NEW AMS DATES AS A CONTRIBUTION TO THE ABSOLUTE CHRONOLOGY OF THE EARLY ENEOLITHIC IN THE CENTRAL BALKANS

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ABSTRACT
In this study we present new absolute dates for the Early Eneolithic in Serbia. Four of them confirm the recently obtained dates from that period (Bubanj-Hum I culture) but two samples (from Mokranjske stene and Bubanj) provide somewhat later dates for this period, although their stratigraphic context makes their interpretation difficult. Pottery from those sites, besides the typical examples, also shows particular stylistic and typological characteristics that resemble Galatin or Šâlcuta IV cultures, so one can presume that the Bubanj-Hum I culture in Serbia may have lasted longer than what is generally assumed.

KEY WORDS – Eneolithic, AMS-dating, Central Balkans.

INTRODUCTION
In South-eastern Europe, the second half of the 5th and early 4th millennium cal. BC (i.e. the Chalcolithic or Eneolithic period) witnessed extensive changes in the archaeological record, including the progressive abandonment of tells in favour of a more dispersed settlement pattern,1 the growing importance of copper metallurgy,2 and flat-grave cemeteries exhibiting signs of social stratification.3 These transformations are reflected in the material culture with the development of various regional archaeological complexes. Although the chronological framework of these processes is relatively well known in Hungary and Bulgaria, the overall absolute chronology of the Eneolithic still requires extensive research in order to gradually shift away from traditional chronologies based on pottery and confusing regional terminologies.4

It is well known, indeed, that the chronology of Eneolithic is not uniform in all the regions of the Balkan Peninsula. For example the Early Eneolithic in Serbia corresponds to the Late Eneolithic in Bulgaria,5 even if in both cases, these are defined on the basis of similar traits. The confusion in terms of nomenclature is generated by the position that occupies each eponymous site in the definition of the cultural complex. Thus, according to Garašanin and Simoska, this complex is defined as Bubanj–Hum I–Krivodol–Šâlcuta,6 while

1 Link 2006; Kapuran et al. 2017.
2 Bartelheim, Krauß 2012.
3 Higham et al. 2007.
4 Schier 2014.
5 Todorova 2003, 288–289.
6 Гараšанин, Симоска 1976, 9.
in Garašanin and Đurić it is defined as Šâlcuţa–Krivodol–Bubanj. Today the accepted definition of this chrono-cultural horizon (culture) in Serbia is Bubanj–Šâlcuţa–Krivodol (hereafter BSK), while in Bulgaria this complex is defined as Krivodol–Šâlcuţa–Bubanj or Krivodol–Šâlcuţa–Bubanj Hum Ia.

The area covered by the BSK complex stretches across modern-day NW Bulgaria, SW Romania, Serbia and Macedonia, and is characterised by numerous regional variants (Šâlcuţa in Oltenia, Bubanj–Hum I in Serbia, Krivodol in Bulgaria and Šuplevec–Bakarno Gumno in the Republic of Macedonia). As already mentioned, its precise chronological position within the south-eastern European Eneolithic is still subject to debate. In Serbia and the Republic of Macedonia, for instance, there is a regrettable lack of absolute dates: so far only three dates are available for the BSK, one from an insecure context belonging to the site of Bodnjik, and two further dates, recently obtained for the eponymous site of Bubanj.

As regards relative chronology, many authors considered Bubanj–Hum I, which represents this complex in most of the Serbian territory south of the Sava and the Danube, as being parallel to the Šâlcuţa II phase. According to the available stratigraphic data, finds and absolute dates from the new excavations in Bubanj and Velika Humska Ćuka in south-eastern Serbia, as well as in Mokranjske Stene, in eastern Serbia, the

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7 Garašanin, Đurić 1983, 12.
8 Tasić 1995, 29.
9 Todorova 2003, 288–289.
10 Георгиева 2005, 144.
11 Живановић 2013.
The BSK internal phasing and geographical evolution are problematic as well. For instance, the two aforementioned dates for the site of Bubanj point to the time period comprised of between c. 4350 and 4250 cal BC. These predate most available $^{14}$C determinations for Romania, and are either earlier than or contemporary with those for Bulgarian sites. These discrepancies also raise questions regarding the geographical structure of the BSK complex, and the directionality of cultural influences. Furthermore, it is also necessary to delineate more precisely the chronological framework of the BSK complex, by investigating its relationship with both preceding (Late Vinča culture in Serbia, and Gradešnica–Slátno–Dikili Tash II complex in western Bulgaria, eastern Republic of Macedonia and northern Greece) and succeeding archaeological cultures (e.g. Coțofeni–Kostolac and Černavodă III cultures).

