UDK 903'12/'15(4/5)''633/634'':575.17; 903'12/'15(4/5)''633/634'':574.91
Documenta Praehistorica XXXV (2008)

Micro-regions of the Lepenski Vir culture: Padina in the Upper Gorge and Hajdučka Vodenica in the Lower Gorge of the Danube

Borislav Jovanović
Serbian Academy of Sciences and Arts, Belgrade, Serbia
bjovanovic@yubc.net

ABSTRACT – *This paper was compelled into existence when confronting the fact that the most commonly discussed transitional period connecting the Late Mesolithic and the Early Neolithic in the Đerdap or the Iron Gates Gorges (present-day Serbia and Romania) is determined by the often emphasized lack of adequately published evidence, thus leaving this period largely unknown. We examine previous conclusions concerning the Lepenski Vir culture, or at the very least, try to put such discussions back in their archaeological context. We discuss the features that are essential for the organisation of the settlements, stratigraphy, and adaptability of architecture caused by geomorphology and climate, as well as the remarkable loss of settlement space due to different types of erosion.*

IZVLEČEK – *Članek je nastal kot odgovor na dejstvo, da pogoste diskusije o prehodu med mezolitikom in neolitikom v soteski Đerdap (v današnji Srbiji in Romuniji) ne temeljijo na ustrezno objavljenih rezultatih izkopavanj in katalogih najdb. V članku reanaliziramo interpretacije kulture Lepenski vir in jih s pomočjo rezultatov naših izkopavanj umestimo v arheološke kontekste. Predstavljamo namreč ključne značilnosti prostora, ki so vplivale na organiziranost naselij in arhitekturo, prilagojeno geomorfološkim in klimatskim pogojem. Predstavljamo tudi krčenje njihovih obsegov in spremenjenih stratifikacij kot posledic velikega števila erozij.*

KEY WORDS – *Late Mesolithic; Neolithic; Iron Gates Gorges; Lepenski Vir culture; settlement structures; stratigraphy*

Introduction

Viewed from a distance of nearly forty years (1970–2007), the excavations at Padina and Hajdučka Vodenica were done in the same way as those that are usually conducted at prehistoric lowland and hillfort sites. To date, the results have been published fragmentarily, which has contributed to conflicting views on the origins and chronologies of these two sites. Such discussions were mostly concerned with unique features of the Lepenski Vir culture, such as stone sculpted boulders, specific architecture and typical settlement organization situated at specially selected locations (Fig. 1). Evaluations of the archaeological content of such sites based on stratigraphic and typological grounds alone has proven inadequate – among other reasons, due to the lack of relevant analogies in the prehistory of the Balkans and south-eastern Europe (*Banffy 2004.367–69*). The stagnation in the study of the Lepenski Vir culture, however, was avoided largely thanks to the activities of the Neolithic Seminars that have been continuously held at the Department of Archaeology, Ljubljana University, and publications of the *Documenta Praehistorica* series.

The immediate surroundings of the Late Mesolithic and Early Neolithic in the Upper Gorge of the Danube was the winding coastal zone, *i.e.* the space between the steep cliffs of the hinterland and the Da-

nube basin. Such a position, narrowed by the rocky cliffs and the course of the river was the site of various types of erosion (Fig. 3). The geomorphology of the Danube Gorges must be emphasized, with slight differences visible everywhere in this landscape – which restricted the settlement space for both the Late Mesolithic populations and the Lepenski Vir culture. After the abandonment of these settlements, the impact of erosion significantly altered the original configuration of the terrain, and to a large extent reduced the original size of settlements. Hence, for the stratigraphic determination of architectural features and portable material culture, it is necessary to estimate the extent of the preservation of different settlements at Sectors I–IV at Padina (*Jovanović 2004.63–74*).

Longitudinal and transversal erosions are related to the dynamics of the Danube River, as well as smaller rivers, streams and seasonal torrents in the immediate vicinity. Their channels, full of cascades carved in the rocky base, crossed sidewise settlement spaces, occasionally producing floods of destructive power. The simplified classification of erosion dynamics we recognized in the stratigraphic sequence at Sectors I–III of Padina is as follows:

- 1. Erosion caused by the Danube (erosion activity visible on river banks; changing river courses).
  2. Erosion caused by seasonal torrents (outbursts that caused large quantities of sediment to be washed down the steep cliffs).
  3. Erosion caused by short watercourses (water in established channels; from the spring to their confluence with the Danube, altering the direction of the river course).

- 1. Eolic and atmospheric erosion in the deposition of anthropogenic layers (mini erosions within a settlement of upper and lower terraces, between buildings).
  2. Stratigraphic significance of archaeological finds that were impacted by the Danube River erosion (accumulated or redeposited artefacts next to the cleaned river banks).
  3. Stratigraphic significance of archaeological finds that were impacted by seasonal torrents (destructive power that such torrents had within semi-subterranean buildings and crofts, accumulated archaeological finds).

- Stratigraphic significance of archaeological finds at palaeo-surfaces and occupation levels (settlement surfaces placed on different terraces).
- Relative chronological significance of ^{14}C results in comparison to the stratigraphy (inconsistencies between ^{14}C results and their stratigraphic position).

Padina. Gospođin Vir (Upper Gorge)

The site of Padina consists of several settlements located at horseshoe shaped coves downstream from the Gospođin Whirlpool (Sectors I–III). The earliest phase here belongs to the Late Mesolithic of the Iron Gates, followed by the entire development of the Lepenski Vir culture. After a long hiatus, the Late Neolithic Kostolac culture, which at the time spread across the Danube and the Sava river basins, is the next cultural manifestation at this site, finally followed by the Early Iron Age Kalakača culture. Sporadic finds have been assigned to the Roman and Medieval periods.

Sectors I to III were connected, while the significantly larger Sector IV looked like a spacious plateau, bordered with steep cliffs. Various geomorphological characteristics affected formation processes: Sector Ia, which was almost at the same level as the Danube River, was significantly affected by high waters (Fig. 2).

Padina A. Sector I, Trench 1, Profile 1

The Late Mesolithic period. Sector I consists of two stepped stony terraces: the lower is bounded by the high river bank profile, at the base of which is a palaeosoil sporadically covered by river sand. Partly preserved remains of architectural features at this sector provided a reliable vertical stratigraphy. Depressions in the bumpy rocky base surfaces of both terraces, as well as of segments 1 and 2 in front of the river bank profile, are largely filled with this palaeosoil of intense black colour. It contains Late Mesolithic flint and bone artefacts. No Early Neolithic Starčevo pottery is found at this level (Fig. 4).

Padina A – B. Base of a building structure. Phase of contacts. Iron Gates Late Mesolithic, the Early Neolithic Starčevo culture

The layer of river-deposited sand in segments 1 and 3 extends almost to the high river bank profile. In segments 2–3, this deposit covers the flattened base of an architectural feature from the final stage of the Late Mesolithic – the phase of contact. A long rectangular hearth, made from vertically placed stone blocks, was found in the central part of this base. In

the vicinity, there is a scatter of split and slab-like stones left behind on the levelled palaeosoil. Only a few stone and bone artefacts were found here, while the Early Neolithic Starčevo pottery is absent (*Jovanović 1971.Pl. III, Figs. 1, 5, 6*).

Padina B1. House 1. The Lepenski Vir culture

On a narrow ridge of one of the cliffs that slopes toward the river (segment 3), a rectangular hearth of House 1 was found, directly above the previously described feature dated to the contact phase. The hearth platform was composed of two parallel stone slabs, while between them was a partly damaged boulder–altar *in situ* occupying a standard place when it comes to architectural features of all phases of the Lepenski Vir culture. Here, in the washed-out layer around the platform of House 1, only a few fragments of coarse and monochrome ware were found (Fig. 6).

Padina B2. House 2. The Lepenski Vir culture

Houses 2 and 3 mark the next two building horizons. These were semi-subterranean structures dug into the culture layers deposited on two rocky terraces up to a depth of 2m. The terraces slope toward the Danube. In other words, segment 1 represents a series of settlements located in a small arc-shaped cove. These settlements were built on river terraces, like hill-top sites, where their downtowns are placed on their steep slopes all the way to the base of the hill.

The riverbank profile of Sector I, which was the result of river erosion, in segments 1 and 2 exposes the trapezoidal base of the semi-subterranean House 2, assigned to the Lepenski Vir culture. The hard-beaten clay floor and a rectangular hearth with an aniconic boulder were found next to the back of the platform. The floor of House 2 levelled the palaeosoil, *i.e.* the Late Mesolithic layer found on terrace 1. This layer is only sporadically preserved next to the rocky base, and contains bone tools, and no pottery. On the floor of House 2, similar bone artefacts were associated with Starčevo-Criş pottery (*Jovanović 1971.T. V.1*) (Fig. 7).

Padina B2. House 3. The Lepenski Vir culture

Although two buildings on these terraces were not built at the same time – House 3 is definitely younger – their end was simultaneous. They were destroyed by a torrent wave; and marked in the section of this Sector as layer 3b. It had prominent contents of torrent-like washed-out materials: deposited mud and a light yellow deposit of gravelly sand. The torrent's thrust crossed both terraces diagonally, hitting with full force across the area of the current river bank to the old channel of the Danube, split both terraces diagonally, and continued with full strength down to the present river bank area into the Danube. Since House 2 was built at the highest spot of the settlement, it was the first to be hit by the torrent: its walls of piled stones were cut through, while its simple ridged wooden roof was destroyed. The rectangular hearth of stone blocks was moved from its foundations and transported down the slope between the terraces and stopped by some kind of barrier, but in the inverse position from the one in the base of House 3. It is unusual that the hearth construction was preserved, as well as both A-supports, one on each of the longer, lateral sides (Fig. 8). On the floor of House 3, a semi-subterranean construction next to the rocky edge of terrace 2, fragments of coarse pottery were found, as well as a complete model of an oven (25 x 35cm) decorated by impresso technique (Fig. 30 A).

After this catastrophic event, these buildings on terraces 1 and 2 were not renewed. However, it did not mean that life had stopped down at the coastal part of the settlement, which was at this time covered by river sand or washed out down to the rocky base (as was the case at Sector Ia).

Padina B2. Pottery workshop between Houses 2 and 3

One more feature found between Houses 2 and 3 relates to settlement horizon B2. This was probably a large, open-air hearth, ellipsoid in shape, paved with small flat stones, and encircled by a wider ring of piled stones (1.50m by 1.10m). The hearth and the area around it were carefully levelled. Pieces of carbonized wood and ash were found, along with clusters of larger fragments of coarse pottery. One such cluster allowed a reconstruction of a typical pot-amphora, ornamented with impresso technique, and with symmetrical placed handles, similar to those of the Starčevo-Körös-Criş cultural complex. This feature is most likely a pottery kiln, or an open-air (?) hearth with or without a dome. This might have been a workshop with a simple hearth, where prepared pots were covered by wooden brunches, and fired in a pyre. It is the first indication of the existence of local pottery workshops in the Lepenski Vir culture.

Padina B occupation level

As previously shown, the architectural features of the upper and lower terraces fairly precisely define the occupation level in the immediate vicinity of Houses 2 and 3. The croft of House 2 was also clearly outlined in segment 2 of the riverbank profile, and can also be seen in the longitudinal sections of Trench 1 (quadrants 1 and 2). The occupation levels of the croft and of the floor of House 2 are identical, which is also confirmed by a round base made of split stones found at the same level in quadrant 1a. The surface level of the occupation zone outside the semi-subterranean croft is identical to the level from which the trapezoidal base of House 2 was dug, and this is clearly visible on segment 1 of the riverbank section (Fig. 7).

In this way, there is a more secure stratigraphic determination of surface activities for the period when Houses 2 and 3 were in use. This horizon yields a larger concentration of finds in comparison with the culture layer above and below the given level. Leaving aside the division of the Late Mesolithic and the Lepenski Vir culture settlements on the erosive zones of both terraces and the costal zone, it is possible to comprehend the connections between these occupation levels of the terrain, which sloped even more steeply toward the Danube in those days. Archaeological material was in this way washed away from the occupation levels upslope and deposited at the base of the terrace, in the costal zone. This process caused inverted and complex stratigraphy in the costal zone, characterized by inverted ^{14}C dates (see below). This inverted stratigraphy of absolute dates was noticed at Padina immediately after the first ^{14}C results in 1978 (*Clason 1980*). The inverse stratigraphy was also noticed in the costal zone of Sector III, after it was realized that every higher terrace with semi-subterranean buildings of the Lepenski Vir culture had been gradually depositing its waste on the lower horizon of abandoned buildings. Thus, some finds from Sector I, such as a cult table, were refitted from pieces that originated from two different culture levels (segments 3 and quadrant 1a) (Fig. 30 B).

The dynamic of formation processes at Padina enabled definitions of different zones of the settlement on the basis of an approximate order by which the archaeological material was deposited. The stratigraphy and relative chronology of this sector can be reduced to the order of occupation levels of successive living horizons. The absolute heights of the living horizon start from architectural features in order to connect a particular cultural layer with the base of a feature, *i.e.* ideally its floor.

Padina. Sector I. Relative chronology of the settlements

It is obvious that occupation levels at settlements based on slopes are not characterized by significant horizontal deposits, since the cultural layers are formed around horizontally placed buildings. The occupation layer should be considered as the ensemble of single surfaces inserted and placed on the steep sides of the gorge, or secondarily connected to the costal zone. The cultural layer of Sector I rests on a natural, rocky base, which prevented the pit-digging that characterizes settlements located on loess or clay soils.

Stratigraphy at Sector I begins with costal palaeosoil, which contains Late Mesolithic finds. On this thin layer of palaeosoil, with an average thickness of 0.30m, the first Mesolithic dwellings were placed in pockets of the cliffs and on the sloping platforms of the rocky base. Such dwellings were more prominently present at Sector II.

Another important aspect related to Sector I was determining the precise stratigraphic position of the rectangular hearth connected to phase Padina A–B. This architectural feature enables us to connect the heights of the stone-lined hearth and the occupation horizon around it. The entire feature covers the levelled zone of the palaeosoil (Mesolithic cultural layer), and does not reach down to the rocky base of segment 2 of the costal zone (Fig. 5). This leveling, made here before the feature was built, confirms that the hearth (or oven) covers undisturbed palaeosoil with Late Mesolithic occupation residues. It is unclear how much time elapsed between the Late Mesolithic occupation in this zone and the period when this later feature was built, although there is perhaps some continuity of occupation. There is no evidence that this feature was built by digging into the ground. It is probable that the period that followed the Late Mesolithic occupation was characterized by an architectural form different from the preceding period as much as from the architecture built during the ensuing phase of the Lepenski Vir culture.

The anthropogenic layer formed over this atypical architectural feature upon its abandonment was formed after a considerable temporal hiatus, since at this location one finds a building with recognizable

elements of the early Lepenski Vir culture. This building (No. 1) had only the rear platform of the hearth, with two stone slabs and an ornamented boulder between them. Between this surprisingly well-preserved architectural detail of the building (▼ 1.50m) and the feature from the contact phase (A–B ▼ 2.80m) is a cultural layer 1.28m thick (Fig. 5–6).

When it comes to the architecture of the Lepenski Vir culture at Padina, the level of the hearth and floor mark the average depth of digging for a particular building – around 0.85m (cut of House 2 in Trench I, quadrant 16). From this, one can indirectly calculate the accumulation of cultural layers: the difference between the floors of the contact phase feature and the Lepenski Vir culture building (House 1) is 1.28m. One can then add the average depth for the latter feature of 1.50m. These two values indicate the build-up of the occupation layer at this point in the settlement (2.75m), which can then be checked against the section of Sector I, Profile I, segments 2–3. One notices an accelerated development of the settlement during the contact phase (A–B) (Fig. 7).

Three settlement horizons – the Late Mesolithic, contact phase and the early Lepenski Vir culture phase – were preserved only in the coastal zone (segments 1–3). This also means that Sector I represents the periphery of these settlements, which spread up to the steep cliffs of the gorge. Unfortunately, the central area of these settlements used to be in the present-day Danube channel. Architectural features (Houses 2 and 3) at both terraces were well-elaborated, containing elements from sedentary Balkan-Danubian Early Neolithic communities, such as pottery and polished stone tools. However, it is less clear what caused the abandonment of the youngest settlement horizon of the Lepenski Vir culture. It seems this might have been caused by local climatic changes (some isolated catastrophe in the case of House 18), but even more probably by a more significant series of events, which also might have caused the abandonment of other settlements of the Lepenski Vir culture that were concentrated in such a narrow zone of the Upper Gorge of the Danube.

The pottery from Sector I is important for two reasons: its first appearance at the site dates to the beginnings of the Lepenski Vir culture, and, its typological classification to a special (Iron Gates) variant of Early Neolithic culture known as the Starčevo and Criş culture complex.

The stratigraphic significance of this pottery is determined on the basis of its context in Sector I, and divided into the following zones:

❶ Pottery of the coastal zone (Profile I, segments 1–3), which was deposited secondarily by hill-wash erosion from terraces 1 and 2, as well as by the additional accumulation of pottery finds from eroded blocks of Profile I undercut by the Danube. The pottery that was washed down from the terraces belongs to various levels of the cultural layer, or from damaged and abandoned buildings; the pottery that came from the eroded profile I could be connected to older levels of the cultural layer, characterized by a mixture of archaeological material from both terraces. The chronological classification of these findings is primarily based on typology and is thus not completely reliable.

