

THE MUSIC-NOTE LINEAR POTTERY CULTURE IN EASTERN ROMANIA: PROPOSAL FOR A RELATIVE CHRONOLOGY

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1. Introduction

The late Neolithic Music-note Linear Pottery culture in Romania developed from the Linear Pottery culture in southwestern Slovakia and diffused to eastern Romania across Moravia, the southeastern marginal areas of Poland and the western part of Ukraine. In all mentioned areas, the ceramics have an ornamentation of incised lines with little dimples which remind us of noteheads². In Romania, the stratigraphical relation between the Music-note Linear Pottery and the Starčevo-Criș culture was first demonstrated by M. Petrescu-Dîmbovița who discovered that in Perieni, the Music-note Linear Pottery layer overlaps the one of the Starčevo-Criș culture³. Independent chronologies for the Music-note Linear Pottery

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² Concerning the decoration of the pottery, the term “notehead” will be used instead of “dimple”.

³ M. Petrescu-Dîmbovița, *Sondajul stratigrafic de la Perieni*, in *MCA*, III, 1957, p. 65.

culture in Romania were established by E. Comşa⁴, S. Marinescu-Bîlcu⁵ and N. Ursulescu⁶. The latter succeeded in incorporating the Romanian sherds into the local chronological scheme by J. Pavúk after comparing them with findings from southwestern Slovakia⁷.

In the following, an attempt will be made to chronologically structure the Music-note Linear Pottery culture in Romania with the aid of statistical methods (seriation and correspondence analysis). Analogue discoveries for the respective groups, formed by the correspondence analysis, based on Ursulescu's method will be searched afterwards in southwestern Slovakia, Moravia, southeastern Poland and Ukraine, in an attempt to create an independent chronology.

Due to the low number of features, a seriation and correspondence analysis of the vessel units seem to be the methods which produce the best results.

2. The material

The ceramics⁸ which were analysed come from different sites in eastern Romania (map I). The biggest part - twelve sites - is located in the Moldova region (Ciurea, Dăneşti, Glăvăneştii Vechi, Iaşi-Munteni, Isaiia, Larga Jijia, Mihoveni, Perieni, Şcheia-Silişte, Traian, Târpeşti, Vîlcelele-Găureanca). Moreover, pottery from four sites in eastern and central Transylvania (Cipău-I.C.I.A., Cipău-Gără, Hărman, Rupea), from five sites in Muntenia (Cernica, Dudeşti, Ghinoiaica, Sudiţi, Vadu Soreşti) and one site in Oltenia (Vădastra) was also considered. However, the ceramics from

⁴ E. Comşa, *Quelques nouvelles données sur la culture à céramique rubanée en territoire roumain*, in: F. Ieno, J. Makkay (eds.), *Die aktuellen Fragen der Bandkeramik, a Vonaldiszas Keramia Idoszeru Kerdesei*, Székesfehérvár, 1972, p. 177.

⁵ S. Marinescu-Bîlcu, *Aspects tardifs de la civilisation à céramique rubanée et sa contribution à la genèse de la civilisation Precucuteni*, in *PZ*, 46, 1971, 1, p. 34; Eadem, *Târpeşti. From Prehistory to History in Eastern Romania*, BAR Int. Ser. 107, Oxford, p. 16.

⁶ N. Ursulescu, *Contribuţii privind evoluţia culturii ceramicii liniare pe teritoriul Moldovei*, in *ArhMold*, XIII, 1990, p. 35.

⁷ For the detailed work of N. Ursulescu see: N. Ursulescu, *Contribuţii privind Neoliticul şi Eneoliticul din regiunile est-carpătice ale României*, Iaşi, 2000, p. 276.

⁸ Besides the pottery from Isaiia, the ceramic analysis is based on figures from the literature.

the western part of Transylvania belong to the Alföld Linear Pottery whereupon the Apuseni Mountains are seen as the geographic border⁹.

Currently, six of these sites can be seen as possible settlements (Glăvăneştii Vechi¹⁰, Mihoveni¹¹, Traian¹², Târpeşti¹³, Isaiia¹⁴, Sudiţi¹⁵) because of the house remains which were discovered there; in two cases (Dăneşti¹⁶, Cipău-Gără¹⁷), the feature situation is not clearly resolved. The only grave from Cipău-I.C.I.A. probably belongs to the Music-note Linear Pottery culture¹⁸.

Fine ware as well as medium-fine ware was researched in the ceramic analysis. The surface of the fine pottery is mostly burnished or polished. The use of a slip is rather seldom (fig. 16/4). In the majority of cases, the firing process produced gray colours, but black and yellow discolourings can appear. Tempering is not typical for the fine ware, but sometimes fine sand¹⁹ as well as grog and grit²⁰ were added. There are only few differences between

⁹ Z. Maxim, *Neo-Eneoliticul din Transilvania. Date arheologice şi matematico-statistice*, Cluj-Napoca, 1999, p. 68.

¹⁰ E. Comşa, *Aşezarea culturii cu ceramică liniară de la Glăvăneştii Vechi*, in *Hierasus*, 5, 1994, p. 65.

¹¹ N. Ursulescu, *op. cit.*, 2000, p. 221-236.

¹² H. Dumitrescu, *Şantierul arheologic Traian (1954) (r. Buhuşi, reg. Bacău)*, in *SCIV*, VI, 1955, 3-4, p. 462-469.

¹³ S. Marinescu-Bîlcu, *op. cit.*, 1981, p. 8-23.

¹⁴ N. Ursulescu *et alii*, *Isaiia, com. Răducăneni, jud. Iaşi. Punct: Balta Popii*, in *CCAR. Campania 2001*, Bucureşti, 2002, p. 161; N. Ursulescu *et alii*, *Isaiia, com. Răducăneni, jud. Iaşi. Punct: Balta Popii*, in *CCAR. Campania 2004*, Bucureşti, 2005, p. 188.

¹⁵ V. Teodorescu, *Date preliminare privind cultura cu ceramică liniară pe teritoriul de la sud de Carpaţi al României*, in *SCIV*, 17, 1966, 2, p. 223.

¹⁶ M. Petrescu-Dîmboviţa, E. Zaharia, *Sondajul arheologic de la Dăneşti (r. Vaslui)*, in *MCA*, VIII, 1962, p. 49-51.

¹⁷ N. Vlassa, *Cultura ceramicii liniare în Transilvania*, in *SCIV*, X, 1959, 2, p. 242.

¹⁸ *Ibidem*, p. 240.

¹⁹ N. Ursulescu, *op. cit.*, 1990, p. 16.

²⁰ A. Alexandrescu *et alii*, *Raport asupra săpăturilor de la Hărman, jud. Braşov (1961-1970)*, in *MCA*, X, 1973, p. 242.

the fine and the medium-fine ware concerning the temper size and the partially added organic material²¹.

As mentioned above, the decoration consists of incised lines forming rectilinear and curvilinear patterns supplemented by the noteheads (fig. 16-18). A detailed description of the different ornamentations follows in section 4.

3. Method

The characteristics which a vessel possesses at its fabrication time can be considered as coeval. Thus, vessels with at least two attributes can be seen as closed findings, which are subjected to the same laws as graves. It is assumed that graves which have similar burial objects must be temporally close. Thus, vessels with a comparable decoration must be created around the same time. So, sherds with no less than two characteristics can be used in the following analysis as significant objects.

If the statistical methods (seriation and correspondence analysis) sort the vessel fragments according to similarities, these similarities must be traced back to the shape or decoration of the vessel for the present. Future research can establish if these congruences depend on chronological, social or regional causes.

