Archaeological research in Miercurea Sibiului – Petriș (Sibiu County, Romania): the Starčevo-Criș level during 1997–2005 (a preliminary report)

Sabin Adrian Luca¹, Dragoș Diaconescu² and Cosmin Ioan Suciu³

¹ Lucian Blaga University Sibiu and National Brukenthal Museum Romania, sabin.luca@brukenthalmuseum.ro
² National Brukenthal Museum Sibiu Romania, goshu_d@yahoo.com
³ Lucian Blaga University Sibiu Romania, cosmin.suciu@ulbsibiu.ro

ABSTRACT – The article presents an archaeological description of the Starčevo-Criș close complexes at Miercurea Sibiului-Petriș, one of the Earliest Neolithic settlements in Romania. The site belongs to the early wave of First Temperate Neolithic communities who reached Romania. Each complex is presented through plans, statistical ceramic analyses and some representative materials. White painting is present here in the earlier complexes.

General context

The Petriș archaeological site is situated 500m east of the Miercurea Bâi halt, 50–80m north of the Sebeș Alba–Sibiu highway, along the Secaș river terrace which is 4–5m in height (Plan 1). The archaeological discoveries are over an area of about 300/100m.

Systematic research at the site commenced in 1997, and at the moment the excavators comprise researchers and representatives of several institutions in Romania and abroad¹.

The interdisciplinary profile of the accomplished research (the statistics on ceramics; the analysis of soil types as rough materials in ceramics processing; the pre-elevation of samples and the ¹⁴C data; the designated analysis of items of flaked obsidian and flint; the zoo-archaeological analysis of the remnants; the analysis of the route attained by the adornments, tools and weapons made of bone, horn and shell; the analysis of seed remnants, etc.), as well as the particularities of the site’s settlement, has led to outstanding findings and remarkable conclusions.

For a better understanding of the topographical setting, detailed measurements were taken (Plan 2), allowing correlation with advanced technology pro-
grammes such as Google Earth. The area in which the site is located enjoys high quality satellite imagery provided through this particular programme. In the near future, we will be able to publish the results of the topographic data processing, i.e. geographical simulations and mathematical processing of data. In order for this to happen, a geo-magnetic study of the area is still needed; the site’s stratigraphy promises a particularly relevant geomagnetic map.

In the first stage, research at the site was conducted by means of stratigraphic control trenches, for which purpose the eastern zone was chosen (Plan 2); Plan 3 clearly presents the exact positioning (S₁/1997 – 20/1.5 m; S₂/1998 – 16/2 m; S₃/1998 – 16/2 m; S₄/1999 – 16/2 m and S₅/2000 – 20/1.5 m).

In the next stage (begun in 2001) the digging system was changed on the researched surfaces because it was observed that the stratigraphy is extensive and horizontal, in which circumstances the archaeological complexes rarely intersect and the dwellings, pits and other constructions could be excavated very productively. That is why it was decided to set aside the archaeological material coming from the cultural level, and concentrate efforts on as closely as possible on the architectural remnants, artefacts and biological remnants in the enclosed archaeological complexes. The surfaces studied (Plan s2 and 3) have the following measurements and numbers: SI/2001–2003 – 20/20 m; SII/2004–2005 – 15/16 m; SIII/2006–2007 – 20/10 m; SIV/2006 – 40/40 m (no image; it is to be traced out north of the SI–II surfaces; still to be excavated); SV/2007 (still to be excavated).

The present article is concerned with the analysis of the Starčevo-Criş levels, systematically researched from 1997–2005 in S₁–₅/1997–2000 sections, and S₁–II/2001–2005 surfaces. In brief, the stratigraphy of the site is as follows:

I - the first and the oldest dwelling level appertains to the Starčevo-Criş culture, presenting several sub-levels:
- Ia - the deepened dwellings of this sub-level appertain to the Starčevo-Criş IB phase;
- Ib - the deepened dwellings of this sub-level appertain to the Starčevo-Criş IC–IIA phase;
- Ic - after a hiatus (?), the deepened dwellings of this sub-level appertain to the Starčevo-Criş IIB–IIIA phase.

II - the second level appertains to the Vinča culture, old phase (A, and evolving to B1):
- IIa - the dwellings of these sub-levels – dwelling pits – are constructed in two stages:
- IIa₁ - the dwellings of this stage appertain to the Vinča A₁–₂ phase (typologically and stylistically);
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IIa₂ – the dwellings of this stage appertain to the Vinča A₃ phase.

IIb – the surfaced dwellings of this sub-level appertain to the Vinča A₁–B₁ phase.

II/III level – unpublished research in 2007, led to the discovery of several pits containing archaeological material from the Vinča B₁ phase, yielding painted decorations specific to the Lumea Noua Transylvanian culture; future research will reveal more details of this aspect. Considering the fact that the stratigraphy of the site was already published, we chose to name this level: II/III, which anyway emerged after Vinča B₁ and before Vinča C₂.

III – this level appertains to the Petrešti culture; its surfaced dwellings, with massive clay floors, appertain to the AB phase of the culture.

IV – the pits at this level were dug by Celto-Dacians in II–I BC.

V – the graves and some of the heterogeneous archaeological complexes at this level appertain to the Gepid period.

VI – this level is represented by a semi-deepened dwelling, with a stone oven that could be dated to the first millennium A.C.

The present article analyses the architectural remnants of the oldest first level in Miercurea Sibiului-Petriş, researched between 1997 and 2005. All the dwellings at this level were sunk deep into the ground (Plan 4), the analysis being done in the order of their age. The criteria were a result of a study of the direct stratigraphic relations, architecture, typological and stylistic examinations, studies in mathematics and statistics, and absolute radiocarbon chronology.

The architecture of the complexes was severely damaged – in the upper part of the dwelling pit – the resultant dyke (levee) is earthen, formed by earth and other elements dug out, on the pit's margins, during contemporary agricultural activities and construction enterprises of the inhabitants who have subsequently followed the Starčevo-Criş culture. This is why we deal mainly with the lower part of the construction, meaning 50–60% of it.

The later work determined, in most cases, the destruction of the first (I) Starčevo-Criş layer. In its preserved parts (Plan 5 – level number 6) it is no thicker than 0.10m; it is discontinuous and presents a yellow-reddish colour, a clay-like consistency mixed with gravel, lying on gravel containing sand and loess. The reddish shade of the archaeological layer could indicate the formation of forest soils during the post-Ice Age period. Over the whole region of Transylvania, the first farmers settled on this type of soil which, after the sedimentation of vegetal remains resulting from human activities over many generations, evolved into the humus visible in the area of the site.
As could be observed, the vertical stratigraphy of the site is not very well developed (1–1, 20m), this being one of the features of most Transylvanian archaeological sites.