❷ Pottery (in much smaller amounts) from architectural features, found both on and beneath the floors, around open-air hearths or ovens, as well as *in situ* pots – these can be considered as closed finds; in addition, those finds connected with the occupation horizon can be said to have a slightly less prominent stratigraphic significance.

Early Neolithic pottery from Padina leaves the impression of a coherent typological and ornamental whole. The narrow range of ornamental motifs and techniques is noticeable when compared with the Starčevo culture settlements outside of the confines of the Danube Gorges. The pottery assemblage at Sector I is dominated by coarse ware, weakly tempered, with chuff and larger sand grain inclusions. The dominant form is the large open dish with a rectangular hollow pedestal with openings, as well as chronologically younger specimens with flat bases and shallower receptacle. Spherical pots and deeper spherical bowls and amphorae are less numerous, but were of better quality and temper.

Most of the ornamentation of these vessels involved two techniques: coarsening or engraving surfaces, *i.e.* polishing. The first technique relies on impressions made by fingertips or semi-circular nail/impression (impresso), producing various combinations of horizontal and vertical impressions, often showing the recognizable motif of a wheat ear. Sometimes, these imprints were made with the tip of a wooden or bone tool. Thin lines, cut by a sharp blade, form asymmetrical sheaves or simple geometrical motifs, occasionally coupled with a series of triangles. The second technique, used on mono-

chrome vessels by polishing their surfaces, was confined to bowls and amphora-like vessels.

Ornamentation by painting or barbotine (the surface of the vessel is channelled with irregular plastic appliqués imitating tree bark), widespread across the area of the Starčevo culture, were not found on pottery from the Lepenski Vir culture settlements at Padina Sectors I–III.

Horse-shoe polished stone axes, which characterize the Starčevo culture, were found in pottery horizons at all 3 Sectors of Padina, mostly outside closed contexts (*Antonović 2004.Fig. 4–6*). Cult objects from the Lepenski Vir culture settlement at Sector I were few and had different roles. The aniconic boulder from House 2 and damaged boulder-altar (ornamented) from House 1 were the only finds of this kind in buildings. Admittedly, the hearth of House 3 was moved from its original location, and the presence of the boulder-altar (on the rear platform) is not completely certain. However, an ornamented model of an oven (Fig. 30) with close typological links to a similar model from Ajmana, the settlement of the Starčevo culture in the Ključ (lower Danube region) (*Stalio 1986.Fig. 13*), comes from the floor of this building.

Padina. Sector I. Relative-chronological division

Settlement of the Iron Gates Late Mesolithic

As previously explained, the occupation layer of the Late Mesolithic settlement is primarily related to palaeosoil full of organic material and discarded artefacts. The most important among these finds were flint blades and flakes, as well as fragmented bone tools found beneath the rectangular hearth. This layer had lenses of charcoal and burning, distinguished from the strip of burned soil under the firebox. The hearth was placed on the palaeosoil. In the layer under the rectangular hearth, no pottery was found. A similar context was found beneath the partly damaged floor of House 2; the layer contained flint and bone artefacts found in the palaeosoil deposited over the rocky base.

Architectural feature with elongated rectangular hearth. Profile I. Segments 2–3

We have already explained the stratigraphic position of this feature found between House 1 of the Lepenski Vir culture (segment 3) and the occupation horizon of the Mesolithic settlement (palaeosoil) (segments 2–3). The functions as well as construction details of this feature remain unclear. The interior of the feature has no partitions, unless the piles of stone slabs were not the remains of partitioning walls. There were no traces of a floor or any kind of subsidiary stone construction. The elongated hearth has analogies only in the architecture of Vlasac and Hajdučka Vodenica (the latter in the Lower Gorge of the Danube, see below), although in a different context (Figs. 5 and 6).

Architectural elements – cult place of House 1. The Lepenski Vir culture. Profile 1

Leaning against the steep cliff, which limits the downstream edge of the cove, the base of House 1 was partially preserved, with the rear platform of the hearth and ornamented boulder-altar. On the one hand, this architectural detail dates House 1; and on the other, it testifies the long duration of the early phase of the Lepenski Vir culture settlement to which this building belongs. The orientation of House 1 did not deviate from the generally accepted rule found in the Upper Gorge: in all settlements of this culture, the buildings faced the Danube with their (wider) frontages most commonly at a right-angle or slightly deviating, depending on the topography of a particular terrain. It has been mentioned previously that the approximate dimensions of the base of House 1 cover the whole gauge of the older feature with the rectangular hearth. In this way, a clear stratigrafic relationship was established between two architectural features, or two different phases in the development of the Lepenski Vir culture (Fig. 5).

House 2. The Lepenski Vir culture. Trench 1, quadrant 1b

The floor of this building was situated on a levelled surface of the palaeosoil. The floor, made of fine clay, was not preserved entirely. The trapezoidal base, which was fairly accurately constructed, had a rectangular fireplace with slab-free firebox embedded on its front. The ash-place with massive slabs arranged fan-like, extended to the front (entrance) area of the base. On the cross-section of the frontal of House 2 and segment 1 (Profile 1), one can clearly notice the cut into the cultural layer that was formed before the construction of the trapezoidal base. This section of the cultural layer confirms that the settlement spread farther on the sloping, wide terrace 3, where the riverbed is found today. The accumula-

tion of this layer confirms that the primary phase of the settlement (B1), which precedes the construction of House 2, was not only related to terrace 3, but that it lasted considerably longer, before the construction of Houses 2 and 3 (Fig. 7).

House 3. The Lepenski Vir culture. Trench 2, quadrant 2b

This building was located at the far end of the area occupied by the settlements of the Lepenski Vir culture, and bordered by the semi-circular cove of Sector I, above which there are steep, uninhabited cliffs. We have previously mentioned the destruction of House 3 in a catastrophe which left only part of the floor, while the fireplace slid down along the steep edge of the ridge. The context of finds from this base has already been considered. The settlement of the Lepenski Vir culture expanded to this natural border only during its youngest phase (Houses 2 and 3; B2) (Figs. 5 and 8).

Stratigraphy and chronology

The first ^{14}C date for Sector I at Padina was obtained through the collagen analysis of Burial 2, dug next to the edge of House 2 (Trench 1, quadrant 1b) belonging to phase B2 of the Lepenski Vir culture settlement: BM–1143, 6220 (95.4%) 5740 calBC. In the absence of a larger series of ^{14}C dates, it is useful to connect the archaeological evidence with available ^{14}C dates in order to estimate their correspondence. On the basis of this date, Burial 2 could have been interred between the last quarter of the 7th millennium and the first quarter of the 6th millennium BC (*Borić and Miracle 2004.315*). A similar date probably refers to the collective burial interred in the vicinity of the house 3 (Fig. 9).

It is not possible to make a reconstruction of the Lepenski Vir culture settlements at Sector I, and even less so of the Late Mesolithic settlement. We can only estimate the area of the settlement space. Previously discussed evidence indicates a significant loss of the cultural layer, including portable finds and architectural features, to the Danube. On the basis of the dimensions of segments of Profile 1, which was researched at the low water levels of the Danube, the eroded cultural layer was found in a range of 6.0m from Profile 1. This layer was coverd by sand and gravels, thinning gradually down the slope of terrace 3, which was in part already under the Danube waters.

The settlement of the Late Mesolithic phase left no trace of building features at this sector and consisted only of the cultural layer that is the same as the palaeosoil. Between the palaeosoil and layer of the Lepenski Vir culture, two architectural features were found with a particular building element and a special stratigraphic position: the elongated rectangular hearths in Trench 1, block 1. Both features were placed on the palaeosoil, making them stratigraphically younger than the Mesolithic settlement.

The position of the building with the rectangular hearth indicates the periphery of the settled area at this time, which also included terrace 3, the lowest and widest of which is today under the Danube. It is certain that this entire terrace was settled during the phase of contact between the autochthonous population and the Early Neolithic Starčevo culture incomers (Padina phase A–B).

If the architectural pattern of the base with the rectangular hearth is compared with the rear platform with boulder-altar of House 1, one notices a progress in the development of architecture, for which one lacks transitional examples. The evidence of such a transitional example must have disappeared with the erosion of the cultural layer of terrace 3 and the coastal zone. On the other hand, a certain level of development can be determined by comparing Houses 1–3 of the Lepenski Vir culture (Profile 1, segment 2; Trench 1, quadrants 1b, 2b). The last two features repeat the same form, with likely differences in details and dimensions. The exclusive use of a dry wall technique was undoubtedly conditioned by the rocky terrain of terraces 1 and 2, unsuitable for a wooden dwelling construction (Fig. 5).

Yet another characteristic of the stratigraphy of phase B1–B2 at Sector I is the existence of the 'invisible dwelling horizon', which is represented by the remains of stone constructions of abandoned or destroyed buildings. The damaged trapezoidal base between Houses 1 and 2, found along the edge of segments 2 and 3 of profile 1, belongs to this horizon. This trapezoidal base was noticed on the basis of horizontal groups of split stones and stone slabs that were at first marked as 'stone constructions'. Further, the remains of the rear hearth platform were preserved in the profile of segment 1, near House 2. Judging from their stratigraphic position, these construction elements point to the existence of an interpolated horizon with 2 building features between House 1 and the end of segment 1 (Profile 1, point A).

One can thus speak of settlements rather than of a settlement of the Lepenski Vir culture at Sector I. In this way one recognizes, at least in basic outlines, the evolution of the architecture typical of this culture, formed during phases B1–B2 at Sector I. The same relative-chronological framework can be applied to the presence of the Early Neolithic pottery at Sector I. Depending on the stratigraphic position of such pottery finds, it is possible to follow the evolution of this local variant of the Starčevo-Criş culture.

Padina A. Sector II. The settlement of the Iron Gates Late Mesolithic

A narrow ridge that diagonally slopes down the stepped cliffs into the Danube, divided Sectors I and II as two separately populated spaces. Less under the impact of river erosion, Sector II is characterized by more favourable conditions for the Late Mesolithic settling of this area than Sectors I and III. It was exactly at this place that the central settlement of the Late Mesolithic period at Padina was located. This layer, with lenses of burning and rich in decomposed organic materials, was characterized by a dark colour and the compactness of the deposit (Fig. 10). Similar to Sector I, flint artefacts and modified bones were found in this layer. Here, such finds were concentrated around the remains of dwelling structures: oval or ellipsoid surfaces built of split or slab stones.

This central part of the sector (Trench II, quadrants 2a–3a; 3b–4b) was not under the erosion impact of the Danube, which does not apply to the parts of the settlement closer to the river bed. In comparison to the river bank of Sector I, it is likely that approximately only half of the original Late Mesolithic settlement was eroded away. The riverbank profile of Sector II extends for 52m, with an average height between 2.20 and 2.80m. This profile was firstly vertically cut and then marked similarly to the longitudinal section of the whole sector.

The pattern of the distribution of the Late Mesolithic dwelling features at this sector indicates some degree of organisation, based on the chosen position, and indicates a semicircular arrangement on the left shore of a small tributary of the Danube. Coming down the steep slopes of the Gorge, this stream cut a narrow bed in order to flash out onto the open and sloping terrain of Sector II.

For the base of dwellings, people chose shallow or wider depressions, as well as channels between particular rocky blocks. The oval base of the biggest dwelling, placed approximately in the centre of the settled space, had two floor levels made of piled stone slabs and smaller pebbles. Dwellings were placed along the left bank of the tributary, where the central dwelling was found.

According to the bases with piled stones, there were eight dwellings, the size of which varied between 3.60 by 1.90m and 0.80 by 0.54m. The total area approximated 30m^2, but it might have been considerably larger, since the paving of the bases of dwellings was done in particular due to the special functions of these surfaces: hearths, workshops, sleeping areas. On these surfaces, along with the remains of charred wood, there were residues of stone and bone tools, next to flat, massive boulders with shallow depressions in the centre (anvils and pounders).

The structure of particular paved areas in blocks 3a–4a of Trench 2 provides enough examples of this kind: Base 4 pavement consisted of sparsely distributed stones, among which was a larger slab stone (dimensions 0.46m x 0.20m) indicating a working surface like a table; the construction of Base 5 pavement was an exception, since it was built entirely of massive stone slabs from 0.50m by 0.21m to 0.24m by 0.20m; Base 7 pavement was the biggest, oval surface (around 6.50m^2) and was constructed from stone slabs of the following dimensions: 0.40m by 0.18m and 0.10m by 0.08m; Base 8 pavement had an approximately square shape, with a massive table-like stone slab that was 0.50m by 0.22m.

The gully of the brook was fan-shaped across the sector close to the riverbank, providing an outlet for periodic outbursts of seasonal torrents down the steep slopes of the Gorge. The diagonal course of this gully and its gradual shifting towards the downstream rocky ridge was caused by the higher terrain in the north-western part of the sector. The south-eastern part of the sector, according to this evidence, was composed of the following zones of Mesolithic settlement: a functional zone next to the right bank of the brook, without dwellings; a central, settlement area along the left bank of the brook, with a concentration of dwellings; a periphery, towards the south-eastern border of the excavation area, with no dwellings.

As visible on the profiles of the costal zone, the Mesolithic cultural layer (palaeosoil) is present in seg-

ments 1–3, Profile 2 due to hill wash processes that accumulated Mesolithic occupation residues in this zone. As a consequence, in this part of the profile the Mesolithic layer has a thickness of up to 0.75m, covering the rocky ground evenly.

These differences in the occupation of the upper and lower zones/terraces at Sector II depended on the course of the torrential brook and topography of the rocky base. Two preconditions for settling during the Mesolithic period were fulfilled at this sector: a source of running water and a convenient place for the construction of dwellings. Such differences in the use of space at Sector II affected the stratigraphy here. It remains unclear how large was the area that the Mesolithic settlements covered in this cove, and it probably depended on the width and depth of bordering rocky ridges at Sector II.

The most frequent category of Mesolithic material culture at Padina were chipped stone tools, which can be separated by form and function into 14 basic types. Most of these finds were found at Sector II, *i.e.* in the preserved part of the settlement. It was possible to separate these finds stratigraphically: the majority were found in the central dwelling that had two floor levels (the intermediate layer between them was 0.16m thick), while a similar pattern was seen in other dwellings. One should also mention workshop areas on the left side of the brook, closer to the downstream ridge of the sector (*Radovanović 1981*).

Besides the secure stratigraphic position of flint finds and retouched boulders, the irregularity in their deposition was caused by a specific terrain of the sector. We should also remember that a part of this settlement was destroyed by the Danube. The most numerous chipped stone artefacts were scrapers and sidescrapers (32.83%). This is followed by denticulates and notched tools (17.16%). Retouched flakes constituted 23.19%. These percentages together make up 73.18% of all 332 retouched specimens. There is a notable increase in burins between the older A1 (1.28%) and younger A2 (5.42%) phases, which may indicate more frequent wood-working activities. Other tools must have been used for hide-working, and were possibly hafted in wooden or bone handles (*Radovanović 1996.Fig. 5.4; Fig.5.5; Mihailović 2004.67–86; Kozłowski 2001.61, Fig. 9*).

A special category of knapped stone tools at Padina were trapezoidal choppers/axes (ranging in size between 3.5cm–6.5cm). They also occur in the Upper Palaeolithic and Mesolithic of the Lower Danube area, the Ukrainian steppes, and in the north and north-east of Europe. This common trait may indicate that this type of tool originates in the early Mesolithic of the Lower Danube region (Fig. 12).

That these artefacts are related on typological grounds is based on the following common features: straight and trapezoidal head and slightly banded, edge as well as massive shafting, part rectangular in section. This tool must have been hafted in a wooden or bone handle, which enabled its multipurpose use. Interestingly, this type of tool is very rare in the collection of chipped stone tools from the discussed area: the duration of this type of tools is restricted between the use of larger Late Mesolithic chipped stone tools and polished stone tools, and were similar in shape to shoe-last axes that characterize the Early Neolithic of the Danubian-Carpathian zone (Figs. 12 and 29). The largest number of these tools were found at Padina. Moreover, it seems that there is evidence for their relatively longer use at this site: two specimens can be assigned to phase A1, and the other four specimens to phase A2 of the Mesolithic settlement at Sector II. There is also a slight typological difference between them – during phase A1, their typical form was not completely developed, while they are perfected during phase A2. The stratigraphy of stone constructions of the central dwelling in square 2a from where these finds originate is securely established, and this also holds for artefacts found in this area. It is clear that between the two phases there is a typological progress in the symmetry of these specific tools, as well as in the shape and retouching of the cutting edge, and also in variations in size. All these elements indicate that such improvements were directly proportional to the use of such a new tool for wood-working, which resulted in the gradual development of a more secure type of dwelling structure. In this way, the population minimized its dependence on the local (rocky) relief of Padina (Fig. 12). On the basis of the spread of this type of tool across the plains of northern Europe and southern Danubian areas, such innovations could be understood as signs of the process that conjoined the early experience of plant cultivation with a long tradition of hunting and gathering.

Bone artefacts. Trench II, square 2a. Phase A1–A2

Bone artefacts were made for specific purposes and their form is more or less constant, hence they are usually a chronologically less sensitive class of ma-

terial culture. One of the larger closed features of this class of tools from Padina relates to the two previously described horizons of the Mesolithic settlement (Trench 2, block 2a – A1–A2) (Fig 11).