4. Characteristic system

4.1. Vessel typology (a)

Regarding the vessel shapes, a differentiation was made between bowls (a1), almost hemispherical vessels (a2) and biconical vessels (a3) (fig. 1). Besides, it was observed that there are retracted, straight and wide rims.

- a1** bowl
- a2** almost hemispherical vessel²²
- a3** almost biconical vessel²³
- aa** retracted rim
- ab** straight rim
- ac** wide rim

²¹ N. Ursulescu, *op. cit.*, 1990, p. 16.

²² See *Ibidem*, 1a, b.

²³ See *Ibidem*, 2a, b.

4.2. Characteristic analysis of the ornamentation systems

The analysis of the vessel decorations was made according to the method used by M. Strobel to structure the Eastern Linear Pottery culture²⁴. It is a convenient method for the characteristic analysis of the ornamentation of the Music-note Linear Pottery culture in Romania. Thus, the decoration was separated into different disposition zones; because of the fragmentation level of the pottery, it made sense to differ only between rim- and main decoration. Further characteristics are the existence of special motifs, the notehead shape and the vertical row of the noteheads between rim- and main ornamentation.

4.2.1. The rim decorations (b)

The rim decoration consists of incised lines which run horizontally below the lip. Their number differs from one to four (b1-b4). In exceptional cases, more lines or different rim motifs appear. Moreover, there are sherds with no rim ornamentation (bk) and an indeterminable number of lines (b0). The position of the noteheads within the rim ornamentation also seems to be important (ba). They can either run vertically (baa) – i.e. one on each line among one another – or randomly (bab); little space between the noteheads (bac) is also a criterion.

b characterized by horizontally running lines (fig. 2)

b0 number of lines not determinable

b1 one line²⁵

b2 two lines²⁶

b3 three lines²⁷

b4 four lines²⁸

bk no rim ornamentation

ba explained by the position of the noteheads (fig. 3)

baa with vertically running noteheads

bab with randomly running noteheads

²⁴ M. Strobel, *Ein Beitrag zur Gliederung der östlichen Linienbandkeramik. Versuch einer Merkmalsanalyse*, in *SASTUMA*, 4/5, 1995/1996, 1997.

²⁵ See N. Ursulescu, *op. cit.*, 1990, A1b.

²⁶ See *Ibidem*, A1a.

²⁷ See *Ibidem*, A1a.

²⁸ See *Ibidem*, A1c.

bac with little space between the noteheads

4.2.2. *The main ornamentations (c)*

Two apparent groups emerge within the main decoration styles. The first main style group includes curvilinear motifs (c1), while the second consists of rectilinear patterns (c2). Both groups were placed on the central zone of the vessel where they usually do not appear together. Furthermore, the position of the notehead in the respective motif attracts interest (ca). Here, the position in the angles (caa) in rectilinear patterns and the siting in the apexes (cab) in curvilinear motifs were in evidence. It was also important if the noteheads were placed on the lines (cac) – i.e. not in the angles or apexes – or on the end of a line (cad).

a. Curvilinear main decoration styles (c1)

The curvilinear main ornamentations split into five different motifs which can be subdivided on the basis of the number of lines they were built of. In certain cases, the number of lines was not determinable or a motif only appeared with a particular number of lines.

c1 curvilinear motifs (fig. 4)

c101 arcs hanging into each other²⁹

c1011 unilinear arcs hanging into each other

c1012 arcs consisting of two lines hanging into each other

c1013 arcs consisting of three lines hanging into each other

c1010 number of lines not determinable

c102 standing arcs³⁰

c1021 unilinear standing arcs

c1022 standing arcs consisting of two lines

c1023 standing arcs consisting of three lines

c1020 number of lines not determinable

c103 hanging arcs³¹

c1032 hanging arcs consisting of two lines

c1033 hanging arcs consisting of three lines

c1030 number of lines not determinable

c104 double arcs

²⁹ See *Ibidem*, A10a, c.

³⁰ See *Ibidem*, A10e.

³¹ See *Ibidem*, A10d.

c105 hanging arcs with wide ends

c1053 hanging arcs with wide ends consisting of three lines

b. Rectilinear main decoration styles (c2)

There are almost twice as many varieties of the rectilinear main decoration styles as curvilinear patterns. As before, a differentiation was made regarding the number of lines. However, for the analysis, a determination of line numbers was not important in half of the patterns.

c2 rectilinear patterns (fig. 5)

c201 angular band

c2011 angular band consisting of one line³²

c2012 angular band consisting of two lines³³

c2013 angular band consisting of three lines³⁴

c2010 number of lines not determinable

c202 alternately hanging and standing angles

c2021 alternately hanging and standing angles consisting of one line³⁵

c2023 alternately hanging and standing angles consisting of three lines

c2020 number of lines not determinable

c203 branch motif³⁶

c204 hanging angles

c2041 hanging angles consisting of one line

c2042 hanging angles consisting of two lines

c2043 hanging angles consisting of three lines

c2040 number of lines not determinable

c205 cross pattern

c206 rectangular motif

c207 horizontal lines

c208 vertical lines³⁷

³² See *Ibidem*, A2d.

³³ See *Ibidem*, A3b.

³⁴ See *Ibidem*, A3b.

³⁵ See *Ibidem*, A2a.

³⁶ See *Ibidem*, 2k.

³⁷ See *Ibidem*, A8b.

c209 diagonal lines*c. The position of the noteheads (ca)*

The position of the noteheads differs within the main motifs. Thus, concerning the rectilinear patterns, the notehead was placed either exactly on their edges (caa) – meaning where two lines come together forming an angle – or on the line (cac). The latter also applies to the curvilinear patterns. Besides, the notehead can be placed in the apex (cab) meaning the middle of an arc. In both categories, the notehead was used at the end of a line (cad).

ca characterized by the position of the notehead within the main motif (fig. 6)

caa on the edges

cab in the apex

cac on the line

cad at the end of a line

d. The shape of the noteheads (d)

Four different types of noteheads could be observed. The common shape is the round notehead (da), but oval varieties (db) are not uncommon either. Triangular noteheads (dc) rather constitute an exception, while stroke-shaped ones only appear in Vădastra.

d defines the shape of the noteheads (fig. 7)

da round

db oval

dc triangular

4.2.3. The occurrence of special motifs (e)

Motifs which appear on a vessel unit beside the usual main or rim decoration and do not belong to the proposed system of ornamentation were described as special motifs. There are motifs in the shape of upwardly open angles, rows of noteheads, randomly placed noteheads, short incised lines which run parallel to the lines of the main motif and cross patterns which were incised on the bottom of the vessel.

e special motif

4.2.4. Vertical row of noteheads between main and rim decoration (f)

As another characteristic, the vertical row of noteheads belonging to the rim and main decoration was included in the analysis because it is a noticeable element of the pottery of the Želiezovce group in southwestern

Slovakia. Some sherds of the Music-note Linear Pottery present the same detail. Therefore, it could possibly be seen as a suitable factor in determining the chronological position of certain vessel units.

f characterized by a vertical row of the noteheads between rim and main ornamentation (fig. 8).

5. Correspondence analysis and seriation

Altogether, the research included 513 fine and medium-fine ware sherds out of which 181 could be used for the analysis. After the correspondence analysis (fig. 9) and seriation (fig. 10) were made on the raw data, the features which appear too often were taken out consecutively in eight steps because they would affect the final result.