New absolute dates from Serbia

In this study we present six AMS radiocarbon dates obtained from three sites: Velika Humska Ćuka and Bubanj near Niš in south-eastern Serbia, and Mokranjske Stene near Negotin in eastern Serbia. Samples were submitted for counting to MAMS, the AMS facility at the Curt-Engelhorn-Centre for Archaeometry. Calibration was performed using OxCal 4.2. All results are reported in Fig. 9.

Velika Humska Ćuka is a stratified hilltop site ca. 8 km north of Niš (Fig. 1/7). Research on this site was first carried out in the 1930s and 1950s, and resumed in 2009 until the present day. Excavations undertaken in 2016 and 2017 explored a structure that was partially carved in a solid rock, above which there was a large amount of fired soil, soot and ashes, which was interpreted as the remains of the above-ground part of a dwelling structure (Fig. 2). In the upper parts of the building, a large number of finds, especially potsherds and animal bones, were recovered. Among these finds, a copper chisel is of particular interest (Pl. I/1–8). Bowls with inverted rims with a wart-like handle, two handled biconical beakers with marked belly and a small biconical amphora with vertical or horizontal handles (Pl. I/1–8) were recovered in this structure, and show the characteristic features of the Bubanj–Hum I culture. Decoration techniques include graphite painting, incision, channelling and series of crescent imprints.

The radiocarbon date obtained analysing an animal bone sample (Ovis/Capra), which was located directly next to the chisel and the characteristic potsherds, gave a value of 5473 ± 31 BP (Fig. 2), which is 4352–4271 cal BC (68.2% probability) or 4365–4259 cal BC (95.4% probability) (Fig. 9/1). This date is important because it defines the time of use of this type of copper chisel, which is known from the Neolithic hoards discovered in the settlement of Pločnik, which lies about 45 km from Hum. This type of chisel was also discovered at Eneolithic sites in north-eastern Bulgaria, and is also known from Eneolithic Bodrogkereszttur contexts in today’s Hungary.

Bubanj is a stratified site on the Niš plain, on the left bank of the Nišava River (Fig. 1/8). Archaeological excavations were carried out on two occasions in the last century, following which the site was completely destroyed over time. The remaining small part of the site (about 200 square meters) was explored between 2008 and 2014. Four samples from the Eneolithic horizon were taken from the site’s remaining stratigraphy. Of these, two come from structures belonging to the Early Eneolithic, while the other two were taken from structures dated to the Late Eneolithic.

The first sample is a bone of a sheep/goat (Ovis/ Capra), which was found in a deep waste pit (structure 37) dug into the virgin soil on the western periphery of...
the explored part of the site. The sample dates to between 5440 ± 30 BP (Fig. 5; Fig. 9/3), that is 4339–4263 cal BC (68.3% probability), 4346–4246 cal BC (95.4% probability). Ceramics recovered in the pit (a bowl with an inverted rim, a conical bowl with a thickened rim, wide open vessels decorated with channels on the neck and the belly, vessels with a high hollow foot and amphorae with two vertical handles, etc.) are characteristic of the Bubanj–Hum I horizon (Pl. I/9–11; Pl. II/2–7).

The second sample is a piece of the long bone of an undefined animal species, found in a ritual shallow pit (structure 25/27) containing several complete vessels, chipped stone tools, a zoomorphic figurine and other finds characteristic of Bubanj–Hum I horizon (Pl. I/12–19; Pl. III/8–10). The AMS analysis determined the age of 5435 ± 30 BP (Fig. 6; Fig. 9/4), that is 4337–4263 cal BC (68.2% probability), 4343–4245 cal BC (95.4% probability). It is interesting to note that the dating of these structures is largely overlapping, even if the first one is placed at an almost 1 m higher level than the previous one, although it is only half a metre distant. Two points must be considered: firstly, the sample could actually come from the layer in which the pit was dug and, thus, belongs to the underlying layer; secondly, it is noticeable that these dates fall into a small plateau in the radiocarbon calibration curve for this period. In these conditions, and from a strictly methodological point of view, further chronological precision remains out of reach and should be not pursued.