The Ia sub-level

Dwelling-pit B_{10}/2003 – Starčevo-Criş Culture (Plan 4, surface I, lower-centre; Plan 5, Plan 6; Fig. 1; Photo 1; Tab. 1)

From a chronological and cultural perspective, the oldest dwelling-pit was discovered in Miercurea Sibiului-Petriş, gate number 10. It is rectangular and oriented approximately north-south. Part of the entrance on its eastern side has survived (Plan 6). The general features of the digging method in prehistory reveals it as a semi-dwelling-pit, the area designed for air circulation being deepened approximately 0.40m in comparison with the lateral part designed as a sleeping area (Plan 5). There is no heating system. Also, there are no elements of a dyke (levee) formed by the earth that was dug out, or pole-pits to indicate its architecture. The pit’s filling shows that the dwelling was left on purpose and rapidly filled in with the remains of other constructions. The 14C data indicate that the dwelling was in use before 7050 ± 70 calBP (Tab. 2 (see Appendix), Fig. 9). The artefacts and biological finds do not indicate disturbances other than those caused by human activity.

Some 382 ceramic fragments comprise the B_{10} complex (Fig. 1, Photo 1, Graphic 1, Tab. 1). Fine ceramics predominate with 47%, closely followed by semi-fine ceramics (41%) and only 17% coarse ceramics. The colour of the exteriors are mainly shades of red: russet (27%) and cardinal red (7%). Brick represents a 19%, followed by shades of brown: dark brown (12%) and light brown (5%). Grey (11%) and yellowish (5%) also occur. The temper consists of sand and husk (86%) or just sand (8%). The exterior surface is polished (49%) and smoothed (48%). 97% of the fragments do not present ornaments. All the above data make the B_{10} dwelling pit at Miercurea Sibiului-Petriş one of the oldest archaeological complexes of this type north of the Danube.

The B_{19} dwelling-pit (Plan 4, surface II, lower left: Plan 7; Fig. 2)

This item is closely connected – chronologically and culturally – to the G_{26} pit (Plan 4, surface II, next to the B_{19} to the right; Plan 7 – right). The features of G_{26} will be described and discussed on another occasion. At this point we restrict ourselves to affirming that it indicates a ritual character (related to hunting and success in hunting rituals and practices; the pit contains dozens of pairs of Bos primigenius horns deposited, it seems, at the conclusion of a successful hunt; on this occasion, it is possible that a Neolithic community had been established). The 14C data show that the pit was in use around 7010 ± 40 calBP (Tab. 2, Fig. 9).

The B_{19} dwelling pit is rectangular and is oriented approximately north–south, as B_{10} is. To the south, the entrance is partially preserved (Plan 7). The general features of the digging method used reveals it as a semi-dwelling-pit, the part designed for air circulation being deepened approximately 0.40m in comparison with the lateral parts designed as slee-
There is no heating system. Also, there are no elements of a dyke (levee) formed by the earth that was dug out, or pole-pits to indicate its architecture. The pit’s contents show that the dwelling was left on purpose and rapidly filled with the remains of other constructions. The artefacts and biological finds do not suggest disturbances other than those resulting from human activity. Stratigraphic observations show that the B10 dwelling pit was made after the digging of G26.

720 ceramic fragments, comprising the B19 content, have been analysed (Fig. 2, Tab. 1, Graphic 1). The semi-fine ceramics predominate with 45%, followed by coarse ceramics (35%) and fine ceramics (20%). There are mainly shades of brown: brown (21%), dark brown (20%) and light brown (16%). There are presented also reddish brown (9%), russet (6%), greyish-black (5%), brown with flaps (4%), brick-colour (4%) and grey (4%). The other nuances are less than 2% each. In the composition of the paste husk prevails in several combinations: husk and sand (38%), sand and husk (23%), sand, shivers and husk (11%), husk and shivers (8%), husk (8%), sand, husk and small stones (4%). The smoothing of the exterior surface of the fragments is as follows: smooth (30%), detached slip (22%), rough (20%), polished slip (15%), polished (5%), well smoothed (4%), smoothed slip (3%) and applied barbotine (ledge) (1%). The presence of ornaments is only 6%.

In our opinion, at the present moment, the oldest Neolithic horizon is in Miercurea Sibiului-Petriș, indicated by the mark Ia and defined by the B10, B19 dwelling pits and the G26 pit (Figs. 1, 2, Tab. 2, Photos 1, 2). These dwellings are not very deep, rectangular, with rounded corners. The B10 dwelling pit is partially cut in its north-western corner by the B1 dwelling pit which appertains - as we shall see as follows - to a subsequent phase of the same culture. If we are to compare this type of dwelling with other types at contemporary sites, we notice that the profile is identical (regarding shape, depth, the fashion of digging) with the one of the oldest dwellings in Gura Baciului (Lazarovici and Kalmar 1995.63) (a comparison with Ocna Sibiului is not possible yet, due to the lack of complete publication of the plans describing the oldest dwellings).

The study of the ceramics in these complexes shows that we are facing some of the oldest dwellings appertaining to farmers domesticating plants and animals during the Neolithic in Romanian areas. Comparing the categories of the ceramics in the presen-
ted site with those in Gura Baciului (a comparison with Ocna Sibiului is impossible due to the lack of published statistical data) a great many similarities are ascertained. These dwelling complexes, completely dug, also have singular characteristics like the presence of ceramic fragments painted with small spots of white-yellowish colour on a red, polished, glass-like background (Figs. 1, 2). This feature, specific to a technology extent in the very old cultural horizon (Gura Baciului I – the dwelling complexes at the inferior part of the level), is also specific to the archaeological complexes studied in Miercurea Sibiului.

In this regard, the B₁₀,₁⁹ dwelling pits and the G₂₆ pit in Miercurea Sibiului-Petriș are to be considered as part of the first migration in the opinion of Gheorghe Lazarovici and Zoia Kalmar (Lazarovici and Kalmar 1995.199–200), and regarding Gura Baciului I, in Nicolae Vlassa’s opinion (Vlassa 1976.198–264), or Precriș Ia in Iuliu Paul’s opinion (Paul 1995.30–31, Abb. 2, 5), the cultural horizon of the archaeological complexes being Starčevo-Criș IB (Lazarovici 1979.40–41).

