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Neolithic sequence: the upper Stryama valley in western Thrace (with an appendix: radiocarbon dating of the Balkan Neolithic)

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ABSTRACT – *The study represents the Neolithic sequence in a newly investigated micro-region in the Balkans – the Karlovo Lowland in the upper Stryama valley (north-western Thrace). Recent evidence confirms that during the Early Neolithic III (the period of Karanovo II) in western Thrace the development of the Karanovo I culture continued. The village of Kliment-Banyata, with some similarity in the pottery to that of Karanovo II, probably represents the end of that stage in the Stryama valley. In addition the chronological definition and the sequences of the different Neolithic periods and key sites, based on available ^{14}C dates calibrated with Oxcal program, version 3.0 are presented.*

POVZETEK – *V članku predstavljamo neolitsko zaporedje novo raziskane balkanske mikroregije – nižavja Karlovo, ki leži v zgornji dolini reke Strjame (severozahodna Trakija). Novi podatki potrjujejo, da se je v času zgodnjega neolitika III (obdobje Karanovo II) v zahodni Trakiji nadaljeval razvoj kulture Karanovo I. Vas Kliment-Banyata, ki kaže nekatere podobnosti s keramiko Karanovo II, verjetno predstavlja konec te faze v dolini Strjame. V dodatku članka so kronološka definicija in zaporedja različnih neolitskih obdobij ter ključnih najdišč. Podatki temeljijo na dostopnih datumih ^{14}C, ki so kalibrirani s programom Oxcal, verzija 3.0.*

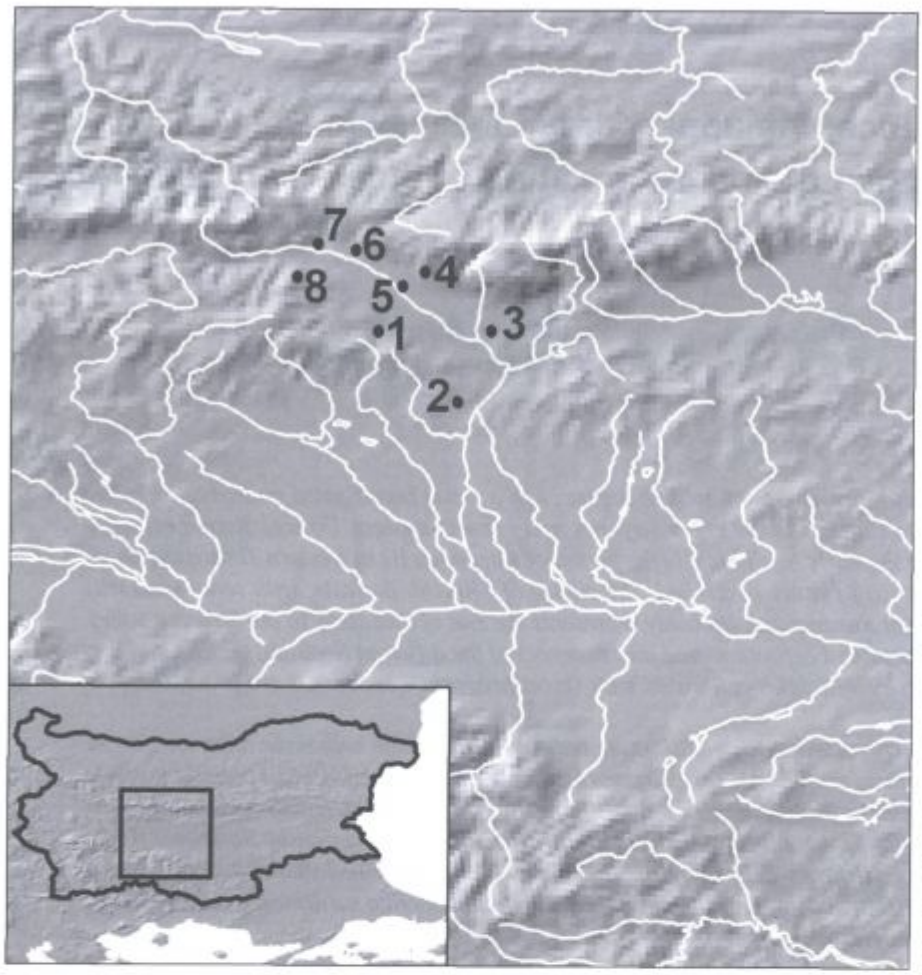
INTRODUCTION

The Stryama River is a tributary of the upper Maritsa River, located in north-western Thrace (the central Balkans). Its lower basin overlaps with the Maritsa basin, but the upper course is localised in the lowlands of Hissar and Karlovo and in the Sredna Gora Mountains (Map 1).

The upper Stryama valley divides into three areas:
- The Hissar lowland, at the foot of the southern slopes of the central Sredna Gora Mountains;
- the Karlovo lowland, between the northern slopes of the Stara Planina Mountain and southern slopes of the central Stara Planina Mountain;
- the uppermost course of the river lies in the western Sredna Gora Mountains, where there is a third micro-region.

Through the Stryama River, the Karlovo and Hissar Lowlands are open to the south-east into the Maritsa valley micro-regions. There are no high hills between the Hissar Lowland and the upper Maritsa valley, so the southern slopes of the central Sredna Gora Mountains can be seen from the Yunatsite Tell when the weather is fine. The western parts of the Sredna Gora Mountains separate the upper Stryama basin from the Zlatitsa-Pirdop and Sofia Lowlands. To the east, through the Kaloffer Hollow, the Karlovo Lowland is connected with the upper Tundja Valley. Recently, winters have been mild there, and the summers are warm, but not very hot. Deluvial soils predominate. The region is suitable both for arable agriculture and stock breeding. The Sredna Gora Mountains and Stara Planina Mountain forests, rich both in wood and game, presented an additional favourable factor for settling this region in prehistory.

The Karlovo and Hissar lowlands, as well as the upper Maritsa basin (to the west of the Plovdiv region) are historical and geographical micro-regions whose cultural interactions were quite intensive in prehistory. The latter resulted in a unification of the



Map 1. Maps of the Balkans with location of the upper Stryama valley and the Neolithic settlements documented there: 1 Hissar, 2 Chernichevo 3 Banya, 4 Karlovo, 5 Dubene – Leshtaka, 6 Dubene-Pishtikova Mogila, 7 Dubene-Popovka II, 8 Kliment-Banyata.

material culture. In short, one and the same cultures developed there during the different prehistoric periods. Western Thrace is connected through the Maritsa and Tundja Rivers with different micro-regions of eastern Thrace and opens into the Turkish Thracian Plain. The easily accessible passes of the western Sredna Gora Mountains and the western and the central Rhodopes Mountains were not a serious barrier to contacts and interaction between the Thracian population with South-western Bulgaria, in the past as in the present. The Rhodopes passes connect western Thrace with the northern Aegean area as well. Therefore, the Karlovo Lowland, being located in the southern central region of Bulgaria, appeared as an important contact zone during the different prehistoric periods.

By the 90's, this micro-region was one of the least investigated prehistoric areas in Thrace. The only Neolithic materials originated from limited drillings of the Ploskata Mogila tell near the village of Banya (excavations of P. Detev and N. Madjev), where Karanovo I and Karanovo III layers (Early and Late Neolithic) were documented. A popular article recorded a destroyed settlement, discovered at the foot of the Stara Planina Mountain, in the suburbs of the town of Karlovo, but there is no surviving material from this site (*Krajchev 1970*). In 1992 a field survey and limited drillings on sites along the upper Stryama valley registered several prehistoric settlements, two of which belong to the Karanovo I culture from the Early Neolithic: the Dubene-Pishtikova Mogila tell and Kliment-Banyata open settlement (*Nikolova and Madjev 1993; Nikolova 1994*). A few Late Neolithic sherds were discovered in the area of the Leshtaka Mogila tell near the village of Dubene in 1996, to the north of the Dubene-Sarovka tell from the Late Copper and Early Bronze Ages.

In the Hissar Lowland, P. Detev performed test diggings of a tell near the village of Chernichevo. There is no publication of excavated material. According to the ceramics from the depot of the Hissar Archaeological Museum, levels from the Early Neolithic (Karanovo I Culture), the Late Neolithic (Karanovo III Culture), the Copper Age (Karanovo VI Culture) and the Early Bronze Age (Yunatsite Culture) were documented there. Few finds have been published from

Period	Western Thrace	Eastern Thrace	Other cultures in the Balkans	Absolute Chronology BC
Late Bronze Age	Karlovo finds	Asenovec	Encrusted pottery Brenica Sabatinovka	Ca. 1500–1200/1150
Middle Bronze Age	No evidence	? Gulubovo ? latest	Verbiciora Tei Vatin	2000 – ca. 1500 BC
Early Bronze III	Dubene IIC Yunatsite 8-1	Ezero 3-1 Nova Zagora 5-1	Hatvan Kirklareli Vinkovci/Maroš Bubanj III/early Vatin	2500/2450–2000
Early Bronze II	Yunatsite 14-9 Dubene IIB	Ezero 10-4 Dolyama	Kostolac/Vučedol Cotofeni II–III/Glina Ezerovo/Sozopol	Ca. 3000–2500/2450
Early Bronze I	Yunatsite 17-15 Dubene IIA ?	Detelina Ezero 13-11 ?	Cotofeni I/Orlea Cernavoda III Baden Vajska - Hunyadihalom	Ca. 3300/3200–3000 BC Ca. 4000–3600/3500
Final Copper	Karlovo axe of Jaszladani type	Dolnoslav Karanovo VI	Cernavoda I/Yagodina Bodrogkeresztur Tiszapolgar	
Late Copper	Karanovo VI	Karanovo VI	Gumelnita – Varna	Ca. 4500–4000 BC
Early Copper	Maritsa	Maritsa	Vinča – Pločnik, Boyan complex, later Hamangia	Ca. 5000/4900–4500 BC
Late Neolithic II	Kaloyanovets	Kaloyanovets Karanovo III/IV (after V. Nikolov)	Hotnitsa, earlier Boyan complex, earlier Hamangia	Ca. 5250–5000/4900 BC
Late Neolithic I	Karanovo III ?	Karanovo III Karanovo II/III	Vinča – Tordoš, Starčevo – Cris IV	Ca. 5500/5450–5250 BC
Early Neolithic III	Karanovo I	Karanovo II	Gradeshnita-Circa Starčevo = Cris III	Ca. 5750–5500/5450 BC
Early Neolithic II	Karanovo I	Karanovo I	Gradeshnitsa-Circa II Starčevo – Cris I Devetaki	Ca. 6000/5900–5750/5700
Early Neolithic IB	?	?	Gura Baciului Ib-Donja Branjevina II	Ca. 6200–6000 BC
Early Neolithic IA			Krajnitsi, Koprivets I, Gura Baciului Ia-Donja Branjevina III	

Tab. 1. Culture sequence and absolute chronology of Neolithic, Copper and Early Bronze Ages in the upper Stryama valley and northeastern Thrace.

a settlement discovered in the area of the present-day town of Hissar belonging to the Karanovo III Culture (*Detev 1962*).

The present study initiates the systematic analysis of the Neolithic sequence in the upper Stryama valley in the context of the Balkan prehistoric development, based on new evidence from my excavation in 1992. Some finds were kindly given to me to publish by Mr. N. Madzhev, from his excavations in 1980's, and to whom I am extremely grateful. There is no evidence on the Early Neolithic I in Bulgarian Thrace (see the Appendix), so the earliest records originated from the Early Neolithic II-III, Karanovo I culture.

THE EARLY NEOLITHIC II–III: KARANOVO I CULTURE

The prehistoric settlements of the Karlovo Lowland (Map 1) are situated at an altitude of approximately 300–450 m. The Early Neolithic settlements are located not far from the upper Stryama riversides, or at the feet of the mountains (the Stara Planina Mountain and Sredna Gora Mountains). Two of the Early Neolithic settlements possess thick cultural layers: the Ploskata Mogila, near the village of Banya, and the Pishtikova Mogila, near the village of Dubene. A test dig at Dubene-Pishtikova Mogila, revealed a preserved cultural layer of around 2 metres in height belonging only to the Early Neolithic, while the Banya-Ploskata Mogila disclosed layers from the Early Neolithic (Karanovo I Culture), Late Neolithic (Karanovo III Culture) and Early Bronze Age (Yunatsite Culture). The third settlement, Kliment-Banyata is located on a slope at the very foot of the northern slopes of the central Sredna Gora Mountains. It is situated at the immediate vicinity of an intercepted warm mineral spring, which probably also existed in Antiquity and preconditioned the rise of a settlement surrounded from the south by bare ravines. Warm mineral springs are also to be found near the Banya tell and Hissar site. The 1992 preliminary trenches demonstrated a destroyed cultural layer there reaching 1 metre in depth (excluding pits).

Three categories of pottery can be distinguished: coarse, ordinary and fine. It is made of clay, with fine or bigger sand admixtures. Small stone fractions appear in the biscuit of the coarse ware. A light red or wine red slip characterise the ordinary and fine pottery. All pottery is hand-made, with brown, brown-red and greyish-black surface after firing. As an exception, a beige surface is found on some bowls.

Jar vessels with corded vertical handles are widely distributed and typify the Karanovo I culture (Fig. 1). A vase-like spheroid vessel without handles, having a small cylindrical neck and equally cut rim, was also found on the tell of Pishtikova Mogila (Fig. 2). A small bowl with equally cut rim (Fig. 3. 1,2) and a cone-shaped plate on which lines and signs were secondarily cut over the outer wall (Fig. 4) are also characteristic of this culture.

Fig. 1. Dubene-Pishtikova tell. Karanovo I Culture. Broken jar-like vessel with an S-shaped profile and four vertical, bud-like handles. Clay with sand admixtures. Well slipped surface, with a fine finish. Brown. Diameter of the mouth – 11 cm. Height – 21.5 cm. Dubene-Pishtikova Mogila. Fallow land.

Fig. 2. Dubene-Pishtikova tell. Karanovo I Culture. Fragmented vase-like vessel with a short cylindrical neck, rounded body and a ring foot. Clay with sand admixtures. Well smoothed and finished surface. Brown. Height – 19 cm. N. Subev's collection. According to the owner of the collection, the vessel originated from Dubene-Pishtikova Mogila.

Fig. 3. Kliment-Banyata settlement. Karanovo I Culture. A fragment of a spheroid bowl; preserved profile. Clay, abundant in sand admixtures. Height – 6.6 cm. Kliment – Banyata. A destroyed cultural layer from.

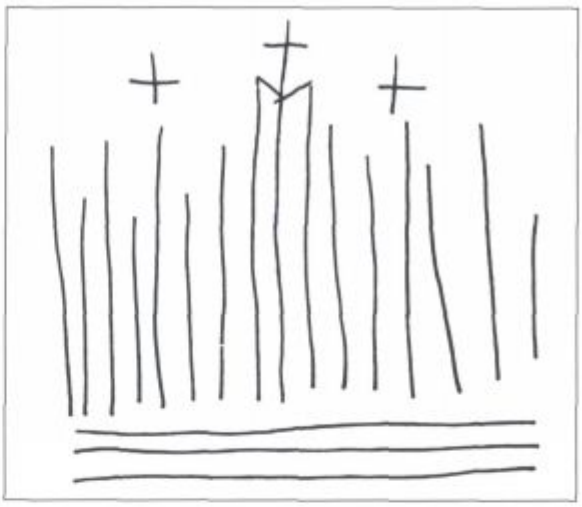


Fig. 4. Dubene-Pishtikova tell. Karanovo I Culture. A fragment of a cone plate with a rounded mouth rim. Clay, abundant in large and fine sand. Traces of brown-red slip on the surface. Parallel lines and small crosses are incised on the wall face. 16 parallel lines, on one side of which three small crosses and one "M" turned to the left are incised. On the other side, three vertical parallel lines are preserved. Wall thickness: 0.7 cm. Dubene-Pishtikova Mogila. Surface find.