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26 Булатовић 2015, 11–12, с. 1–2.
The third sample from Bubanj (bone of an undefined animal species) originates from the floor structure of a late Eneolithic house (structure 3) and belongs to the Early Eneolithic horizon of the site. It gives almost identical values as the previous samples – 5445 ± 24 BP, that is 4338–4267 cal BC (68.2% probability) or 4344–4260 cal BC (95.4% probability) (Fig. 4; Fig. 9/2).

The last sample from Bubanj discussed here is possibly the most significant one, as it comes from a deep pit, probably used for waste disposal (structure 20), underneath a late Eneolithic or Early Bronze Age layer and dug through the Middle Eneolithic and the upper part of the Early Eneolithic layers. The sample of the Unio shell from the bottom of the structure, whose level corresponds to the youngest horizon of the Early Eneolithic, showed a value of 5087 ± 25 BP, or 3952–3810 cal BC (68.2% probability), or 3960–3800 cal BC (95.4% probability) (Fig. 7; Fig. 9/5). In addition to pottery corresponding to the late Eneolithic, i.e. the Coţofeni–Kostolac horizon, two potsherds decorated with a series of circular imprints were discovered, which, according to stylistic and typological features, can be attributed to the Bubanj–Hum I horizon (Pl. III/11, 12). It is interesting that, while the dates from the three closed contexts from the Early Eneolithic of Bubanj show an almost identical age of approx. 4350–4250 cal BC (bearing in mind the aforementioned effect of the calibration curve), this last sample is considerably later by almost 500 years. It thus seems that some of the – not directly dated – structures assigned to the latest horizon of the Early Eneolithic actually belong to this period, or rather there are no preserved structures from this period in this part of the site, but only a cultural layer, which in this case was cut by the pit marked as structure 20. This most recent date, however, is important, as it suggests that Bubanj was inhabited during this period, that is, that the Bubanj–Hum I horizon lasted considerably longer than previously thought, and that during this time span the basic stylistic and typological features remained rather homogeneous. It is important to underline that no elements characteristic of later cultural horizons, such as the so-called Scheibenhenkel (the disc-shaped handles), or the vessels with small handles placed at the junction of the body and the foot, which were discovered at the nearby Velika Humska Čuka site, are present here.28

The site of Mokranjske Stene lies about 8 km south of Negotin in eastern Serbia, not far from the Timok River and the Serbian-Bulgarian border (Fig. 1/6). Its extent covers both the hilltop and the foot of the hill along the rocky walls. During the 2011–2013 excavation campaigns, a smaller stratified rock-shelter was explored, in which finds from several prehistoric periods were uncovered.29 Starting from the 9th artificial excavation spit in the lower parts of a light brown earth cultural layer, characterised by the presence of Coţofeni culture pottery, potsherds with stylistic and typological characteristics of Bubanj–Hum I culture, as well as elements that did not correspond either with Coţofeni and Bubanj–Hum I culture, were recovered. These are thin plastic ribbons forming different shapes, series of triangular, oval, crescent, circular or rectangular imprints, incised net motifs, bowls with an inverted rim decorated with wide, deep oblique or horizontal channels, low vessels with a wide mouth, whose belly is adorned with rectangular vertical channels, stamped ornaments which resemble the so-called caterpillar ornament, and others (Pl. II). This pottery was recovered in the lower part of the layer of light brown soil and the layer of yellow soil below it, to its bottom, which lies directly above the bedrock. In the lower spits (layer of yellow soil), Bubanj–Hum I characteristic features became more abundant.