These features are: 1. Round notehead (da); 2. Retracted edge (aa); Notehead at the end of the line (cad); 3. Almost biconical vessel (a3); Notehead on the line (cac); 4. Almost hemispherical vessel (a2); 5. Little space between the noteheads in the rim decoration (bac); 6. Vertically running noteheads in the rim decoration (baa); Vertical row of noteheads between rim and main ornamentation (f); 7. Special motif (e); 8. Notehead on the edges (caa) and in the apex (cab) of the main motif.

Due to the removal of the mentioned characteristics, the rectangular motif (c206), the hanging arcs consisting of three lines (c1033) and the horizontal lines (c207) also fall out of the analysis because of too little characteristic combinations.

Evaluation

After all frequent characteristics had been taken out, the correspondence analysis shows the following pattern: the order of the vessel units is L-shaped and reminds us of a parabola (fig. 11; 12). Eight groups can be pointed out and each group can be related to certain decoration styles and rim models (fig. 12).

The first group (green) includes vessel units whose specific feature is the absence of the rim ornamentation (bk). Within this group, different main decoration styles become apparent: the cross pattern (c205), alternately hanging and standing angles (c2020), the angular band (c2010, c2012), hanging arcs with wide ends consisting of three lines (c1053) and standing

arcs consisting of one (c1021) and two lines (c1022). Moreover, the bowl (a1) and the wide rim (ac) appear.

The following group (brown) combines a part of the main decoration styles from the first group (green) - c205, c2020, c1053 - with the rim ornamentation of an indeterminable number of lines (b0).

The red group, which already leads over to the central point cloud, includes vessel units whose specific main decoration consists of standing arcs (c102). There are unilinear (c1021) as well as bilinear (c1022) arcs. Concerning the rim ornamentation, the latter are combined with two (b2), three (b3) or an indeterminable number (b0) of rim lines, while the former only appears with three horizontal lines (b3). Furthermore, the bilinear angular band (c2012) exists in combination with two (b2) or three (b3) rim lines, the wide rim (ac) and the triangular notehead (dc). The branch pattern (c203) appears together with two rim lines (b2) and the wide rim (ac). Thus, the red group includes characteristics which are contained in the preceding (green) as well as in the following group (white).

The central point cloud (white) combines, like the preceding red group, vessel fragments with two (b2), three (b3) and an indeterminable (b0) number of rim lines, but to a great extent without including the characteristics of the green group. Three rim lines (b3) are in combination with the interleaved hanging arcs consisting of three lines (c1013), the alternately hanging and standing angles made of three lines (c2023), the standing arcs composed of three lines (c1023), the bilinear hanging angles (c2042), the double angular band (c2012), the interleaved hanging arcs made of two lines (c1012), the unilinear alternately hanging and standing angles (c2021) and the unilinear angular band (c2011). Moreover, three rim lines are connected to the hanging arcs (c1030), the angular band (c2010), the double-arcs (c104) and the hanging angles (c2040).

Together with two rim lines (b2) the following characteristics appear: the interleaved hanging arcs composed of three lines (c1013), the alternately hanging and standing angles consisting of three lines (c2023), the triple angular band (c2013), the hanging arcs with wide ends composed of three lines (c1053), the standing arcs made of three lines (c1023), the bilinear hanging angles (c2042), the double angular band (c2012) and the interleaved hanging arcs consisting of one and two lines (c1011, c1012). Also, the

hanging arcs (c1030), the standing arcs (c1020), the branch pattern (c203), the double-arcs (c104), the angular band (c2010) and the interleaved hanging arcs (c1010) are combined to the rim ornamentation of two lines (b2).

The rim decoration of an indeterminable number of lines (b0) appears together with the interleaved hanging arcs made of three lines (c1013), the standing arcs composed of three lines (c1023), the bilinear interleaved hanging arcs (c1012) and the unilinear interleaved hanging arcs (c1011). Moreover, the alternately hanging and standing angles (c2020), the hanging angles (c2040), the standing arcs (c1020), the interleaved hanging arcs (c1010), the hanging arcs (c1030), the angular band (c2010) and the branch pattern (c203) are combined with the rim ornamentation of an indeterminable number of lines (b0).

The white group further includes the oval notehead (db), which can be assigned more frequently to the interleaved hanging arcs made of two and three lines (c1012, c1013) than to any other motif. The same also applies to the triangular notehead (dc). The straight (ab) and the wide (ac) rimshape appear in this group as well.

Characteristic of the yellow group is the rim ornamentation consisting of four lines (b4). It is combined with the triple angular band (c2013) as well as with the hanging angles composed of three lines (c2043).

The latter is also characteristic of the black group, which is located between the central point cloud and the yellow group. It presents a connection between both groups by linking the hanging angles made of three lines (c2043) with the rim decoration of three lines (b3).

The blue group can be separated into two subgroups, *a* and *b*, on the basis of the number of rim lines. Thus, the vessel units of the blue group *a* have clearly one rim line (b1), while the number of rim lines of the blue group *b* is not determinable (b0). The main decoration styles of the blue group consist of vertical (c208) and diagonal (c209) lines. The bilinear hanging arcs (c1032) and the oval notehead (db) appear only in the blue group *a*. The orange group is clustered parallel to the blue group. On the one hand, it contains the bilinear hanging arcs (c1032) in combination with three rim lines (b3) and straight rim (ab) and on the other hand the

interleaved hanging arcs consisting of three lines (c1013) together with one rim line (b1) and the straight rim (ab).

6. Proposal for a chronological scheme of the Music-note Linear Pottery culture in Romania

In an attempt to establish a chronological system for the Music-note Linear Pottery in Romania, the groups created on the basis of ornamentation will be incorporated into the chronological schemes already developed (southwestern Slovakia, Moravia, southeastern Poland, western Ukraine).

The green group, which is especially characterized by the absence of rim ornamentation (bk), shows similarities to the decorations of the first and second phases of the Music-note Linear Pottery in its distribution area. The absence of the rim decoration (bk) and the standing arcs (c1021, c1022) exist in the southwest Slovakian early phase³⁸, in phase I,1 in southeastern Poland³⁹ and in phase IIa₁ in Moravia⁴⁰, while the cross motif (c205) in southwestern Slovakia appears starting from the middle phase⁴¹. The same applies to the angular band (c2010, c2012), which appears in southwestern Slovakia in the middle phase and in Moravia from phase IIa₂⁴².

The brown group combines the cross motif (c205) with an indeterminable number of rim lines (b0); its analogies could be seen in the middle phase of southwestern Slovakia⁴³.

The red group which connects the standing arcs (c1021, c1022) and the angular band (c2012) with two or three rim lines (b2, b3) does not only have parallels in the early phases in southwestern Slovakia, Moravia and

³⁸ J. Pavúk, *Chronologie der Želiezovce-Gruppe*, in *SlovArch*, XVII, 1969, fig. 1/1-3; 2/14.

³⁹ J. K. Kozłowski, *Über die Untersuchungen der östlichen Peripherien der Linien-Bandkeramik-Kultur*, in *AAC*, XIV, 1974, fig. 14/2, 8.

⁴⁰ Z. Čížmář, *Nástin relativní chronologie kultury s lineární keramiky na Moravě. Poznámky k vývoji výzdobného stylu. Zur relativen Chronologie der Linearbandkeramik in Mähren. Bemerkungen zur Entwicklung des Zierstils*, in *AMMSS*, LXXXIII, 1998, fig. 4/7, 12.

⁴¹ J. Pavúk, *op. cit.*, 1969, fig. 4/1.

⁴² See footnotes 45 and 46.