Pottery painted in white was typical of the Dubene-Pishtikova Mogila and Ploskata Mogila tells near the village of Banya (Fig. 5. 1,2). Earthenware painted in dark-brown was found as an exception at Dubene-Pishtikova Mogila (*Nikolova and Madjev 1993. Fig. 6*) (Fig. 5. 3). The investigated area, however, was quite restricted. An exceptional find of two fragments of a lid with a greyish-black surface and a deeply incised spiral decoration with white encrustation was discovered at Dubene-Pishtikova Mogila (Fig. 5. 4a–b).

The white painted pottery was manufactured of well-refined clay, which sometimes contained fine sand or small stones. Cone-shaped broad plates and spheroid bowls, some of which have a foot, are most popular. Sometimes, the feet are detached. There are sherds of tulip-shaped vessels, but for the time being the evidence is scanty about this popular shape in Early Neolithic Thrace.

The prevailing number of painted earthenware has a wine-red slip, but pottery painted in white on an ochre ground was also found. Rare examples are known both from Dubene-Pishtikova Mogila (*Nikolova and Madjev 1993. Fig. 6*) and from Banya-Ploskata Mogila (unpubl.).

The painted pottery is characterised by a lozenge decoration pattern under the mouth. Geometric pat-

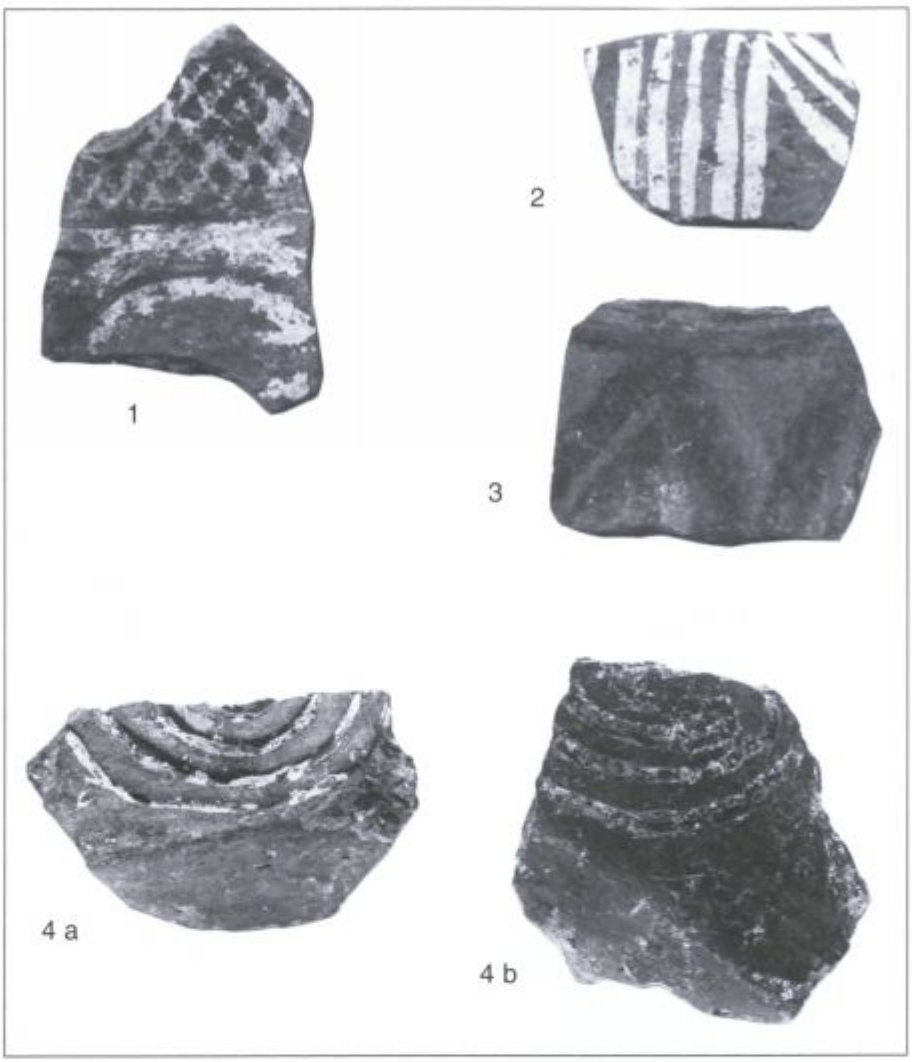


Fig. 5. Dubene-Pishtikova tell. Karanovo I Culture. 1. A fragment of a vase-like spherical vessel with a cylindrical neck and evenly cut, rounded rim. Clay with sand and plant admixtures. Fine, dense cover of red-brown slip. Painted pattern in white. On the outer side of the neck: large lozenge pattern under the mouth; on the body: curved line decoration. Wall thickness: 0.5 cm. Dubene-Pishtikova Mogila. 1.90-2.10 m depth from the surface. 2. A mouth fragment of a plate with a rounded rim. Clay with small sand and plant admixtures. Brown-red slip. Painted pattern in white. On the inner side: a strip of wide lozenge pattern under the mouth. On the outer side: groups of parallel lines crossing at an angle. Wall thickness: 0.5–0.6 cm. Dubene-Pishtikova Mogila. 1.25–1.30 m depth from the surface. 3. A fragment of a jar-like vessel with spheroid body. Clay with sand and plant admixtures. On the outer wall: a painted pattern in dark brown. Clearly defined profile change, under which a painted band of concentric lines and upright triangles follow. Wall thickness: 0.6–0.9 cm. Dubene-Pishtikova Mogila. Surface find. 4a–b. Two fragments of a lid with an incised spiral pattern encrusted with white. Finely refined clay. Black polished surface. Wall thickness: 0.5 cm. Width of the encrustation channel: 0.3–0.5 cm. Dubene-Pishtikova Mogila.

terns are typical of the body (Fig. 5. 1–3). Some of the feet bear concentric white painted strips.

The pottery fragments discovered in Kliment-Banyata were without preserved surface slip. The acid soil destroyed the ceramic surface, creating an impression that painted pottery is absent. But from the morphological point of view, however, the earthenware does not differ significantly from that found in Dubene-Pishtikova Mogila. Some jar-like vessels with rope handles have more elongated bodies. Impresso ceramics are typical. Therefore, the settlement probably followed chronologically the Dubene-Pishtikova Mogila. One herring-bone channelled fragment was discovered at Kliment-Banyata (Fig. 6) which has no parallels at Dubene-Pishtikova Mogila. It is probable that Dubene-Pishtikova Mogila and Kliment-Banyata represent the long duration of the Karanovo I culture in the Karlovo Lowland.

The cult objects so far discovered consist of fragments of small tables-altars. One of the pieces from the Dubene-Pishtikova Mogila bears a stamped pattern (Fig. 7. 1), and another has an attached zoomorphic foot (Fig. 7. 2). The small table from the Kliment-Banyata was completely restored (Fig. 8). The female idol from the Banyata-Ploskata Mogila is typical of the Karanovo I culture (Fig. 9).

Dubene-Pishtikova Mogila and Kliment-Banyata are the most northwestern Karanovo I settlements in Thrace (about Karanovo I see *Georgiev 1974 and*

Fig. 6. Kliment-Banyata settlement. Karanovo I Culture. A wall fragment of a channelled herringbone vessel. The finish is missing. Clay, abundant in fine and coarse sand. Brown surface. Destroyed cultural layer.

Parzinger 1993.110, and the a bibliography quoted there). They effectuated one of the communication lines between the upper Thracian Plain and the Zlatitsa-Pirdop and Sofia Lowlands. The pottery finds the closest numerous parallels at Chernichevo in the Hissar Lowland (unpublished), as well as in the upper Maritsa basin (Kapitan Dimitrievo: *Detev 1950. Fig. 5*). The upper Stryama valley is directly connected with the upper Tundzha region through the eastern Sredna Gora Mountain passes, where the closest parallels are to be found on the Kazanluk tell (unpublished). Stryama River also connects northwestern Thrace with the Maritsa valley, where the ceramic parallels reach as far as the region of Edirne (materials from the Archaeological Museum, Edirne).

Although the ceramics from all the investigated Karanovo I settlements have not been completely published, it could so far be assumed that this culture comprised the whole upper Thracian Plain, the northern Rhodopi Mountains slopes included. According to recent evidence, during its early stages the Karanovo I Culture occupied not only Bulgarian Thrace, but also south western Bulgaria: Kovachevo, Eleshnitsa (the Middle Strouma basin), Slatina, lower horizons (Sofia Plain), etc. (*cp. Pavuk 1993*). Earthenware painted in white from the upper Stryama valley finds parallels in settlements like Kovachevo (*Perničeva 1990. Fig. 7. 2; Fig. 9. 4*). But at the same time, there are some very close parallels to the site of Nevestino I in the middle Strouma basin (*Čohadžiev and Genadieva 1998.85; Fig. 1. 7, 16*) with earlier dot painted pottery at Donja Branjevina (*Brukner 1997. Fig. 3. 2; Karmanski 1968. Fig. 1. 6–7*). The later stages of the culture, however, demonstrate a strong influence of the Starčevo culture in the north western areas (Slatina, Gulubnik), which was reflected in the pottery style of the "mixed" Kremikovtsi group, including the Zlatitsa-Pirdop Plain (Chavdar) (*Garašanin 1966.19*) or recently named Starčevo. The pottery painted in brown and red from Dubene-Pishtikova Mogila and Chernichevo could be considered as influenced by the production of the Zlatitsa-Pirdop region. The cult tables have numerous parallels in the synchronous settlements in Southwestern Bulgaria: Priboj (*Chokhadžiev 1986. Fig. 10*), as well as in the Late Neolithic settlements (*Vandova 1997 with ref.*). Triangular tables were also typical of Gradeshnitsa A–C (Northwestern Bulgaria) where, however, a meander pattern prevails (*Nikolov 1975. Fig. 14*) which is not found in Thrace.

The northern boundary of the Karanovo I culture was the Stara Planina Mountain. Pottery painted in white is known from Vrtiste, Byala and the Devetaki cave (*Nikolov 1992.12 with ref.*), but recently it was discovered in the Danube areas of north western Bulgaria: Maluk Preslavets (*Panayotov et al. 1992. Fig. 4*) and Koprivets (unpublished), as well. According to V. Popov and I. Vajsov (*1992.10*), the

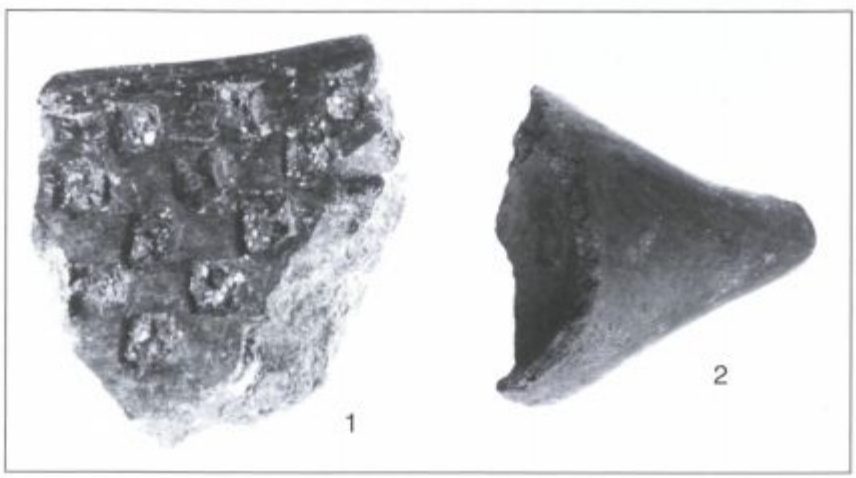


Fig. 7. Dubene-Pishtikova tell. Karanovo I Culture. 1. A fragment of a cult table. Part of the wall is preserved with a stamp decoration. Clay with fine sand and stone admixtures. Dark brown surface with a finish. Wall thickness: 0.4–1.1 cm. Dubene-Pishtikova Mogila. 2. A fragment of a zoomorphic leg with a round-like basin. Clay with fine sand admixtures. Red slip. Wall thickness: 0.3–0.5 cm. Dubene-Pishtikova Mogila.

Fig. 8. Kliment-Banyata settlement. Karanovo I Culture. A fragmented cult table. Clay with fine sand and lime admixtures. Light brown surface. The basin is relatively deep, triangular in plan. The legs have triangular cross sections. Pierced metop-like pattern on the walls and on the lower part of the legs. Wall length: 15 cm. Basin depth –1.6 cm. Height – 9.8. Wall thickness – 0.5 cm. Wall height – 3 cm. Legs foundation thickness – 3.8 x 1.9 cm. Kliment-Banyata. A destroyed cultural layer.

white painted pottery from last site parallels the Proto-Starčevo horizon. These data, however, are insufficient for a search of the Karanovo I cultural genesis in northern Bulgaria, bearing in mind the new data from Strouma valley (Nevestino), as well as of the monochromic stage in European Turkey (see below). At the same time, the material from the Devetaki cave poses the problem of the possibility of direct contacts between the Karlovo Lowland population and that of the Osum basin in northern Bulgaria as early as the Early Neolithic. At present, the Kurnare-Troyan pass is a major communication route between southern and northern Bulgaria. The earliest archaeological data from the high parts of the Troyan pass in the Stara Planina Mountain originate from the First Millennium BC. High prehistoric set-

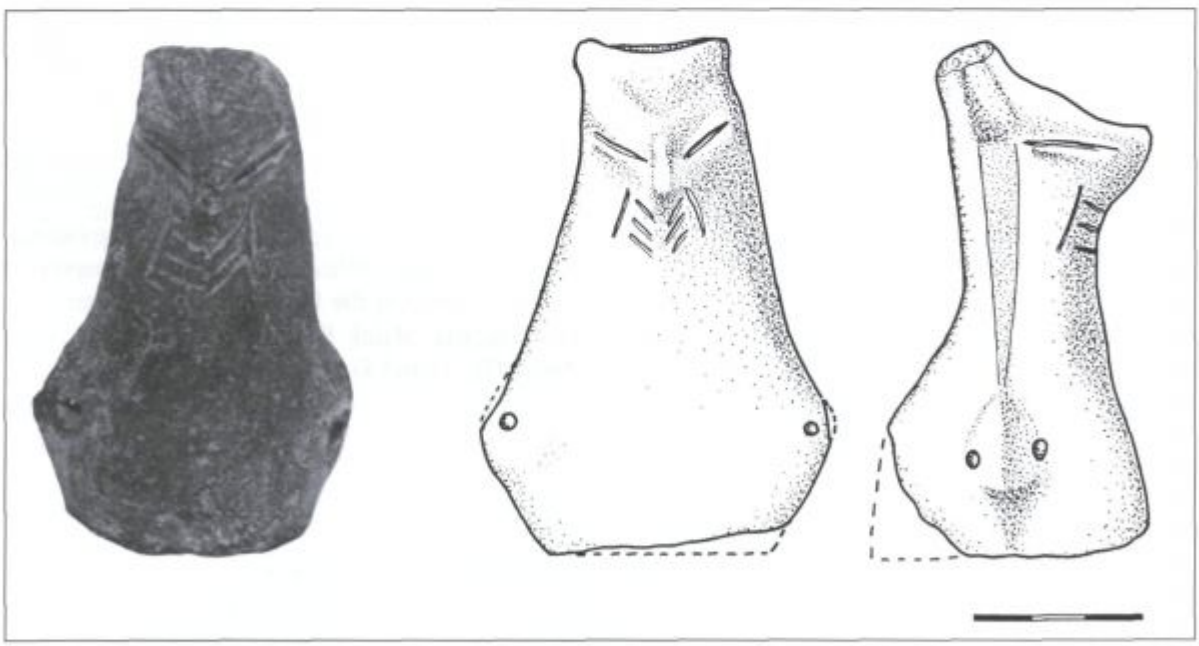


Fig. 9. Banyata-Ploskata Mogila. Karanovo I Culture. A female idol. Clay with coarse and fine sand and gold mica admixtures. Well finished surface. Dark brown surface. A short cylindrical part of a hollow body is preserved. Broken parts at the lower and rear sides. Two opposed flattened extensions and two horizontal openings render the hands. High head, flattened at the back. Rounded face with a cone projection rendering the nose, on both sides of which two oblique cuts represent the eyes. Slight elongation of the face depicts the coiffure, with a concave upper edge and conical ends, one of which is broken. Under the nose, deep, M-shaped cuts render the mouth. Between the two longitudinal cuts there are two additional oblique cuts. Preserved height: 9.3 cm; neck thickness: 4.15 cm; maximum body width: 6.5 cm; wall thickness: 1 cm; opening diameter: 3.2 x 2 cm.

tlements are generally missing in the Stara Planina Mountain. It is possible, however, that in the Early Neolithic there were communication routes through the more difficult passes, together with the Iskur Gorge and the lower eastern Balkan passes.