Finds belonging to Bubanj–Hum I culture in the yellow soil appear much less than the mentioned newer elements unusual for this culture, and it is possible that there was a layer with this pottery that preceded the Coţofeni culture, although it could not be distinguished during the excavation. A bone sample (Bos taurus) from the 9th artificial excavation spit gave a result of 4875 ± 23 BP, that is 3692–3642 cal BC (68.2% probability), or 3698–3638 cal BC (95.4% probability) (Fig. 8; Fig. 9/6). The unusual stylistic and typological elements and the possibility of the existence of a layer of the later phase of Bubanj–Hum I culture at this site have already been pointed out, which is confirmed by this date in some way.30 This date and the stylistic-typological characteristics of the pottery correspond to the layer of “Final Chalcolithic” from the site of Borovan in north-west Bulgaria, which is dated to the Galatin horizon i.e. to between 40th–37th c. cal BC.31

27 Immediately above the pit, a grave from the new age was dug, which destroyed the upper part of the pit, so it is uncertain from exactly which layer it was dug.
28 Such vessels were found during excavation in 2017.
29 Капуран, Булатовић, Јанчић 2013; Капуран, Јанчић 2015; Булатовић 2015a.
30 Булатовић 2015а, 29.
31 Ганетовски 2016.
New AMS dates as a contribution to the absolute chronology of the Early Eneolithic in the Central Balkans (19–32)

Fig. 3. Velika Humska Ćuka, calibrated date chart
Сл. 3. Велика хумска ћука, дијајрам калибрације датума

Fig. 4. Bubanj – structure 3, calibrated date chart
Сл. 4. Бубањ, објекат 3, дијајрам калибрације датума

Fig. 5. Bubanj – structure 37, calibrated date chart
Сл. 5. Бубањ, објекат 37, дијајрам калибрације датума

Fig. 6. Bubanj – structure 25/27, calibrated date chart
Сл. 6. Бубањ, објекат 25/27, дијајрам калибрације датума

Fig. 7. Bubanj – structure 20, calibrated date chart
Сл. 7. Бубањ, објекат 20, дијајрам калибрације датума

Fig. 8. Mokranjske Stene, calibrated date chart
Сл. 8. Мокрањске стене, дијајрам калибрације датума
Pottery with similar stylistic and typological features also appears at other sites in Oltenia (Ostrovul Corbului, Bâile Herculane and Bistret) and in north-western Bulgaria (Galatin and Rebarkovo). This cultural phenomenon is defined as the Galatin culture in north-west Bulgaria and the Sâlcuța IV–Herculane II–III culture in Oltenia.

Discussion

Most of the mentioned dates (Fig. 9/1–4), together with the recently published ones from Bubanj, are contemporary and correspond to the dates for the BSK complex in Bulgaria and Romania. They range between the mid-44th and the mid-43rd centuries cal BC. Two dates deserve more attention (Fig. 9/5, 6), because they allow for a lower dating of the BSK complex, in the period between 40th and 37th c. cal BC, and thus represent the first dates in Serbia which indicate such a later chronology for the BSK complex. The stylistic and typological characteristics of pottery from the 9th–11th layers of Mokranjske Stene, as well as the sporadic finds from the pit at Bubanj (structure 20) from which these samples were taken, indicate that at that time the characteristics of Bubanj–Hum I pottery were still retained, and that they coexisted with new elements related to the cultures of Galatin and Sâlcuța IV–Baile Herculane II–III, which date approximately to the same period. In the lower parts of the layer of light brown earth (layers 9th–11th) at Mokranjske Stene dated to the 37th century cal BC, numerous elements of these cultures were indeed noticed, while at Bubanj, which showed somewhat higher dates (40th–39th centuries cal BC), the situation appears significantly different, since these elements are almost nonexistent. It remains to be explained whether the geographical location of these sites or their different chronological affiliation is the cause of this discrepancy. Chronological affiliation seems a more likely explanation, as numerous finds with the elements that correspond to the Sâlcuța IV culture were discovered in a yet undated layer at the nearby site of Velika Humska Ćuka (e.g. Scheibenhenkel handles, vessels on a foot with small handles placed at the junction of the body and the foot, parallel incisions carried out in different directions, etc.). However, a layer with numerous Scheibenhenkel handles at Borovan, a site in north-west Bulgaria, was dated to between 40th and 37th c. cal BC, which could probably have been expected for this layer on the Velika Humska Ćuka site.