⁴³ J. Pavúk, *op. cit.*, 1969, fig. 4/1.

southeastern Poland because of the standing arcs (c1021, c1022)⁴⁴, it also has parallels in the middle and late phase of the younger Linear Pottery culture and the early phase of the Želiezovce group in southwestern Slovakia⁴⁵, in the Moravian phases IIa₂, IIb and IIc⁴⁶, in the phases I,2, I,3 and II,A in southeastern Poland⁴⁷ as well as in the phases II and III in the Ukraine⁴⁸ on the basis of the rim lines (b2, b3) or the angle band (c2012).

Similary, some elements of the white group correspond with characteristics of the middle and late phase as well as with those of the early phase of the Želiezovce group in southwestern Slovakia and of the contemporaneous phases from the distribution area. So, the interleaved hanging arcs (c1011, c1012, c1013, c1010) build the most characteristic motif beside the rim ornamentation consisting of two (b2) and three (b3) lines in the white group. These ornamentations have analogies in southwestern Slovakia (middle and late phase of the younger Linear Pottery culture and early phase of the Želiezovce group)⁴⁹, Moravia (IIa₂, IIb, IIc)⁵⁰, southeastern Poland (I,2, I,3, II,A)⁵¹ and Ukraine (II, III)⁵². Likewise, the angular band (c2012, c2010) appears as a common element and has its parallels in the middle and late phase of the younger Linear Pottery culture and the early phase of the Želiezovce group in southwestern Slovakia as well as in the Moravian phase IIa₂, IIb and IIc and in the phase II in the

⁴⁴ See footnotes 38, 39, 40.

⁴⁵ Rim lines: J. Pavúk, *op. cit.*, 1969, fig. 3; 6; 13; angle band: *Ibidem*, fig. 3/11; 10/12; 15/18.

⁴⁶ Rim lines: Z. Čižmář, *op. cit.*, 1998, fig. 5/2; 6/15; 8/2; angle band: *Ibidem*, fig. 5/1; 11/1; 8/11.

⁴⁷ Rim lines: J. K. Kozłowski, *op. cit.*, 1974, fig. 18-20.

⁴⁸ Rim lines: N. S. Kotova, *Neolithization in Ukraine*, BAR Int. Ser. 109, Oxford, 2003, fig. 88-89; angle band: E. K. Černyš, *Istorii na selnjaeneolitičeskogovremeni v srednem Podnestrovja*, MIA 102, 1962, fig. 7/31, 33.

⁴⁹ Interleaved hanging arcs: J. Pavúk, *op. cit.*, 1969, fig. 5/7-8; 6/7; 16/1; rim lines: see footnote 45.

⁵⁰ Rim lines: see footnote 46; interleaved hanging arcs: Z. Čižmář, *op. cit.*, 1998, fig. 6/1, 2.

⁵¹ Interleaved hanging arcs: J. K. Kozłowski, *op. cit.*, 1974, fig. 18/2, 5; 20/ 1, 7; rim lines: see footnote 47.

⁵² Interleaved hanging arcs: N. S. Kotova, *op. cit.*, 2003, fig. 88, 4; E. K. Černyš, *op. cit.*, 1962, fig. 7/9; 10/4; rim lines: see footnote 48.

Ukraine⁵³. The hanging arcs (c1030) are reflected in the decoration of the late phase in southwestern Slovakia⁵⁴. Possible analogies to the double-arcs (c104) could exist in the middle phase in southwestern Slovakia⁵⁵, whereas the oval shape of the notehead (db) could already point to the beginning of the Želiezovce group⁵⁶. The branch pattern (c203), which only appears in Târpești⁵⁷, has analogies to a fragment from the southwest Slovakian site of Bajč⁵⁸ which is related to the early phase of the Želiezovce group.

The characteristic of the straight rim (ab) from the orange group could correspond to the horizon of the late phase in southwestern Slovakia⁵⁹.

The decoration styles of the blue group do not agree with the ornamentations from the relevant regions. However, the decoration of one rim line (b1) is a characteristic for all early phases of the Music-note Linear Pottery⁶⁰. This fact stands in contrast to the following proposed hypothesis: the ornamentation of one rim line (b1) appears with the vertical (c208) and the diagonal lines (c209) which do not have any correspondence in the distribution area. The pottery with influences from the Želiezovce group⁶¹ existing only in Târpești makes clear that at this stage there either did not exist anymore relations to the original regions of the Music-note Linear Pottery or they were too weak. Therefore, the decoration of vertical (c208) and diagonal lines (c209) in connection with one rim line could be an independent Romanian development that dispersed in a late phase when the contact to the other regions hardly existed any longer.

Furthermore, it stands out that the motif of the horizontal lines (c207), which was eliminated from the analysis because of too few characteristic combinations, appears in Traian and Târpești next to an

⁵³ See footnotes 45, 46, 48.

⁵⁴ J. Pavúk, *op. cit.*, 1969, fig. 6/2; 8/9.

⁵⁵ *Ibidem*, fig. 3/7.

⁵⁶ *Ibidem*, fig. 13/16; 15/18; 16/5.

⁵⁷ S. Marinescu-Bîlcu, *op. cit.*, 1981, fig. 28/11.

⁵⁸ J. Pavúk, *op. cit.*, 1969, fig. 12/10.

⁵⁹ *Ibidem*, fig. 8/6, 7, 8.

⁶⁰ *Ibidem*, fig. 2/8-9; Z. Čížmář, *op. cit.*, 1998, fig. 4/5, 7; J. K. Kozłowski, *op. cit.*, 1974, fig. 14/1, 4; N. S. Kotova, *op. cit.*, 2003, fig. 87.

⁶¹ S. Marinescu-Bîlcu, *op. cit.*, 1981, fig. 27/9; 28/4; 29/6.

ornamentation of rows of dots⁶². Analogies to these dot rows can be found in the Ukrainian site of Niezwiska where the horizontal lines (c207) appear at the same time⁶³. This decoration of rows of dots is found in Târpești next to ceramics influenced by the Želiezovce group. Besides, it has analogies in Šárka as well⁶⁴. All of the previously mentioned facts could indicate that the decoration of dots is a late element within the Music-note Linear Pottery. Thus, the coexistence of the rows of dots and the horizontal lines (c207) in the sites of Târpești, Traian and Niezwiska could likewise give the horizontal lines (c207) a late position within the Music-note Linear Pottery. In Perieni, Isaiia and Târpești, the horizontal lines (c207) appear along with the vertical (c208) and diagonal lines (c209), possibly supporting the proposed hypothesis.

Another motif, which fell out of the analysis, the rectangular pattern (c206), appears both in Perieni and Glăvăneștii Vechi. Its parallels are placed in the southeast Polish phase I3⁶⁵. From the same chronological horizon are the cross motifs which were placed on the outer bottom of the vessel. They are known in Târpești, Glăvăneștii Vechi and Traian and have equivalents in southwestern Slovakia⁶⁶. A geometric motif, which was almost identically formed on all fragments, arises only in Glăvăneștii Vechi⁶⁷.

It becomes apparent that the characteristics mainly split and group themselves along the axes according to the different number of rim lines. The decoration of one rim line (b1) and of four rim lines (b4) only show a low connection to the central point cloud (white group) whose main characteristics are two (b2) and three rim lines (b3). On the other hand, the vessel units without any rim ornamentation (b0) are well integrated (fig. 11). Thus, the cross pattern (c205) overlaps, as was mentioned above, between the green and brown group and the standing arcs (c1021, c1022) and the

⁶² *Ibidem*, fig. 28/5, 7, 8, 9; H. Dumitrescu, Vl. Dumitrescu, *Activitatea șantierului arheologic Traian*, in *MCA*, VIII, 1962, fig. 7/4.