Evidence about the so-called monochromic stage of the Early Neolithic which precedes chronologically the horizon of the pottery painted in white is so far absent from Thrace. Data for this horizon came from south western Bulgaria: Krajnitsi, Polyanitsa, Platoto and Koprivets, and other sites in north eastern Bulgaria (*Vajsov 1998; Pavuk 1993. map 2;* see also the Appendix below). There are two possible explanations for this situation in Thrace: firstly, it can be accepted that the evidence about the earliest Neolithic in Thrace has not yet been discovered.

Secondly, we can suppose that the monochromic stage does not exist because of different reasons: a small number of the initial population which migrated into the Balkans with a tradition of the monochromic pottery and/or of native Mesolithic population adopted the baked pottery production; a lack of favourable conditions for settling down, etc.

The existence of a pre-Karanovo I stage was a principal point in the P. Detev periodisation, in which the pottery painted in white was assigned to the "Middle Neolithic" (*Detev 1963*). A number of Karanovo I characteristic morphological elements are genetically related to the monochromic stage, corded handles, spherical bowls and conical plates included (Fig. 1) (*Tscochadjiev and Bakamska 1990. Fig. 11. 1–4, Fig. 10. 1–2, 8*).

At the present state of our knowledge about the Karanovo I culture, several theoretical possibilities remain about the genesis of this culture in Thrace. An autochthonous development from the monochromic pottery along with synchronous cultural contacts is the first assumption. A second possibility is to assume an autochthonous development from the monochromic pottery along with synchronous cultural contacts and the appearance in the Balkans of migrating groups from western Anatolia. A third hypothesis is based on the presumption of a mass migration of Anatolian people into the Balkans and the occupation of areas that remained free after the initial monochromic stage migration (*see Lazarovici and Kalmar 1995.402–403; Garašanin 1998*).

In north-western Thrace we can identify a regional unit of Karanovo I culture, with the population who settled the area, for whom it is difficult to establish origins: whether from the Maritsa basin, the Kazanluk plain, or from the Zlatitsa-Pirdop lowlands. Multi-layered settlements existed along the Stryama River, while the settlements at the feet of mountains (the Stara Planina Mountain and the Sredna Gora Mountains) comprised only thin layers. The population had obviously chosen the left bank of the river, where the soils were more fertile (Dubene-Pishtikova Mogila) and the topography is more favourable for agriculture. The proximity of the Sredna Gora Mountains meant that hunting was also among the major economic activities. The land between the left bank of the Stryama and the southern slopes of the Stara Planina mountain is favourable both for agriculture and cattle breeding, although a great part of the present-day, flat arable area was probably forested. In the latter case there is no evidence of clearance of the surrounding area through burning. Only P. Detev mentions that at the base of the Plovdiv tell a thick ash layer was found which may be evidence of such activity. A thick layer of ash with fragmented pottery was found on the northern periphery of the Dubene–Pishtikova mogila, but the presence of archaeological artefacts indicates that it was the village dumping site.

The remains of Kliment-Banyata represent another type of settlement: an occupation at the immediate foot of the mountain, near a warm mineral spring. Stock breeding was probably the main economic activity of its population, as the settlement was small and did not last long, despite the massive house structures evidenced by large fragments of plaster. The upper Stryama valley is also characterised by the absence of flint resources. These were extracted in the Rhodopi Mountains region and shipped along the river. It is not clear whether the flint was an object of exchange, or whether there were groups specialised in mining it. An obsidian plate originates from Kliment-Banyata (*Nikolova and Madjev 1993, Fig. 4*), which is evidence of direct or indirect exchange, probably with the southern areas. As an exception, obsidian blades were found among the Early Neolithic flint materials from Thrace, which testify to long-distance contacts, if we do not accept that migrating groups brought them. Clay beds were also of prime importance for the first farmers settling in the upper Stryama valley. Present-day clay resources can be found in the vicinity of Dubene-Pishtikova mogila. It is worth noting that vessels of well-refined clay are numerous among the Dubene-Pishtikova mogila pottery. The large sand admixtures are local features of the Kliment-Banyata ceramics (Fig. 3; 6).

The late Karanovo I stage in western Thrace was synchronous with Karanovo II culture in north-eastern Thrace. The latter, from which no white painted pottery has been found, forms a local group. Channelled pottery is emblematic of this culture, while according to recent evidence, it appears among Karanovo I materials from western Thrace only as an exception. The channelled pottery from Kliment-Banyata have parallels as far west as in Sapareva Banya-Kremenik, where four Early Neolithic horizons have been documented (*Georgiev et al. 1986. Fig. 11*). Kliment-Banyata is probably synchronous with the late phase of Early Neolithic occupation of that site and marks the end of the Karanovo I culture in Thrace.

The second Karanovo I stage of western Thrace was contemperaneous with the Kremikovtsi Group and later Starčevo and the earlier polychrome stage in north-western Bulgaria (Gradeshnitsa), but concrete contact data have not yet been recorded from the upper Stryama valley. Vessels with polychrome decoration have been discovered in several Karanovo I settlements in Thrace: Rakitovo, Kazanluk, Stara Zagora/Azmashka Mogila and Karanovo (*after V. Nikolov, unpubl.*). These are individual vessels whose penetration to the east was facilitated by the communication route from Zlatitsa to Pirdop (Chavdar) – from the upper Stryama valley (the Dubene-Pishtikova mogila and Banyata-Ploskata mogila) – to the upper Tundzha region (Kazanluk). Another communication route was the Topolnitsa River connecting the Zlatitsa-Pirdop valley with the upper Maritsa valley. The idol from Banya-Ploskata Mogila is very similar to the one found in the Gradeshnitsa "B" level (*Nikolov 1975. Fig. 13c*) and has no close parallels in eastern Thrace.

According to the present data, it can be assumed that a variant of Karanovo I culture developed in western Thrace which could be named Kapitan Dimitrievo – Dubene – Pishtikova Mogila (for the regionalism during the Early Neolithic see *Pavuk 1993*).

Late Neolithic I: Karanovo III Culture

The Karanovo III culture followed the Karanovo I culture in Thrace, which developed during the first stage of the Late Neolithic. The Karanovo I layers are overlaid by the Karanovo III layers on the tells Banya-Ploskata Mogila and Chernichevo. Unfortunately, the data are limited and it is not clear whether the stage of pottery style transformation is testified in the Karlovo Lowland, which was defined as Karanovo II–III Middle Neolithic culture in north-eastern Thrace by V. Nikolov (*1998 with ref.*). He relied on the interpretation of the excavation data from Karanovo and on the G. Il. Georgiev information on the so-called Karanovo II–III stage, documented on the Kazanluk Tell. V. Nikolov finds the old definition of "Karanovo II–III" as invalid for Kazanluk, because as the author notes there is no Karanovo II stage. It should be remembered that no precise excavations of the Neolithic layers have been performed on larger areas in north-western Thrace. A thick Karanovo III layer was investigated near Chernichevo, which probably overlaid the Karanovo I layer of ceramics painted in white together with pottery painted in

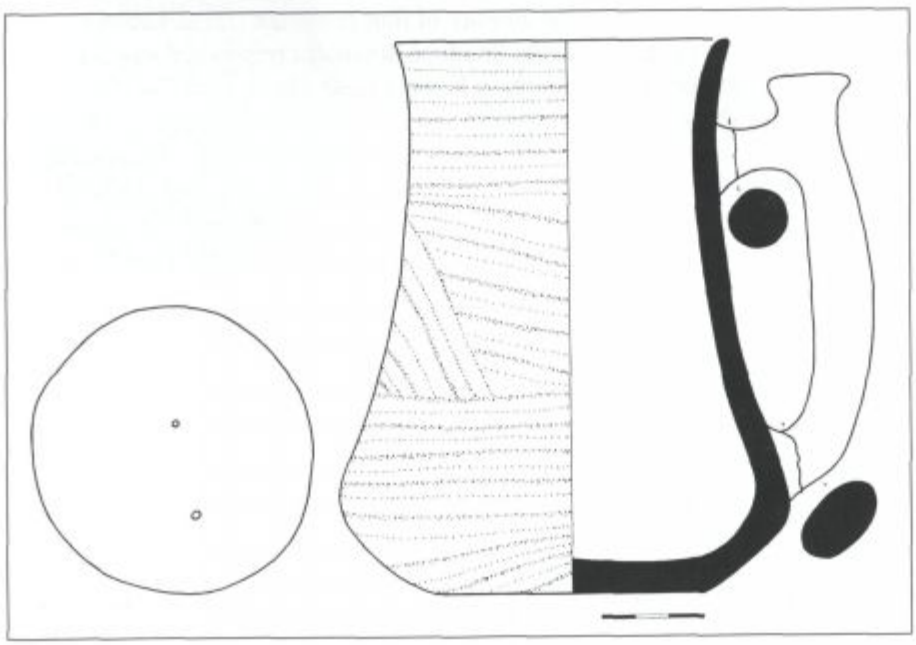


Fig. 10. Banyata-Ploskata Mogila. Karanovo III Culture. A jug. A evenly cut rim and orifice, long neck and earthenware body. Two small holes on the flat bottom. Greyish-black, polished surface. Broken vertical handle attached to the upper part of the neck and to the earthenware body. Shallow, wave-like, horizontal and oblique channels over the whole outer wall surface. Height – 16 cm.

Fig. 11. Banyata-Ploskata Mogila. Karanovo III Culture. A bowl. Clay with a great amount of fine sand admixtures and small stones. Grey-brown smoothed surface. Cylindrical. Oblique short relief band. 9.7 cm long. The vessel actually is the lower part of a jug which was later used as a bowl after it had been broken and the upper rim had been rounded. Height – 10 cm. Wall thickness – 0.7 cm.

dark colours, but stratigraphic data are lacking and its informative value is significantly reduced. At Banya-Ploskata Mogila, the Karanovo III layer was discovered at the periphery of later excavations, while P. Detev documented an Early Neolithic layer. These investigations were again limited and not precisely published. Thus, it cannot be ruled out that future investigations could differentiate or discover the Karanovo III formation stage in north-western Thrace, bearing in mind the observations in eastern Thrace, which confirmed its local character in the context of the active cultural interactions. The publication of the materials from Karanovo and Kazanluk would provide an opportunity for a better cultural definition of this stage as well.

Jugs having vertical handles and bud-like projections on them are diagnostic of Karanovo III culture. To this kind of vessel probably belongs a jug with a greyish-black, polished and channelled surface, which probably had the same kind of handle, which was found in a Karanovo III cultural layer at Banya – Ploskata Mogila (Banya II; Fig. 10), together with a jar secondarily used as a bowl (Fig. 11). Madjev registered two building horizons at the periphery of that tell. Also discovered with the ceramics was a loom weight (Fig. 12), a bone spoon (Fig. 13), a fish-hook (*Nikolova, Madjev 1993. Abb. 4*), a fragment of a cult table (Fig. 14), the lower part of a clay idol (Fig. 15), stone tools, numerous flint artefacts (*Tsonev 1995*), animal bones, etc.

A handle of a Late Neolithic jug with bud-like projection is a surface was found north of the Dubene-Sarovka, in the locality of Leshtaka (unpubl.). It is possible that the small tell located there to belongs to a Karanovo III Culture village which was a satellite of the large Banya–Ploskata mogila site some 3–5 km. distant.

The closest Banya II synchronous settlements investigated are to be found on the tell near Chernichevo (Chernichevo II) (unpublished) and at a settlement near Hissar (*Detev 1962*) in the Hissar valley. The bowl discovered at the last settlement is similar to that from Banya-Ploskata mogila. The materials from Banya find numerous parallels in Plovdiv-Yasa tepe (*Detev 1960*), including a jug (*Detev 1959. Fig. 12a, Fig. 21*), loom weight (*Detev 1959. Fig. 56.4*), spoon (*Detev 1960. Fig. 9*), cult table (*Detev 1959. Fig. 45; Detev 1960. Fig. 26*) and an idol whose high cylindrical head is missing (*Detev 1960. Fig. 34*). Detev published a marble fish-hook from Plovdiv-Yasa tepe, which was, however, discovered together with materials of Maritsa culture (the Early Copper Age, see *Detev 1960. Fig. 18*). The short relief band of the secondarily used vessel finds parallels in eastern Thrace (Karanovo III, see *Nikolov 1992. Fig. 1. 8*). Small cult tables with chess-board encrustation are characteristic of the Karanovo III culture in the region of Assenovgrad (Ruen I), in the Upper Maritsa valley (Kapitan Dimitrievo), the Middle Tundja basin (Vesseli-

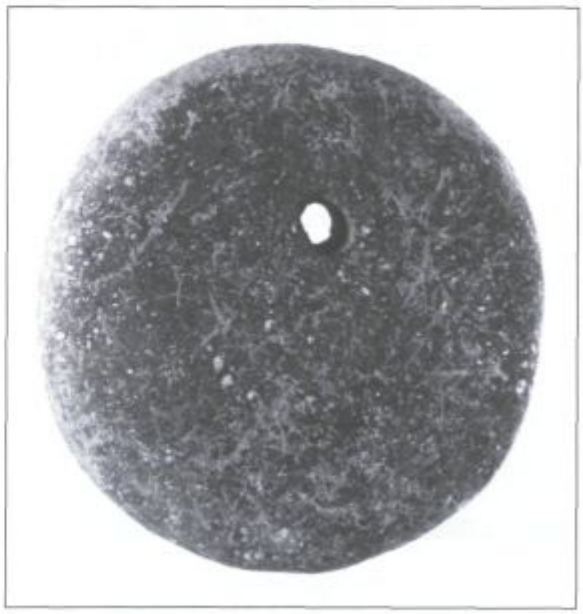


Fig. 12. Banyata-Ploskata Mogila. Karanovo III Culture. A loom weight. Clay, sand admixtures. Brown, smoothed surface. Disc-like shape. A small, round opening. Diameter–7.2 cm; thickness–2 cm; opening diameter – 0.5 cm.

Fig. 13. Banyata-Ploskata Mogila. Karanovo III Culture. A bone spoon. Rectangular, with a long handle. Height – 8.9 cm.

novo), etc. (*Kaludova 1966. Fig. 6a, g*). Banya II could possibly be synchronised with Drama-Gerena II.