It must be reminded however, that the accuracy of these two late samples, especially the one from Bubanj, is possibly hampered by poor stratigraphic contexts. Further confirmation of these results will have to be sought with additional dates from more reliable closed units.

So far, the earliest dates for the BSK complex come from Oltenia (Curmatura and Ostrovul Corbului) and north-western Bulgaria (Liga), while the earliest date for Serbia comes from the western part of the country (Bodnjik). The absolute date from the oldest phase from Pilavo, a site in eastern Republic of Macedonia, which was ascribed to the Šuplevac–Bakarno Gunmo culture, is 4540–4330 cal BC. This dating is quite high and seems to indicate that this complex developed

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32 Roman 1971, Abb. 6/14, 29/15; Taf. XIV, XVIII, XXVIII; Sâlcuței 2008, Foto 4, 15/5.
33 Georgieva 1987; Georgieva 1993, Fig. 2/5.
34 Bulatović, Vander Linden 2017, Tab. 1/1, 2.
35 The finds from the 2009 excavation have been published (Bulatović, Mihailović 2015, T. II/26–31), while the largest number of the finds with those elements still remain unpublished.
equally throughout its whole territory, as also suggested by a number of elements present in the pottery inventory of the Šuplevac–Bakarno Gumno sites (BSK complex) that are rooted in the Gradešnica–Slatino–Dikli Tash II culture. The Gradešnica–Slatino–Dikli Tash II dates to a slightly earlier period and can be recognised in present-day south-western Bulgaria and northern Greece.

Also of interest is another dating from Pilavo (3750 cal BC), which comes from the latest phase of the site. This dating, on the other hand, could chronologically define the later horizon of the Šuplevac–Bakarno Gumno culture, which is parallel to the Sâlcuţa IV culture or Galatin culture. Regrettably, although, in the first publication of the research in Pilavo, two stages are mentioned, nowhere in more recent publications are those phases clearly defined, and it is impossible to understand which of the published finds belongs to which of these two phases. For this reason, the stylistic and typological characteristics of the pottery of each phase cannot be clearly identified. However, published pottery from Pilavo, according to the stylistic and typological characteristics – in particular bowl types and graphite and red painting decorations – recall the finds from Velika Humska Ćuka, including those from structure 2/16, whose dating is known.

Conclusions
The AMS radiocarbon dates presented in this paper substantially contribute to the chronological determination of the Bubanj–Hum I culture within the BSK complex. Four dates confirm the previously published results (three dates from Bodnjik and Bubanj), while the other two provide significant information, opening a discussion regarding the length of the Bubanj–Hum I culture. As we pointed out, there are some indications that this culture extended to the first centuries of the 4th millennium cal BC, in combination with new cultural elements which are characteristic of north-western Bulgaria and south-western Romania in the same period. If both dates from the Pilavo site in the eastern part of the Republic of Macedonia can be actually assigned to the layers showing Šuplevac–Bakarno Gumno features, this would mean that this cultural complex originated almost simultaneously in Oltenia, north-western Bulgaria and eastern Republic of Macedonia.

While these dates from Serbia are not confirmed by samples from closed units, and until the stratigraphic situation at the Pilavo site is resolved, the issue of the length of the BSK cultural complex remains open.

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BIBLIOGRAPHY:


Bulatović, Milanović, forthcoming – A. Bulatović, D. Milanović, Bubanj, the Eneolithic and the early Bronze Age tell in southeastern Serbia.


У раду је презентовано шест апсолутних датума из старијег енеолита са три локалитета у Србији. Четири датума потичу са локалитета Бубањ код Ниша, један је са локалитета Велика хумска чука, такође код Ниша, а посљедњи датум потиче са локалитета Мокравска стена код Његотина.

Датовани узорак са Велике хумске чуке откривен је у остацима једног стамбеног објекта, непосредно до бакарног делта (клина) (T. III/1) и многобројне керамике која припада Бубањ–Хум I култури (T. I/1–8). Анализом АМС овај узорак је опредељен у 5473 ± 31 ВР (сл. 2), односно 4352–4271 саВС (вероватноћа 68,2%) или 4365–4259 саВС (вероватноћа 95,4%) (сл. 8/1).