⁶³ E. K. Černys, *op. cit.*, 1962, fig. 7/19-21; 10/18.

⁶⁴ V. Slavonil, *Studie O Sareckem Typu. Vymezení pojmu. Sbornik Narodního Muzea V Praze*, in *AMNP.A*, XV, 1961, 3, fig. 6/16; 18/5.

⁶⁵ J. K. Kozłowski, *op. cit.*, 1974, p. 32.

⁶⁶ J. Pavúk, *op. cit.*, 1969, fig. 7/6.

⁶⁷ E. Comșa, *op. cit.*, 1994, fig. 24/5, 12.

angular band (c2010, c2012) within the green and red group. This shows a clear overlap concerning the main decoration for vessel units without rim ornamentation (bk) and for those with two (b2) and three rim lines (b3). The only modest integration of the blue (main characteristic: b1) and yellow (main characteristic: b4) groups could possibly depend on regional reasons or on a too little material basis.

The statistic evaluation clearly shows that the Music-note Linear Pottery culture can apparently be divided on the basis of the rim decorations into three phases, which is also shown by the statistical spread in the correspondence analysis. The main decorations seem to have little chronological relevance, whereas the rim ornamentation can be estimated as chronologically sensitive. The first group (green) connects the angular band (c2010), which does not appear in southwestern Slovakia until the middle phase, with no rim decoration (bk), which is a characteristic of the early phase there. This could mean that in Romania the first phase (main characteristic: bk) began in a chronological horizon which corresponds not only with the early southwest Slovakian phase but also with its middle phase. Thus, the second phase (main characteristics: b2, b3) could have its beginning in a time frame which is consistent with the sophisticated middle phase and the late phase of southwestern Slovakia. The last phase of the Music-note Linear Pottery (main characteristic: b1) could envelop a chronological horizon that at least goes along with the early phase of the Želiezovce group (tab. 1).

7. Expansion

The results allow the following statements concerning the occupation of certain sites (fig. 13; 14; 15). With the help of the rim decoration and main ornamentations (c207, c208, c209) presumably only significant for the last phase, it can be shown that the sites Glăvănești Vechi, Traian, Dănești, Larga Jijia, Mihoveni and Perieni belong to the first and second phase of the proposed chronological system for Romania. Dudești, Vadu Sorești, Sudiți, Vădastra, Hărman, Cipău-Gără, Șcheia-Siliște, Isaiia and Târpești not seem to appear until the middle phase. The last two mentioned sites even exist from a temporary level which corresponds with the southwest Slovakian middle phase (based on the decoration c104). The ceramics from Târpești

definitely influenced by the Želiezovce group demonstrate a persistence of the site until the last phase. The same probably also applies to Isaiia (c209, c207), Traian (c207, dot decoration), Glăvăneștii Vechi (c208, c209), Mihoveni (c208), Larga Jijia (c209), Dănești (c207), Perieni (c207, c209) and Rupea (c208).

When the low find density and the material basis are taken into consideration, the following picture of the expansion process of the Music-note Linear Pottery culture in Romania emerges. The first appearance of the Music-note Linear Pottery is evident in the Moldova region in the first phase (map II), which is proved by the sites Glăvăneștii Vechi, Traian, Larga Jijia, Mihoveni, Dănești and Perieni. In the second phase (map III), the Music-note Linear Pottery culture seems to expand to Muntenia (Dudești, Vadu Sorești, Sudiți) and Oltenia (Vădastra) as well as to Transylvania (Hărman, Cipău-Gără). At the same time new sites appear in the region of Moldova (Târpești, Isaiia, Șcheia-Siliște). A continuation until the third phase is likely (map IV) in Transylvania (Rupea) and in the Moldova region (Târpești, Isaiia, Glăvăneștii Vechi, Traian, Mihoveni, Perieni, Larga Jijia, Dănești).

8. Analogies to the Music-note Linear Pottery culture in Romania

In Romania, the Music-note Linear Pottery culture directly follows the Starčevo-Criș culture, while in all other regions an older phase of the Linear Pottery culture without notehead ornamentation precedes the Music-note Linear Pottery⁶⁸. Only influences of this older phase could be found in two Romanian Starčevo-Criș settlements (Grumăzești, Suceava)⁶⁹. Furthermore, it was observed that big long houses dominate in western Slovakia⁷⁰ and Moravia⁷¹, while in Poland⁷², Ukraine⁷³ and in the Republic of

⁶⁸ Z. Čižmář, *op. cit.*, 1998, 137; A. Kulczycka-Leciejewiczowa, *Kultura ceramiki wstęgowej rytej w Polsce. Zarys problematyki*, in J. K. Kozłowski (ed.), *Z badań nad kulturą ceramiki wstęgowej rytej: materiały konferencji w Nowej Hucie dn. 22 IV 1969*, Polskie Towarzystwo Archeologiczne, Kraków, 1970, p. 23; J. Pavúk, *op. cit.*, 1969, p. 269; N. S. Kotova, *op. cit.*, 2003; N. Ursulescu, *op. cit.*, 2000, p. 277.

⁶⁹ S. Marinescu-Bîlcu, *Asupra unor probleme ale culturii Criș*, in *SCIVA*, 26, 1975, 4, p. 500; N. Ursulescu, *op. cit.*, 2000, p. 276.

⁷⁰ J. Pavúk, *Štúrovo. Ein Siedlungsplatz der Kultur mit Linearbandkeramik und der Želiezovce-Gruppe*, Nitra, 1994, p. 64.

Moldova⁷⁴ - as well as in Romania - small house features are most common. Concerning the inside of the houses, there are analogies regarding the fire places. Thus, the pit hearth of the ground-level house in Mihoveni has analogies in Poland⁷⁵, Ukraine and in the Republic of Moldova⁷⁶, where this type frequently appears. Moreover, in Poland until now burials were only discovered inside the settlements⁷⁷, whereas in southwestern Slovakia⁷⁸ and Moravia⁷⁹ cemeteries are also documented. In all mentioned areas inhumation dominates, the dead person being buried in contracted position⁸⁰.

⁷¹ R. Tichý, *Osídlení s volutovou keramikou na Moravě*, in *Památky archeologické*, 53, 1962, p. 304.

⁷² A. Kulczycka-Leciejewiczowa, *op. cit.*, 1970, p. 34.

⁷³ E. K. Černýš, *Territoire orientale des tribus de la céramique linéaire*, in *Atti del VI congresso internazionale delle scienze preistoriche e protostoriche, II, Roma 29 agosto-3 settembre 1962 / II, Comunicazioni sezioni I-IV*, UISPP, Firenze, 1965, p. 264.

⁷⁴ Idem, *op. cit.*, 1965, 264; T. Passek, *L'Europe Occidentale et l'Europe Orientale à l'époque néolithique*, in *Atti Del VI Congresso Internazionale Delle Scienze Preistoriche e Protostoriche. Roma 29 Agosto - 3 Settembre 1962. Vol. I. Relazione Generali*, Roma, 1962, p. 131.

⁷⁵ A. Kulczycka-Leciejewiczowa, *op. cit.*, p. 34.

⁷⁶ E. K. Černýš, *op. cit.*, 1965, p. 264.

⁷⁷ A. Kulczycka-Leciejewiczowa, *op. cit.*, 1970, p. 35.