The Late Neolithic finds of the Karanovo III culture from the upper Stryama valley relate north-western Thrace to the Zlatitsa-Pirdop Lowland where they find close analogies in the Chelopech II materials, vessels with vertical handles and bud-like projections on them (*Petkov 1948. Fig. 11*) and small cult tables (*Petkov 1948. Fig. 16*). According to N. Petkov, the Chelopech II cultural layer was 2.60 m thick and overlapped a dark, painted pottery layer (Chelopech I). The small cult tables with encrusted chess-board patterns are characteristic of the Late Neolithic in south-western Bulgaria: Sapareva Banya-Kremenik (*Georgiev et al. 1986. Fig. 28.1–2*). In the Early Neolithic layer of the same site a horn spoon was discovered (*Georgiev et al. 1986. Fig. 6*). A bone spoon from Gradeshnitsa also belongs to the Early Neolithic (*Nikolov B. 1975. Fig. 3*). The lower part of the flat idol finds parallels in Kurilo (*Vajsov 1984. Fig. 4.6*), probably belonging to the Late Neolithic as well. The head of that idol was probably similar to the heads discovered at Hissar (*Detev 1962. Fig. 3*). The settlement pattern in the upper Stryama valley included tells, but in contrast to eastern Thrace and upper Maritsa River, a peculiarity in the settlement structure exists there: there are no high, layered tells, and they do not exceed 2–3 m height, independently of the cultural succession on the micro-regional level. Interregional migration could not be better explained, unless a systematic investigation of the prehistoric sites of the micro-region is accomplished. According to the present data, some Neolithic tells (Banya, Chernichevo) were re-occupied in the Early Bronze Age.

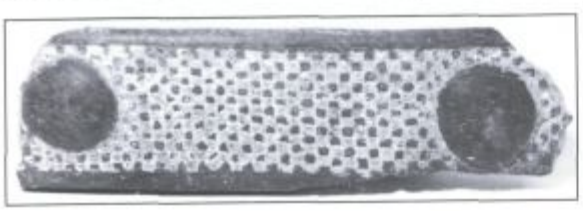


Fig. 14. Banyata-Ploskata Mogila. Karanovo III Culture. A fragment of a cult table. Well refined clay. Grey-black surface. One table side is preserved, on which a chess-board pattern is encrusted with white paste, and bud-like projections are attached to its ends. Preserved length: 13.9 cm. Wall thickness: 1.3 cm. Wall height – 4.3 cm. Basin depth – 2.6 cm.

The Late Neolithic II: Karanovo IV Culture

During the second half of the Late Neolithic the Karanovo IV (Kaloyanovets) culture developed in Bulgarian Thrace and in European Turkey (Kîrklareli). A change in the settlement pattern characterises this phase: the pattern of the tell decreased (Karanovo IV, Kazanluk, etc.) and open settlements characterise that culture – Kaloyanovets, Nova Zagora – Khobeza-voda, etc. The Karanovo IV culture has been best studied in the region of Nova Zagora (*Kančev and Kančeva 1988 with ref.*), although its expansion was significantly greater, reaching Turkish Thrace – Kîrklareli (excavations under the direction of H. Parzinger and M. Özdoğan).

The absence of convincing evidence of the Karanovo IV Culture in western Thrace has recently provoked the launching of the hypothesis that Karanovo III culture continued its development in western Thrace during the period of the Kaloyanovets culture in eastern Thrace (*Nikolov 1998*). According to V. Nikolov, the encrusted ceramics from Kalugerovo (unpublished) in the upper Maritsa valley do not contradict this assumption.

But in 1992 a vessel with the encrusted ornamentation typical of Karanovo IV Culture was found for the first time in north-western Thrace (Fig. 16), which demonstrates that Kalugerovo was not an exception in western Thrace. It is a conical bowl found on the surface to the south of Dubene-Pishtikova Mogila, in the immediate vicinity of the left bank of the Stryama (Dubene-Popovka II). The bowl has a massive, broken foot. It is of clay, with fine and coarser sand admixtures. Its surface is smoothed, but not polished. The inner side of the plate is decorated with successive bands of horizontal incised lines and parallel zigzag lines. The rim bears oblique cuts. Bands of parallel, incised lines and an S-attached pattern decorate its outer side. The ornamentation was encrusted.

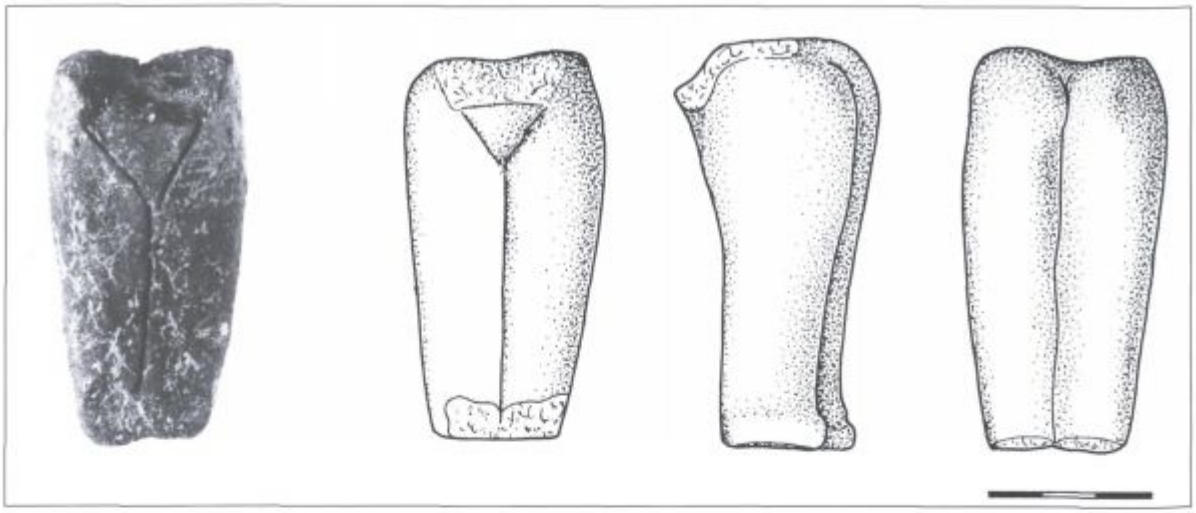


Fig. 15. Banyata-Ploskata Mogila. Karanovo III Culture. The lower part of a clay idol. Clay with sandy admixtures. Black smoothed surface. The legs are preserved, which represent an undifferentiated volume, marked by a vertically incised line which reaches the point of an inverted triangle at the upper end. The seat is moulded rendered.

This vessel is evidence of the fate of most of the thin-layered settlements in the region, which were completely destroyed by farming.

The close parallels in the ceramics from eastern Thrace also support this conclusion. A plate with an S-shaped pattern from Nova Zagora-Hlebozavoda has been discovered (*Kančeva 1992. pl. VI*). Three building horizons of the Kaloyanovets culture were filed at this site, as well as another bowl with a zigzag, incised pattern (*Kančev, Kančeva 1988. pl. II: 7*). The different decorative patterns on the inner and outer surfaces of the vessels could be followed in the published cone-shaped bowls from Nova Zagora-Hlebozavoda as well, although they have no feet (*Kančev, Kančeva 1988. plates I–II; Kančeva 1992. pl. 6*). According to the published stratigraphic data, the bowl from Dubene-Popovka originated from a settlement that was synchronous with building horizons 1–2 at Nova Zagora-Hlebozavoda.

The cone-shaped, solid foot, the zigzag and S-shaped patterns relate the vessel from Dubene-Popovka II to the bowls from Brenitsa (Northwestern Bulgaria), which, however, have smoother profiles (*Nikolov 1986. Fig. 5, 6*). According B. Nikolov, the lower two horizons at Brenitsa belonged to the end of the Late Neolithic.

In light of the evidence from Dubene-Popovka II (and Kalugerovo), the Karanovo IV Culture encompasses the whole of Thrace (Turkish Thrace includ-

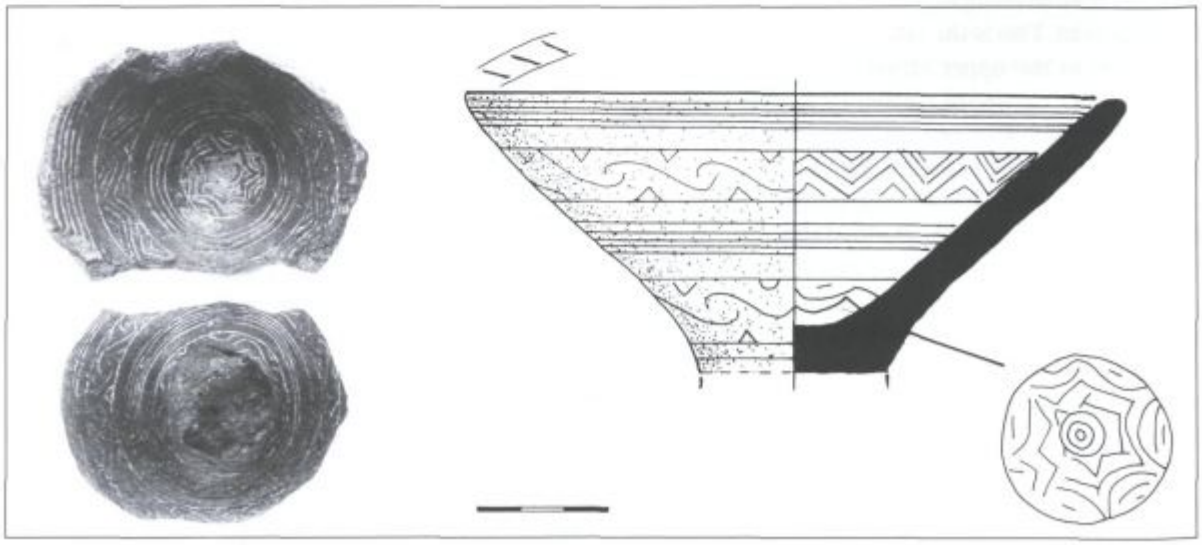


Fig. 16. Dubene-Popovka II. Kaloyanovets Culture.

ed). North-western Thrace was not isolated from common trends in the development of pottery styles (*Nikolov 1998*). It could be theoretically assumed that the Dubene-Popovka II find did not originate from the Karanovo IV Culture settlement in this locality, because the context is missing. But in my opinion, the presence of a Late Neolithic II settlement is more probable, given that the villagers have reported numerous pottery finds in the locality.

At the same time, the find, originating probably from a thin level, open settlement, also confirms my thesis that changes in the settlement pattern characterise the later Late Neolithic in Thrace, because there are no cultural levels of the Karanovo IV culture at the Banyata and Chernichevo tells. The situation is similar to that at the Kapitan Dimitrievo, Plovdiv – Yasa tepe, Kazanluk and other tells in Thrace.

The vessel from Dubene-Popovka II is so far the latest Neolithic find from north-western Thrace. No settlement of the Early Copper Age Maritsa culture has been discovered there, but a female anthropomorphic figurine from Dubene (an accidental find) suggests that the Karlovo Lowland was also occupied during this period (*Nikolova and Madjev 1993. Fig. 8*). A settlement of the late stage of Karanovo VI was discovered at the base of the tell near Dubene-Sarovka, located to the south-east of the village of Dubene (*Nikolova 1994*). A period followed which has not been documented: the final stage of the Copper Age when the Chernavoda I culture developed along the eastern lower Danube; while the end of the Krivodol-Salcuta-Bubanj and Salcuta-Telish cultures were characteristic of the western lower Danube. A big multi-layer settlement of Early Bronze Yunatsite culture has been investigated on the upper levels of Dubene-Sarovka. This is the latest prehistoric site so far registered in the upper Stryama valley.

DISCUSSION AND CONCLUSIONS

In the context of the case study of this contribution, the recent evidence of the Balkan Early Neolithic raises several points for discussion and/or conclusions:

❶ The archaeological data on prehistoric sites in the Karlovo Lowland provide an opportunity to create a cultural-chronological system of the micro-region (Tab. 1). The last includes the following cultures: Karanovo I (Early Neolithic), Karanovo I/III, Karanovo II/III Karanovo III and Karanovo III/IV after V. Nikolov (Late Neolithic I), Karanovo IV (Late Neolithic II), Maritsa (Early Copper Age), Karanovo VI (Late Copper Age), Yunatsite (Early Bronze Age). For the time being, the Late Bronze Age is documented only by an accidental find of an axe mould (unpublished).

The data are so far insufficient for the periodisation of the Neolithic cultures of the micro-region. Apart from the Early Bronze Yunatsite Culture, the rest have scarcely been excavated. The new data on the Neolithic, the Karanovo I, Karanovo III and Karanovo IV cultures, however few, allow a more precise definition of the cultural attributes of the micro-region, to make a preliminary sketch of its settlement structure and to reconsider some previous scholarly views.

❷ At the various sites one, two or more prehistoric periods were represented (Tab. 2).

Sites	Periods of occupations
Dubene-Pishtikova Mogila	EN II-III
Banya – Ploskata Mogila	EN II-III, LN I, EB II
Chernichevo	EN II-III, LN I, LC, EB III
Kliment – Banyata	EN III
Dubene- Leshtaka	LN I
Dubene-Popovka II	LN II

Tab. 2. The prehistoric periods of occupations on the documented prehistoric sites in the Karlovo Lowland.

❸ The prehistoric settlement structure in the Karlovo lowland was established during Early Neolithic II. In the earlier stage it included multi-level settlements at distances of 10–15 km apart along the Stryama River: Chernichevo, Banya-Ploskata mogila and Dubene-Pishtikova mogila. The increase in population probably resulted in an extension of the settlement structure and settlement at the foot of the Sredna Gora, near the village of Kliment–Banyata. But no conditions for successful agriculture existed there. Probably this is a main reason for the short-term occupation of the village. In terms of archaeological typology, there are two types of settlements: tells (multi-level settlements) and open villages (short-term occupations). There are no investigated houses of the Karanovo I culture in the Karlovo lowland. According to the plasters recovered, wattle-and-daub buildings typify the Early Neolithic architecture there, as in other regions of the Balkans.

❹ Typological variety characterised the hand-made pottery of households in the Karlovo lowland dur-

Models	Description
1	Adoption of the ceramic style of the white painted pottery by undiscovered culture of the monochrome stage (Early Neolithic I)
2	Migration / demic diffusion from the Strouma valley
3	Migration / demic diffusion from European Turkey
4	Migrations / demic diffusions from the Strouma valley and European Turkey
5	Migration from Anatolia through the Strouma valley and/or European Turkey

Tab. 3. Models of a genesis of the Karanovo I Culture in Bulgarian Thrace.

ing the Early Neolithic, but pithoi, jars, pots, bowls and conical plates predominated. The evolution from the white towards white and red/brown painted ware can be assumed based mainly on the data from Dubene – Pishtikova Mogila. In the Karanovo III culture, plain pottery predominated, but channel and plastic ornamented vessels specify this ceramic style. Encrusted pottery, represented in the Karlovo valley by the conical bowl with a foot, is emblematic of the Late Neolithic II, Kaloyanovets culture.

❺ The arable/stock breeding economy characterises the Neolithic Stryama valley. Stone tool assemblages were comprised of mainly flat axes. Bone implements were also widely used in household activities. Special evidence of fishing was found at Banya-Ploskata tell, where a fish hook was discovered in a Karanovo III level.

❻ Idols and small tables were used in fertility cult rituals, and of special interest is a female idol of the goddess of fertility, which has no parallel in the Karanovo I culture, although there is a close one from north-western Bulgaria. This record documents active cultural interaction through the Sredna Gora Mountains and the Iskur River or through the Stara Planina Mountains, probably connected with common rituals of the fertility.

❼ The upper Stryama valley belongs to the third Euro-Asian geographical region distinguished by M. Zvelebil (the so-called southern Balkans and the Pontic Steppe) with an environment, which would suggest "a reliance on cereals, roots, and tubers" during the Mesolithic. He considers this area "as an extension of grassland habitats of the Near East (Irano-Turenian steppe), which share in common the abundance of wild seed grasses, including wild barley and eincorn" (*Zvelebil 1994.64*). G. Georgiev also stressed the presence of wild forerunners of some cultivated plans in the Bulgarian region. Nevertheless, there are no secure arguments for the autochthonous genesis of the Neolithic in Bulgarian Thrace, including the Karlovo lowland.

Several migration hypotheses can be defined (Tab. 3), but all they are based mainly on a lack of archaeological evidence of the earliest Neolithic in Bulgarian Thrace.