Phase A1

The layer under the construction of the older floor of the central dwelling in the settlement (block 2a), lying directly on the rocky base, contained the following forms of bone tool:

1. Projectile, ellipsoidal cross-section, length 4cm.
2. Awl tip – prod, end broken (5.2cm x 1.2cm)
3. Awl – pin, round cross-section (6.8cm x 2cm)
4. Awl – prod (10.8cm x 2.1cm)
5. Scraper – polishing tool, rounded tip (9.2cm x 2.2cm)

On the stone construction of the floor of the central dwelling bone artefacts were few:
6. Pin – prod, tip of red deer antler (12.5cm x 2.0cm)
7. Fragmented polishing tool of good quality (9.5cm x 2.3cm)
8. Boulder/anvil, found with bone artefacts (Fig. 13)

Phase A2

The following finds come from the younger floor of the central dwelling and directly above it:

1. Projectile, round cross-section (Length 5cm)
2. Arrow tip (pin with spike) (5.3cm x 1.3cm)
3. Perforator, lower part in the form of a chisel (3.9cm x 1.3cm)
4. Knife (blade?) made of boar tusk (5.4cm x 1.5cm)
5. Dagger (top of spear?), hollow bone (8.0cm x 2.2cm)
6. Double-sided awl, round cross-section (length 10.8cm)
7. Needle, lower portion broken (6.7cm x 1.1cm)
8. Polishing tool – scraper (6.2cm x 1.8cm)
9. Head of scraper, oval blade (6.5cm x 5.0cm)
10. Chisel, damaged, flat blade (6.5 cm x 3.5 cm)

From the renewed floor of the central dwelling of the Mesolithic settlement, there is a complete list of bone artefacts belonging to the younger phase of the settlement, made of red deer antler, wild boar tusk, hollow and cylindrical animal bone (Fig.14).

From the upper level of the palaeosoil above the floor of the central dwelling (block 2a).

1. Awl, oval cross-section (Length 6.2cm)
2. Perforator, red deer antler (Length 5.5cm)
3. Perforator, red deer antler (Length 5.6cm)

Padina B–2. The Lepenski Vir culture

Although larger than Sector I, Sector II was not inhabited so extensively during the Lepenski Vir culture phase. The advantage of having running fresh water in this zone was of less importance than the fear of the destructive power of the occasional torrential flood. However, the terrace of Sector II had other purposes during this period. The south-eastern corner of the terrace that was outside of the flood zone seems to have served as a workshop zone for Houses 1–3 from Sector I, or even of a part of the settlement of Sector III. Separated by a diagonal ridge, the terrace might have served as a corral for stock-breeding, or as a workshop for fishing activities, with some additional stone constructions that can be recognized here. A larger amount of split stones, the remains of fireplaces and smaller stone constructions, as well as a significant amount of pottery fragments of Starčevo-Criş (the Iron Gates), along with other finds, indicate an everyday range of activities.

Burials in the course of the Lepenski Vir culture phase are few at this sector, without particular burial constructions or offerings. The deceased were lying in extended positions on their backs, with their arms along their bodies. The dead were mostly buried in the costal zone (Trench 2, block 1b).

One should also mention another burial where no burial cut was recognized. The burial contained only a skull, and was found at the periphery of the terrace in the foothill of the steep sides of the gorge. This partial burial, with some symbolic significance, was found in block 5d, Trench 2, cut into the Mesolithic palaeosoil that was later covered by a massive layer of hill wash; such a stratigraphic position could date this cut to the contact phase (A–B). The skull was covered by several stone plaques which were encircled with split stones, partly damaged by erosion. The remains of burning were noticeable in the vicinity of this construction to a diameter of 1.20m. Among broken bone finds there was a haft of a red deer antler. Apart from skull fragments, no post-cranial fragments were found here (Fig. 15). There is one ^{14}C date on a skeletal inhumation (Burial 7) from this sector (analyzed bone collagen) with the result BM–1144: 8250–7600 calBC (*Borić and Miracle 2004.Tab. 1*).

Padina B1 – 3. Sector III

The chronology of prehistoric cultures at Padina indicates how particular locations were used during these periods, which depended on the micro-characteristics of the terrain, as well as on the technical capabilities of the culture to adapt to a particular chosen location. The settled area of Sector III is much larger than the two previous sectors, and is also more complex with regard to the organization of the settlement, including the separate area of a necropolis. Although the erosion of the costal area is also prominent at Sector III, due to the higher absolute level of the terrain, it was less destructive than at two other sectors (Fig. 16). The following functional zones can be separated on the basis of their relative chronological order:

- The costal area with high profiles is the limit of the river erosion.

- The lower level of the costal zone, with partly preserved traces of buildings (B–1) – the second row is in a better preserved part of the settlement, above the costal profile (B–2). The upper horizon of the terrace at the periphery of the settled area, *i.e.* the third row of buildings (B–3).

- Necropolis: a group of burials around elongated stone constructions of the necropolis (A2); a group of burials beneath dome-like and other stone constructions (A–B); a group of burials buried around buildings of the third row (B–3).

- All burial groups were found in the foothills of the steep sides of the gorge at the very periphery of the terrace and were south–north orientated.

- The necropolis of Sector III of the Lepenski Vir culture settlement can be divided into two groups: The first was contemporaneous with those settlements (B–3), while the other one significantly precedes it (A–B; A2). In both instances, one must accept the possibility of burials of people who were not part of the settlement at Sector III (Fig. 16).

Padina A2. Trench 7. Sector III. The necropolis with elongated stone constructions

The oldest building feature at Sector III was not placed next to the costal zone as one would expect. The opposite was the case: a relatively long construction (10–12m), some type of a shallow base, built in four levels of piled stones, extended along the foothills of the vertical massive gorge. Built and piled one on top of the other, separated by a levelled layer of soil, the stone constructions were a sacred feature – a site place for only few, single burials. However, the dead were not placed inside constructions, but beside them or in their vicinity (Figs. 17 and 18).

Another important (technical) characteristic of these stone piles was a layer of loessic soil with some gravels that separated the layers of stones. In this way, the whole area of the necropolis was gradually elevated, reaching a height of 0.50m–0.65m and a width of 0.80m–2.60m. Inside the construction, or in the levelled zones, there were broken bone artefacts, small pieces of chipped stone, fragments of animal bone and, in places, notable remains of burning and charred wood.

In total, in all three levels of the necropolis, there were four burials: in the older levels (1–2) there were three burials – Burials 19, 21, 22; in the youngest level (4) there was only one – Burial 23. Burials were of two types: with the deceased lying supine in an extended position oriented towards the Danube (Burials 19 and 22); in a sitting position, which demanded more complex stone constructions. Usually, the latter stone constructions and the burial remains in them were less preserved. An older burial of this kind comes from level 2 (Burial 21), and a younger one from the final level 4 (Burial 3).

Burial concentration with domed stone constructions. Trench 6, block 2

Immediately beside the necropolis of elongated stone construction, there was a burial zone with domed stone constructions. They were constituted of a stone ring, wider at its base, narrowing toward its top. Inside these constructions, there were one or two burials in sitting positions with crossed legs – Burials 15 and 16 (two burials in the same stone construction); it is not absolutely clear about Burials 17 and 18, since the stone construction was damaged, although the individual in Burial 17 was most likely placed in a sitting position (Fig. 19). However, within this group of burials there are also interments placed in flexed positions and with their hands below their heads: Burials 14 and 26. Domed-like burials were less frequent on the left bank of the Danube; a good example is found in the mortuary record of the Late Mesolithic and Early Neolithic of Ostrovul Corbului; a burial of this type was discov-

ered there, and assigned to the Starčevo-Criş culture. On the right bank of the Danube, at the sites of Kula and Velesnica, burials in sitting positions were also discovered. Kula was situated across the Mesolithic site at Ostrovul Mare, and dated to its younger phase (Kula II) was a burial in sitting position, covered with a layer of split stones. Velesnica is situated in the region of Ključ – in the vicinity of the Mesolithic settlement at Ostrovul Corbului – and in the Early Neolithic horizon of this multi-layered site, there was a group burial with seven burials: one of the deceased was buried in a sitting position; according to the pottery found in association with this interment, the group burial was dated to the Early Neolithic (the Starčevo-Criş culture) (*Paunescu 1996. 177, Fig. 10; Sladić 1986.432; Vasić 1986.268, Figs. 15–16*).

A larger number of this type of burials and their links with the Lepenski Vir culture phase characterize the right bank of the Upper Gorge. At Vlasac, in a double Burial 16–17, one of the individuals was buried in a sitting position: the long bones were crossed, the spine was banded, and the skull was lying on top of the pelvis; one could suppose a domed stone construction here. The stratigraphic position of this burial is in the early phase, Vlasac I. The date is in the range 8286 to 7749 calBC at 95 per cent confidence (*Borić, French, Dimitrijević this volume Table 1*). At the site of Lepenski Vir, a burial of this type was found in an undisturbed anatomical position, with legs lying wide open, banded at the knees, while the heels were touching. It is dated to Lepenski Vir phase Ia (*Srejović and Babović 1981.55–56*).

To some extent, Padina is an exception in this case: burials with the deceased in sitting positions were found in elongated stone constructions (Burials 18b, 21 and 23) and within the group of burials with domed stone constructions (Burials 12, 15–16 and 17) (Fig. 19). Three of them have been radiocarbon dated recently. AMS dates give a range of 9250 to 7960 calBC at 95 per cent confidence (for details see *Borić and Miracle 2004.348–357, Tabs. 1 and 5*).

In total, there are 6 burials with the deceased in sitting positions, which by far outnumbers burials of this type from other sites. One notices very strict burial rites, with an emphasis on burying the dead with stone constructions specially built for the purpose. However, burial offerings were absent; burials in pairs is not a strict rule, while all of these burials faced the Danube.

Padina A1–2, A–B and B1–3. Architecture

As previously published works show, it is clear that the Lepenski Vir culture is accepted and identified on the basis of its peculiar architecture and ritual and figurative artworks. Other categories of finds were connected to the Epi-Palaeolithic/Mesolithic traditions. Hence the terminology of the Mesolithic-Neolithic transition was applied to, at the time, the newly discovered culture of the Danube Basin. The enigmatic question about contacts and the appearance of the Lepenski Vir culture was in this way equated with the Late Mesolithic of the Danube Gorges on the one hand, and with the Starčevo-Criş pottery complex, as the representative of the Early Neolithic in the wider region, on the other.

To date, the published and debated evidence about the architecture of the Lepenski Vir culture has been primarily limited to building floors with recognizable trapezoidal bases, built-in stone foundations, stone artworks, which were grounded in the symbolism of the Danube Gorges sandstone boulders of specific colouration and different sizes.

Not much ink has been spilled on the fact that this cultural phenomenon was confined within such a small area of the gorges at the time of its flourishing, exhibiting its exceptional stylistic and typological features at only two known settlements in the course of its entire development: Lepenski Vir and Padina in the Upper Gorge of the Danube. Although Padina was occasionally discussed when talking about this specific phenomenon of the Middle Danube Basin, there have been limitations due to delayed publishing of its rich corpus of finds and data. This has limited the spectrum of evidence documented about the site during the 1968–1970 excavations. To some extent, these limitations are being rectified here. For instance, Sector III at Padina offers a unique possibility to fill in the gaps in our knowledge of the Lepenski Vir architecture, both with regard to building techniques as well as the organization of the settlement.

Built along the steep cliffs of the Gorge, the settlements of the Lepenski Vir culture at the eponymous site and at Padina were built in parallel rows, one higher than the other, forming stepped terraces. Such was the layout of Padina after excavations. However, it was necessary to establish the stratigraphic relationship between different living horizons, with complex distribution – previously unknown buildings characterized by dug-in bases of trapezoi-

dal shape (example of House 12, middle row, phase B–2) (Figs. 21, 22, 23). Rows of such buildings placed parallel to the Danube were the main stratigraphic features with a contemporaneous existence. One possibility is that each row was inhabited during the same period as a single settlement horizon, while the older horizon was abandoned and littered with the residue of the settlement (Fig. 20). In the following, we discuss the function of Houses 13, 15, 17, and 18 from the younger and middle rows of the Lepenski Vir culture settlement at Sector III, chosen due to their position, size, architectural details and artefacts found *in situ*.

House 13. Middle row. Profile III, segment 2

It is unnecessary to repeat the main construction details of this and other buildings described here, since these are common to the whole architectural tradition. It is more useful to discuss specific, *i.e.* local construction details. House 13, for instance, was the only building at Padina with its rear zone limited by blocks of rock placed vertically, similar to a massive stone wall. Bringing such large rocks (1.50m–0.80m), which probably originated from the cliffs that overhang the costal zone, must have depended on developed engineering skills. The configuration of the terrain at this site excludes any ritual function for such a dry wall in the back of the building – House 13 had, in fact, a stone dam as protection against the torrential brook that ran down the hill into the Danube, and that also impacted House 18, which will be mentioned later. Hence the protective role of this rocky dam: preventing flooding, washing out or destruction of the building, similar to the problem that caused the destruction of House 3 at Sector I (Figs. 16 and 21).

House 18. Trench 5, block 1 – Trench 6, block 2

With regard to this building, it was most important to establish the time of its abandonment, which might have been caused by the torrential brook or preceded this event. The base of this building was completely preserved, its complete inventory was found *in situ*, which was rare for the settlements of the Lepenski Vir culture at Sector III. House 18 was also one of the youngest buildings in this row (B3) and certainly indicates the end of the use of this settlement (Fig. 27); on the floor of the building a group of pots was found which were typologically different from the typical Starčevo-Criş pottery found in other buildings (with the exception of House 15 in the same row), in the occupation layer or middens of the costal zone.

It seems that the torrential brook took the inhabitants by surprise, but was not the only reason for the abandonment of this settlement. It seems that the abandonment of this building marks much larger changes in the traditional economic system, such as a decline in demand for fish from the Danube, especially of anadromous fish, such as beluga and other species of *Acipenseridae*, or other large fish species that were fished by collective efforts. Thus, the abandonment of House 18, *i.e.* its youngest settling horizon, certainly was not sparked by a sudden disappearance of these species, since up until the hydroelectric dams Đerdap I and II were built, the whole region was famous for fishing on these species.

In stratigraphic terms, House 18 cut the front of House 17, built on higher terrain (0.30m–0.40m), hence its lower position is an exception to the rule of building the Lepenski Vir culture settlements – younger buildings always being on higher terrain. The exception to this rule must have been related to the lack of adequate space in the given area; shifting House 18 to the lower position exposed it to the torrential brook. Being positioned on loessic sand, House 18 could not have been supported by a wall of massive stone blocks like House 13.

In front of wider side of House 18, *i.e.* in front of its entrance, there was a preserved part of the floor, partly levelled by gravels and small size split stone, like a porch of some kind. The buildings of the second row, and to some extent those of the first horizon, or at least some of them, could also have had a similar paved porch, thus giving horizontal access to the building, as some kind of narrow platform that was cut into the layer of loessic sand (Figs. 16 and 17).

House 15. Trench 5, block 2

The entrance area with the porch is clearly visible in the case of this building, similar in its construction to House 18. What distinguishes this building from other buildings is a completely preserved cut for the building, with dug-in sides that were almost vertical, and with a carefully levelled, trapezoidal floor, along with the massive rectangular built-in hearth. There is an exception in this building when it comes to the construction of the hearth. The longer massive stone slab was found slanting on the side of the hearth, as thrown into the hearth; it might have served various functions. There is also a large block of rock in this building with a slanting flat surface in the back of the building. The stone might have ser-

ved as a firm construction element for the longitudinal beam of a gabled roof with the necessary inclination. Pots found on the floor of House 15 were few, and were typologically similar to those found in House 18 (Figs. 16, 26, 28).

House 17. Trench 5, block 1

The floor construction of this building, in the youngest settlement horizon at Sector III, was carefully furnished, while the building can be connected to a special sacred/sacrificial function. At the bottom of a funnel-shaped pit (depth from the floor level 0.50m), an oval stone slab was placed as a lid of some sort, while underneath it, a carefully manufactured ellipsoidal stone altar with a shallow receptacle and a draining lip (0.35m by 0.20m) was found. Similar to other cult places in the settlement, at this place there were neither visible traces of ritual offerings nor animal bones. Remains of burning and charcoal were not very prominent here, which is clear judging by the absence of ash and soil burning. A ritual rite dedicated to a particular divinity might have been symbolic. House 17 was also abandoned without any visible traces of violent or hasty abandonment. Yet the inventory of finds discovered on the floor of this building is quite modest (Figs. 16 and 24).

Padina B1 – 3. Sector III. Settlement organization

The settlement of the Lepenski Vir culture at Sector III is not found on top of a previous settlement as was the case with contemporaneous trapezoidal buildings at Sector I. However, this could be related to the loss of settlement space due to the erosion caused by the Danube. This was the reason test trenches were dug in the costal zone in order to check the possibility of the existence of the oldest horizon in the settlement. In the immediate vicinity of the excavation area (1968–1970), using a sandy ridge formed during the low water table, Trench 3, Sector 3 was excavated to a depth of 2.50m, when underground water was reached. This showed that the slope of the terrace was significantly steeper at the time of the duration of this settlement than at the time of the excavation. This conclusion was also confirmed by a limited number of Early Neolithic finds in this zone, putting the boundary of the prehistoric coastal zone 15–20m toward the Danube from the riverbank profile encountered in the 1960s.

It is clear that the width of this zone was irregular, depending on the topography, although it is possible to assume that approximately one third of the settlement of Sector III was lost. Such an estimate could be supported on the basis of the current costal profile, with a cross-section of the bases of trapezoidal buildings in the middle row (B2), while the bases of the first, and the oldest, row of buildings were covered by layers of sand which accumulated when the water table of the Danube was high, *i.e.* during inundations.