Од четири датована узорака са локалитета Бубањ два су откривена у затвореним целинама из старијег енеолита (објекти 25/27 и 37), један узорак потиче из јаме која је пробила и слој старијег енеолита (објекат 20), док је посљедњи нађен у целини из позног енеолита (објекат 3), где је доспео, вероватно, приликом земљаног радова обављених у том периоду. Узорак из објекта 25/27 датован је у 5435 ± 30 ВР (сл. 5, 8/4), односно 4337–4263 саВС (вероватноћа 68,2%), 4343–4245 саВС (вероватноћа 95,4%); узорак из објекта 37 у 5440 ± 30 ВР (сл. 4, 8/3), што износи 4339–4263 саВС (вероватноћа 68,3%), или 4346–4246 саВС (вероватноћа 95,4%), док је узорак из објекта 3 дао датум 5445 ± 24 ВР, што износи 4338–4267 саВС (вероватноћа 68,2%) или 4344–4260 саВС (вероватноћа 95,4%) (сл. 3, 8/2). Посљедњи узорак са Бубања потиче са две јаме (објекат 20) које је пробила слој старијег енеолита.

Уз већу количину пужева и малобројну керамiku (T. III/11, 12) на дну јаме је нађена и школска која је датована у време 5087 ± 25 ВР, односно 3952–3810 саВС (вероватноћа 68,2%), или 3960–3800 саВС (вероватноћа 95,4%) (сл. 6). Овај датум је значајан стога што индицира могућност да је Бубањ–Хум I култура, као део Бубањ–Салкуца–Криводол комплекса, егилистирава на овим просторима и у првим вековима 4. миленијума пре н. е.

На дуже трајање културе Бубањ–Хум I њего што се то до сада мислило упућује и узорак са Мокравских стена који је дао још ниже датум – 4875 ± 23 ВР, односно 3692–3642 саВС (вероватноћа 68,2%), или 3698–3638 саВС (вероватноћа 95,4%) (сл. 7, 8/6). Овај узорак потиче са два слоја светломере земље у којем је преовладавала керамика Кокофене културе, али у којем је откривена и керамика Бубањ–Хум I културе, као и керамика слична керамici констатованих у културама Галатин и Салкуца IV (T. IV) у северозападној Бугарској и Олтенији. Непосредно испод тог слоја на Мохрским стенама налази се танак слој земље, који је вероватно, са јамском керамиком која потписује на овим просторима и у првом веку 4. миленијума у северозападној Бугарској и Олтенији. Слој са сличном керамиком на излазу Борован у северозападној Бугарској датован је у приближно исти период као и узорци са Бубања и Мокравских стена – између 40. и 37. века пре н. е.

Иако не потичу из потпуно поузданих јединица, датуми са Бубања и Мокравских стена допуњава могућност да је Бубањ–Хум I култура, као део БСК комплекса, егилистирава на овим просторима, бар у истој и југоисточној Србији и у првом кварталу 4. миленијума пре н. е. На ово упућују и датуми са локалитета Пилово у Македонији (Шунлевак – Бакарно гумно култура – регионална варијанта Бубањ–Салкуца–Криводол комплекса), који се срећу између 4540/4330 и 3750 саВС. Међутим, се досеђе у сви ови датуми не потврде датумама са више локалитета из различитих регија овог комплекса, питање трајања комплекса БСК на Балкану остављено је отворено.
(drawings by J. Antić)

Таблица I – 1–8) Велика хумска чука, објекат 2/16; 9–11) Бубань, објекат 37; 12–19) Бубань, објекат 25/27
(крчежи: J. Антић)
Plate II – 1–14) Mokranjske Stene, trench 2, 9th–11th arteficial spits
(drawings by A. Kapuran)

Таблица II – 1–14) Мокранска слоеви, сонда 2, 9–11 слой (креци: А. Капуран)
Plate III – 1) Velika Humska Čuka, structure 2/16; 2–7) Bubanj, structure 37; 8–10) Bubanj, structure 25/27; 11–12) Bubanj, structure 20

Tabla III – 1) Велика хумска чука, објекат 2/16; 2–7) Бубан, објекат 37; 8–10) Бубан, објекат 25/27; 11–12) Бубан, објекат 20