In the first model, the stage of the painted pottery in the second level of the graduate Neolithization of the Balkans and the bearers of the Karanovo I culture appear to be the inheritors of the first agricultural communities in the Balkans. The second to fourth models require a demographic crisis in the neighbour regions, the outcome of which was the colonisation of Bulgarian Thrace. In this case the presence of strong micro-regional and long-distance contacts are one of the main factors of Neolithisation in terms of demic interactions. The fifth model assumes a new population in the southern Balkans which immigrated from Anatolia and was integrated with the local agricultural and stock breeding structures. In all cases, Neolithisation can be defined as a long-term process of gradual culture integration.

The absence of Mesolithic evidence from the southern Balkans contrasts with the increased data on the Vlasac-Lepenski Vir culture in the western lower Danube basin, but recently in the south-eastern parts, important so-called Epi-Paleolithic sites have been documented (*Gatsov and Özdoğan 1994*). The Vlasac-Lepenski Vir culture is an advanced Mesolithic model, including temporary housing, a complex flint industry, possible storage facilities and a developed ideological system, the centre of which was an ancestor cult. It cannot be ruled out that the Mesolithic population participated in the Neolithisation of the Balkans (*Séfériadès 1993*). The anthropological characteristics of the Maluk Preslavets settlement cemetery in the eastern lower Danube basin are an example of a proto-European anthropological type (*Panayotov et al. 1992.52–53*), which is comparable to the Vlasac–Lepenski Vir Culture. A similar conclusion arises from the Devetaki Cave anthropological material, while Mediterranian characteristics are reported from Late Neolithic Plovdiv-Yasa Tepe (*Boev 1959*). At the same time, M. Hopf (*1988*), following the model of

J. Renfrew, assumes an influence from the south among the earliest (EN I) agriculturalists in North-eastern Bulgaria. Therefore, culture integration also characterises the Neolithisation of the Balkans in the light of the evidence from north-eastern Bulgaria.

❽ The process of Neolithisation originates from the Karanovo I settlement pattern, which characterises that process as a stabilisation and structuring of social relationships towards interrelated complex communities, in which households were the main social basis (see Hodder's (*1990*) concept of *Domus*).

The pottery, stone and bone industries of the Karanovo I culture also represent the Neolithisation of the Balkans as a standardisation of the cultural components connected probably not only with domestic activities, but to some extent with the specialisation of production.

The idols of the monochromic stage and from Karanovo I culture also define the Neolithisation of the Balkans as a process of reutilising social life, developing an innovative fertility cult. The existence of settlement burials suggests that in that process an ancestor cult was of great importance. But the absence of separate burial backgrounds characterises the Balkan Early Neolithic. This fact can be explained by the absence of a cult of the dead or of burial traditions. But in my opinion, it is more probable that a tradition of isolated burials existed. In this case the cult of the dead was not communal, but connected with the different households. At the same time, the Maluk Preslavets settlement cemetery as an exception in the Balkans is connected not only anthropologically and also ritually with the Mesolithic Vlasac-Lepenski Vir culture, where burials in settlements were popular, but its mode of inhumation - crouched position – is a element of Neolithisation.

❾ A cultural change can be recognised in the development of the Karlovo Lowland at the beginning of the Late Neolithic. Banya tell, and Chernichevo tell in the Hissar valley, represents continuity in settlement life, while in the Dubene region a new settlement probably was based at Leshtaka, approximately 5 km from the Early Neolithic Pishtikova Mogila. It can be assumed that a change in ceramics was the result of eastern influence in a period when the Balkan style of painted pottery began to be replaced by encrusted ornamentation. The last, as an exception, appeared during the early Neolithic, but began to predominate in the period of the Kaloyanovets culture. The absence of settlement(s) of this culture in the Karlovo lowland can be explained by a crisis in the arable/stock breeding economy, and a change towards a semi-nomadic economy in the later late Neolithic in western Bulgarian Thrace. Some changes in the landscape cannot be completely excluded (for the western Balkans see *Budja 1995*). Despite the possibility that one or more settlements existed from the Early Copper Age in the upper Stryama valley, a new flourishing of the prehistoric culture can be argued for the Late Copper Age, as well as during the Early Bronze Age.

❿ The Neolithisation of the Balkans was also a stage in the initial development of the earliest proto-Indo-Europeans as a stage towards the development of the initial technological terminology of the agriculture. In this case of special importance there is evidence of culture integration in the Balkans in terms of the similarity between the Karanovo I and Starčevo cultures, as well as the examples when one culture with painted pottery adopted other style (later Gulubnik and Sofia-Slatina). This example defines the culture system as dynamic. In the course of interactions, terminology was probably unified and reunifited, like the technologically unified system: stone and bone implements. For this problem it is important to define continuity in my case study in western Thrace: after the Neolithic, the Maritsa culture is well-documented in the Plovdiv region, as well as the Late Copper Karanovo VI culture, in all micro-regions. The latest Karanovo VI site in the light of recent evidence dates to the earlier Final Copper Age. At the same time, the Central Rhodopi Mountains cave were occupied by the successors of the Karanovo VI culture during the Final Copper I–II, the pottery of which parallels that of the Cernavoda I culture. Because the cultural continuity between the Cernavoda I and Cernavoda III cultures is well argued, of special importance is evidence of parallels in the material culture (mainly diachronic) between the Early Bronze I Ezero and Yunatsite cultures, on the one hand, and the Cernavoda III, on the other hand.

At the same time, there is no evidence for steppe migration in western Thrace at all, which is a very strong counter-argument against any theory connected with Indo-Europeanisation through steppe migration.

From this point – the Early Bronze Age – a long, well-documented continuity characterises the southern Balkans, including western Thrace, with its critical point, the Middle Bronze Age. But knowledge on the earlier Balkan prehistory suggests that in Bulgarian

Thrace there were cyclic economic changes, followed by the decreasing or temporary disappearance of settlement structures. This feature of the southern Balkan prehistoric development fits well with the social model of periodic crises in agricultural structures, and social and economic change towards nomadic structures. This fact explains the evidence for some similarity in the ornamentation of Late Bronze Age pottery to that of the Early Bronze Age, following at the same time the style of the former period. This pottery appears in the Rhodopi Mountains in a period when part of the population was already settled on the plain. But the Early Bronze Age was the last period of long-term settlements (tells); the Middle Bronze Age can be defined as a period of gradual development of nomadic structures in the southern Balkans, like those structures which are known for the earliest Indo-Europeans, the Thracians.

In this evolution and integrated model of Indo-Europeanisation as a gradual process of change, an increase and decrease in arable/stock breeding and nomadic structures, the advances over the migration theory is that there is no homeland identified by material culture, because in my opinion, one and the same culture cannot be equated to one and the same language, just as different cultures are not the same if they have different languages. A language can be unified through active contacts between distant cultures, and at the same time peculiarities can increase in micro-regional interactions. In this case a question appears: to what extent does an archaeological culture equate with a tribe? From an ethnic point of view, the ethnographic peculiarities appear as regional characteristics. At this point, the material culture of the distinct archaeological structures has the same feature – the archaeological culture is a regional definition of a peculiar material culture. This theoretical similarity makes possible the different archaeological cultures to be defined as different tribes (or clans). Therefore, the Early Neolithic is also a process of initial ethnic structuring and development of the Balkan population and the earliest stage of the proto-Indo-European tribes.

SUMMARY

The study represents the Neolithic sequence in a newly investigated micro-region in the Balkans – the Karlovo Lowland in the upper Stryama valley (northwestern Thrace). The excavations of the author in 1992 uncovered Early Neolithic sites (Dubene-Pishtikova Mogila tell and the Kliment–Banyata open settlement), as well as a find from the Late Neolithic II period (Dubene – Popovka II). Based on ceramic parallels, they are attributed to the Karanovo I culture and to the Karanovo IV culture. Recent evidence confirms that during the Early Neolithic III (the period of Karanovo II) in western Thrace the development of the Karanovo I culture continued. The village of Kliment–Banyata, with some similarity in the pottery to that of Karanovo II, probably represents the end of that stage in the Stryama valley. At the same time, it is clear that the advanced culture developed there was in active contact with neighbouring regions, lying on one of the communicated lines connecting Thrace and the Strouma valley and, conceivably, northern Bulgaria. The unpublished excavations of P. Detev at the Chernichevo tell argue that the Early Neolithic II–III period was represented in the Hissar valley (to the south of the Karlovo Lowland), as well.

As far as the Late Neolithic I period is concerned, materials from the Karanovo III culture originate from excavations by P. Detev at Banya-Ploskata Mogila tell, Chernichevo (II) tell and the Hissar open settlement, as well as from the excavations of N. Madzhev at Banya-Ploskata Mogila. Some finds from the most recent investigations are included in this study to represent the Late Neolithic in the Karlovo Lowland, which parallel that from Hissar. The latest Neolithic sequence is represented by an accidental find from Dubene-Popovka II: a plate with Karanovo IV culture encrusted ornamentation. According to the author, the find confirms that the latter culture was distributed in north-western Thrace, and also economic changes are assumed for LN II in Thrace.

The absence of ^{14}C dates from the upper Stryama valley has required an indirect dating, so the Neolithic chronology and calibrated individual ^{14}C dates, as well as R-combine and Sum-probability for levels and phases from the Neolithic Balkans are given as an appendix. The chronological definition of the different Neolithic periods and of some key sites are based on available ^{14}C dates calibrated with Oxcal program, version 3.0. It is concluded that the Neolithic cultures developed from the later 7th Millennium BC until the end of the 6th Millennium/beginning of the 5th Millennium BC (c. 6200–5000/4900 BC). EN I is dated to c. 6200 BC– 6000 BC/5900 BC (monochromic and earliest painted phases), which is not documented in Bulgarian Thrace. The EN II span was between 6000 BC/5900 BC and c. 5750 BC (Karanovo I, earlier Starčevo and synchro-

nous cultures). The beginning of EN III (c. 5750) is well dated by the end of the Karanovo I and the beginning of the Karanovo II in eastern Thrace, continuing until 5000–5450 BC (the beginning of the Karanovo III culture). The span of the Karanovo III culture defines LN I (5500/5450 BC – 5250/5000/4900 BC) and that of Karanovo IV culture – LN II (c. 5250 BC–5000 BC/4900 BC). This periodisation is based on the culture sequence in Thrace.

APPENDIX

Neolithic Radiocarbon Dating in the Balkans

The absence of Neolithic radiocarbon dates from the upper Stryama valley requires indirect absolute dating. Recently armed with calibrated curves, the relative chronology based on cross-cultural contact data (*Lazarovici 1979. figs. 17–18; Özdoğan 1993; Lazarovici and Kalmar 1995; Özdoğan 1997; Brukner 1997; Garašanin 1998; Nikolov 1998;*) is easily comparable with the absolute chronology (*Breuning 1987; Vajsov 1998. Tab. 1; Görsdorf and Bojadžiev 1996. Fig. 1; Gläser 1996; Schier 1996*, and above (Tab. 1). Therefore, at the end of this approach towards the Neolithic in the Central Balkans I will briefly construct a model of the Neolithic Balkan radiocarbon dating, for the purposes of the indirect absolute dating of the Neolithic cultures of the upper Stryama valley. The fundamental monograph of Breuning (*1987*) and the recent comprehensive summaries of Bulgarian (*Görsdorf and Bojadžiev 1996*) and that of Rumanian dates (*Mantu 1995*) include the basic individual ^{14}C dates, and termoluminescence dates (*Bogdanović 1996*). The Oxcal program (3.0 version by B. C. Ramsay) provides for different interpretations of the available radiocarbon (and termoluminescence) dates.

In this study, of primary importance is the possibility of a Sum probability definition of different ^{14}C date series. In the cases of more than one date from one and the same horizon the Oxcal program requires R-combine dating, which is used here to date several key sites (Tab. 4). The Sum probabilities of dates from key phases (Tab. 5) give an approximate span of duration. There is are special technique for reduction of the values from wood charcoal, but bearing in mind that the ^{14}C dates give the end of the phase, for the purposes of this study this calculation was eliminated below. I should stress that most of the Neolithic samples are from wood, in contrast to the later prehistoric Balkans, but the method of using blocks of dates for conclusions give dates close to the historical chronology. It should be especially stressed that none of my conclusions is based on uncalibrated date comparisons because of the nature of the ^{14}C dates the validity of which depends on the calibrated values. Recently, only in exceptional research are uncalibrated dates still used, but this archaism of Balkan historiography is almost past.

In light of recent evidence, two periods can be distinguished in the Balkan Neolithic: Early and Late. Until the 80's, the thesis of the Middle Neolithic was popular, to which period recently V. Nikolov attributes so-called Karanovo II/III culture. In my periodisation system this phase, well-argued for by Nikolov, is attributed to the earliest stage of the Late Neolithic, based on the jugs with vertical handles and plastic application in the upper part as one of the remarkable innovations in the Balkans, characterising all later Neolithic periods in the southern Balkans. I. Vajsov (*1998*) still uses Middle Neolithic terminology, attributing the Karanovo III Culture even to the Early Neolithic; the former term is also popular for the stage of classical Starčevo in Yugoslavian historiography. V. Nikolov gave cogent arguments for the evolution from the Karanovo III towards the Karanovo IV cultures, which is my reason for attributing the Karanovo III culture to the earlier Late Neolithic (*Nikolova and Madjev 1993*).

The Early Neolithic is divided into three stages. The earlier phase of the first stage (EN IA) is characterised by the emergence of monochrome pottery (Donja Branjevina III-Gura Bacuilui Ia, Krajnitsi I, Koprivets I, etc.). It is partially investigated, e. g. there are areas in the Balkans, such as Thrace, in which this stage is missing, but there are no serious reasons to ignore the phase of monochrome pottery in the development of the Neolithic in the Balkans. To this phase belongs the Hoca Çesme IV type from the south-eastern Balkans (*Özdoğan 1993.185–86*). But according to M. Özdoğan (*1993.185*), at the same type of villages in north-western Turkey a few painted sherds were discovered. The radiocarbon dates place the EN IA at the latest in the 7th Millennium BC (Chart 1, Tab. 1). The radiocarbon chronology of the Vlasac (Lepenski Vir) culture – from the point of view of recent interpretations – belongs to the preceding Mesolithic period and there is no overlap between the Earliest Neolithic and the Mesolithic of the Central Balkans (*Tasić 1992*). This dating is important for excluding 6400 BC as possibly the earliest chronological border of the monochromic horizon in the Balkans if it was not a graduate stage from

Site /Horizon	R_combine BP	68.2% confidence BC	95.4% confidence BC	Relative Chronollogy
Hoca Çeşme I	7468±27	6360-6220	6380-6210	EN IA
Polyanitsa-Platoto	7271±34	6160-6010	6170-6000	EN IA
Gulubnik 8	6787±33	5665-5600	5690-5590	EN III
Gulubnik 7	6965±53	5860-5720	5950-5690	EN II
Slatina 4	6875±17	5714-5687	5730-5670	EN II
Eleshnitsa 2	6879±21	5720-5688	5745-5670	EN II
Chavdar 5	6922±42	5790-5695	5860-5670	EN III
Dobrinishte1	6626±38	5580-5450	5580-5440	EN III

Tab. 4. R-combine dating of key levels of the Neolithic Balkans.

Sum	68.2% confidence	95.4% confidence	Period
Hoca Çeşme IV-II	6500-5600	6600-5200	EN I - EN II
Hoca Çeşme III	5950-5660	6350-5500	EN IB
Hoca Çeşme II	5820-5330	6150-5200	EN II
Stara Zagora - Okruzhna Bolnitsa IV-V	5800-5520	6050-5400	EN II-EN III
Stara Zagora - Azmak I	5770-5320	6300- 5000	EN II, EN III
Stara Zagora - Azmak I2-3	5720-5440	5950-5200	EN II
Stara Zagora - Azmak I4-6	5490-5140BC	5600-4950BC	EN III
Stara Zagora - Okruzhna Bolnitsa IV	5780-5520	5940-5440	EN III
Karanovo III	5440-5290	5530-5220	LN I
Sitargoi I-II	5450-4600	5700-4400	LNI-II

Tab. 5. Sum probability distribution for site sites and phases from the Neolithic Balkans.

the south towards the north with possible example in southeastern Thrace before 6200 BC (Hoca Çeşme IV) (*Vajsov 1998*).