The organization of the settlement space at Sector III during the Lepenski Vir culture phase was not dependent on the complex of necropolises, which were significantly older than this settlement, or on the preceding phase of contacts with the Early Neolithic groups, since the space where we might have had such traces is now covered by the Danube. What survived was a settlement from the time of the developed Lepenski Vir culture, with three rows of typical buildings. This settlement was gradually built up. It is realistic to suppose that the main settlement horizon (B2) was connected with the buildings of the older phase (B1), during which the preparations for the building of a new row of buildings was anticipated (B3) (Fig. 28).

The middle row of buildings on the settlement plan contained Houses 11–15/1 (in total 5 floors); the older, lower horizon contained Houses 5–10 (in total 6 floors) (Fig. 25). One can notice that the middle row is reduced by one building (6:5), although it is advanced on the basis of a new architectural detail that was introduced at the time: A-frames placed asymmetrically over the hearth. This reduction in the number of buildings continues, if one compares the middle row of buildings (B2) with the latest, higher row (B3), which was also reduced by one building (5:4), since the space for building was narrowed. The conclusion that the settlement space previously used went out of use at this time, and even stopped being visible during the latest horizon (B3), is based on the existence of an exceptionally large midden zone (*c.* 28m by 6.5m), covering the middle and older parts of the settlement, reaching up to the very platforms of Houses 15 and 18. The thickness of the midden was uneven, and it was formed by a gradual accumulation of residues from each higher level of buildings (Fig. 16). This explains why no rubbish pits were found at the sectors of Padina. This role was taken up by the costal zone (with the zone of the abandoned settlement horizon) and high waters of the Danube. The most important palaeozoologial and ichthiological finds from Padina (for the settlement of the Lepenski Vir culture) were

found in this particular stratigraphic feature. The scarcity of finds from the contact phase is understandable, since these were probably washed out by the Danube at Padina, in this way deepening the enigma about the appearance/disappearance of the Lepenski Vir culture.

Padina. Sectors I–III. Pottery and the chronology of the Lepenski Vir culture

Pottery is not often found within closed contexts in the Lepenski Vir phase buildings at Padina, despite the small settlement area and density of finds within the buildings. Therefore, we focus on the discovery of circumstances and contexts of those finds and not on the typological or chronological schemes based on pottery. There are only two, quantitatively different groups of pottery finds. The first type of pottery comes from the cultural layer, including middens, and the second, much smaller, from buildings, hearths and burials. Traditionally, most attention has been paid to the Starčevo-Criş pottery from the Lepenski Vir settlements, mostly representative vessels, which are even more scarce than the second group of finds (*Budja 1999.134–35; 2007.50, Figs. 31, 32, 33, 34, 35*).

However, the first group of pottery finds is surprisingly large in number, even if it is compared to the assemblages from the Early Neolithic sites from the middle Danube area. But formal analogies do not imply that the pottery is the same, as pottery from the Upper Gorges sites represents a distinctive variant of the Starčevo-Criş complex. This pottery is robust and poorly made. Vessels of large dimensions are common; monochrome pottery of better quality is rare, while the painted pottery is almost absent. At Padina, this last technique of ornamentation is completely missing. On the other hand, decoration of the outer surface of the vessel by pinching and impressing is the dominant method of decoration from the beginning to the end, when it becomes less common. Typical Starčevo ornamentation techniques such as combing, relief furrowing and the application of wet clay (barbotine) is completely absent (*Borić 1990.49–53*).

The stratigraphic position of concentrations of pottery within the cultural layer is uncertain, due to the formation of large middens upslope. Like on hillforts, large fragments tend to move down slope, where they cover abandoned parts of the settlement. An important issue when discussing the emergence and the development of the Iron Gates variant of Early Neolithic pottery is to locate its production. There is now evidence for local production at Padina (at Sector I, block Ib), but only after the contact phase. The same can be said, at least in principle, for chipped and polished stone tools, especially at Sector III (Fig. 29).

Padina. Sectors I–III. ^{14}C dates and their correlations with stratigraphy

A series of ^{14}C dates from several laboratories have been obtained for samples from Padina over the years, and due the publication of new AMS dates from Padina and Hajdučka Vodenica, we present the full list here. We stress the context of samples and their correlation with the stratigraphy of the settlement.

❶ The first contradictions between the stratigraphy of building horizons at Padina and corresponding ^{14}C dates (from 1978 and without calibration which was performed subsequently) were caused by the inverse relative chronology, where younger horizons were defined as the oldest:

GRN–8229; 6570 ± 55 BP; 5630–5380 calBC at 95 per cent confidence (charred wood, the hearth from House 8, Sector III, Profile 3);

GRN–7981: 7100±80 BP; 6160–5780 calBC at 95 per cent confidence (cultural layer, Sector III, Trench 6, block 1 [phase B3]);

GRN–7981: 7075 ±50 BP; 6030–5800 calBC at 95 per cent confidence (charred wood, House 15, Sector III, Trench 5, block 2 [phase B3]).

This contradiction was later attributed to the contamination of samples due to the middens. A large volume of the midden material affected the samples, while middens were also post-depositionaly disturbed by flash floods.

Obtained dates can be arranged in two intervals – the first half of the 6th millennium for phase B3, and the second half and end of the 7th millennium for phase B2 (*Borić and Miracle 2004.345*).

A part of the same sample of charred wood from the floor of House 8 (B1) was dated to 7065 ± 110 BP; 6105–5725 calBC at 95 per cent confidence, which is approximately contemporary with the date GrN–8229. This unpublished analysis was carried out by the University of Minnesota (USA) in 1974. Absolute

dates for House 9 (B1), situated immediately adjacent to House 8, is according to the date of the sample from the floor calibrated in the range 6410–6090 calBC at 95 per cent confidence (*Canis familiaris*, OxA–9056), which puts the date for phase B1 (according to its stratigraphical priority) in the expected place. House 9 is therefore dated to the middle and second half of the 7th millennium BC (*Borić and Miracle 2004.346*).

❷ Temporal interval between Houses 15, 17 and 18 of the youngest dwelling horizon, Sector III, Trench 5–6 (B3).

Houses 18 and 15

OxA–9052, floor of House 18 (deer antler, *Cervus elaphus*): 6965 ± 60 BP; 5990–5720 calBC at 95 per cent confidence.

OxA–9054, under House 15 (Mammalia, worked bone): 6790 ± 55 BP; 5780–5560 calBC at 95 per cent confidence.

The absolute temporal gap between both houses, which is between 210 and 160 calendar years, suggests that they are more or less contemporary, which confirms the stratigraphic relationships recognized during the excavations (*Borić and Miracle 2004. 347*).

Houses 17 and 18

OxA–11103, from the hearth of House 17 (Mammalia, bone tool): 7315 ± 55 BP; 6250–6025 calBC at 95 per cent confidence.

Absolute temporal gap between both houses from the same horizon, B3, which is between 305 and 260 calendar years. This confirms the stratigraphical relation between houses, where the floor of House 17 was cut during the construction of House 18. The question remains as to whether they are really separated by three centuries (*Borić and Miracle 2004. 347*).

Two chronological terminus, related to the base of House 18

OxA–9052. House 18 (red deer antler, *Cervus elaphus*): 5990–5720 calBC at 95 per cent confidence.

OxA–9053. House 18 (under the house floor/*Canis familiaris*): 6440–6210 calBC at 95 per cent confidence.

The age difference of both samples corresponds to their stratigraphical position. However, the interval between dates seems to be too large, almost half a millennium (450–490 calendar years). It is possible that the sample of *Canis familiaris* belongs to the Late Mesolithic phase, which in turn leads us to discuss the age of dog domestication at Padina (*Borić and Miracle 2004.346*).

Age difference between Burial 11, under the floor of House 15 and the base of this building

OxA–11104. Burial 11, under the floor of House 15 (Sector III, Trench 5, block 2): 9360–8920 calBC at 95 per cent confidence.

OxA–9054 (Mammalia, worked bone): 5780–5560 calBC at 95 per cent confidence.

These dates are separated by three millennia. Ignoring the issue of the acceptability of this difference, we can observe that the pit for Burial 11 could not have been cut during the existence of House 15. Burial 11 is located 0.6m below the building floor, which together with the depth for the cut made for the building floor (0.65m) amounts to 1.25m. This is significantly deeper than the depth of burials next to the stone structure of the Late Mesolithic necropolis in test Trenches 6 and 7 of the same sector. This is similar to the case of Burial 13 under House 18, which was interred before the building was constructed. As the radiocarbon dates indicate, Burial 11 is older than House 18. The large age difference can be provisionally explained by the early settling of the local Late Mesolithic population of the Danube Gorges (*Borić and Miracle 2004.Tab. 3 and 5; Bonsall at al. 2002/3. Figs. 3–4*).

Burials 1a and 2. Sector 1, Trench 1, blocks 1 and 1b

Burial 1a is greatly disturbed, only the bones of lower extremities were preserved. Their position indicates an unusual position of the body, which was positioned supine (test Trench 1, block 1). However, in the photograph published by Borić and Miracle (*2004.Fig. 4*) instead of Burial 1a, Burial 2 (test Trench 1, block 1b) is shown, located next to the Lepenski Vir culture House 2. This is due to the mislabelling of the photograph of this burial in Živanović (*1973–1974*) that Borić and Miracle used in their paper. However, the stratigraphic position of both burials puts them in the contact phase or the earliest stage of the Lepenski Vir culture (B1) (Fig. 5).

The comparisons of ^{14}C dates with the stratigraphic evidence from Padina does not end with these examples, and it remains important to provide an adequate correspondence between these sets of evidence as one of the key issues in the study of the Late Mesolithic and Early Neolithic settlements at Padina and the Upper Gorges.

Padina I–III. The Lepenski Vir culture

The study of the stratigraphic relationships of the Mesolithic settlements of the Lepenski Vir culture is focused on those parts of the cultural layer, occupation surfaces and features that were spared post-depositional disturbances caused by erosion or the movement of material from middens in areas outside the living settlement zone. This approach has brought new ideas about the appearance of settlements, based on the excavated area with the horizontal and vertical arrangement of trapezoidal buildings with stone constructions on the inner sides of their cuts. These entities are composed of past occupation surfaces, positioned on terraced surfaces outside the areas exposed to flood hazards caused by the Danube and away from torrent streams coming down the slopes of the Gorges. Building horizons excavated at the Sectors I and II provide a good example of their primary function on which the organization of the settlement is based, by adapting to the specific environment. Thus, there is a symbiosis between the natural environment and the technology for extracting particular resources.

People were making very selective choices about where to settle in the Upper Gorges in the Late Mesolithic, sometimes even inconsistently in the choice of suitable locations, as some less favorable locations were selected. However, as a general rule, settlements were located in the vicinity of whirlpools (Lepenski Vir, Gospođin Vir), or in the vicinity of rapids and cataracts (Greben near Vlasac), usually located downstream from a particular settlement. The hospitable riverbank at Sector IV at Padina, from the fossil Gospođin Vir at Sector III to the outlet of the Čezava River was not settled, nor was the river bank between Stubica and Padina. However, it should be stressed that the shallow coves of Padina's sectors were located along the last rapids of the Gospođin Vir whirlpool.

These locations were suitable for collective fishing focused on large fish. The presence of large European sturgeon, which weighed around 200 kg and was up to 5m in length, was attested by ichthyological analyses of fish bones from Padina (*Brinkhuizen 1986.18*). However, no fish hooks were found at Padina. Bone fish hooks present in riverine settlements can often be the evidence of organized fishing. Therefore, we must assume the use of fish nets and traps at these locations, where similar fishing techniques were used until the construction of the Iron Gates dam.

Fishing in the course of the Lepenski Vir culture is an interesting issue. The cultural development of communities was based on the exploitation of certain natural resources with a highly developed specialized technology, which resulted in unique cultural expressions. We will only briefly touch upon these phenomena. One of the more general points about the essence of the Lepenski Vir culture is that its uniqueness can be connected directly with the transformation of the Late Mesolithic populations into the communities of the first producers of food in the area.

If we observe the whole process of transformation outside the existing classificatory schemes, we can note that Mesolithic populations were already involved in a system of production, fishing the large seasonal migratory *Acipenseridae*, which was very similar to food production. A careful consideration of the material and religious superstructure of these early communities before the adoption of farming may indicate constant efforts at achieving the stage of a food-producing economy. The moment of abandoning the millennia-long tradition of hunting and gathering at Lepenski Vir and Padina was preserved by chance.

Hajdučka Vodenica, Mali Kazan (Lower Gorge)

The prehistoric site of Hajdučka Vodenica is located in the Lower Gorge of the Danube (Mali Kazan) and consists of two locations: the settlement in the centre of a large semicircular depression below the Mali Štrbac mountain massif, while the necropolis was located beside the Danube to the west. However, neither of these two locations have been extensively researched or studied, despite large-scale systematic excavations between 1965 and 1969. Hypothetically, the settlement might have been situated in the middle of the cove, near a large spring. This water source was strong enough to run a wooden mill, hence the name of Hajdučka Vodenica (meaning Hajduk's mill or outlaw's mill).

The construction of Roman and Byzantine settlements, which were parts of the Danube *limes*, significantly disturbed the earlier Early Neolithic settlement. The construction of a guardhouse in the middle of the last century further demolished the site. The rescue excavations revealed a large quantity of residual Starčevo pottery, redeposited in the foundations of the Roman rampart, and discovered a necropolis of the Lepenski Vir culture that was located at the western entrance to the Mali Kazan Gorge (Fig. 36). The site can be described as a necropolis, more so on the basis its purpose than on the basis of its contents. There were complex architectural elements and stone constructions, previously unknown in the Iron Gates and in the wider region.

Due to significant post-depositional destruction of the cultural layer here, similar to other sites in the Danube Gorges, it is very difficult to provide a detailed description of this feature of the Lepenski Vir culture. The location of the sacrificial feature was identified due to a large slide from the riverbank profile. Test trenches dug at this spot revealed a tangle of stone constructions full of charcoal, ash, burned soil, washed out human bones, and finally burials. The site could be characterized initially as both a settlement and a necropolis, although we are still seeking a more detailed description (for details, see *Jovanović 2004.58; Fig. 4*).

Whilst clearly differing from other necropolises of the Lepenski Vir culture in the Upper Gorge, Hajdučka Vodenica belongs to the same tradition. Firstly, here, no clear relations between the settlement and the necropolis can be established. There are some similarities between the oldest building horizon at Hajdučka Vodenica and other sites. This oldest horizon consists of chaotically distributed hearths on a flattened living floor, which are not on the same level as the building horizons. These hearths were oriented in different directions, mainly with the narrow side facing the Danube. Sometimes stone plaques covered these constructions made of vertically placed stone blocks, crudely worked. There were visible traces of burning, sometimes on the edges of the hearth construction in the form of a strip of burning, which could indicate that such hearths were covered with a dome of some kind. Hearths were not damaged, but had been abandoned long enough to be covered by a layer of intense black colour containing organic remains. Lithic and stone tools were generally absent from this layer, reduced only to a few cores, debitage, and massive stone tools such as anvils and hammers (Figs. 48 and 49; Horizon 1).

This contrasts with the abundance of bone tools found in horizon 1, such as points, awls, chisels, scrapers, projectiles and small hoes made from antler. No pottery was found in this horizon. Moreover, this horizon was excavated at the depth of 0.8–1m below the current level of the Danube. Therefore the expanse of the founder horizon at this settlement, which perhaps might have been attributed to an unarticulated phase of the Lepenski Vir culture, remains completely unknown (Figs. 52, 53, 54; Horizon 1).

Above this, a new cultural layer was deposited which is characterized by a completely new building technique: it begins with piling large stone constructions; large, split stones were used and arranged more or less horizontally, consisting of groups, circles and irregular heaps at particular locations. Bone tools are also present here, as well as traces of burning, and sporadic burials that were interred within the stone constructions. The deceased were placed in extended positions and were differently oriented, although the general orientation was made in relation to the Danube. Thus building activities using the same template continued, forming four horizons of roughly piled stone. There was an unexpected exception here. In horizon 2, a small feature was built resembling a model of a classic building of the Lepenski Vir culture. However, it was constructed on an uneven, rocky surface, where it was not possible to identify the floor level or even less the floor. This structure had a rectangular hearth, covered by a stone slab, and with an accompanying aniconic boulder (Figs. 49, 50, 51; Horizon 2).

The dry stone wall, which was 2.0–4.0m wide, was almost 2.0m high, with vertical and very stable sides, with no traces of tear, except some later erosion caused by the Danube, which covered the earliest phase with hearths in a thick layer of sand (Figs. 44, 45, 46, 47, 48).

In the last two horizons of the stone feature, Early Neolithic Starčevo-Criş pottery appears. Here one finds fragments of large, crudely made and monochrome vessels, which predominate; mainly bowls and pots-amphorae were present. Pottery was obviously broken at specifically chosen locations, since fragments were not uniformly distributed at the level of the construction, but were found in piles and associated with traces of burning (Figs. 44, 45; Horizon 3–4).

All the above could indicate a new type of sacrificial construction in the burial ritual of the early phases

of the Lepenski Vir culture. Downstream from the stone constructions, builders set apart a special area, clearly planned in advance. In the stratigraphic sense, this is a secondary shift of the sacrificial altar, which would be in the tradition of the Lepenski Vir culture, although the feature in itself is slightly different from this tradition (Fig. 37).