The Ib sub-level

The B₁⁷ dwelling-pit (Plan 4, surface II, centre; Plan 8; Fig. 3, Tab. 1)

This dwelling pit is round, being interrupted on its southern side by a complex of pits: B₂₀–₂₁; G₃₁–₃₂–₃₆. To the south-east, the dwelling pit is disturbed by an oven-hearth at the Vinča level (a surfaced dwelling that appertain to the Vinča level is dated 6359 ± 130 BP). The pits anthropically upsetting the dwelling pit are G₂₈ and G₃₄ (Plan 8). The depth of the dwelling pit is greater than in the case of the dwelling pits of the Ia level by approximately 0.60m. The dwelling pit has lateral ‘beds’.

649 ceramic fragments from the B₁⁷’s content have been analyzed (Fig. 3, Graphic 1, Tab. 1). Regarding the categories of ceramic, semi-fine ceramic (44%) predominate, followed by coarse (38%) and fine (18%) ceramic. As for colour, nuances of brown are most common: brown (28%), light brown (19%), dark brown (11%) and brown with flaps (7%). The reddish nuances are: reddish (11%), reddish-brown (11%) and cardinal red (3%). The temper used for the paste is mainly made up by different combinations of husk: husk and sand (64%), sand, husk and small stones (10%), sand and husk (8%) and husk (7%). Regarding the smoothing of the exterior surfaces, there are to be observed: smoothed slip (29%), detached slip (27%), rough (19%), smoothed (11%), smoothed slip (9%) and barbotine (3%). 89% of the fragments are not decorated, with barbotine (3%), application (3%), application and cell (3%) and finger tip impressions (1%). The pit is dated at 7030 ± 50 BP (Poz-24697 – Thanks to prof. dr. hab. Janusz Kozlowski who kindly accepted the sample in FEPRE project – Tab. 2, Fig. 9).
The B20-21 dwelling-pits and the G31,35-36 pits
(Plan 4, surface II, centre-right; Plan 9; Figs. 4 and 5)
The B20-21 dwelling-pits and the G31,35-36 pits are special cases in Miercurea Sibiului-Petriş. The five complexes are in a very small area. Because they intersect in such a manner, we faced difficulties in establishing their stratigraphic succession, considering their chronological succession at the same time. So, we resorted to intermediary stratigraphic profiles (cross-section) in order to establish the succession of these units. It was clear that, from a stratigraphic point of view, B21 is the latest, as it ‘cuts up’ the filling of B20 and G35 which, in turn, intersects B20. The latter is intersects the G36 pit. The difficulty resided in establishing the stratigraphic position of G31 in relation to the other four complexes, due to its eccentric position. The dwelling pits were abandoned and corked up at short notice, and a palisade at the Vincă level, as well as other two pits at the same level (indicated by the dotted line contours) ‘passed’ through the middle of the intersection of pits, making more difficult the chronology reading of the complexes.

129 ceramic fragments were recovered from B20. Semi-fine ceramics predominate (41%), followed by coarse ceramics (37%) and fine (22%). The nuances of brown are the most numerous: brown (24%), light brown (19%), brown with flaps (8%). There are also nuances of red such as reddish-brown (6%), reddish (5%), cardinal red (3%), and nuances of grey: grey (10%), greyish-black (3%), light grey (3%) and grey with black flaps (1%). The temper used for the paste is mainly made of different combinations of husk: husk and sand (70%), sand and husk (12%) and sand, husk and small stones (12%). The exterior surfaces are: detached slip (35%), polished slip (33%), rough aspect (17%), applied barbotine (5%) and smoothed slip (5%). Only 15% of the ceramic fragments are ornamented, with barbotine (5%) and application (2%) being predominant, and the rest of the decoration types being below 1%.

From B21, 186 ceramic fragments were analysed (Figs. 4 and 5), with semi-fine ceramic (51%) being the most frequent, followed by fine (25%) and coarse (24%). The exterior colour of the fragments is dominated by nuances of brown: brown (25%), light brown (21%), dark brown (20%) and brown with flaps (5%). The nuances of red are: reddish (5%), reddish brown (4%) and cardinal red (2%). Husk prevails in the composition of the paste: husk and sand (62%), sand and husk (17%) and sand, husk and small stones (9%). The exterior surfaces were: detached slip (40%), polished slip (22%), rough (13%) and smoothed (18%). Only 9% of the fragments are decorated, the percentage for every type of decoration being below 2%.

When analyzing the ceramics in these complexes (which offered enough data for a comparative ana-
ysis on typological and stylistic bases) we decided to integrate the complex of pits in the Ib sub-level (even if from a stratigraphic point of view there is a clear chronological difference between the five deepened complexes, the ceramic materials discovered here argue for the relative contemporaneity of these pits in the IC–IIA phase of the Starčevo-Criş cultural complex).

**The B₁ dwelling pit (Plan 4, surface I, left; Plan 10; Photo 3, Tab. 1)**

It seems that the initial pit of B₁ was round. Unfortunately, its initial shape was damaged by the B₄ Vinča dwelling pit (which reached the bottom of B₁ only here and there, but modified its initial shape) and the M₃ grave (level V – a Gepid necropolis). The ¹⁴C data for this dwelling complex, 6920 ± 70 calBP, is the base – along with the typological and stylistic characteristics – for the absolute chronology of the Ib horizon here, representing the real time of the complex (the archaeological material discovered here is characteristic of fully functional house-ware). Two pits were preserved in the interior of B₁, namely G₁₄a and G₁₄a’ (Plan 4, surface I, left; Plan 10). It seems that they were part of this complex as pole-pits (?) of large dimensions. The archaeological ma-

Only 141 ceramic fragments were recovered from B₁ (Fig. 6, Graphic 1, Tab.1). Fine ceramic predominates (41%), followed by semi-fine ceramic (37%) and coarse (22%). Brick colour (23%) is followed by the brown (18%), reddish (13%), cardinal red (11%), dark brown (9%), light brown (9%), grey (6%) and yellowish (2%). Husk prevails as a supplement in the composition of the paste: sand and husk (81%), husk and sand (13%) and fine sand (3%). The exterior surface is smoothed (56%) and polished (40%). Un-decorated ceramics predominate (92%), most of the decorative elements being cells (5%). The rest of the ornaments are below 1%.