⁷⁸ I. Cheben, *Bajč – eine Siedlung der Želiezovce-Gruppe. Entwicklungsende der Želiezovce-Gruppe und Anfänge der Lengyel-Kultur*, Universitätsforschungen zur prähistorischen Archäologie, Bd. 68, Bonn, 2000, p. 62.

⁷⁹ Podborský *et alii*, *Dvě pobřežské neolitické lidu s lineární keramikou ve Vedrovicích na Moravě*, Brno, 2002, p. 322.

⁸⁰ I. Cheben, *op. cit.*, p. 78; A. Kulczycka-Leciejewiczowa, *op. cit.*, p. 35; Podborský *et alii*, *op. cit.*, p. 324.

CULTURA CERAMICII LINIARE CU CAPETE DE NOTE MUZICALE ÎN ESTUL ROMÂNIEI: PROPUNERE PENTRU O CRONOLOGIE RELATIVĂ

(Rezumat)

Prin această lucrare se încearcă stabilirea unei cronologii pentru cultura ceramicii liniare cu capete de note muzicale (Notenkopfkeramik) în România cu ajutorul serierilor și analizei corespondențelor fragmentelor ceramice. Pe baza acestora se încearcă expunerea procesului de ocupare a teritoriilor. Cercetarea s-a bazat pe fragmentele descoperite în 22 de situri arheologice din estul României ce prezintă mai mult de două caracteristici semnificative. În privința caracteristicilor au fost considerate atât forma vaselor cât și decorul, care a fost separat în funcție de dispunere (pe buză și decorul principal). În funcție de rezultatul analizei corespondențelor, se pot crea grupuri diferite ce pot fi apoi legate de analogiile materialelor aparținând culturii ceramicii liniare cu capete de note muzicale din Slovacia, Moravia, sudul Poloniei și vestul Ucrainei. Astfel, a devenit evident faptul că numărul diferit de linii de pe partea superioară a vasului este motivul principal pentru care decorul se desparte și se grupează în jurul axei, în timp ce motivele decorative principale par să nu aibă o relevanță cronologică. Astfel, cultura ceramicii liniare cu note muzicale din România poate fi împărțită, pe baza decorului de pe buza vasului, în trei faze ce pot fi comparate cu schema cronologică locală pentru sud-vestul Slovaciei întocmită de către J. Pavúk.

Lista ilustrațiilor:

- Fig. 1. Formele de vase relevante pentru analiză.
- Fig. 2. Decorul buzei.
- Fig. 3. Poziționarea notelor muzicale.
- Fig. 4. Stiluri ale decorului principal curboliniar.
- Fig. 5. Stiluri ale decorului principal rectiliniu.
- Fig. 6. Poziționarea notelor muzicale în stilurile principale de decor.
- Fig. 7. Forma notelor muzicale.
- Fig. 8. Rânduri verticale de note muzicale între motivele principale și cele de pe buză.
- Fig. 9. Analiza corespondențelor tuturor fragmentelor de vase: unități.
- Fig. 10. Serierea datelor.
- Fig. 11. Analiza corespondențelor după înlăturarea trăsăturilor da, aa, cad, a3, cac, a2, bac, baa, f, e, caa and cab: trăsături.
- Fig. 12. Analiza corespondențelor, ordonate pe grupuri, după înlăturarea trăsăturilor da, aa, cad, a3, cac, a2, bac, baa, f, e, caa și cab: unități.

Fig. 13. Numărul fragmentelor de vase ce au caracteristici corespunzând fazelor.

Fig. 14. Numărul fragmentelor de vase ce au caracteristici corespunzând fazelor.

Fig. 15. Numărul fragmentelor de vase ce au caracteristici corespunzând fazelor.

Fig. 16. Isaiia-Balta Popii. Ceramică fină.

Fig. 17. Isaiia-Balta Popii. Ceramică fină; 1, 2, 4 din șanțul de fundare a locuințelor 8/8A.

Fig. 18. Isaiia-Balta Popii. Ceramică fină; 1-7 din locuința 4.

Hărți:

Harta I. Situri cu descoperiri ce pot fi încadrate în cultura ceramicii liniare din România: 1. Cernica; 2. Cipău-Gără, Cipău-I.C.I.A.; 3. Ciurea; 4. Dănești; 5. Dudești; 6. Ghinoiaica; 7. Glăvăneștii Vechi; 8. Hărman; 9. Iași; 10. Isaiia; 11. Larga Jijia; 12. Mihoveni; 13. Perieni; 14. Rupea; 15. Șcheia-Siliște; 16. Sudiți; 17. Târpești; 18. Traian; 19. Vadu Sorești; 20. Vădastra; 21. Vâlcelele-Găureanca.

Harta II. Situri cu descoperiri ce pot fi încadrate în cultura ceramicii liniare din România (pentru numere vezi harta I): Faza timpurie. Numărul fragmentelor de vase semnificative (se aplică și hărților III și IV).

Harta III. Situri cu descoperiri ce pot fi încadrate în cultura ceramicii liniare din România (pentru numere vezi harta I): faza mijlocie

Harta IV. Situri cu descoperiri ce pot fi încadrate în cultura ceramicii liniare din România (pentru numere vezi harta I): faza târzie.

Tabel 1. Cronologia relativă a culturii ceramicii liniare cu capete de note muzicale în sud-vestul Slovaciei, Moravia, sud-estul Poloniei, Ucraina și România (J. Braungart).

