosovo), i.e. territorial distinction of the Neolithic ground stone industry in the territory of present-day Serbia had any connections with the neighboring territories. The question arising without saying is how much this distinction is the result of the autochthonous processes during Mesolithic and Early Neolithic in the mentioned areas and whether and to what extent there were influences from the surrounding cultures. When the uniformity of the ground stone industry within Starčevo-Vinča technocomplex is concerned it must be emphasized that it is most prominent in the central Serbia-Vojvodina circle. It seems to me that just in this area the ground stone industry characteristic of the Starčevo and later of the Vinča culture is the result of the autochthonous evolution. The main characteristics of such evolution are just the raw materials – recognizable fine-grained gray/green rocks and technological method of production that they dictated. After precise petrographic analyses it turned out that there were

probably many places from whence the raw material had been brought and that were of local importance (*Antonović D., Resimić-Šarić, Cvetković*, in print). The Neolithic masters of the Starčevo-Vinča technocomplex already at the beginning of the Neolithic had thorough knowledge about the deposits of high quality raw materials and this inevitably leads to the conclusion that bearers of first agricultural cultures were natives in the territory they inhabited. Thus it turned out that stone material as chronologically almost indistinctive material, which could not be used in dating cultural layers could be the only reliable evidence in solving such questions as those concerning the autochthonous evolution of the certain culture, the influences or even complete subduing by the bearers from the neighborhood. By all appearances the stone industry is to the greatest extent the key for solving the question of origin and evolution of the Neolithic culture in the territory of the southeast Europe. The sources of raw materials and the ways of their procurement certainly had the crucial role in making contacts between populations with different cultural and technological traditions and in establishing larger technocomplexes as is, for instance Starčevo-Vinča cultural complex, which characterizes the Neolithic of the central Balkans.

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#### NOTES

1. This author had the opportunity to examine material from Crnokalačka Bara, Drenovac, Gradac, Lipovac, Naprelje, Pavlovac, Petnica, Pločnik and Predionik in the National Museum in Belgrade thanks to the kind help of the keepers Duško Šljivar, Ljubinka Babović and Andrej Starović.
2. Unfortunately, the material from Gomolava that is the most important group of the Vinča stone tools in Vojvodina has not yet been investigated (*Borić D., 1996, 80*).
3. Ground stone tools occur at the sites in the Serbian section of the Iron Gates already in the Mesolithic horizons.
4. Under this name are included rocks similar macroscopically and whose main characteristics are that they are of different nuances of off-white or yellowish/white color, relatively soft (except when silicified) often porous and therefore of light weight. On the basis of analyses these rocks are variously defined: as magnesite, porcelanite,



diatomeic soil, diatomeic shale, ash tuff etc. Just because of such discrepancies concerning the name of this raw material, for the time being in archaeology are most frequently used the descriptive names, which provide the closest information about the macroscopic appearance of this raw material (Antonović D., 1997a; Bogosavljević-Petrović V., 2004, 385 – 387, 411; Šarić J., 2002, 20).

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