An item of special character was discovered in this dwelling pit. The schematic amulet (Fig. 6/4a–b; Photo 3) represents an ‘idol bucranium’ or a ‘labret’ (Karmanski 1986.12, prilog 1) and is made of clay. In Romania, this kind of amulet is to be found in settlements that appertain to the Starčevo-Criş cultural complex: Cluj-Napoca-Gura Baciului (Vlassa 1976. 211, 230, Fig. 14/3–4; Lazarovici and Kalmar 1995. 155, Fig. 22/6; Brukner 2000.298–299), Dubova-Cuina Turcului (Lazarovici 1979.34; Pâunescu 1979. 37, fig. 14/ 11), Foeni-Sălăș (Gubotaru 1998.75, Pl. III/6–7, 9), Miercurea Sibiului-Petrîş (Luca 2002).
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The chronological and cultural integration of the Ib sub-level

The B1 dwelling pit is contemporary with Starčevo-Criș IC–IIA, according to the similarities regarding ceramic and plasters. In the same way, the $^{14}$C data and the seriation with other data obtained from the same site clearly indicate a relation with the anterior sub-level and a certain evolution at the same time.

The Ic sub-level

The B9 dwelling pit (Plan 4, surface I, lower centre; Plan 11; Fig. 8)

This deepened dwelling shows – through the cropped archaeological material, as well as through architectural characteristics – that we are dealing with a different cultural and chronological horizon, a later one, appertaining to the Starčevo-Criș culture. The $^{14}$C data for this archaeological complex – 6180 ± 40 BP – reflects an important reality of the stratigraphy of the site in Miercurea Sibiului – the existence of considerable disturbance due to human activity, rodents and carnivores. In our case, the disturbance was caused by humans – as shown by the stratigraphy. During the 2007 research, we observed that the B9 dwelling pit continues in surface III (no illustration) and is strongly affected by a pit appertaining to the II/III level (Lumea Nouă culture), the one which follows here to the II horizon complexes, dated Vinča A3–B1. This complex has an extended, oval shape, with a short axis of small dimensions (2m), and is of very deep (see Plan 11).

In total, this complex comprises 585 fragments (Fig. 8, Tab. 1, Graphic 1). Rough ceramics predominate.

Fig. 5. Miercurea Sibiului-Petriș. Sherds from the B21 dwelling pit.

Ocna Sibiului-Triguri (Paul 1995.51, Pl. VIII/5–6; XXX/3 a–b, 4 a–b) and Sâlcuța (Lazarovici 1979.34, n. 170). Dumitru Berciu integrates very early the first level of the Piscul Cornișorului (Berciu 1961.29–30, 160, 161, 162, 167, 185–192), the same perspective being that in the case of the site at Timișoara-Fratelia (Drăsovean 2001.34, Pl. 4/4–5), analogies in South-Eastern Europe being developed with Blagotin (Ciubotaru 1998.75). This author states that the items were discovered in the vicinity of a cultic complex and could have a utilitarian purpose, perhaps in connection with the religious practices, as they have been hypothesised at Divostin (Karmanski 1988.12), Dobanovici-Ciglana (Karmanski 1988.12), Donja Branjevina (Lazarovici 1979.34, n. 166; Karmanski 1989.Pl. 9/2–6, 10–12, 14; 2000, T. XXII; Brukner 2000.309), Grivac (Lazarovici 1979.34, n. 168), Knjepište (Brukner 2000.309), Kozluk (Srejović 1969.306, Pl. 8; 85/2; Tasić 1973.90; Lazarovici 1979.34, n. 167), Lepenski Vir (Srejović 1969.306, Pl. 8; 85/2; Tasić 1973.90; Lazarovici 1979.34, n. 167), Lug-Obrenovac (Jovanović 1967.20; Tasić 1973.90; Lazarovici 1979.34, n. 169) and Rakitovo (Matsanova 1996.105–127). Culturally, these items are to be integrated with the Starčevo-Criș culture, the IC–IIA phase (Lazarovici 1983.13; Ciubotaru 1998.75; Drăsovean 2001).

Plan 10. Miercurea Sibiului-Petriș. The plan of the B1 dwelling pit.
(43%), followed by semi-fine (37%) and fine (20%). The exterior colour is different from that in earlier complexes, where the nuances of red (reddish, cardinal red, reddish brown) played an important role. In this complex, nuances of brown are predominate (brown 18%, light brown 13%, and dark brown 13%), followed by the nuances of grey (grey–9%, whitish grey–6% and greyish dark–3%). The nuances of brick colour are almost at the same percentage (14%).

The way that the exterior surfaces were smoothed indicates an affinity for a higher quality of product through the polished (30%) and smoothed (27%) surfaces. In the same context, the barbotine technique can be observed in 25% of the material. The ceramic paste contains sand and husk (45%), or husk and sand (28%) as a degreaser. The fragments containing sand of various consistencies are not more than 14% of the total of the analyzed fragments. The greater parts of the fragments have no decoration (74%). The barbotine (25%) (barbotine is considered to be a technique for treating surfaces, as well as a type of decoration) predominates, while the remainder of decorative types comprise about 1% (applications, pinches, nail impressions, incisions and cuts).

The chronological and cultural integration of the 1c sub-level

The archaeological material discovered in this dwelling pit also appertains to the Starčevo-Criş culture. As we could observe from a study of the ceramics, there is a hiatus between the settlements characteristic of the 1a–b and sub-levels. The ceramics with barbotine appear in such a great number – being decorated in the technique of organized barbotine (Fig. 8) – that we are led to the opinion that we are dealing with a moment of ‘starčevisation’, integrated after the IIB phase of the Starčevo-Criş culture.

The statistics of the analyzed complexes

In Table 1 and on the Graphic 1 the materials of the complexes we are concerned with, are analyzed. Thus, B16, B19, G26, B17 were examined almost completely. B1 comprises partial results because of the exterior disturbances which affected its structure. B9 was researched in 2003 and 2007, when the bulk of the ceramic fragments were recovered.

The situation is relatively constant regarding the extant relation between the three categories of ceramics. Thus, for the B10, B19, G26, B17 and B1 complexes, there is a larger proportion of semi-fine rough ceramics, while B9 is the only complex having a higher percentage of rough ceramics.

The most substantial differences are registered for the fine category, with B10 and B1 having values over 40%.

Apart from the B1 complex (comprising a small number of fragments for each category), the other complexes yielded a constant number of fine ceramic fragments (between 119 and 162 fragments).