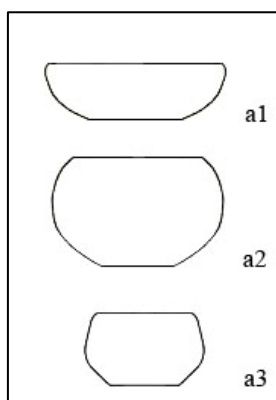


Fig. 1. Overview over the vessel shapes relevant for the analysis

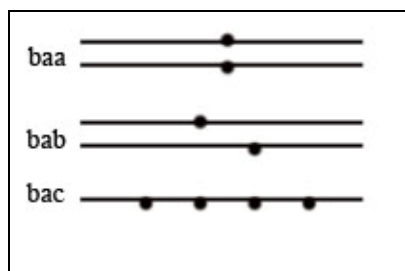


Fig. 3. Position of the noteheads

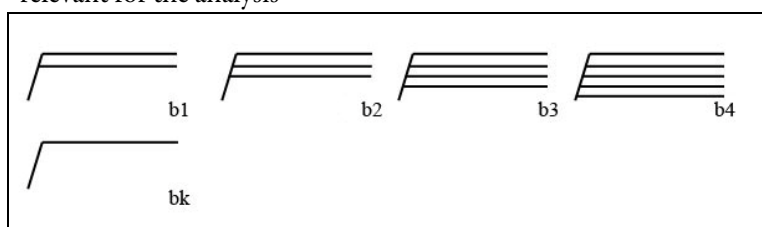


Fig. 2. Overview over the rim decorations

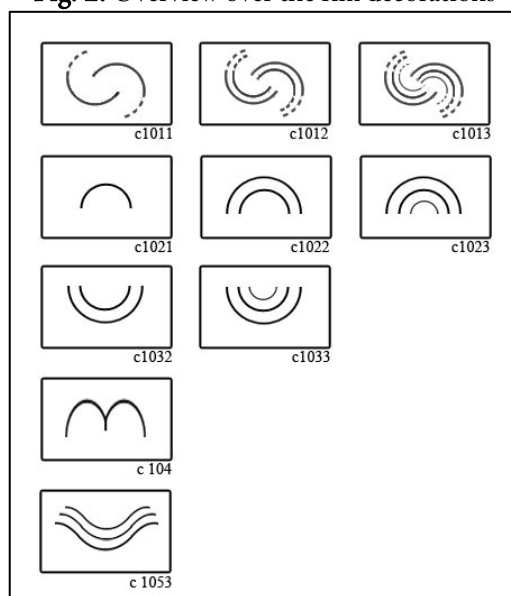


Fig. 4. Overview of the curvilinear main decoration styles

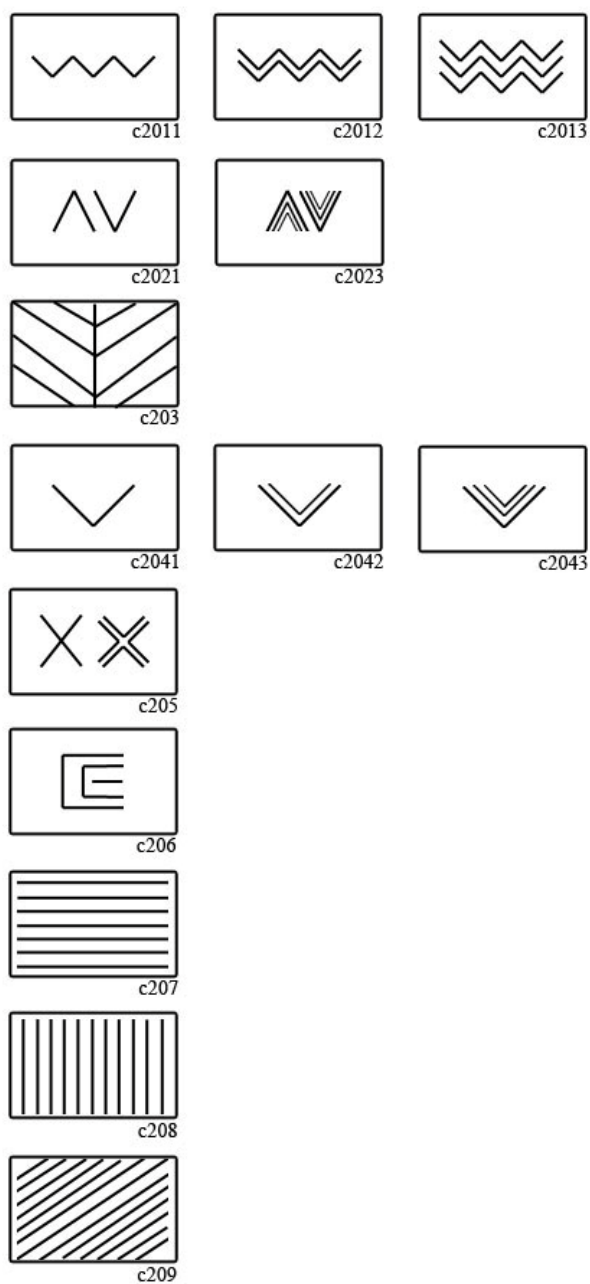


Fig. 5. Overview of the rectilinear main decorations styles

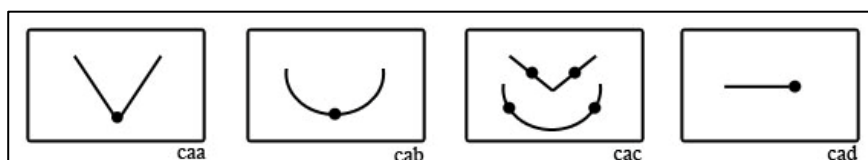


Fig. 6. Position of the noteheads in the main decoration styles

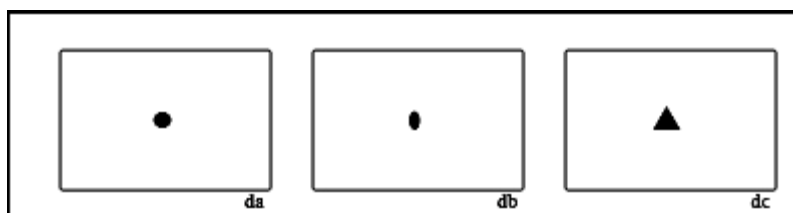


Fig. 7. Shape of the noteheads

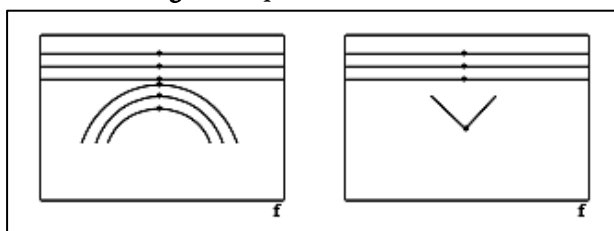


Fig. 8. Vertical row of the noteheads between main and rim motif

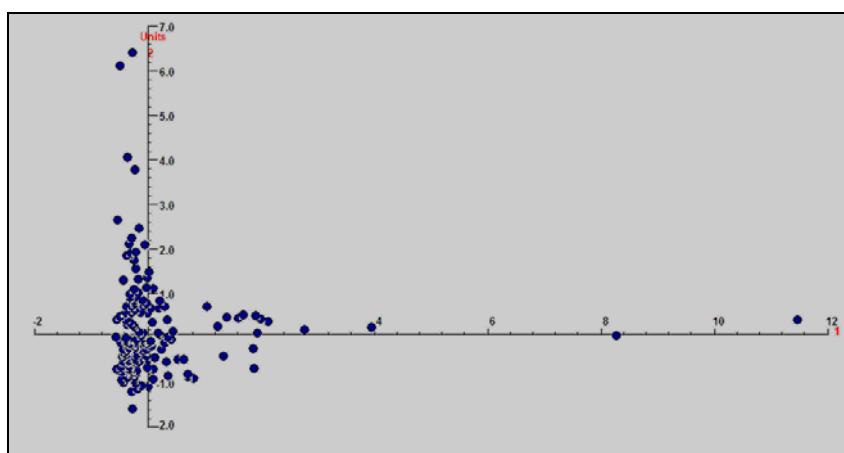


Fig. 9. Correspondence analysis of all vessel units: the units