There are ^{14}C series for the EN IA from Polyanitsa - Platoto I and Hoca Çesme IV (Charts 1, 2). According to the excavator (*Özdoğan 1993; 1997*), the third layer seems to precede Karanovo I culture. Despite that most of the dates from the third phase are dated after the beginning of the sixth Millennium BC (Chart 2), the computing programme of the possibility of calculates of any given year that preceded Hoca Çesme III, gives a dating before the end of the sixth Millennium BC (Chart 3).

To the later phase of EN I belongs the earliest white painted pottery horizon of Donja Branjevina II type (Proto-Starčevo II). According to V. Nikolov (*1998*), pottery with parallels in this horizon was documented at a multilevel site in north-eastern Bulgaria, where it followed a monochromic level. Therefore, in light of that evidence EN IB also includes that micro-region. The fact that at Krajnitsi the white level succeeded the monochromic level also suggests a diachronic relation between the earliest white painted pottery and that of the earliest Karanovo I complex. There are some parallels in Donja Branjevina II and Nevestino I (see above), probably document this Pre-Karanovo I phase in the central Strouma valley. It is difficult to conclude if this phase belongs to EN I (B-C?) or to EN IIA.

There are limited ^{14}C dates from the key sites in the northern Balkans from EN IB with published correlation between the radiocarbon samples and the ceramic evidence. Tasić (*1993; Table A*) published dates and some stratigraphic correlation from Donja Branjevina and Magareči mlin. Assuming for the time being that EN IB is dated ca. 6100-6000/5900 BC.

The second stage of the EN is characterised by the wide distribution of white painted pottery in the Karanovo I complex, the earlier Gradeshnitsa-Cirça and earlier Starčevo-Cris cultures, as well as in the Maluk Preslavets type from the eastern lower Danube basin with the numerous regional peculiarities (for the middle and upper Strouma see *Pavuk 1993, Brukner 1997*). The ^{14}C dates from earlier Karanovo I and Starčevo cultural contexts date the stage to earlier Sixth Millennium. The earlier Charvar, Slati-

na and Gulubnik belong to this stage too. For the case study of the upper Stryama valley, the beginning of the Karanovo II culture in turn gives the border between the EN IIA and EN IIB or between the earlier and later Karanovo I culture in western Thrace. There is a possibility of dating the latest white painted horizon in the upper Stryama valley, as well, and for the results to be compared. The radiocarbon dating of the Karanovo II culture based on the dates from the eponymous site correspond well to the EN III in the Balkans, giving dates between 5750 BC and 5520 BC, with 68.2% confidence (Chart 5). The fact that the charcoal samples date that group is not a big problem because those samples date the end of occupation of the levels and we are interested in the beginning of the Karanovo II group. Those dates coincide with the dating of the end of the Slatina 4 (Chart 6) to c. 5750 BC based on the earlier values of 68.2% confidence in the context of cross-cultural comparisons.

Therefore, the lowest chronological border of the EN II is c. 6000/5900 BC, and the upper chronological border is c. 5750 BC. This is the period to which can be attributed the earliest levels from the Dubene-Pishtikova Mogila, and probably from Banya-Ploskata Mogila and Chernichevo. It is possible the earliest Gradeshnitsa-Circa culture followed the beginning of the Karanovo I culture because of the indirect evidence for the white painted horizon from Devetaki cave (*Nikolov 1992*).

For the time being, the relative chronology is well defined for the Dobrinishte 1 (middle Stryama basin), at the end of the EN II (Chart 7). The calibrated values of R-combine 6626±38 BP date the end of the village between 5580 BC and 5450 BC (68.2% confidence) which in short corresponds to later Starčevo and the end of the Karanovo II complex in the eastern Balkans, including the Karanovo II and Ovcharovo groups.

There are 212 ^{14}C dates reliable for Sum probability dating of the Early Neolithic Balkans, from pre- and Karanovo I culture and Starčevo complexes to Karanovo II culture. They infer that the span between 6010 BC and 5520 BC (with 68.2% confidence) gives the probable dating of the that period (Chart 4), which fact in my opinion corresponds well to the regional chronology of the different culture formations.

In the earlier Late Neolithic (LN I) two tendencies characterise Balkan Neolithic development: on the one hand, the innovatory, bi-conical ceramic style was distributed in the Karanovo III (including Karanovo II/ III and III/IV after V. Nikolov) and the earliest Vinča, as well as that of the Hamangia cultures (for the chronological sequence of the latter see *Vajsov 1998. Fig. 1*). On the other hand, the decreased evolution of the EN ceramic style of painted pottery was still distributed in the north-western Balkans. This stage is dated by the Karanovo III Culture ^{14}C dates to the third quarter of sixth Millennium BC (Chart 8); 5440BC–5290 BC is the radiocarbon dating based on the sum probability of 12 dates from Karanovo tell, which coincides with the sum probability based on the dates from the tells of Karanovo III, Kazanluk 6 and 3 and Ezero 24 (Chart 9) to 5440 BC–5280 BC. To this stage belong the LN levels from Banya-Ploskata Mogila and Chernichevo tells.

The late Neolithic II horizon includes Karanovo IV culture in Thrace, an earlier Vinča culture, the earliest Boian, Hotnitsa, Gradeshnitsa and Hamangia cultures in the Balkans between the Drina and the Black Sea, as well as between the Carpathians and the Aegean. The absolute dating of Karanovo IV culture, based on a comparison with the EN II dating of sites from neighbouring regions (Chart 10), is to the fourth quarter of the sixth Millennium BC. This is the stage to which belongs the Dubene-Popovka II encrusted plate.

In light of the recent evidence, the end of the Neolithic in the Balkans occurred between c. 5000 and 4900 BC. The Sum probability of the 283 dates of the Balkan Neolithic confirms mainly the dating of the earlier stages (Chart 11), which can be explained by the fact that more dates belong to the earlier Neolithic.

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CHARTS

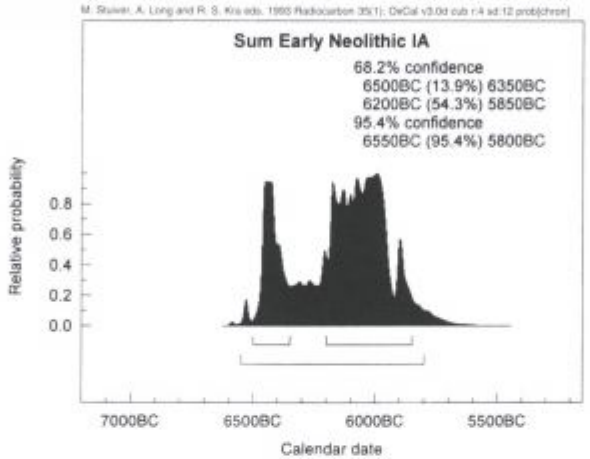

Chart 1. Sum-probability for ^{14}C dating of EN IA in the Eastern Balkans (Hoca Çeşme IV and Polyanitsa-Platoto) n = 7.

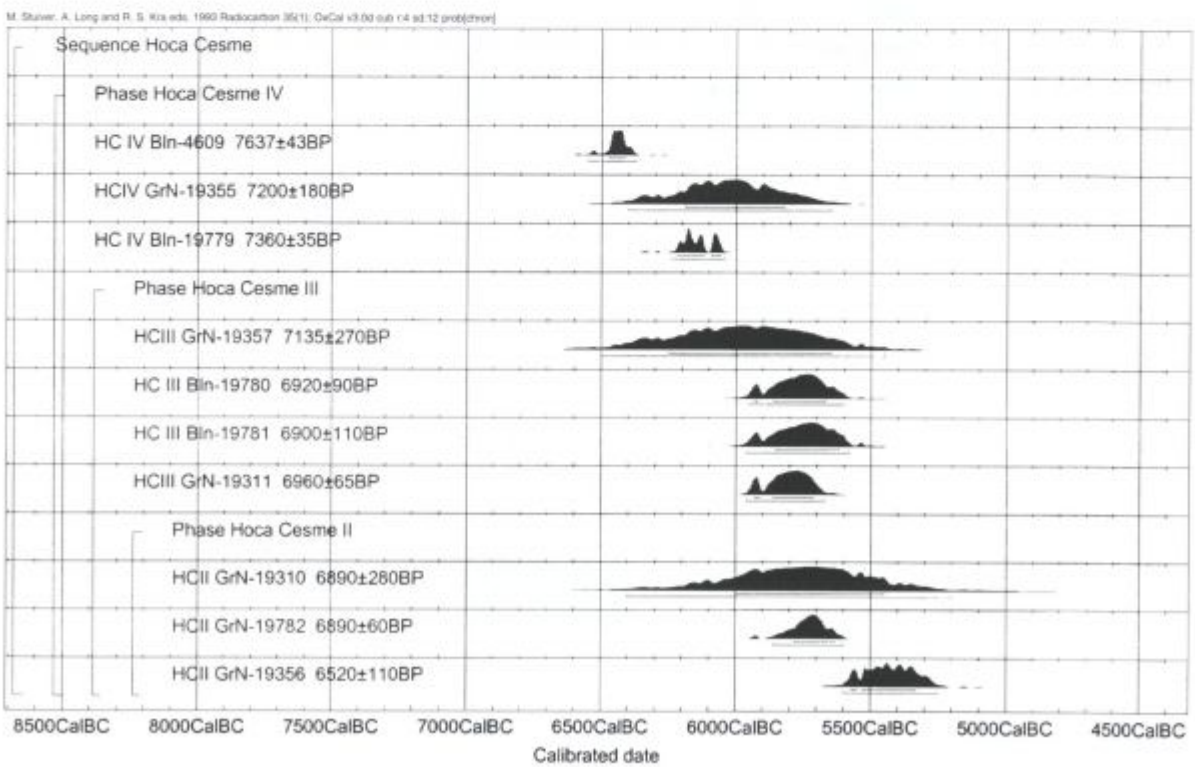

Chart 2. ^{14}C dated sequence of the Hoca Çeşme IV, III and II phases.

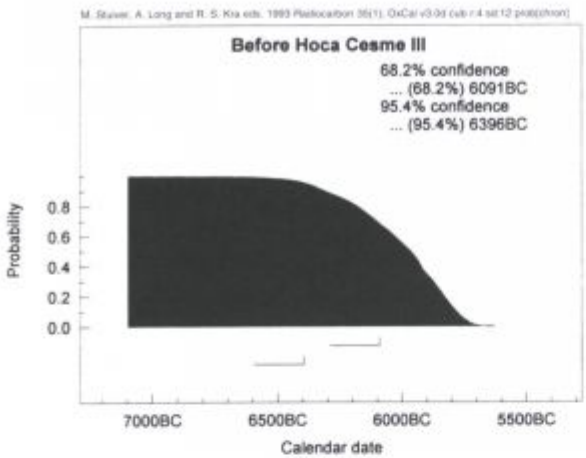

Chart 3. The computing of the possibility of the calculates the probability of any given year preceding Hoca Çesme III.

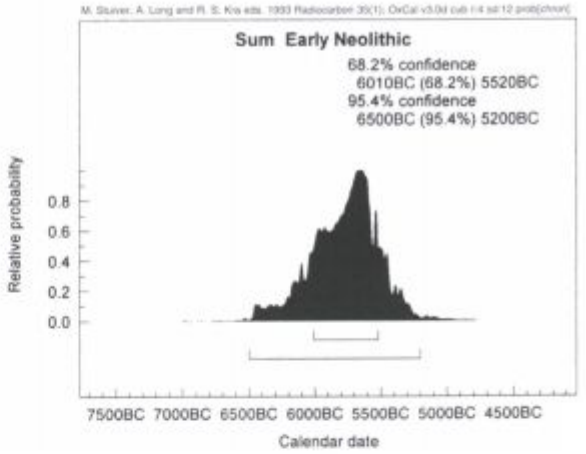

Chart 4. Sum probability for dating of the EN in the Balkans based on 212 dates.

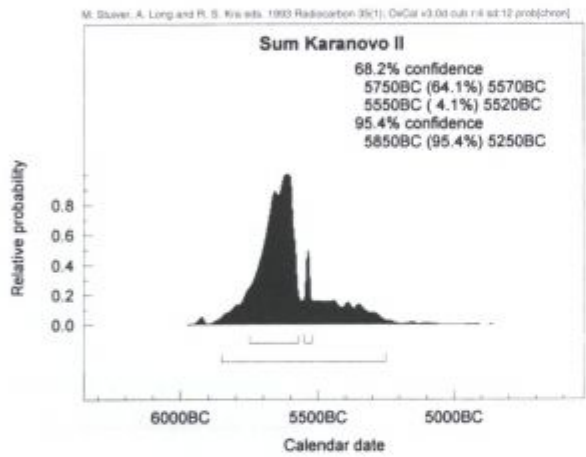

Chart 5. Sum probability of radiocarbon dating of the Karanovo II culture.

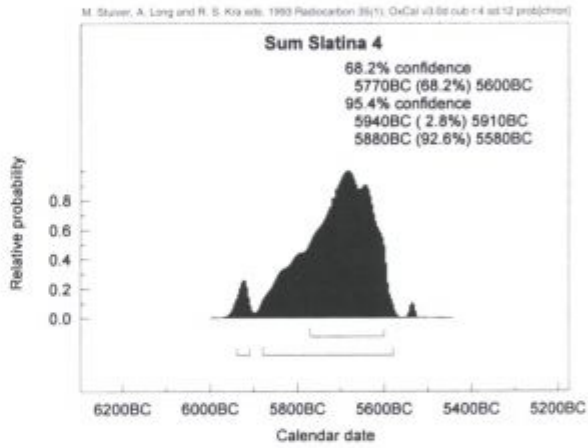

Chart 6. Sum probability of dating of the end of the Burnt House from Slatina 4 (end of EN IIA).

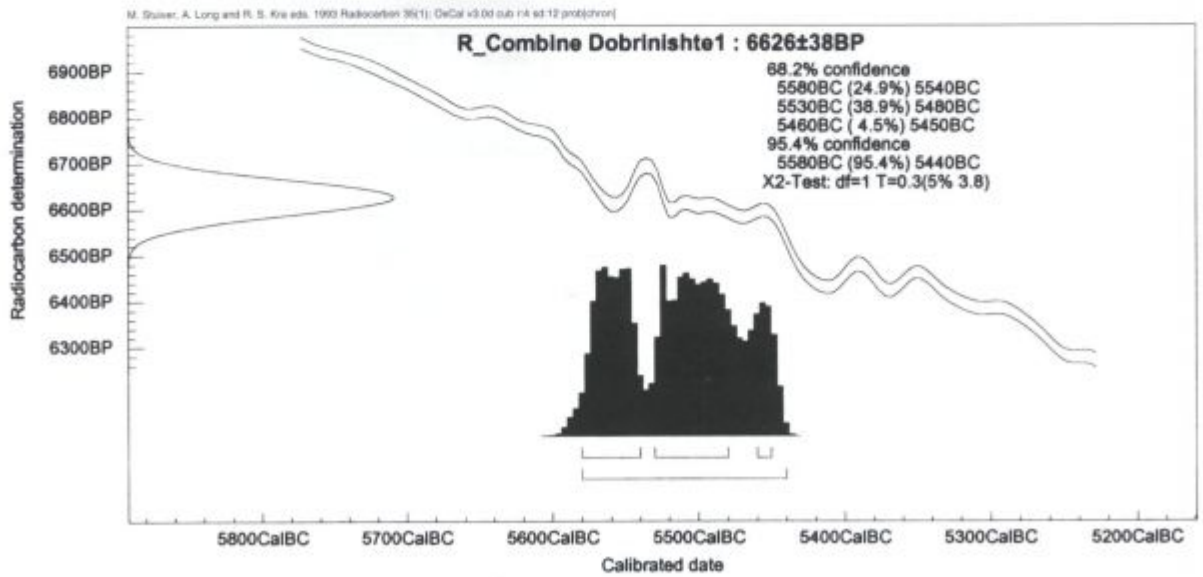

Chart 7. R-combine probability of dating of the Dobrinitshte (the end of EN IIB in the Balkans).