We believe that the analysis of the degrease of the paste, as one of the most important elements defining the technology of ceramics, shows small differences between the three sub-levels, constituting, along with the analysis of the categories of ceramics, a ba-
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Thus, in the case of the B10 dwelling pit, we observe a certain prevalence of the combination based on ‘sand and husk’ (the order is given by the element that predominates) (87%) and ‘husk and sand’ totalling only 4% (the sum of the two categories having values of 91%). We present the combined values for the two types of degreaser ‘sand and husk’ and ‘husk and sand’, as the analysis of the ceramics is done macroscopically and could sometimes cause confusion regarding the prevalence of one or another component. B10 demonstrates a contrasting situation, favouring degreaser containing ‘husk and sand’ in 40%, the other combination of ‘sand and husk’ having a percentage of 24% (the sum of the two categories having values of 64%). There is to be noted the introduction of ‘pounded shivers’ in three different mixtures, amounting to 21% of the total of ceramic fragments in this complex. In which regard, the G26 pit we consider to belong, with the other two units described above, to the Ia sub-level; it presents a slightly different situation: the ‘husk and sand’ have values of 63%, ‘sand and husk’ 16% (the total being 79%), while the mixtures with ‘pounded shivers’ total 8%.

The Ib sub-level includes, as the most representative complexes, the B17, B20, B21 and B9 dwelling pits. For B9, the values of the two categories (‘sand and husk’, ‘husk and sand’) total 96%; for B17, 74% (this complex presents a large range of combinations of different materials for a degreaser), for B20, 88%, and for B21, 85%.

Up to this moment, B9 is the only identified unit integrated in the Ic sub-level. In our estimation, the percentage of the two categories is 74%.

A common element is also to be observed regarding the technological aspect of ceramics processing in the early Neolithic communities, as shown by the site at Petriș, the two types of material used as a supplement for the rough material (clay), husk and sand, have a percentage higher than 60% in the case of every unit analyzed, a fact that could indicate a ‘rule’ through several phases in the evolution of the Starčevo-Criș cultural complex at the Miercurea Sibiului site.

Conclusions

The earliest manifestation of the Neolithic in Transylvania is the Starčevo-Criș cultural horizon, as defined by most scholars in the specialized literature of the...
last three decades (Vlassa 1966.9–48; Lazarovici 1975.8–12; 1977.34–42; 1979.39–56; 1983.9–34; 1984.49–104; 1992.25–59; 1993; Dumitrescu 1983.69; Ursulescu 1984.90; Paul 1989.3–28).

The mode dissemination by the newcomers was determined – to all appearances – by the existence of some areas newly uncovered from under glaciers. This is the only way of explaining the conclusion of Breunig regarding Europe, obtained through the correlation of all the 14C data (in the BC period) having a natural and direct relation to the process of Neolithisation (Breunig 1987.86).

Concerning the terminology for naming the Neolithic newcomers, we are circumspect regarding the acceptance of the idea that the old phases of the Starčevo-Criș cultural complex must be considered ‘a genetic phase of the Starčevo-Criș culture’ (Pavök 1993.231; Brukner 2000.287). Especially in Transylvania, the defined terminology for the concept of Precris culture (Paul 1989; 1995; Ciuta 1998; 2000; 2001) is based on the scarcity of precise observations, complete research of the archaeological complexes, statistics, complete analysis, and horizontal and vertical stratigraphies (Lazarovici 2001.42–45).

The existence of a ‘first Neolithic wave’, represented through the ‘aceramic’ or ‘pre-ceramic’ Neolithic horizon, as discovered in Thessaly (Milojčić 1959.230–232; 1960; Benac 1978.16; Garašanin 1978.34; 1980.58) or in other locations, especially in caves (Benac 1971.98), cannot be a demonstration of the situation in Transylvania. The closest site and associated assemblage of this cultural and chronological horizon was hypothesised at Dârți-Ceahlău (Păunescu 1958.269–271; Berciu 1958.91–98), which proved to be of later date (Vlassa 1964.463–464).

The evolution of the large Carpatho-Balkan cultural complex of the Early Neolithic, Starčevo-Criș – a component of the Balkano-Anatolian complex of the Early Neolithic (Garašanin 1978.32–33, 55–38; 1980) – begins in Transylvania, at least theoretically, at the same time as the ‘Frühkeramik’ or ‘Monochrom’ phase (Milojčić 1949; 1959; Milojčić-Zumbusch 1971.25). The archaeological materials of this phase are shown hypothetically at Romanian sites (Lazarovici 1977.34; 1979.17; 1984.53–55). The existence of the monochrome, fine and polished ceramic, is beyond doubt, present among the other pottery in all the locations yielding early Neolithic ceramics in Transylvania (Paul 1989.20). It is enough to mention here the settlements at Gura Baciului I (Vlassa 1976.198–264; Lazarovici and Kalmar 1995.199, 201), Ocna Sibiului-Triguri I and II (Paul 1989; 1995.28–68) and Miercurea Sibiului-Petriș (Luca 2002; 2004; Luca et al. 1998; 1999; 2000a; 2001; 2002).