The first construction of a narrow and long hearth, with elongated lateral sides, was carried out on the level of loessic sand, based on preserved foundation ditches. Similar to the construction technique in the horizon with rectangular hearths in the zone of stone constructions, long and large stone slabs were inserted in the foundation trenches here. The immediate area around this hearth remains unknown, although it is certain that on both sides of this first hearth burial rites were performed, connected with the burials found in the cultural layer (Figs. 38, 43).

The hearth was accompanied by an older boulder of green volcanic stone, the surface of which was channelled by narrow flutings, which form an ornamental motif distantly related to patterns found on the boulders of Lepenski Vir (*Srejović and Letica 1983. Fig. 27*) (Fig. 55).

After some time, the space around the sacrificial hearth was filled in and the whole construction was moved back, away from the river bank. A burial chamber, cut deep into the layer of flowstone between two ridges which ran into the Danube, was extended further (dimensions 7.5 x 4.0m, Fig. 41).

A new hearth was built, no longer rectangular, but in a funnel-like shape, with a narrow channel along one of its lateral sides. There can be no doubt about its function – it is a conduit for liquid, which does not come immediately from the sacrificial altar, but accumulates at the end of the channel. The design of this type is unknown among the hearths of the Lepenski Vir culture (Figs. 38, 39, 42).

The time lapse between the older and younger sacrificial hearths is evident in the basis of the change in style of decorating the boulder associated with the younger hearth. It is a sandstone boulder, with some anthropomorphic details (*Srejović and Letica 1983; Antonović 2004.73–74*) (Fig. 56).

The floor, built on both sides of the hearth (6.0 x 2.5m), does not respect the symmetry of the construction – with the hearth on the main axis – which is one of the main construction rules of the Lepenski Vir culture. The part of the floor that was upstream the Danube from the location of the hearth was twice as large in comparison to the one on the opposite side; the floor even partly covered the hearth and was on the same level with two stone slabs. The first, a massive rectangular slab, functioned as the threshold, while the other one, much narrower, leads to the hearth. There is no ash place, as both stone slabs were located where the ash place is usually found. The hearth might not have been constructed for keeping a continuing fire, but for special (cult), periodic events (Fig. 39).

Some burials (Burial 11 and partial remains of other burials, Figs. 38, 39, 40) were located below the horizon with hearths, in a layer of dark earth with considerable quantities of charcoal.

The burial chamber extends directly from the sacrificial hearth. Here, a large number of bodies were buried in single, double or multiple burials, in the extended position, parallel to the Danube, with the heads pointing downstream (*Roksandić 2000.37–38*). In the latest horizon, burials were covered by stone plaques, and the whole feature was abandoned. It was preserved until the excavation, with both sculpted boulders accordingly in association with the hearths to which they belonged.

We have no answer to the question about the population which maintained this as well as other ritual constructions for such a long period. Preliminary comparisons can be made with Hajdučka Vodenica, Vlasac (*Borić, French, Dimitrijević this volume*) and Padina A–B during the contact phase. For example, the long hearth from this phase at Padina (approximately 1.50m x 0.50m in Sector I, segment 2–3) is the only example of the elongation of lateral sides of the hearth.

These similarities are related to the earliest phase in the formation of the Lepenski Vir culture, namely with the first material evidence of the contact phase. They demonstrate the influence of local traditions in the process of accepting the sedentary life-style and food production. The strong presence of the Lower Danube variant of Starčevo culture, with important settlements found distributed down from Kladovo to Prahova and to the mouth of the Timok River, should be taken into consideration when discussing the process of transformations at Hajdučka Vodenica. On the other hand, there are no reliable data on the fate of the destroyed settlement with Starčevo pottery found in the middle part of the Hajdučka

Vodenica cove. Such pottery was also found in horizons 3 and 4, with elongated stone constructions of the necropolis.

Hajdučka Vodenica necropolis, radiocarbon dates – correlations with the stratigraphic position of burials

A series of 4 AMS dates from Hajdučka Vodenica date 4 burials from the necropolis with the sacrificial construction (*Borić and Miracle 2004.346, Tab. 3*; for OxA–13613 this replaces previously published OxA–11128 see *Borić et al. 2004.Tab. 3*). They belong to different levels of this construction:

❶ OxA–13613. Burial 8: 7076–6699 calBC at 95 per cent confidence. One of the oldest double burials cut into loess, at the south-east corner of the foundation trench of the first sacrificial hearth. The body was placed supine with arms crossed, parallel to the Danube, elevation ▼ 46.86m.

❷ OxA–11127. Burial 12: 6500–6230 calBC at 95 per cent confidence. The burial was placed directly on the floor next to the sacrificial hearth, after the sacrificial hearth had been abandoned. Here, one again finds a double Burial (12 and 9): both skeletons were fully articulated, elevation ▼ 47.74m.

❸ OxA–11109. Burial 20: 6440–6090 calBC at 95 per cent confidence. The burial was placed in the extension of the burial chamber and belonged to a group burial (Burials 17, 17a, 18, 19), elevation ▼ 48.14m.

❹ OxA–11126. Burial 15: 6470–6230 calBC at 95 per cent confidence. This burial was covered with stone constructions and belonged to the burials of the second, younger horizon, elevation ▼ 48.54m.

The elevation of the excavated area of the site located on the riverbank is ▼ 48.86m, which makes a height difference of 3.32m, exactly the height of the section above the construction of the necropolis. The deposition of the scree hill-wash can be attributed to the time interval between the abandonment of the site and our excavations. This thick deposits contributed to the preservation of the cultural layer and stone constructions.

AMS dates suggest two chronological horizons of the necropolis. The older belongs to the beginning of the 7th millennium BC (Burial 8), while the younger can be dated to the middle and second half of the 7th millennium BC. In other words, there may be a temporal gap of several hundred years in the use of the necropolis. Both sacrificial structures are clearly related, and the renovation of the younger necropolis continues from the use of the older.

Discussion of the date of the construction of the first sacrificial structure is hindered by the lack of analogous features from other areas. Certain architectural analogies with the contact phases of Vlasac and Padina point to the middle and the second half of the 7th millennium BC (*Borić, French, Dimitrijević this volume*). We must also consider the amount of work put into the construction of massive stone structures layered one on top of the other. In this way, a monumental stone structure was built, the dimensions of which can only be guessed at. The appearance of Early Neolithic pottery in the third and the fourth horizons of the stone structure places the whole (sacral?) settlement in the formation phase of the Lepenski Vir culture.

Conclusions

The results of the systematic excavations of Padina and Hajdučka Vodenica have been concisely presented here. However, since these views are very distant from the time of the initial excavations, they are viewed through the lenses of several decades of research and interpretation of the the Lepenski Vir culture. The issues presented here are the result of heterogeneous strands of evidence in the present knowledge of the Lepenski Vir culture, which has for a long time served as a model for the Neolithisation of the frontier area on the Danube. This discussion, based on facts and finds gathered from Padina and Hajdučka Vodenica, actually announces their imminent monographic publication.

If Padina is taken as a point of departure, then the issue was the difficulty of establishing the relative chronological position of the material from Sectors I and III in relation to other settlements of the Lepenski Vir culture.

Sector I was first thought to be chronologically older, as its closed assemblages are typical of the blooming of the traditional elements of this culture, while the considerably larger settlement at Sector III, organically incorporated into the known scheme of rows of buildings with trapezoidal floors, is distinguished by a unique find – a closed assemblage of pottery from the floor of the latest House 18. This assemblage has no stylistic or formal similarities with Star-

čevo-Criş pottery; it is more similar to an unexpected phenomenon of the "Proto-Vinča pottery", with black burnished or grey vessels, of rather biconic than spherical forms, together with the entire absence of ornamental styles of classic Starčevo-Criş production. After the abandonment of this building in the final phase (B–3) of the settlement, Padina was not settled. In that sense, Sector I rather indicates the origin of this culture in the Late Mesolithic of the Danube Gorges and in the subsequent contact phase (A–B).

It is impossible to define precisely the bearers of these changes and the range of relationships that might have existed between the older sedentary (static) community in this region and newcomers, *i.e.* expanding Early Neolithic populations. However, the community of the Lepenski Vir culture might have been complex in make-up:

- the generation from downstream areas of Danube Gorges that was first exposed to contacts and became familiar with Early Neolithic sedentary groups who established settlements in the Ključ and Oltenia.

- the generation from the Lower Gorges of the Danube, for example from Hajdučka Vodenica, might have experienced the first melting of populations and the appearance of 'interbreeding' through biological reproduction or merely through the diffusion of the experience or knowledge of the Early Neolithic cultures.

- the generation from the Upper Gorges forms a new indigenous lifestyle based on interbreeding with incoming Early Neolithic populations. This generation lived to see the end of the Lepenski Vir culture, when its specific ways of fishing were declining as the primary food procurement strategy.

If we accept this outline as a point of departure for further discussion, then the process of transformation consisted of a mosaic of micro-processes dependent on the production stage of individual communities.

Outside the Danube Gorges, there were no conditions for the existence of the Lepenski Vir population *sensu stricto*. All the elements of this culture originated from the gorges during the phase of contact: the organization of settlements and unification of the big river cult, which countered the agricultural fertility cult. In this way, the respect for the 'deity of fertility of the water world' is a response to the adoration of the 'Magna Mater' of the Early Neolithic agriculturists. Instead of sacral areas in Starčevo-Criş dwellings, in the buildings of the Lepenski Vir culture, the rear area of the hearths of trapezoidal buildings was appropriated with sacrificial pits covered by sacred boulders.

The history of the Lepenski Vir culture after the abandonment of its settlement remains unclear, especially of Lepenski Vir and Padina. If the buildings were left desolate, the good preservation of their floors and the household inventories is surprising. How can we explain that anthropomorphic, fishlike deities at Lepenski Vir were concentrated in one of the buildings ('sanctuary XLIV'), placed in two rows, facing each other, where they awaited the excavators? It is more likely that one relatively scarce, mixed population of fishermen, hunters and probably even cattle breeders, already accepting the new mode of sedentary, Early Neolithic lifestyle, peacefully abandoned their previous environmental zone. While the locations of previous settlements were still respected, they remained without visible traces of seasonal camps, until the Late Eneolithic, when Kostolac and Cotofeni settlements appear in the Iron Gates Gorges.

REFERENCES

ANTONOVIĆ D. 2004. Stone Objects from Padina and Hajdučka vodenica. Late Foragers and Early Farmers of the Lepenski vir – Schela Cladovei Culture in the Iron Gates Gorges. *Acts of The XIVth UISPP Congress. Liege 2001, BAR International Series 1302*. Archaeopress. Oxford: 69–75.

BANFFY E. 2004. *The 6th Millennium BC Boundary in Western Transdanubia and its Role in the Ventral European Neolithic Transition (The Szentgyörgyvölgy-PityerdombSettleme. Varia Archaeologica Hungarica 15*. Publicationes Instituti Archaeologici Academiae Scientiarum Hungaricae Budapestini. Budapest.

BONSAL C., MACKLIN G. M., PAYTON R. W., BORONEANŢ A. 2002. Climate, floors and river gods: environmental change and the Meso – Neolithic in Southeast Europe. *Before Farming 3–4 (2): 1–15*.

BORIĆ D. 1999. Places that created time in the Danube Gorges and beyond c. 9000 – 5500 BC. In M. Budja (ed.), *4th Neolithic Studies. Documenta Praehistorica 24: 41– 70*.

BORIĆ D. and MIRACLE T. P. 2004. Mesolithic and Neolithic (dis)continuities in the Danube Gorges: New AMS dates from Padina and Hajdučka vodenica (Serbia). *Oxford Journal of Archaelogy 23(4): 341–371*.

BORIĆ D., GRUPE G., PETERS J. and MIKIĆ Ž. 2004. Is the Mesolithic-Neolithic subsistence dichotomy real? New stable isotope evidence from the Danube Gorges. *European Journal of Archaeology 7(3): 221–248*.

BRINKHUIZEN D. C. 1986. Features observed on the skeletons of some recent European Acipenseridae. Their importance for the study of excavated remains of sturgeon. In D. C. Brinkhuizen and A. T. Clason (eds.), *Fish and Archaeology, BAR International Series 294*. London: 18–33.

BUDJA M. 1999. The transition to farming in mediteranean Europe – an indigenous response. In M. Budja (ed.), *4th Neolithic Studies. Documenta Praehistorica 24: 119–141*.

2007. The Dawn of Ceramics. In Blečić M., Črešnar M., Hansel B., Hellmuth A., Kaiser E. and Metzner-Nebelsik C. (eds.), *Scripta Praehistorica in Honorem Biba Teržan, Situla 44: 41–55*.

CLASON A. T. 1980. Padina and Starčevo, Game, fish and cattle. *Palaeohistoria 20: 141–173*.

GARAŠANIN M. and RADOVANOVIĆ I. 2001. A pot house 54 at Lepenski vir I. *Antiquity 75(287): 118–125*.

JOVANOVIĆ B. 1971. Chronological Frames of the Iron Gate Group of the Early Neolithic period. *Archaeologia Iugoslavica 10: 23– 38*.

2004 Padina and Hajdučka vodenica: Sites of the Lepenski vir Culture in the upper and lower Gorges of the Iron gates. *Acts of The XIVth UISPP Congress. Liege 2001, BAR International Series 1302*. Archaeopress. Oxford: 55–59.

KOZŁOWSKI K. S. 2001. Eco-cultural/stylistic zonation of the Mesolithic/Epipaleolithic in Central Europe. In R. Kertesz and J. Makkay (eds.), *From the Mesolithic to the Neolithic. Proceedings of the International Archaeological Conference held in the Damjanich Museum of Szolnok, September 22–27.1996*. Archaeolingua Foundation. Budapest: 261–282.

MIHAILOVIĆ D. 2004. Chipped Stone Industry from horizons A and B at the site Padina in the Iron Gates. *Acts of The XIVth UISPP Congress. Liege 2001, BAR International Series 1302*. Archaeopress. Oxford: 61–68.

PAUNESCU A. 1996. Die mesolitische Siedlung der Schele Cladovei – Kultur. In H. Hauptmann und P. Roman (eds.), *Ostrovul Corbului. Institutul Roman de Tracologie*. Bucuresti: 115–155.

RADOVANOVIĆ I. 1981. *Ranoholocenska kremena industrija sa lokaliteta Padina u Djerdapu*. Građa, knjiga 4. Arheološki institut, Beograd.

1996. *The Iron Gates Mesolithic*. International Monographs in Prehistory. Archaeological Series 11. Ann Arbor, Michigan.

ROKSANDIĆ M. 2000. Between Foragers and Farmers in the Iron Gates Gorge: Physical Anthropology perspective. In M. Budja (ed.), *7th Neolithic Studies. Documenta Praehistorica 27: 1–100*.

SLADIĆ M. 1986. Kula pre Mihajlovac – un site prehistorique. *Đerdapske sveske – Cahiers des Portes de fer III: 271–285*.

STALIO B. 1986. Le site prehistorique Ajmana a Mala Vrbica. *Đerdapske sveske – Cahiers des Portes de fer III: 27–35*.

SREJOVIĆ D. and LETICA Z. 1978. Vlasac I. A Mesolithic settlement in the Iron Gates. In M. Garašanin (ed.), *Vol. I Archaeology*. Serbian Academy of sciences and arts, Belgrade.

SREJOVIĆ D. and BABOVIĆ L. 1983. *Umetnost Lepenskog vira*. Izdavački zavod Jugoslavija, Narodni muzej Beograd.

VASIĆ R. 1986. Compte – rendu des Fouilles du site prehistorique a Velesnica 1981– 1982. *Đerdapske sveske – Cahires des Portes de fer III: 271– 301*.

Figures

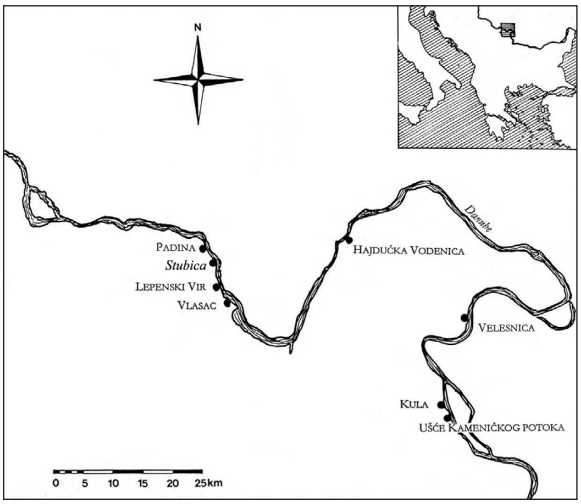

Fig. 1. Upper and Lower Gorges of the Danube with settlements of the Lepenski Vir culture (protective excavations on the territory of the hydroelectric dam Đerdap I; 1965–1970).

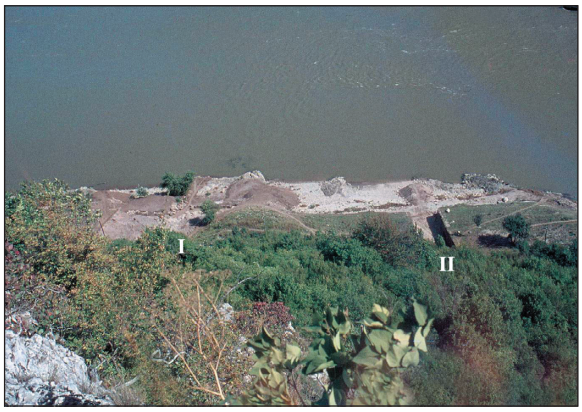

Fig. 3. Padina. View over Sectors I and II during excavations (1968) from the top of the steep side of the gorge.