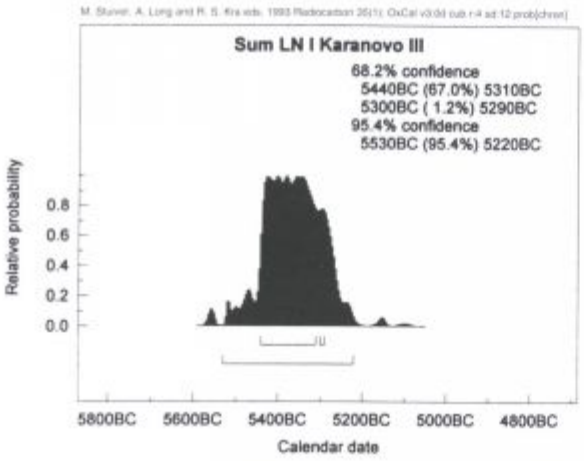

Chart 8. Karanovo III levels absolute dating based on the sum probability of 12 dates.

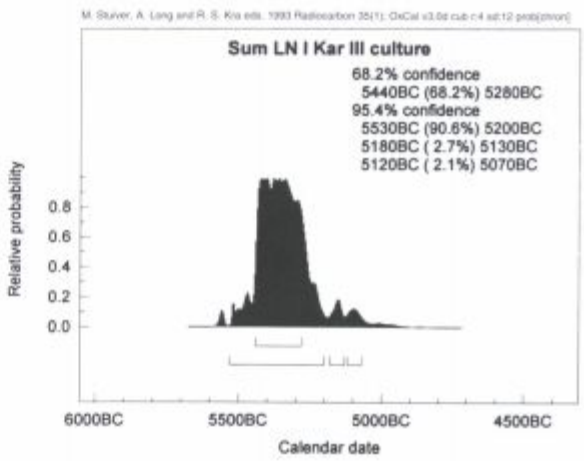

Chart 9. Karanovo III culture absolute dating based on the dates from Karanovo, Kazanluk and Ezero tells.

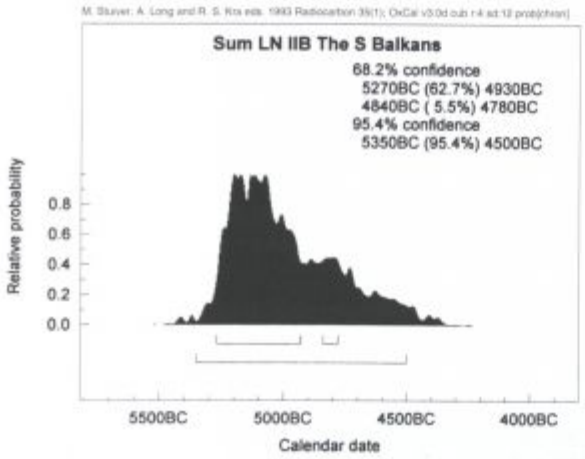

Chart 10. Late Neolithic II in the Bulgaria and the northern Aegean dated by the ^{14}C dates from Kachica 3, Topolnitsa and Sitgaroi II.

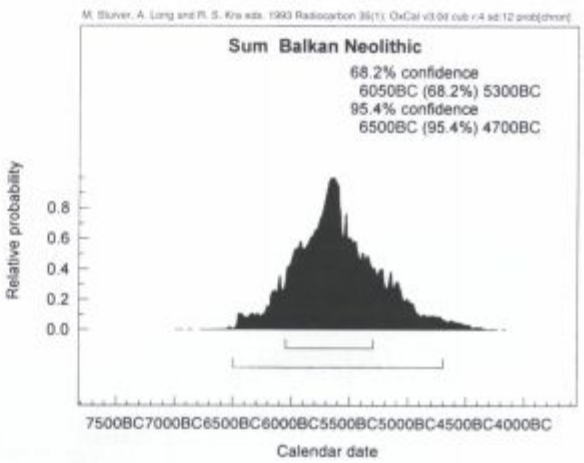

Chart 11. Sum probability of the Neolithic absolute dating the Balkans based on 283 ^{14}C dates.

Table A. Individual calibrated dates from Neolithic sites in the Balkans (later Seventh– earlier Fifth Millennia BC), R-combine for individual levels and Sum-probability for phases. References for the dates: Breuning 1987; Tasić 1988; Mantu 1995 and Görsdorf and Bojadžiev 1996 (with ref.); Tasić 1993; Özdoğan 1993.186; Pyke G. and Yiouni P. 1996.195; Schier 1996; Gläser 1996; Özdoğan 1997.28; Özdoğan and Dede 1998.150. Calibrated by Oxcal 3.0.

EN – Early Neolithic
LN – Late Neolithic
EC – Early Copper

Comment: The kind of the most of the samples and their stratigraphic context are given in the original publications.

Site	Labaratory and Sample No.	BP	68.2% confidence BC	95.4% confidence BC	Complex (Culture, Group, Type) Period
Anzabegovo	LJ-2519	7560±70	6460-6250	6470-6190	Anzabegovo-Vršnik
Anzabegovo Ia	LJ-2181	7340±250	6450-5850	6700-5600	
	LJ-3032	7210±50	6120-5970	6170-5950	
	LJ-2330/2331	7180±60	6110-5950	6170-5870	
	LJ-3187	7150±70	6050-5880	6170-5820	
	LJ-3183	7150±50	6030-5890	6120-5860	
	LJ-3185	6830±70	5720-5600	5810-5520	
	LJ-2347	6700±150	5690-5440	5950-5250	
Sum-probability Anzabegovo Ia			6150-5550 6050 (56.2%) 5940	6400-5400	EN I
Anzabegovo Ib	LJ-2341	7230±170	6220-5860	6400-5700	Anzabegovo-Vršnik
	LJ-2342	7120±200	6170-5730	6400-5550	
	LJ-2332	7110±120	6050-5800	6170-5710	
	LJ-2339	7110±70	6010-5850	6120-5770	
Sum-probability Anzabegovo Ib			6120-5790 6060 (63.8%) 5790	6400-5650	
Sum-probability Anzabegovo Ia-b			6200-5600 6200 (62.0%) 5800	6400-5400	EN I-beginning EN II?
Anzabegovo Ib/II	LJ-2337	7080±60	5980-5850	6020-5760	Anzabegovo-Vršnik
Anzabegovo II	LJ-2157	7030±330	6200-5550	6500-5200	
	LJ-2405	6940±80	5930-5690	5960-5630	
	LJ-2333	6840±120	5810-5580	5950-5480	
	LJ-2409	6850±50	5720-5630	5770-5590	
	LJ-2338	6800±140	5790-5520	5950-5400	
	LJ-2156	6630±300	5850-5200	6200-4800	
Sum-probability Anzabegovo II			5940-5530 5870 (65.4%) 5570	6300-5000	EN II
Anzabegovo II/III	LJ-2343	7000±280	6150-5550	6400-5300	Anzabegovo-Vršnik
	LJ-2351	7050±80	5970-5800	6020-5700	
Anzabegovo III	LJ-2344	7000±270	6150-5550	6400-5300	Anzabegovo-Vršnik
	LJ-2345	6540±120	5580-5330	5630-5250	
	LJ-2185	6510±110	5560-5320	5600-5250	
Sum-probability Anzabegovo III			5630-5260	6200-5200	ENIII-LN I
Anzabegovo IV	LJ-2329	6230±60	5250-5070	5280-4990	Anzabegovo-Vršnik
					IV
	LJ-2411	6070±190	5220-4780	5450-4500	
Sum-probability Anzabegovo IV			5270-4980	5350-4600	LN
Sum Anzabegovo			6150-5550	6500-4900	EN-LN
Banja	Bln-873	7048±100	5970-5770	6050-5680	Proto-Starčevo EN I
Beran Krš 7	Z-491	6030±160	5210-4720	5300-4500	Vinča / LN-EC
Beran Krš 13	Z-492	5870±150	4910-4540	5200-4350	

Continued...

Site	Labaratory and Sample No.	BP	68.2% confidence BC	95.4% confidence BC	Complex (Culture, Group, Type) Period
Bulgarchevo 4	Bln-2614	6100±50	5070-4930	5210-4850	Topolnitsa
Chavdar 6	Bln-1583	7208±52	6120-5970	6170-5950	Karanovo I
	Bln-1580	7202±55	6120-5970	6170-5890	
	Bln-2108	7195±65	6120-5960	6170-5880	
	Bln-1663	7070±50	5970-5850	5990-5780	
	Bln-1582	7020±45	5950-5800	5960-5750	
	Bln-1581	7000±60	5940-5760	5960-5710	
	Bln-1579	7003±45	5940-5770	5960- 5730	
	Bln-1578	6994±55	5940-5760	5960-5710	
	Bln-2662	6820±50	5695-5615	5740-5580	
R-combine Chavdar 6		7049±17	5950-5855	5960-5840	EN II
Chavdar 5	Bln-4261	7120±80	6040- 5850	6130-5760	Karanovo I / EN II
	Bln-4106	6840±50	5710-5625	5760- 5590	
R-combine Chavdar 5			5790-5695	5860- 5670	EN II
Chavdar 4	Bln-1160A	7040±100	5970-5770	6050-5670	Karanovo I
	Bln-1251	6997±100	5950-5730	6000-5630	
	Bln-1162A	6985±100	5950-5720	5990-5630	
	Bln-1241A	6930±100	5940-5670	5960-5600	
	Bln-1241	6852±100	5780-5590	5950-5520	
	Bln-1160	6680±100	5620-5440	5720-5380	
R_Combine Chavdar 4		6917±41	5780-5695	5850-5670	EN II
Chavdar 3	Bln-998	7045±120	5980-5750	6120-5630	Kremikovtsi
	Bln-908	6990±150	5970-5690	6150-5500	
	Bln-911	6870±120	5820-5590	5960-5520	
	Bln-909	6815±100	5750-5580	5940-5480	
	Bln-1030	6760±100	5710-5520	5790B-5440	
	Bln-910	6665±100	5600-5440	5710-5340	
R_Combine Chavdar 3		6833±45	5705-5625	5740-5590	EN III
Chavdar 2	Bln-906	6720±100	5680-5490	5750-5430	Kremikovtsi / EN III
Circea-Viaduct III	Bln-1981	6540±60	5570-5380	5580-5330	Later Gradeshnitsa - Circea
	Bln-1982	6430±60	5440-5310	5440-5260	
	Bln-1983	6395±60	5430-5270	5440-5240	
Sum-probability Circea-Viaduct III			5550-4700 5550(65.2%) 5250	5600-4550	LN I
Circea-Viaduct	Bln-1978	6585±65	5570-5440	5600-5340	Dudesti - Vinča B
	Bln-2292	6325±60	5330-5140	5430-5070	
	Bln-2008	6250±40	5260-5080	5270-5070	
	Bln-1980	6100±60	5200-4930	5220-4840	
Sum-probability Circea-Viaduct			5600-4950 5350(49.7%) 4950	5600 (95.4%) 4900	LN II
Čuka	Z-495	7010±190	6010-5660	6250-5500	Starčevo
Dikili Tash I	Gif-1740	6450±160	5570-5240	5650-5000	
	Gif-1737	6400±160	5480- 5080	5600-4950	
	Gif-1735	6170±160	5270- 4920	5450-4700	
Sum Dikili Tash I			5480-5060	5600- 4800	LN I
Dikili Tash II	Gif-1736	5990±160	5200-4700	5300-4500	Sitagroi - Dikili Tash
	Gif-1424	5750±150	4780-4450	4950-4250	
	Gif-1425	5750±140	4770-4460	4950-4300	
Dikili Tash II			4910-4450	5250-4300	LN II
Divostin	Bln-899	7200±100	6170-5890	6220-5810	Proto-Starčevo
	Bln-826	7120±100	6050-5830	6170-5730	

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Site	Labaratory and Sample No.	BP	68.2% confidence BC	95.4% confidence BC	Complex (Culture, Group, Type) Period
	Bln-823	7080±180	6110-5720	6350-5550	
	Bln-866/899	7050±100	5970-5770	6050-5680	
	Bln-824	6970±100	5940-5710	5980-5620	
	Bln-896	6950±100	5940-5690	5970-5610	
	BM-573	6935±98	5940-5680	5960-5600	
	Bln-827	6910±100	5850-5630	5960-5590	
Sum-probability Divostin			5960-5690	6200-5500	EN I
Dobrinishte 1	Bln-3785	6650±60	5590-5480	5610-5430	Kremenik
	Bln-3786	6610±50	5570-5440	5580-5430	
R-combine Dobrinishte1		6626±38	5580-5450 5530BC (38.9%) 5480BC	5580- 5440	EN III
Donja Branevinja	Grn-15974	7155±50	6040- 5890	6120-5860	
			6040 (64.6%)	6060 (77.4%)	
			5950	5930	
	GrN-15976	7140±90	6110-5850	6170-5770	
			6050 (46.5%)		
			5930		
	GrN-15975	6955±50	5850-5720	5950-5690	
Sum Donja Branevinja			6050- 5740	6120- 5700	Proto-Starčevo and early Starčevo EN I-II
Eleshnitsa 2	Bln-3238	7010±60	5950-5770	5960-5720	Karanovo I
	Bln-3241	6960±60	5930-5710	5950-5680	
	Bln-3242	6940±50	5830-5700	5940-5670	
	Bln-3239	6920±60	5820-5680	5940-5630	
	Bln-3240	6850±50	5720-5630	5770-5590	
	Bln-3237	6790±50	5675-5595	5720-5530	
	Bln-3245	6730±90	5690-5520	5730-5440	
	Bln-3244	6720±70	5670-5520	5690-5440	
R-combine Eleshnitsa 2		6879±21	5720- 5688	5745-5670	EN II
Ezero 24	Bln-1833	6415±70	5430-5280	5450-5230	Karanovo III
	Bln-530	6270±80	5280-5070	5430-4990	
R-combine Ezero 24		6353±53	5380-5240 5340(64.8%) 5240	5430-5210	LN I
Gornja Tuzla	GrN-2059	6640±75	5580-5440	5640-5430	Later Starčevo/EN III
Grivac	Bln-869	7250±100	6170-5980	6360-5860	Proto-Starčevo/EN I
Gulubnik 1	Bln-3579H	7220±80	6160-5960 6070 (47.2%) 5960	6190-5870 6190 (91.4%) 5930	Gulubnik
	Bln-3580	7120±70	6020-5850 6020 (41.7%) 5930	6120-5770 6060 (92.8%) 5770	
	Bln-3579	7030±70	5960- 5790	5980-5710	
	Bln-3582	6950±70	5930-5700	5960-5660	
R-combine Gulubnik 1		7073±36	5965-5865	5980-5820	EN II
Gulubnik 7	Bln-4096	7140±80	6050-5860	6170-5780	Later Starčevo
	Bln-4095	7020±150	5980-5700	6200-5550	
	Bln-4094	6760±80	5690-5520	5750-5440	
R-combine Gulubnik 7		6965±53	5860- 5720	5950-5690 5890 (84.7%) 5690	EN II
Gulubnik 8	Bln-4091	6760±60	5675-5580	5720-5520	Later Starčevo
	Bln-4092	6710±60	5640-5520	5680-5440	
	Bln-3576	6670±70	5600-5480	5640-5430	

Continued...