Perhaps the most important location pertaining to the primary moment of Neolithisation – ‘post ceramic’ is at Cluj-Gura Baciului. The first (I) horizon here (Vlassa 1976.198–264) comprises archaeological complexes beginning their evolution as early as the IA phase of the Starčevo-Criș cultural complex (Lazarovici and Kalmar 1995.63, 68–79). The most important dwelling complex is the B2a dwelling pit, considered by its discoverers to be the oldest Neolithic (Lazarovici and Kalmar 1995.68–69). Other complexes and archaeological materials – along with those in the B1 dwelling pit and G14 pit, the B8 dwelling pit, the B24a dwelling pit, the G14 pit, the B9b dwelling pit, the G53 pit, and the B10 and B28 dwelling pits – are part of horizon I at Gura Baciului (Lazarovici and Kalmar 1995.68–79), considered by Vlassa to be parallel with the ‘Protosesklo’ stage (Vlassa 1976.257–260).
An important location of the early Neolithic in Transylvania is at Ocna Sibiului-Triguri (Paul 1989; 1995. 28–68), considering its stratigraphy and archaeological material. The first three successive levels of this site (Ia–IIa) appertain to the ‘Protosesklo’ horizon. The Ib level could appertain to the transit phase to the Criș culture (a synchronic phase with Gura Baciului II); while the last two levels – IIIa–IIb – appertain to some sequences of the Starčevo-Criș cultural complex (Paul 1989.10). He suggested that the ‘Protosesklo’ horizon appears as a distinct cultural complex (Paul 1989.10). He suggested that the ‘Protosesklo’ horizon appears as a distinct culture, having a relatively long evolution, which he names ‘Preciș’, two regional aspects of which were noticed north of the Danube: the ‘Wallachian aspect’ in Cârcea (Oltenia) and the ‘Transylvanian aspect’ in Ocna Sibiului-Gura Baciului, observing the existence of two developing stages as well – I and II (Paul 1989.11). Against a unitary evolution of the early Neolithic in the northern zone of the Balkans, under the name of Starčevo-Criș cultural complex (Lazarovici 1992.27), Paul is seeking a detailed phase I and partial phase II of this chronological system, which was not confirmed directly in the context of the newest discoveries in Transylvania, especially in Gura Baciului or Miercurea Sibiului-Petriș. It is to be observed that, no matter in what perspective we consider the development of the first Neolithic phases (such as the Starčevo-Criș cultural complex, phase I and partial II, or Preciș I–II, or a cultural group – or culture – Gura Baciului-Cârcea), the recent discoveries will lead to the required nuances and reconsiderations. Finally, we notice that, in the publication of this site, no clear observations were made of the dwellings and the evolution of the ceramics at each successive level of the dwellings. Analysing the published material, we could offer the opinion that – besides the consideration that the author has other data – the oldest dwellings here would be a dwelling pit (Paul 1995.30–31, Abb. 2) for Preciș Ia phase, along other one in SXII (Paul 1995. Abb. 5), and a semi-dwelling pit (Paul 1995.30–31, Abb. 2), dwelling 9 and a pit (Paul 1995. Abb. 5, 6) for the Preciș Ib phase. Without renouncing to a research system based on the prospect of the stratigraphy in narrow sections, the author remains captive to some theoretical concepts which are only tangentially based on the data from a thorough analysis of both the architecture and the artefacts (Lazarovici 2001.42).

The observations made in Transylvania, as well the latest discoveries, compel us to draw attention to the Early Neolithic cultural penetration along the valley of the River Olt to Ocna Sibiului, continuing (Miercurea Sibiului – thermal springs) towards the salt mines at the far north curve of the central stretch of the River Mureș and towards the settlement at Gura Baciului. It is difficult to consider that we are dealing with migration in the real sense of the word (Lazarovici and Kalmar 1995.42–43), especially because the data relating to ceramic technology do not match those from Thessaly, for example. The ways of diffusions are not clear (Lazarovici and Kalmar 1995.42–43). We have to accept that, for the time being, these remain the only possible definitions if we consider them in succession: migration and diffusion. However, the Ib level is – in the case of the location at Miercurea Sibiului – the association of a piece of bucranium type with the ceramics of the B1 dwelling pit which compel us to integrate the artefact and the archaeological complex in the IC–IIA phase of the mentioned culture. As a consequence, it is contemporary with Gura Baciului I (a part of the complexes: the B9 dwelling pit, B25A dwelling pit, the G11 pits, the B9P dwelling pit, the G11 pit, the B10 dwelling pit and B20 dwelling pit) (Lazarovici and Kalmar 1995.68–79) or with Preciș Ib – the pit, semi-dwelling pit, dwelling 9 (Paul 1995. 30–31, Abb. 2, 5–6) and dwelling 1/1997 in Șeșula cărărea morii (Ciută 1998; 2000). To the same chronological and cultural horizon appertains the archaeological site discovered in Cerișor-Peștera Cauce.

A new horizon presenting mainly monochrome ceramics could be defined among the latest discoveries at Cerișor-Peștera Cauce, where there is cultural layer in which the ceramics are mainly fine and poli-

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**Tab. 1. Distribution of ceramic fragments from the analysed complexes.**

| The Stratigraphic Position | The Complex Code | Rough | Semi-fine | Fine |
|---------------------------|------------------|-------|-----------|------|
| Sub-level Ia              | B10              | 65    | 155       | 162  |
|                           | B19              | 251   | 322       | 147  |
|                           | G26              | 151   | 233       | 119  |
| Sub-level Ib              | B17              | 246   | 288       | 115  |
|                           | B1               | 31    | 52        | 58   |
| Sub-level Ic              | B9               | 248   | 218       | 119  |

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(Lazarovici and Kalmar 1995.42–43)
shed, but we cannot give it a definite date. We note that no painted ceramic fragments were discovered here.

On the other hand, the existence of this kind of settlement in Romania was announced by the discovery in Iosa-Anele (Luca and Barbu 1992–1994). Some Romanian researchers preferred to integrate the early Neolithic settlements that presented no painting (‘Monochrom’ in the Dimitrijević (1974) system), in the IC–IIA phase of this large cultural complex, the chronological level at which was stipulated the disappearance – or the very rare appearance – of painting (Lazarovici 1979.43). That is characteristic, however, of the IA phase as well, and it is certain that there are other characteristics which made the period at the beginning of Neolithic a separate unit. Considering our knowledge, the painting of white dots develops in the IB and IC phases of the Starčevo-Criș cultural complex, while its presence in other periods is rather accidental.

As a matter of fact, the ceramics painted in white appear quite rarely in Șeușa-La cărărea morii (3–4 fragments) (Ciută 2000.67–68, Fig. 25/1–3), so the author suggests that the ceramic material here is monochrome, chromatically speaking (Ciută 2000.65). The same author though, expresses in other pages of the same work, his doubts about the existence of a ‘Monochrom’ horizon in Romania (Ciută 2000.76). We are to conclude that, until complete research of an old Neolithic site the north of the Danube, we cannot clearly envisage which the characteristics of a possible ‘Monochrom’ horizon could be (be it the oldest or more recent in the chronological perspective). If so, we must avoid the integration of some dwellings with painted ceramic fragments – a few – in the IA phase of the Starčevo-Criș cultural complex!

We may hypothesise the ‘Monochrom’ (in Dimitrijević’s perception), would mark the second migration suggested by Lazarovici and Kalmar (1995.200; Lazarovici 2001.42).