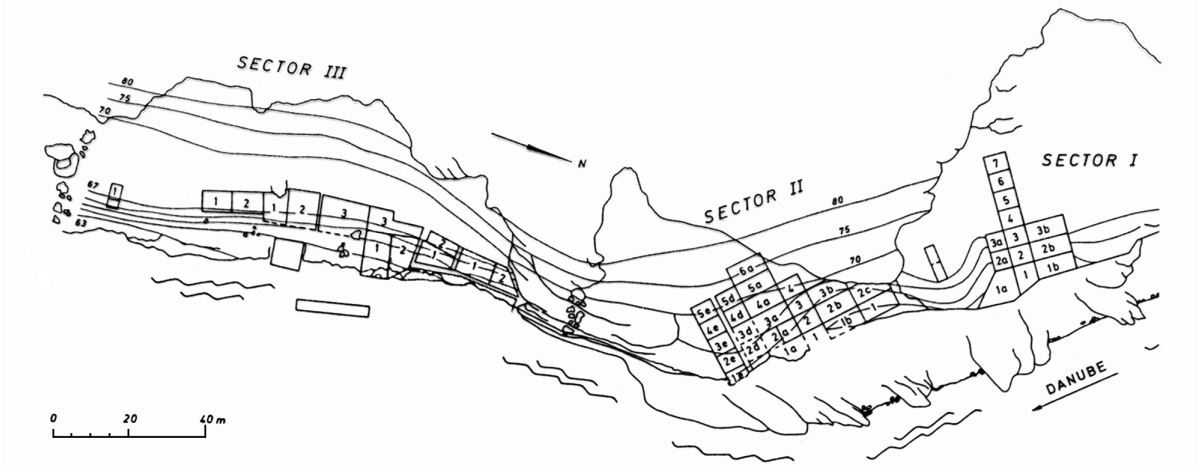

Fig. 2. Padina – Gospođin Vir. Sectors I–III, semi-circual coastal coves with the settlements of the Iron Gates Late Mesolithic and the Lepenski Vir culture.

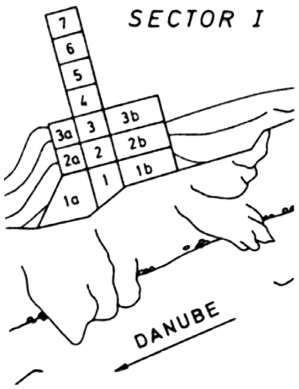

Fig. 4. Padina. Excavated areas at Sector I (without segments 1–3 in the coastal zone).

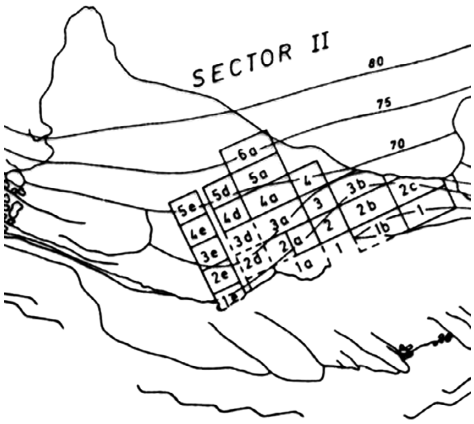

Fig. 10. Padina. Sector II, Trench 2, profile 2. Grid over the excavated area. Half-circular cove divided by the mountain creek.

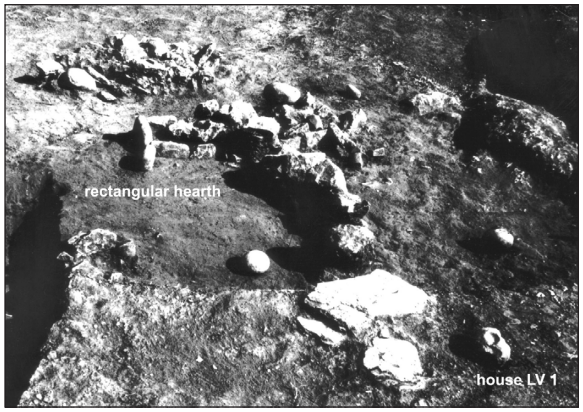

Fig. 6. Padina. Architectural features of phase A: the feature with long rectangular hearth, covered by the remains of House 1 (phase B1, the Lepenski Vir culture) with slabs of the rear platform of the hearth and the ornamented boulder (altar in situ*, Sector I, Profile 1, segments 2 and 3 of the coastal area.*

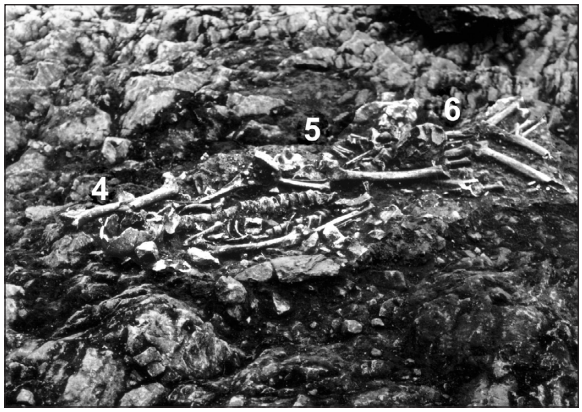

Fig. 9. Padina. Sector I, Trench 1, block 1a. Group burial at the level of palaesoil. Burials 4, 5 and 6 interred in different positions. Burials were made in the croft of House 2 (B2).

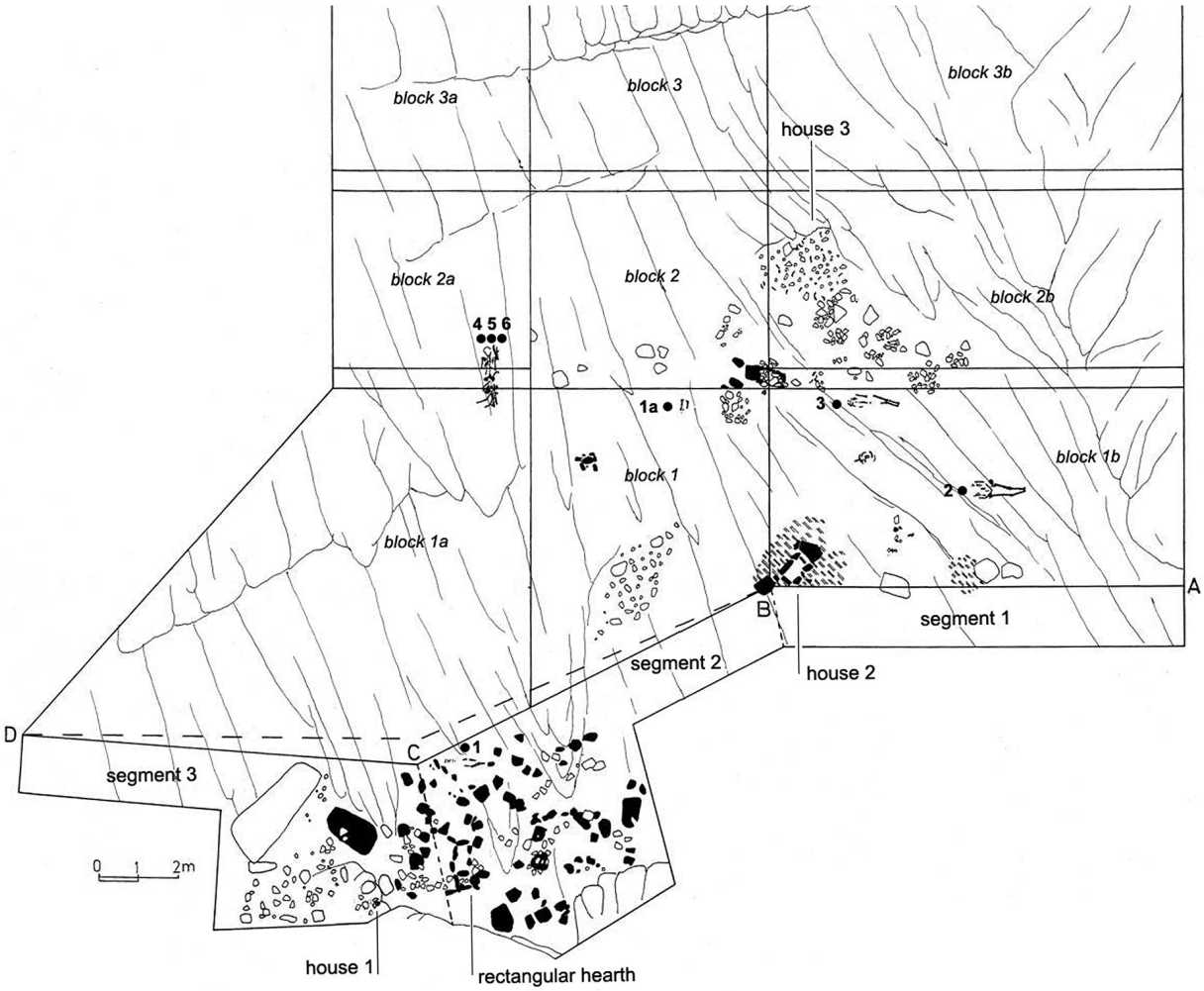

Fig. 5. Padina. Excavated areas at Sector I with features and burials belonging to chronological phases Padina A, A–B, B1 and B2.

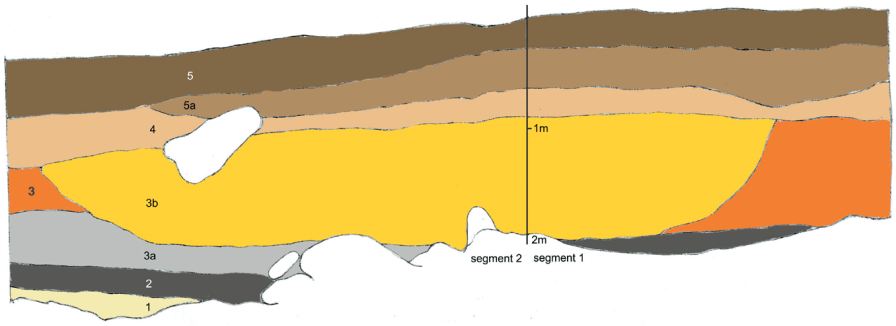

Fig. 7. Padina. Sector I, Profile 1, segments 1–2, cross-section of the cut for the trapezoidal base of House 2 (B2) of the Lepenski Vir culture. Legend: A – hillwash layers. (1) Yellow sandy soil. Grey soil with pebbles and sand (3a); B – palaeosoil/cultural layer of the Mesolithic settlement formed on the bedrock (2); C – layers associated with the Lepenski Vir culture. Cut for House 2 (B2) filled with the torrential hillwash and archaeological finds (3b). Cutting of the building and its croft in the older layers of the same settlement (3). D – Layer of the Late Eneolithic and the Iron Age (4). E – Modern humus and subhumus (5 and 5a).

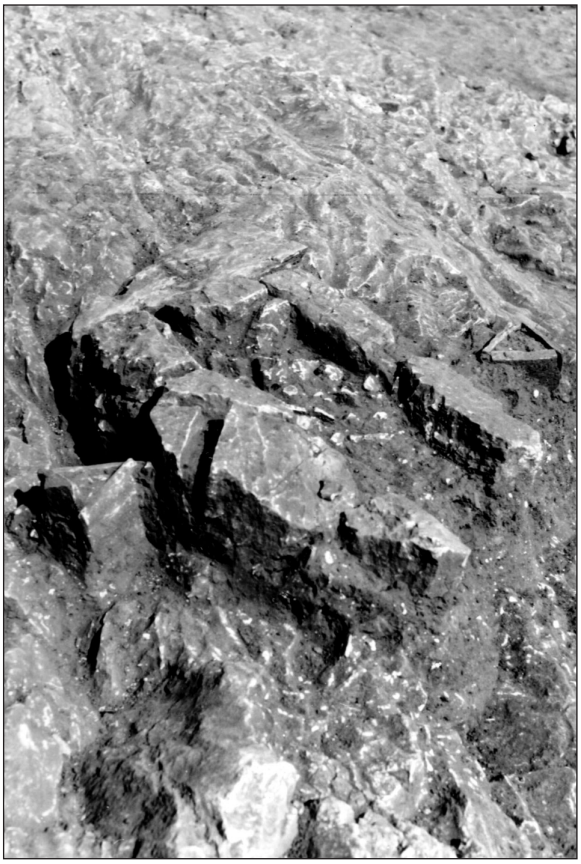

Fig. 8. Padina. Sector I, Trench 1, block 2b. Hearth of House 3 (B2) of the upper terrace in the secondary position after the impact of the torrential outburst. On the moved base, two A supports were preserved.

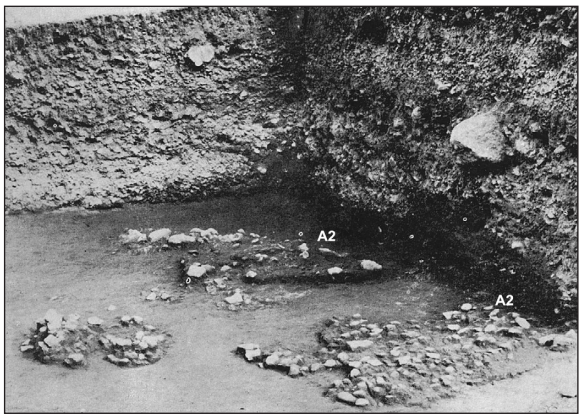

Fig. 11. Padina. Sector II, Trench 2, block 2a. The base of dwellings of the central part of the Iron Gates Late Mesolithic settlement on the level of palaesoil layered over the bedrock.

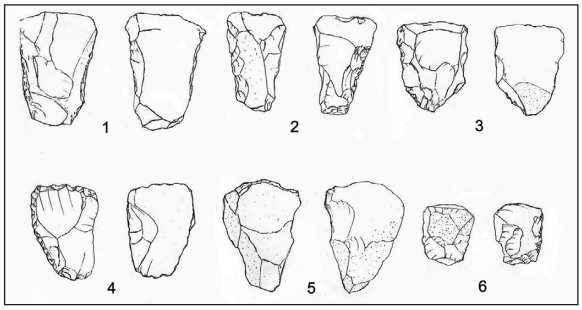

Fig. 12. Padina. Trench 2, block 2a, 5e. Flint axes, Late Mesolithic settlement. No. 1 – 3. From the floor of the dwelling, block 2a (phase A2). No. 5. From the floor of the dwelling, block 2e (phase A2). No. 4. From Profile 2, Trench 2 (phase A1). No. 6. From the floor of the dwelling, block 2a (phase A1).

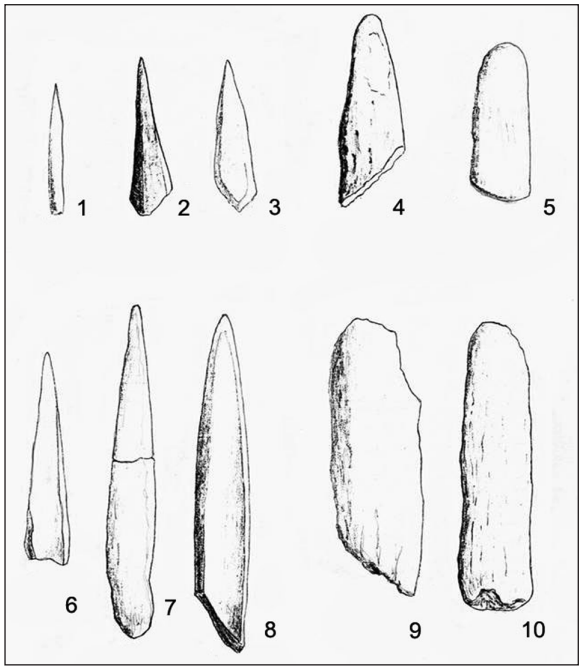

Fig. 14. Padina. Trench 2, block 2a. Bone artefacts, from the floor of the dwelling, Late Mesolithic settlement (phase A2).

Fig. 15. Padina. Sector II, Trench 2, block 2e. Partial burial; ritually buried skull from the level of the palaeosoil, cut from the Lepenski Vir culture layer (late phase A–B).

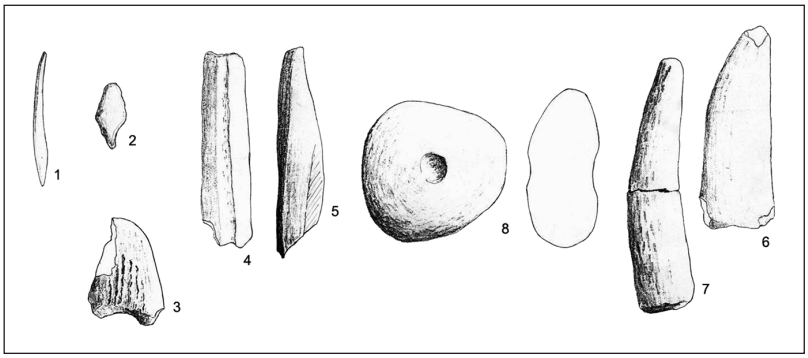

Fig. 13. Padina. Trench 2, block 2a. Bone and stone artefacts, from the floor of the dwelling, Late Mesolithic settlement (phase A1).