Site	Labaratory and Sample No.	BP	68.2% confidence BC	95.4% confidence BC	Complex (Culture, Group, Type) Period
R-combine Gulubnik 8		6718±36	5605-5525 5605 (45.8%) 5570	5670-5520	EN III
Hoca Çeşme IV	Bln-4609	7637±43	6470-6410	6550-6370	Hoca Çeşme
	GrN-19779	7360±35	6220-6060	6240-6040	
	GrN-19355	7200±180	6190-5820	6400-5650	
R-combine Hoca Çeşme IV		7468±27	6360-6220	6380-6210	EN IA
Hoca Çeşme III	GrN-19357	7135±270	6250-5650	6500-5450	Hoca Çeşme
	GrN-19311	6960±65	5930-5710	5960-5670	
	GrN-19780	6920±90	5930-5670	5950-5600	
	GrN-19781	6900±110	5850-5620	5960-5580	
Sum Hoca Çeşme III			5950-5660	6350-5500	EN IB-II
Hoca Çeşme II	GrN-19782	6890±60	5780-5630	5860-5600	
	GrN-19310 (or GrN-19356)	6890±280	6000-5450	6400-5200	
	GrN-19356 (or GrN-19310)	6520±110	5570-5330	5600-5250	
Sum Hoca Çeşme II			5820-5330	6150-5200	EN II
Sum Hoca Çeşme			6500-5600	6600-5200	EN I-II
Karanovo I	Bln-4179	7130±70	6040-5860	6120-5780	Karanovo I
	Bln-4336	7110±50	5990-5870	6050-5830	
	Bln-4177	7110±50	5990-5870	6050-5830	
	Bln-4339	7090±90	6000-5810	6120-5720	
	Bln-4338	6955±45	5840- 5720	5940-5690	
	Bln-3942	6820±50	5695-5615	5740- 5580	
	Bln-4337	6810±65	5695-5595	5770-5520	
	Bln-4335	6710±55	5630-5520	5680-5450	
Sum-probability Karanovo I			6000-5530 6000BC (39.5%) 5840BC	6050-5500	EN II
Karanovo II	Bln-3716	6910±60	5810-5670	5940-5620	Karanovo II
	Bln-3716H	6850±60	5730-5620	5810-5590	
	Bln-152	6807±100	5740-5530	5860-5480	
	Bln-3944	6785±60	5680-5590	5730-5520	
	Bln-3586	6780±60	5680-5590	5730-5520	
	Bln-3943	6760±50	5665-5585	5700-5520	
	Bln-3941	6750±50	5670-5530	5700-5520	
	Bln-201	6540±100	5570-5330	5600-5270	
	Bln-234	6490±150	5570-5270	5700-5050	
Sum probability Karanovo II			5750- 5520	5850- 5250	EN III
Kazanluk 6	Bln-730	6335±160	5440-5070	5600-4900	Karanovo III/LN I
Kazanluk 3	Bln-729	6330±100	5430-5080	5450-5040	Karanovo III/LN I
Kremenik 2	Bln-2554	6620±100	5590-5440	5670-5330	Kremenik
	Bln-2552	6460±60	5440-5330	5480-5260	
Kremenik 3	Bln-2555	6840±60	5720-5615	5790-5580	Kremenik
	Bln-2553	6660±60	5600-5480	5620-5440	
	Bln-2105	6530±50	5530-5340	5570-5330	
	Bln-2556	6480±60	5450-5330	5530-5270	
	Bln-2106	6475±40	5440-5335	5450-5310	
Kremenik 4	Bln-2550	6550±60	5570-5380	5580-5330	Kremenik
	Bln-2551	6450±100	5450-5280	5580-5210	
	Bln-2549	6350±60	5380-5220	5440-5140	
Sum-probability Kremenik 2-4			5570-5310 5530 (64..5%) 5310	5720-5240	EN II

Continued...

Site	Labaratory and Sample No.	BP	68.2% confidence BC	95.4% confidence BC	Complex (Culture, Group, Type) Period
Magareci Mlin	Grn-15973	7130±60	6020-5870 6020 (48.3%) 5930	6120-5820 6060 (92.8%) 5820	
	GrN-15972	7015±90	5960-5760	6000-5670	
	GrN-15971	6910±45	5780-5685	5860-5630	
Sum Magareci Mlin			6000-5690 6000 (17.3%) 5930	6050-5670	Proto-Starčevo and early Starčevo EN I-II
Nea Nekomedea	P-1202	7557±91	6460-6230	6550-6170	Nea Nekomedea
	OxA-1606	7400±100	6370-6060	6410-6010	
	OxA-4282	7400±90	6370-6060	6400-6010	
	OxA-1605	7400±90	6370-6060	6400-6010	
	OxA-3876	7370±90	6360-6050	6380-6000	
	OxA-3874	7370±80	6350-6050	6370-6010	
	OxA-1604	7340±90	6230-6030	6370-5990	
	OxA-3873	7300±80	6180-6020	6360-5960	
	OxA-3875	7280±90	6180-6010	6360-5950	
	P-1203A	7281±74	6170-6020	6230-5960	
	OxA-4283	7260±90	6170-5990	6240-5880	
	OxA-4281	7100±90	6010-5820	6120-5720	
	OxA-1603	7050±80	5970-5800	6020-5700	
	OxA-4280	6920±120	5940-5630	5980-5570	
Sum Nea Nekomedea			6360-5990	6450-5700	EN I-II
Ogradena-Icoana	Bln-1056	7445±80	6370-6180	6420-6050	Starčevo-Cris / EN I
Ovcharovo-Gorata 1	Bln-1544	6688±60	5610-5480	5670-5440	Karanovo II - Ovcharovo aspect A
	Bln-1620	6463±50	5435-5335	5450-5280	
R-combine Ovcharovo-Gorata 1		6558±38	5525-5435 5505 (61.0%) 5435	5570-5380 5530 (82.3%) 5420	
Ovcharovo-Gorata 3	Bln-2032	6555±70	5450-5330	5530-5270	Ovcharovo
Sum-probability Ovcharovo-Gorata 1/3			5590-5330	5630-5290	EN III
Ovcharovo-Platoto I	Bln-1356	6480±60	5450-5330	5530-5270	Ovcharovo EN III
Padina B1		7100±80	6010-5840	6120-5740	Proto-Starčevo EN I
Polyanitsa-Platoto I	Bln-1571	7535±80	6430-6230	6470-6180	Koprivets I
	Bln-1613	7380±60	6110-5950	6170-5870	
	Bln-1613A	7275±60	6170-6010	6190-5980	
	Bln-1512	7140±80	6050-5860	6170-5780	
R-combine Polyanitsa-Platoto		7334±34	6180-6060 6180-6120	6220-6040	EN IA
Porodin	KN-I.596	7240±55	6130-5990	6180-5970	Starčevo
	H-1486/987	7120±140	6120-5780	6250-5650	
R-combine Porodin		7224±51	6120- 5980	6170-5960	EN II
Priština-Predionica	Bln-435	6280±80	5290-5070	5430-4990	Vinča A
Selevac	Z-233	6366±100	5430-5220	5450-5060	Vinča B/C
	Z-233B	6152±90	5220-4960	5270-4840	B/C
	Z-233A	6113±80	5210-4930	5230-4830	B/C
	LJ-2523	6100±100	5210-4860	5250-4790	
	LJ-2521	6080±70	5070-4850	5220-4810	B/C
Sum-probability Selevac			5220-4900	5450- 4800	LN II
Servia	BM-1103	6880±49	5760-5665	5820-5610	
	BM-1104	6747±51	5670-5530	5700-5520	
	BM-1106	6690±83	5630=5480	5690-5430	
	BM-1107	6606±55	5570=5440	5590-5430	
Sum Servia			5670- 5450	5770-5430	EN-LN

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Site	Labaratory and Sample No.	BP	68.2% confidence BC	95.4% confidence BC	Complex (Culture, Group, Type) Period
Sitagroi I	Bln-779	6625±170	5670-5330	5850-5200	
	Bln-778	6425±100	5440-5270	5570-5140	
	BM-648	6265±75	5280-5070	5340-4990	
Sum-probability Sitagroi I			5490-5080 5490 (57.3%) 5200	5750-5000	Sitagroi LN I
Sitagroi II	Bln-884	6240±100	5280-5050	5430-4930	Sitagroi II
	Bln-777	5920±120	4950-4610	5100-4450	
	Bln-649	5904±66	4900-4710	4940-4600	
	Bln-776	5720±100	4700-4460	4780-4350	
Sum-probability Sitagroi II			5250-4500 4950 (62.1%) 4500	5300(95.4%) 4350	LN II
Slatina 4	Bln-3504	6970±60	5930-5730	5960-5690	Karanovo I
	Bln-3441	6960±60	5930-5710	5950-5680	
	Bln-3438	6960±60	5930-5710	5950-5680	
	Bln-3439	6940±60	5840-5700	5950-5660	
	Bln-3434	6890±60	5780-5630	5860-5600	
	Bln-3435	6860±50	5730-5635	5790-5590	
	Bln-3440	6840±60	5720-5615	5790-5580	
	Bln-3443	6840±60	5720-5615	5790-5580	
	Bln-3436	6840±60	5720-5615	5790-5580	
	Bln-3555	6830±60	5710-5610	5780-5580	
	Bln-3437	6810±50	5685-5605	5730-5580	
	Bln-3442	6780±60	5680-5590	5730-5520	
R-combine Slatina 4		6875±17	5714- 5687	5730-5670	EN II
Stara Zagora-Azmak I-1	Bln-293 Bln-291	7303±150 7158±150	6350-5970 6170-5830	6450-5800 6400-5650	Karanovo I
	Bln-292	6878±100	5810-5610	5950-5570	
	Bln-294	6768±100	5710-5520	5800-5440	
R-combine Stara Zagora-Azmak I-1		6956±59	5850-5710	5950-5680	EN II
Stara Zagora-Azmak I-2	Bln-296	6779±100	5720-5520	5820-5440	Karanovo I
	Bln-295	6720±100	5680-5490	5750-5430	
R-combine Stara Zagora-Azmak I-2		6750±71	5680- 5520	5720- 5480	EN III
Stara Zagora-Azmak I-3	Bln-203	6870±100	5800-5600	5950-5520	Karanovo I
	Bln-299	6812±100	5750-5580	5860-5480	
	Bln-267	6758±100	5710-5520	5790-5440	
	Bln-297	6675±100	5610-5440	5720-5380	
	Bln-224	6650±150	5670-5380	5800-5250	
	Bln-298	6540±100	5570-5330	5600-5270	
R-combine Stara Zagora-Azmak I-3		6727±43	5625-5525	5680- 5520	EN III
Stara Zagora-Azmak I-4	Bln-301	6483±100	5480-5280	5580-5240	Karanovo I
	Bln-300	6426±150	5530-5220	5600-5000	
Stara Zagora-Azmak I-5	Bln-430	6279±120	5330-5060	5440-4940	Karanovo I
Sum probability Stara Zagora-Azmak I-4-5			5490-5140	5600- 4950	EN III
Stara Zagora-Azmak II	Bln-140A	6476±100	5480-5280 5450 (66.5%) 5280	5580-5230 5530 (90.6%) 5230	LN I
Stara Zagora-Okruzhna Bolnitsa V	Bln-1586	6814±65	5700-5600	5770-5520	Karanovo I

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Site	Labaratory and Sample No.	BP	68.2% confidence BC	95.4% confidence BC	Complex (Culture, Group, Type) Period
	Bln-1587	7139±65	6040-5880	6120-5810	
Sum-probability Stara Zagora-Okruzhna Bolnitsa V			6020- 5590	6150- 5500	EN II
Stara Zagora-Okruzhna Bolnitsa IV	Bln-1590	6939±60	5840-5700	5950-5660	Karanovo II
	Bln-1589	6918±45	5790-5690	5930-5660	
	Bln-1250	6820±100	5750-5580	5940-5480	
	Bln-1164A	6744±100	5700-5520	5770-5430	
	Bln-1164	6723±100	5680-5500	5760-5430	
	Bln-1163	6688±150	5690-5440	5850-5250	
Stara Zagora-Okruzhna Bolnitsa IV1	Bln-1588	6750±60	5670-5530	5710-5500	
Sum-probability Stara Zagora-Okruzhna Bolnitsa IV			5780- 5520	5940- 5440	EN III
Starčevo	GrN-9036	6920±45	5790-5695	5940-5660	Later Starčevo
	GrN-7155	6835±70	5720-5600	5820-5570	
	GrN-9035	6835±45	5705-5625	5740-5590	
	GrN-8231	6700±70	5630-5480	5680-5440	
	GrN-9037	6700±55	5625-5520	5670-5440	
	GrN-9034	6640±45	5580-5450	5590-5440	
	GrN-6629	6615±65	5580-5440	5600-5430	
	GrN-6626	6610±65	5570-5440	5600-5380	
	GrN-7154	6610±100	5590-5430	5670-5320	
	GrN-6627	6545±105	5580-5330	5600-5270	
Sum-probability Starčevo			5630-5440	5810-5330	EN III
Tîrpeşti	Bln-801	6245±100	5280-5050	5430-4930	Linear Band Pottery
	Bln-800	6170±100	5220-4970	5290-4840	
Sum-probability Tîrpeşti			5270-5000 5270 (64.5%) 5040	5400-4850	LN II
Topolnitsa 2c	Bln-3349	6240±90	5270-5060	5340-4940	Topolnitsa
	Bln-3382	6100±60	5200-4930	5220-4840	
Topolnitsa 2b	Bln-3381	6270±60	5270-5080	5330-5060	
	Bln-3348	6000±80	4970-4780	5080-4710	
Topolnitsa Sum-probability			5270-4940	5350-4750	LN II
Toptepe 5	GrN-16476	6290±25	5260-5227	5280-5140	Toptepe
	GrN-18741	6200±50	5220 (68.2%) 5060	5260 (95.4%) 4990	
	GrN 18740	6160±70	5220-4990	5260-4930	
	HD 13589-13321	6155±40	5210-4990	5220-4950	
	HD 13590-13235	6095±40	5050-4945	5210-4900	
Toptepe 4	HD 13591-13339	6410±180	5530-5090	5650-4900	
Toptepe 3	GrN-18743	6220±70	5240-5060	5280-4960	
	GrN-18742	6060±110	5200-4830 5080(63.8%) 4830	5250-4700	
Sum Toptepe			5270 (68.2%) 4990	5450BC (95.4%) 4800BC	LN II
Trestiana	GrN-1 7003	6665±45	5595-5500	5600-5440	Starčevo-Criş
Valea Rău	KN-1 102	6480±75	5450-5310	5570-5270	LN I Starčevo-Criş

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Site	Labaratory and Sample No.	BP	68.2% confidence BC	95.4% confidence BC	Complex (Culture, Group, Type) Period
Veluška Tumba	Tx-1785	6950±120	5950-5680	6000-5590	Starčevo
	Tx-1786	6890±140	5930-5600	5990-5480	
	Tx-1809	6900±90	5830-5630	5950-5590	
Sum-probability Veluška Tumba			5930-5630	5980-5570	EN II
Vršnik-Tarinci	Bln-339	6950±100	5940-5690	5970-5610	Starčevo
	Bln-339a	6855±80	5760-5600	5860-5570	
	H-559/485	6865±150	5930-5580	6000-5400	
Sum-probability Vršnik-Tarinci			5840-5610	5980-5520	EN II
Vinča-Belo Brdo	GrN-1535	6170±85	5220-4990	5270-4900	
	GrN-1546	6190±60	5220-5060	5260-4960	Vinča
	Hd-14184	6249±31	5260-5090	5270-5070	Vinča A
	Hd-14235	6264±22	5260-5140	5270-5090	
	Hd-14110	6149±63	5210-4960	5230-4920	Vinča B
	Hd-16661	6353±66	5420-5230	5440-5140	
	Hd-17665	6273±49	5270-5090	5290-5060	
	Hd-16636	6180±40	5220-5060	5230- 4990	
	Hd-17674	6198±51	5220-5060	5260- 4990	
	Hd-16864	6145±34	5210- 4990	5220-4950	
	Hd-16733	6293±79	5320-5080	5430-5050	
Sum Vinča			5260-5060	5340-4940	LN II