Now, the ‘traditional’ way of Early Neolithic cultural penetration in Transylvania (via Oltenia) is doubted by another, towards the south-west (Banat), of which vestiges are to be found, most probably, in the karst caves of Poiana Ruscă Mountains, as well, or in the south Apuseni Mountains (Cerșoar-Peștera Cauze, see Luca et al. 1997.19, 24, or Crâciunești-Peștera Balogu, see Roman et Diaconescu 2001.7–8). The biggest problem remains the unsatisfactory state of archaeological research in this area, with many of the karstic formations here remaining un-researched or even unidentified. The supposed way of access would have been developed step by step, with the result that, in the period of ‘starčevisation’ of the communities in southern Transylvania, the way along the valley of the Oltul River was closed for a while.

The phenomenon of ‘starčevisation’ was linked to the end of the second Starčevo-Criș phase in Transylvania, (Paul 1989.18). The settlement in Ocna Sibiului-Triguri loses its importance, failing to develop painting in black, characteristic of the late horizons of the cited cultural complex (Paul 1989.21). The early Neolithic locations in the valley of the middle Mureș River develop (Miercurea Sibiului-Petriș and Pustia, Orăștie-Dealul Pemilor, point Xs, Limba-Bordane etc.) under the cultural influence of the west and south-west such elements as barbotine, applied ornament, incision or ‘impresso’ decorative motifs (Paul 1989.21) along with painting in black (Drașovean 1981.42), or altars with leg-like postaments with eyes marked on them (Luca et al. 1998).

All these observations demonstrate that we still can
discuss cultural unity over large areas, a fact that was accepted under the name of the Starčevo-Criş cultural complex even by Paul (Paul 1989:24).

It is possible now to integrate the discoveries in Ocna Sibiului-Triguri IIa and Miercurea Sibiului-Petriş, the B3/2003 dwelling-dwelling pit, in the vertical and horizontal stratigraphy here.

Even if there are some differences in comparison with the above described complexes, we notice a technological unity, easy to demonstrate, and an evolution having common roots which generated the complexes in Miercurea Sibiului-Petriş.

The influences generated in Transylvania from the Banat region and the plain of the Tisa River, and from south of the Danube, become more and more visible in the IIIrd phase (Gh. Lazarovici’s system) of the Starčevo-Criş cultural complex. At the same time as the middle of this phase, the appearance of the first Vinca communities in Transylvania is to be observed (Luca 1995–1996; Luca et al. 2000; 2000b).

The evaluation of the data of absolute chronology in the development area of this cultural complex (see Tab. I) indicates the relative contemporaneity of the Ia sub-level in Miercurea Sibiului with the Ib and II level in Anza, partially with the ‘Monochrom’ level in Donja Branjevina, with Gura Baciului, Ocna Sibiului (level VIII), Şeşuşa, Foeni-Sălaş. Miercurea Sibiului Ib has the same chronological level as Donja Brnjevina (the red on white level), Endrőd 39, Anza II, Foeni-Gaz, Dudeştii Vechi, Endrőd 119, Biserna Obala-Nosa, Szarvas 23 etc. The last sub-level of the site in Petriş was wrongly dated to 6180 ± 40 BP, due to its being intersected by a later pit.