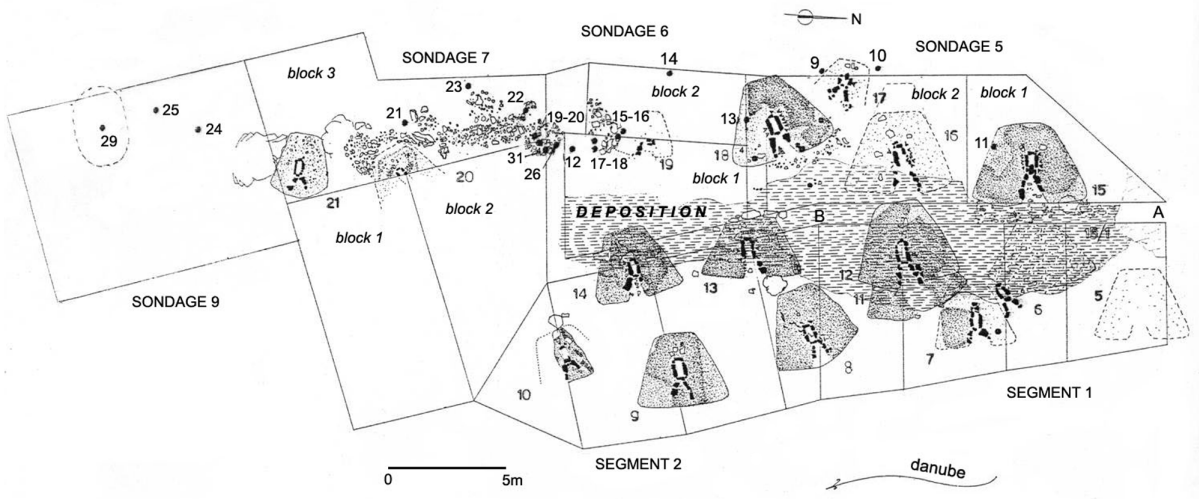

Fig. 16. Padina. Sector III. excavated area of the Lepenski Vir culture settlement (phases B1–3); necropolises with elongated stone constructions, Iron Gates Late Mesolithic (phase A2); necropolises with domed-like stone constructions (contact phase, A –B); single burials around the building of phase B3.

Fig. 17. Padina. Sector III, Trench 7, block 3. Necropolises with elongated stone constructions, horizon 1, Late Mesolithic settlement (phase A2).

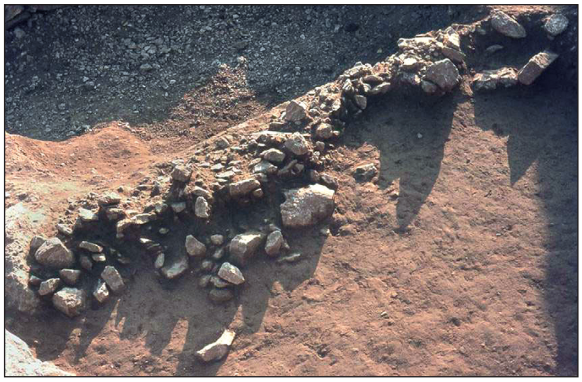

Fig. 18. Padina. Sector III, Trench 7, block 3. Necropolises with elongated stone constructions, horizon 2. Distinguishing different horizons of the necropolis was difficult due to layers of soil between them and due to the existence of separate surfaces with piled stones. Late Mesolithic settlement (phase A2).

Fig. 19. Padina. Sector III, trench 6, block 2. Burials with domed-like stone constructions; the deceased were placed in sitting positions with crossed legs, protected by dome-like piles of stone. Double Burial 15–16 (phase A).

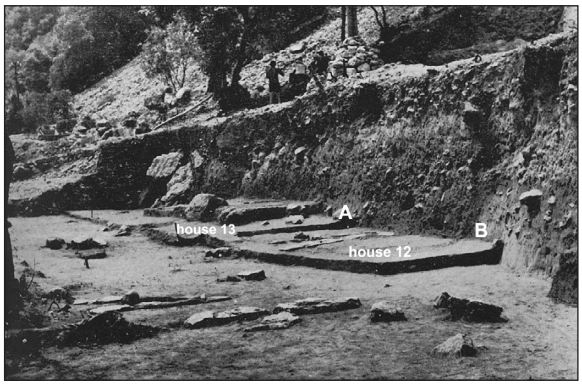

Fig. 21. Padina. Sector III. details of the coastal profile, segment 2, position of the cross-section of semi-subterranean House 12 (points A–B). Order of the deposition of layers (1–6) in the cut of House 12 upon its abandonment.

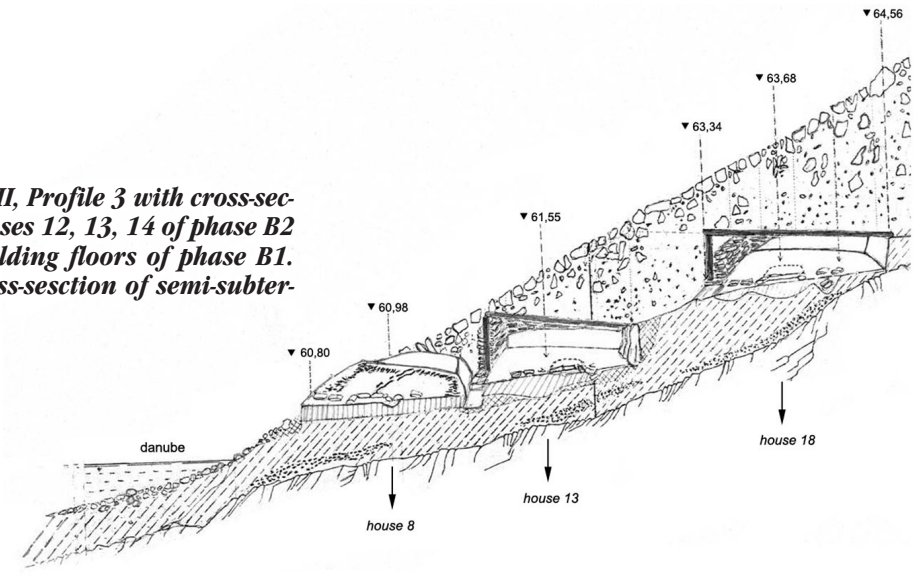

Fig. 20. Padina. Sector III, Profile 3 with cross-sections of the bases of Houses 12, 13, 14 of phase B2 and the remains of building floors of phase B1. A–B: position of the cross-sesction of semi-subterranean House 12.

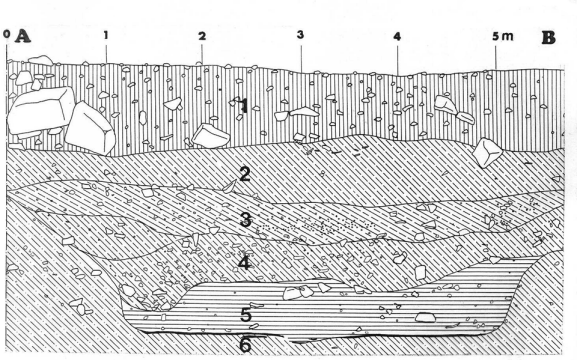

Fig. 22. Layer no. 6. Natural, sandy loess. Layer no. 5. Lower level. Dark strip of the floor made of compact and at places burned clay, the limit of the ellipsoid cut for House 12, which came down the depth of 1.16m in the loessic base (vertical T. A – 1.10m vertical T.B). In this way, between the floors of buildings 12–13 and 12–15 there is a zone of sterile loess, limited by the level of palaesoil and rocky base. Layer no. 5. Upper level. Floor of House 12 was covered by a compact layer of crushed black soil that contained a large quantity of fish bones and remains of charcoal (0.20m –0.50m). This layer was formed after the abandonment (or demolishion) of the building, with the remains of the wooden construction of the roof or household inventory that was left behind. Layer no. 4. Horizon of mixed grey soil, smaller crushed stones, fragments of pottery, and remains of burning (0.20m–0.40m) with a large amount of fish bones. This horizon corresponds with the successive backfill of the building's cut with the remains coming from buildings of the upper row (B3),* i.e. *midden layers (Fig. 16). Layer no. 3. Level of lighter soil and crushed stone belonging to the deposition in the partly backfilled cut of House 12 from the level of present-day humus (0.20m–0.40m). Layer no. 2. Light grey cultural layer also covers other bases of the middle row buildings (B2) and contains common categories of finds, belonging to the end of the leveling process that probably took place after the abandonment of the upper, third horizon of buildings (B3). Layer no. 1. Massive modern humus, composed of eroded materials of hillwash scree, with darker soil and the remains of vegetation (0.50m–0.80m).

Fig. 23. Padina. Sector III, Anthropomorphic boulder (altar from House 12, rear platform of the hearth).

Fig. 25. Padina. Sector III, coastal strip, segment 2. Trapezoidal base and floor of House 8, lower settlement horizon (phase B1). Burned remains found on the floor from the upper construction of a gabled roof.

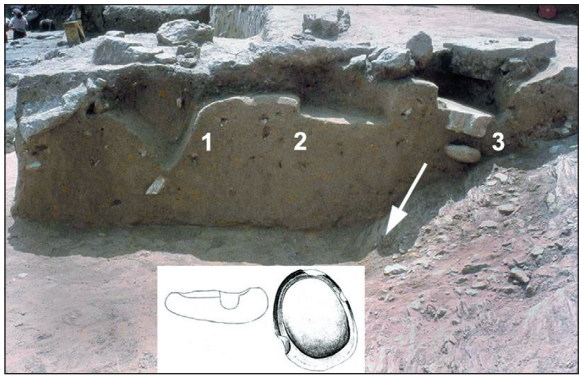

Fig. 24. Padina. Sector III, Trench 5, block 1. Longitudinal cross-section of House 17 (B3). Installation of the inner stone constructions: 1. cut for the ash-place; 2. cut for the rectangular hearth; 3. cut for the cult pit with ritual stone bowl at its bottom.

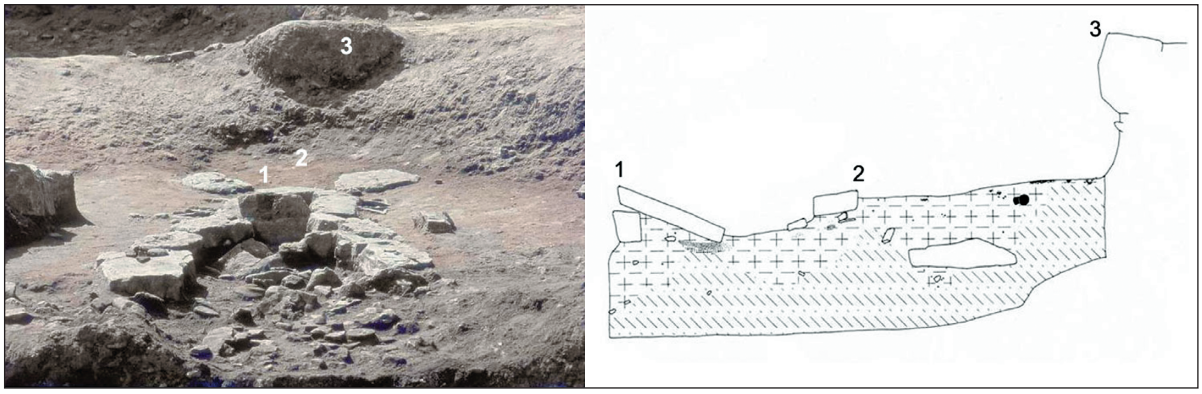

Fig. 26. Padina. Sector III, Trench 5, block 2. Longitudinal cross-section of House 15 (B3). 1. Hearth with a stone slab for ash disposal or for heating and preparation of dry fish. 2. Rear platform of the hearth with a cult pit at the bottom, covered by a large stone slab. 3. Large stone blocks at the rear edge of the cut for the trapezoidal base served to support the main beam for the roof construction. Slanted construction of this support reflects the slant of the gabbled roof.

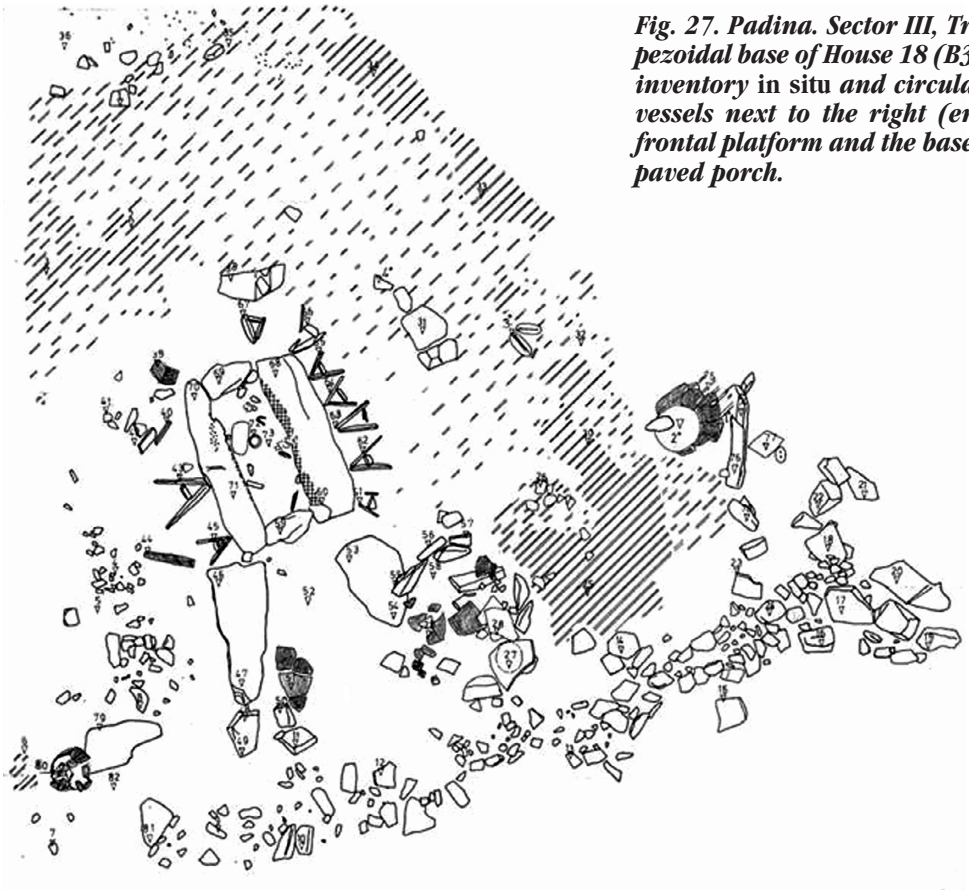

Fig. 27. Padina. Sector III, Trench 5, block 1. Trapezoidal base of House 18 (B3) with the household inventory* in situ *and circular space for ceramic vessels next to the right (entrance) side of the frontal platform and the base of the approaching, paved porch.

Fig. 28. Padina. Sector III. View over lower (B1), middle (B2) and upper (B3) rows of buildings; House 15 with approaching paved porch. The Lepenski Vir culture settlement.

Fig. 29. Padina. Sector III. A selection of polished stone tools. The Lepenski Vir culture settlement.

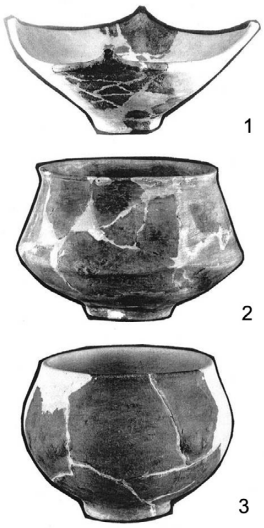

Fig. 32. Padina. Sector III, Trench 5; 1 – 3 vessels from the floor of House 18 (B3); the Lepenski Vir culture.

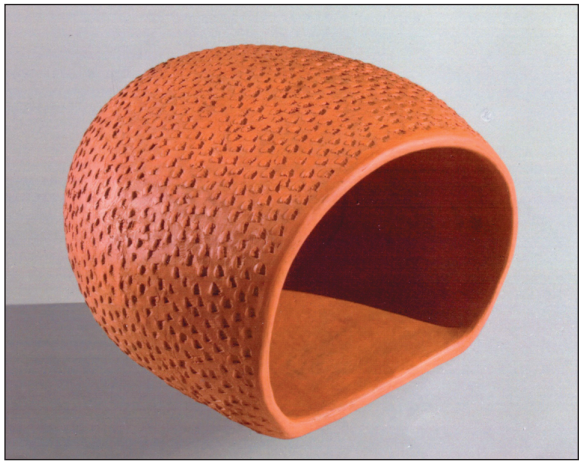

Fig. 30 A. Padina. (B2) Model of an oven (25 x 35cm) decorated by impresso technique, found on the floor of House 3.

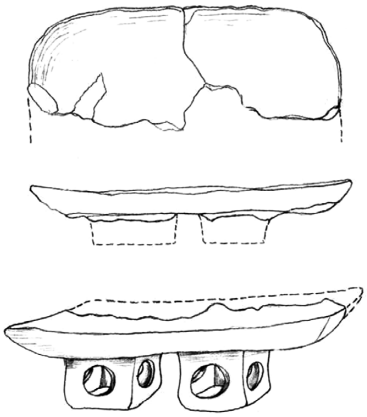

Fig. 30 B. Ritual table. Parts of the cultic vessel found in two different zones of the settlement. The Lepenski Vir culture. Sector I. Coastal zone, Profile I, segment 2; Trench I, block 1a.