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### Appendix

**Tab. 2. The absolute chronology data for the Starčevo-Criş cultural complex.**

| Phase | Settlement | LABNR | BP  | Error | Description |
|-------|------------|-------|-----|-------|-------------|
| IA Monochrome | Anza Ia | LJ–2181 | 7270 | 140 | unspecified |
| Starčevo, white on red painted | Grivac Barice | Bln–869 | 7250 | 50 | Sonda B |
| White on red, IB–IIA? | Anza Ib | LJ–2341 | 7230 | 170 | unspecified |
| IA Monochrome | Anza Ia | LJ–3032 | 7210 | 50 | unspecified |
| IA Monochrome | Anza Ia | LJ–2330–31 | 7170 | 60 | unspecified |
| Monochrome – IA | Donja Branjevina | GrN–15974 | 7155 | 50 | layer III, trench V/1986–1987 pit dwelling |
| IA Monochrome | Anza Ia | LJ–3183 | 7150 | 50 | unspecified |
| IB–IC | Cura Baciului | GrA–24137 | 7140 | 45 | structure in trench E–D, square 8 |
| IA Monochrome | Anza Ia | LJ–3186 | 7140 | 70 | unspecified |
| Monochrome – IA | Donja Branjevina | GrN–15976 | 7140 | 90 | layer III, trench V/1986–1987 outside dwelling pit |
| White painted horizon | Magareći Mlin | GrN–15973 | 7130 | 60 | unspecified |
| White on red, IB–IIA? | Anza Ib | LJ–2339 | 7120 | 80 | unspecified |
| Pre-Criş? IB–IC | Ocna Sibiului | GrN–28110 | 7120 | 60 | layer VIII |
| White on red, IB–IIA? | Anza Ib | LJ–2332 | 7110 | 120 | unspecified |
| White on red, IB–IIA? | Anza Ib | LJ–2342 | 7100 | 80 | unspecified |
| Early Körös | Gyálavét – Sziágyi | Bln–75 | 7000 | 100 | |
| IB–IIA | Anza II | LJ–2337 | 7080 | 60 | unspecified |
| IIA–IIIB | Foeni Sălăș | GrN–28454 | 7080 | 50 | dwelling pit, square 5, level 7, locus 23, Bos sp. Radius |
| Monochrome – IA | Donja Branjevina | OxA–8557 | 7080 | 55 | layer III, trench 2/1987 |
| Precriş? SCIB–IC | Şeuşa | GrN–28114 | 7070 | 60 | level |
| IB–IC | Miercurea Sibiului Petris | GrN–28520 | 7050 | 70 | Bei/2003, level Ia |
| IB–IIA | Anza II | LJ–2351 | 7040 | 90 | unspecified |
| IB–IC | Miercurea Sibiului Petris | GrN–29954 | 29954 | 7010 | 40 | G/2005, nivel Ia, ritual pit |
| Linear A Phase, IB–IIA | Zadubravlje | Z–1 nec | 6995 | 115 | pit 10 |
| IIB | Dudeştii Vechi | GrN–28111 | 6990 | 50 | neolithic ditch, trench 1, sector E4–5, cervus elephus, humerus dx |
| Körös | Röszke-Lüdvár | Deb–2730 | 6972 | 59 | unspecified |
| mid-late Körös | Endröd 39 | BM–1668R | 6970 | 110 | unspecified |
| IB–IIA, White on red | Donja Branjevina | GrN–15975 | 6955 | 50 | unspecified |
| mid-late Körös | Endröd 39 | BM–1870R | 6950 | 120 | unspecified |
| mid-late Körös | Endröd 39 | BM–1863R | 6950 | 140 | unspecified |
| IB–IIA | Anza II | LJ–2405 | 6940 | 80 | unspecified |
| IIB | Dudeştii Vechi | GrN–28113 | 6930 | 50 | trench 3, sector A2, cm 165, Bos sp. Astragalus |
| IIB | Foeni- Gâz | GrA–23562 | 6925 | 45 | dwelling pit 1, cm 125, Long bone flake |
| IC–IIIA | Miercurea Sibiului Petris | GrN–28521 | 6920 | 70 | Bei/2003, level Ib |
| IIIA | Dudeştii Vechi | GrA–24115 | 6920 | 80 | Trench 3, sector A, cm 75–80, bone perforator |
| IB–IIIA, White on red | Endröd 119 | OxA–9587 | 6915 | 45 | unspecified |
| Phase       | Settlement           | LABNR  | BP     | Error  | Description                                           |
|-------------|----------------------|--------|--------|--------|-------------------------------------------------------|
| II B        | Măgura               | Wk–14435 | 6896  | 61     |                                                       |
| IB–IIA, White on red | Endrőd 119  | OxA–9583 | 6895  | 45     | unspecified                                           |
| IB–IIA, White on red | Biserna Obala-Nosa | OxA–6875 | 6875  | 55     | unspecified                                           |
| IB–IIA, White on red | Ludos-Budžak    | OxA–8554 | 6875  | 55     | unspecified                                           |
| IIIA        | Parța                | GrN–28460 | 8680  | 60     | dwelling pit 1, trench II, square 7–5, cm 380, Cervus Elaphus, metatarsal |
| IB–IIA, White on red | Szarvas 23     | OxA–9375 | 6855  | 55     | unspecified                                           |
| IB–IIA, White on red | Endrőd 119  | OxA–9588 | 6855  | 45     | unspecified                                           |
| IB–IIA      | Anza II              | Lj–2409 | 6850  | 50     | unspecified                                           |
| IB–IIA, White on red | Endrőd 119  | OxA–9586 | 6850  | 45     | unspecified                                           |
| Linear Phase, IB–IIA | Donja Branjevina | OxA–8555 | 6845  | 55     | Layer III                                            |
| II          | Dudeștii Vechi       | GrA–26951 | 6845  | 40     | Acorn (Quercus sp.)                                   |
| White on red, IB–IIA | Anza 1b    | Lj–2333  | 6840  | 100    | unspecified                                           |
| Linear Phase, IB–IIA | Zadubravlje | Z–2 nec  | 6835  | 110    | unspecified                                           |
| Kőrösi      | Mehtešek-Nádas      | Bln–1331 | 6835  | 60     | pit 1–3/a                                            |
| II B        | Măgura               | Wk–14436 | 6833  | 53     |                                                       |
| mid-late Kőrösi | Endrőd 39         | Bm–1971R | 6830  | 120    | unspecified                                           |
| IIB–IIIB linear and spiral | Soroca II | Bln–586 | 6825  | 150    | unspecified                                           |
| IB–IIA, White on red | Endrőd 119  | OxA–9584 | 6825  | 45     | unspecified                                           |
| IB–IIA, White on red | Endrőd 119  | OxA–9582 | 6825  | 45     | unspecified                                           |
| IIIA        | Judeștii Vechi       | GrN–28876 | 6815  | 70     | trench 1, sector C, Square 1 and 2, oven, quercus and ulmus charcoal |
| IB–IIA, White on red | Donja Branjevina | OxA–9590 | 6815  | 50     | unspecified                                           |
| Protostarčevo, IB–IIA | Donja Branjevina | GrN–24609 | 6810  | 80     | layer II                                              |
| IB–IIA      | Anza II              | Lj–2338 | 6800  | 140    | unspecified                                           |
| IB–IIA, White on red | Endrőd 119  | OxA–9585 | 6795  | 50     | unspecified                                           |
| II B        | Măgura               | Wk–14437 | 6784  | 56     |                                                       |
| Early Kőrösi | Szarvas 23           | Bm–1866R | 6780  | 100    | unspecified                                           |
| Linear Phase, IB–IIA | Donja Branjevina | OxA–8556 | 6775  | 60     | Layer III                                            |
| Starčevo    | Mostongal III        | GrN–24117 | 6750  | 50     | level                                                 |
| IB–IIA, White on red | Biserna Obala-Nosa | OxA–8540 | 6740  | 75     | unspecified                                           |
| IB–IIA, White on red | Biserna Obala-Nosa | OxA–8552 | 6725  | 60     | unspecified                                           |
| IB–IIA, White on red | Endrőd 119  | OxA–9589 | 6720  | 45     | unspecified                                           |
| III         | La Hoțu Cave         | Sac–2001 | 6710  | 80     | unspecified                                           |
| Linear Phase, IB–IIA | Zadubravlje | Z–3 nec  | 6705  | 95     | unspecified                                           |
| IB–IIA, White on red | Biserna Obala-Nosa | OxA–8553 | 6705  | 55     | unspecified                                           |
| IB–IIA      | Anza II              | Lj–2345 | 6600  | 110    | unspecified                                           |
| IIB–IIIB linear | Golokut Vizic       | OxA–8695 | 6520  | 50     | unspecified                                           |
| IIB–IIIB    | Anza III             | Lj–2185 | 6510  | 110    | unspecified                                           |
| III/IV?     | Valea Răii-Copăceni  | Knc–1.102 | 6480  | 75     |                                                       |
| Starčevo end | Starčevo            | GrN–9033 | 6475  | 60     | unspecified                                           |
| Kőrösi      | Hődmezővásárhely-   | Bln–115 | 6450  | 100    | potsherd                                              |
|             | Kotacpart            |          |       |        |                                                       |
| IV sau Cârcea III | Cârcea Viaduct   | Bln–1982 | 6430  | 60     | unspecified                                           |
| IIB–IIIB linear and spiral | Gura Baciului | Lv–2157 | 6400  | 90     | grave M6                                              |
| Early Kőrösi | Szarvas 23           | Bm–1865R | 6400  | 170    | unspecified                                           |
| IV, Cârcea III | Cârcea Viaduct   | Bln–1983 | 6395  | 60     | unspecified                                           |
| IIB–IIIB linear and spiral | Trestiana | Lv–2155 | 6390  | 100    | unspecified                                           |
| IV          | Limba – Bordane      | GrN–28112 | 6290  | 50     | L3 house, square 6–8, cm 110–130                       |