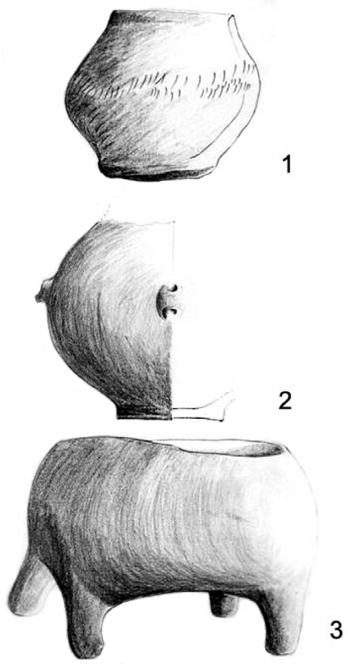

Fig. 31. Padina. Sector III, Trench 5 and 6; 1–2 vessels from the level of occupation of the third row of buildings (B3); 3. Altar from the floor of House 17 (B3), Trench 5, block 1. The Lepenski Vir culture.

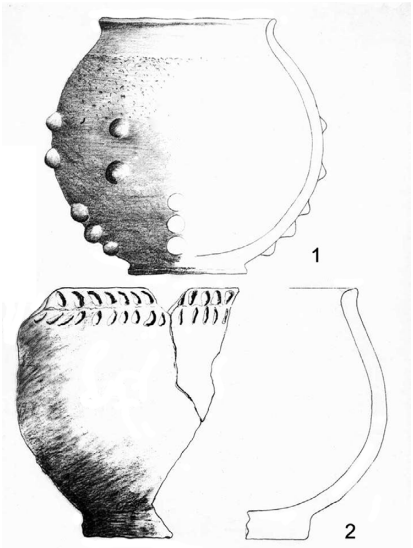

Fig. 34. Padina. Sector I, space between Houses 2 (B2) and 3 (B2); 1. Amphora-like pot, pottery oven (open-air hearth?); Sector I, block 1b; 2. Half-spherical bowl, the floor of House 2 (B2). The Lepenski Vir culture settlement.

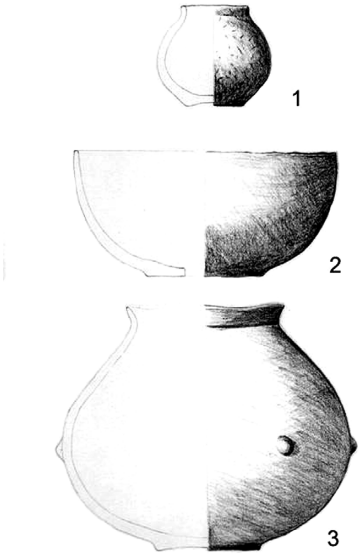

Fig. 33. Padina. Sector III, Trench 5, block 1. Vessels from the floor of House 18 (B3); the Lepenski Vir culture.

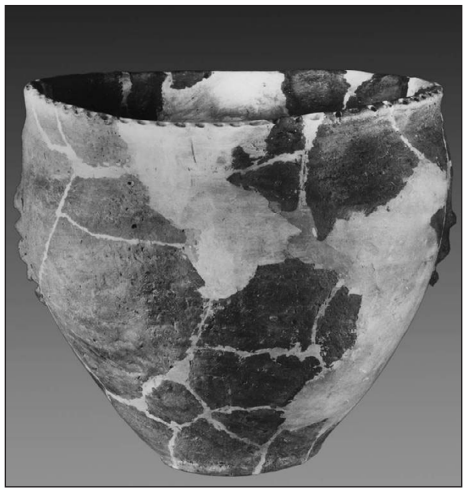

Fig. 35. Padina. Sector III, Trench 5, block 2. Large pot/pythos from the floor of House 15 (B3). The Lepenski Vir culture settlement.

Fig. 36. Hajdučka Vodenica. Position of the site; entrance to Mali Kazan, Lower Gorge of the Danube.

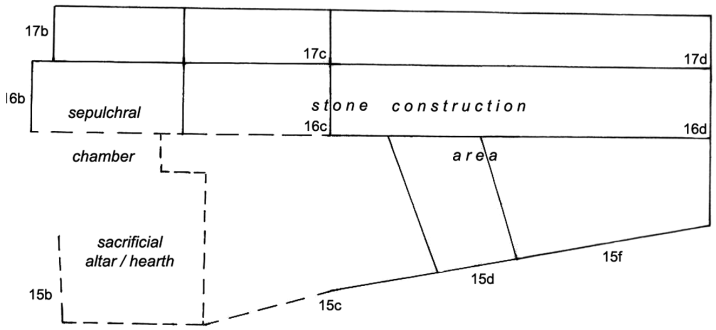

Fig. 37. Hajdučka Vodenica. Excavated areas of the necropolises 1967–1969 with the functional organization of space. Excavated area 630m².

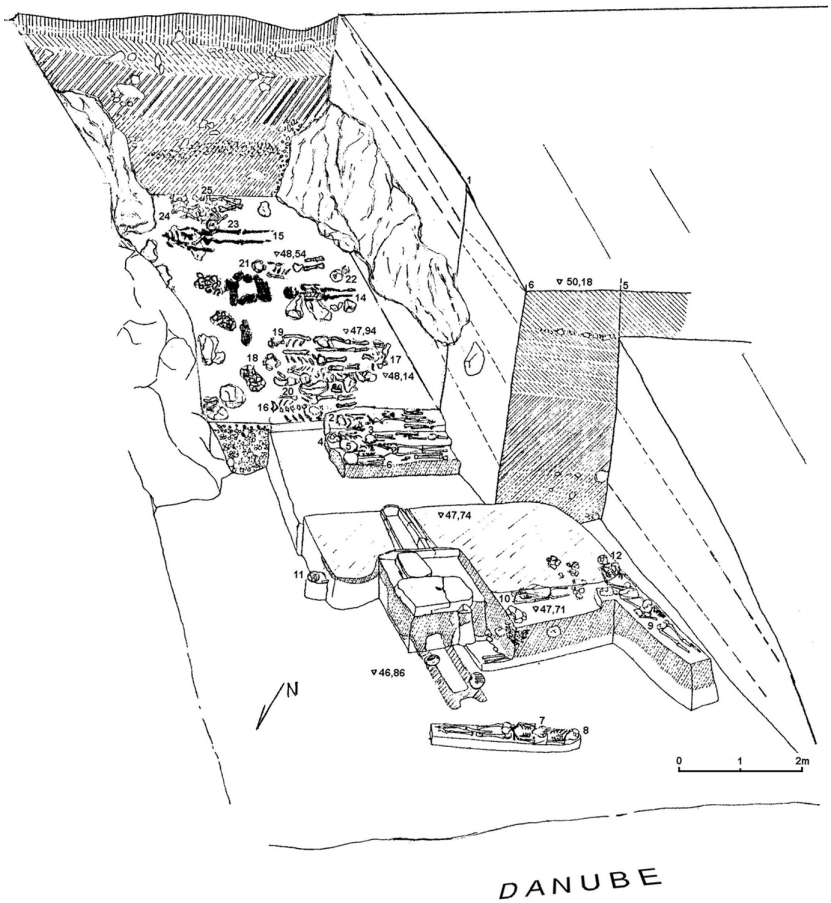

Fig. 38. Hajdučka Vodenica, isometric reconstruction of the sacrificial/ritual construction and the burial chamber with four horizons of burials.

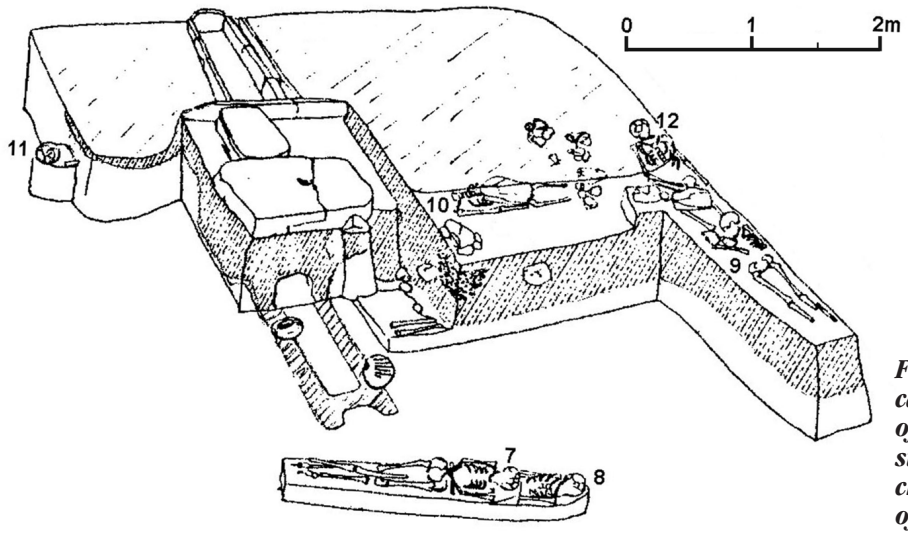

Fig. 39. Hajdučka Vodenica, isometric reconstruction of the sacrificial/ritual construction and the burial chamber with two horizons of burials.

Fig. 40. Hajdučka Vodenica. Stratigraphic position of the sacrificial construction of the necropolis.

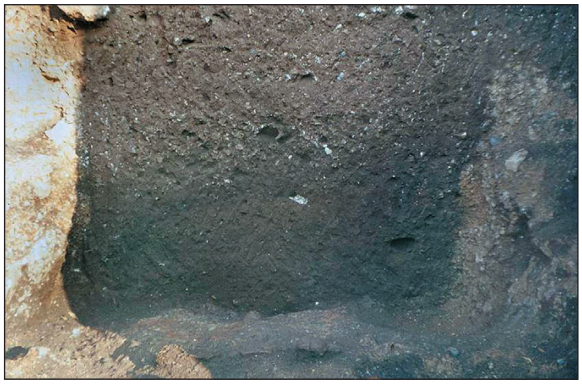

Fig. 41. Hajdučka Vodenica. Section of the burial chamber behind the sacrificial construction of the necropolis. Lower level of the section filled with abundant remains of burning belonging to the horizon of burials.

Fig. 42. Hajdučka Vodenica. Stratigraphy of building phases of the sacrificial construction; older phase: foundation channel of the first elongated heart, dug into the loessic base; younger phase: approaching platform; elongated with associated finds; surrounding zone furnished with burned clay.

Fig. 43. Hajdučka Vodenica. Outline of the older elongated hearth on the basis of its foundations for the stone construction, level of sterile loess.

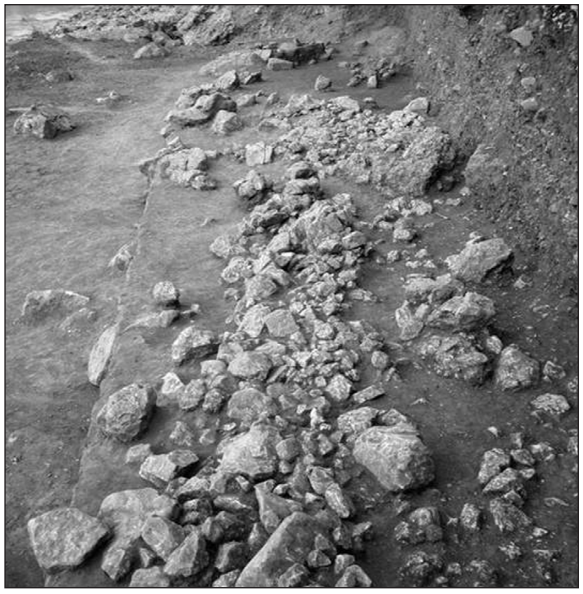

Fig. 44. Hajdučka Vodenica. Elongated stone constructions of the necropolis, horizon 4.

Fig. 45. Hajdučka Vodenica. Elongated stone constructions of the necropolis, horizon 3.

Fig. 47. Hajdučka Vodenica. Stratigraphy of elongated stone constructions of the necropolis, horizons 4–2; Facing south-west, upstream from the location of the sacrificial/ritual constructions and burial chamber of the necropolis.

Fig. 46. Hajdučka Vodenica. Elongated stone constructions of the necropolis, horizon 2. In the foreground grouped stone blocks with a rectangular hearth.

Fig. 48. Hajdučka Vodenica. Longitudinal section of the elongated stone constructions of the necropolis, north-east and south-west, with horizons 3–4 under excavations and noticable stratigraphic position of horizons 1–2.

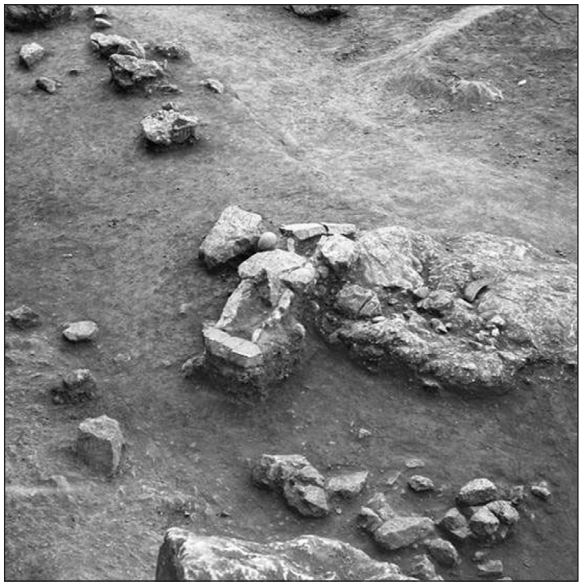

Fig. 49. Hajdučka Vodenica. Stratigraphic position of the hearth with the approaching stone slab and an aniconic boulder, horizon 2 of the elongated stone constructions of the necropolis.

Fig. 50. Hajdučka Vodenica. Detail of the rectangular hearth of horizon 2 of the elongated stone constructions of the necropolis.

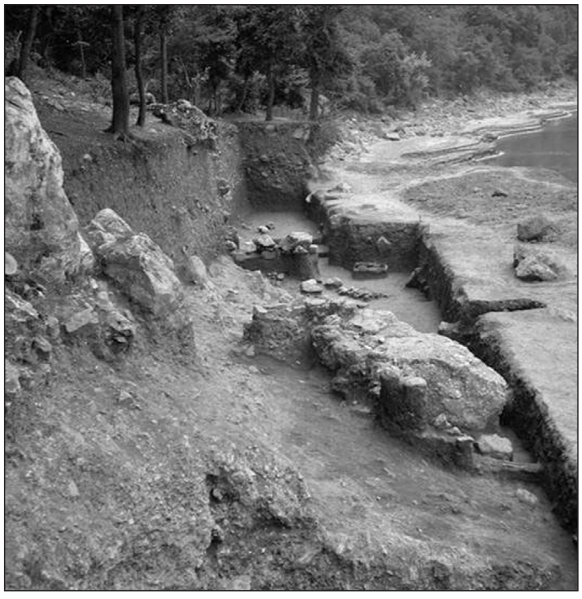

Fig. 51. Hajdučka Vodenica. Stratigraphic relationship of horizon 1 and rectangular hearth of horizon 2 of the elongated stone constructions of the necropolis.

Fig. 52. Hajdučka Vodenica. Horizon 1, lower level, rectangular hearth placed on the level of palaeosoil. In the foreground a hearth covered with piled stones.

Fig. 53. Hajdučka Vodenica. Horizon 1, lower level, detail of the base with rectangular hearths.

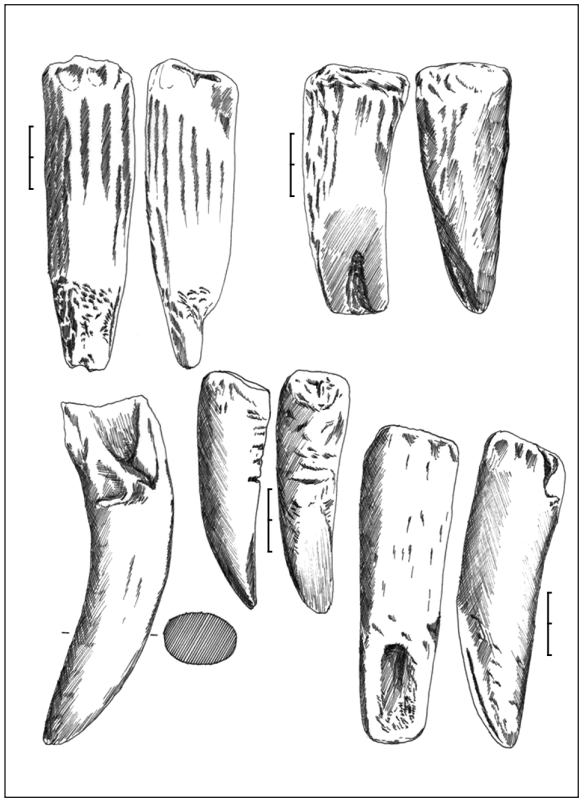

Fig. 54. Hajdučka Vodenica. Horizon 1, selection of red deer antler tools.

Fig. 55. Hajdučka Vodenica. Older sacrificial/ritual construction, ornamented boulder (volcanic rock, green colour, channeling technique) (dimensions 25cm x 18cm x 19cm).

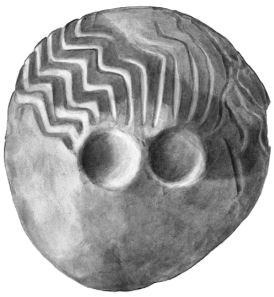

Fig. 56. Hajdučka Vodenica. Younger sacrificial/ritual construction, ornamented boulder (sandstone, chalky colour, incision technique) (dimensions 31cm x 27cm x 24cm).

back to contents