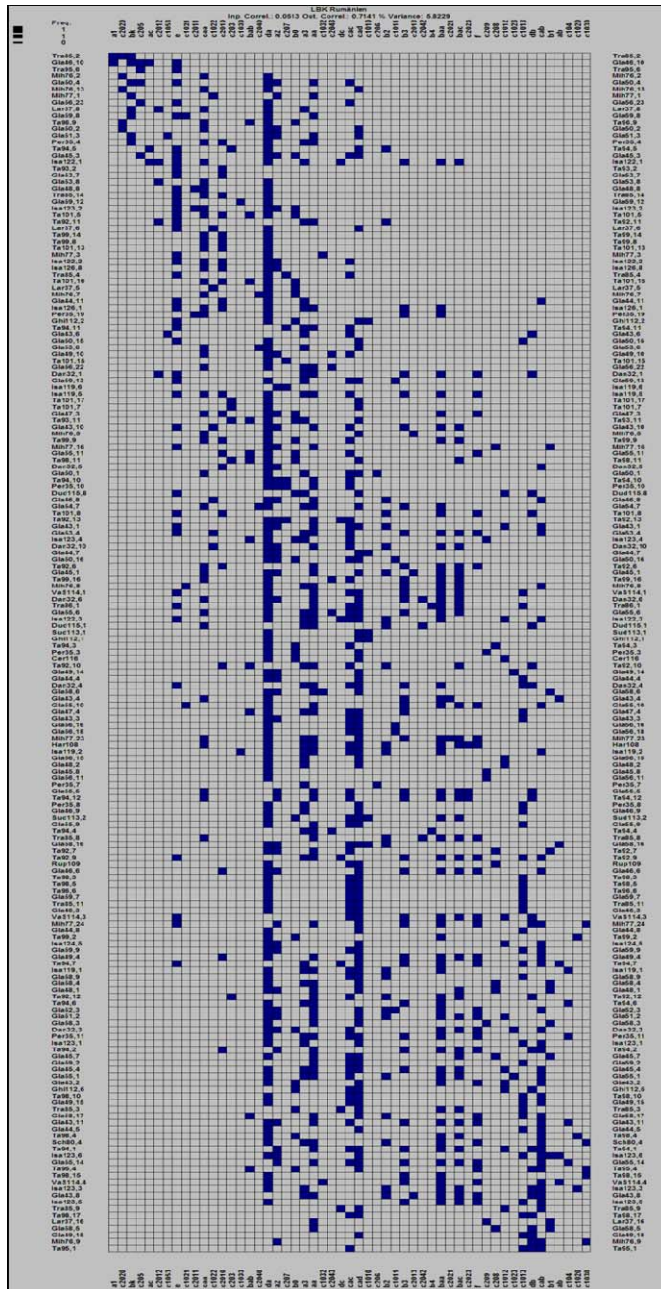


Fig. 10. Seriation of the raw data

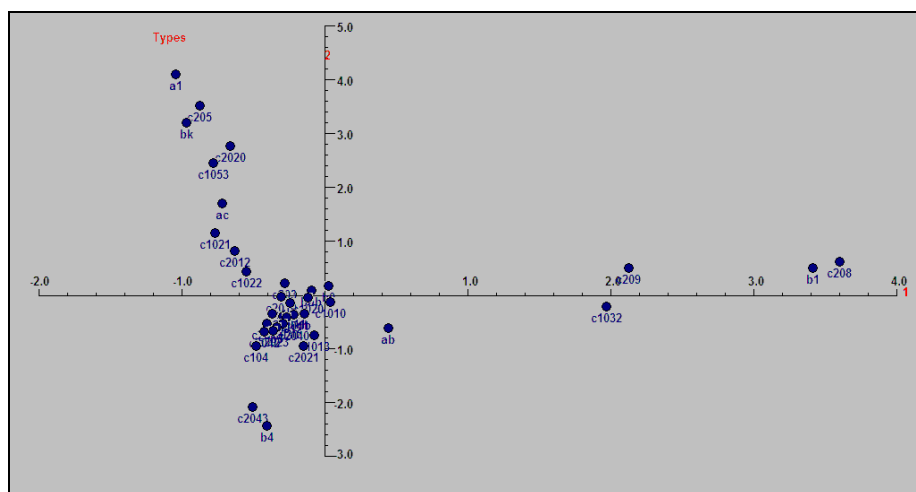


Fig. 11. Correspondence analysis after the removal of the characteristics da, aa, cad, a3, cac, a2, bac, baa, f, e, caa and cab: the types

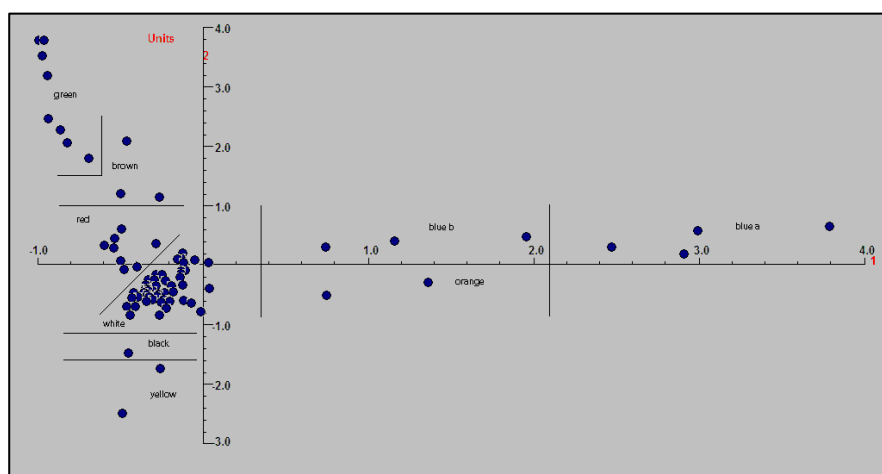


Fig. 12. Correspondence analysis, ordered by groups, after the removal of the characteristics da, aa, cad, a3, cac, a2, bac, baa, f, e, caa and cab: the units

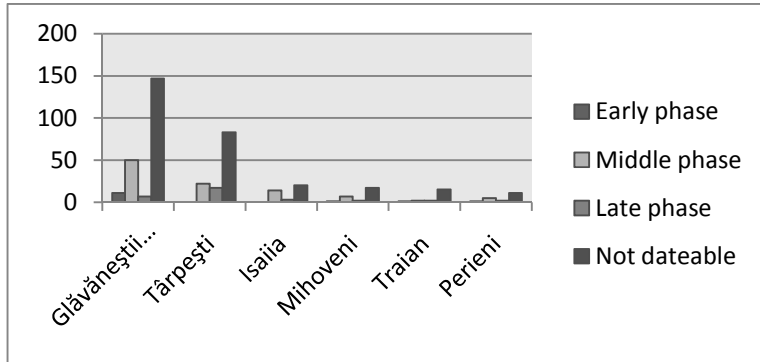


Fig. 13. Number of vessel units possessing characteristics corresponding to the phases

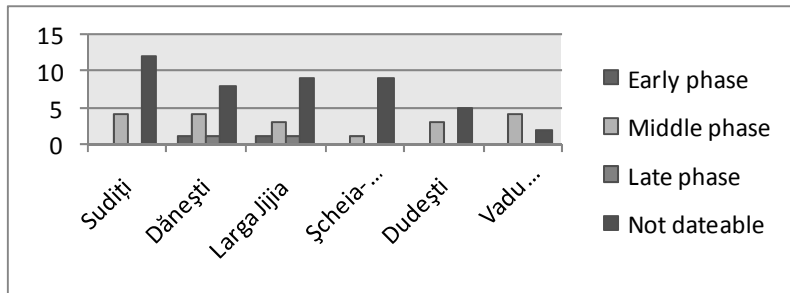


Fig. 14. Number of vessel units possessing characteristics corresponding to the phases

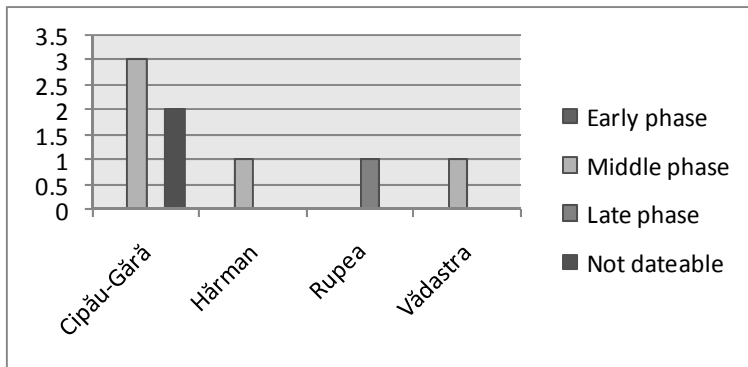


Fig. 15. Number of vessel units possessing characteristics corresponding to the phases

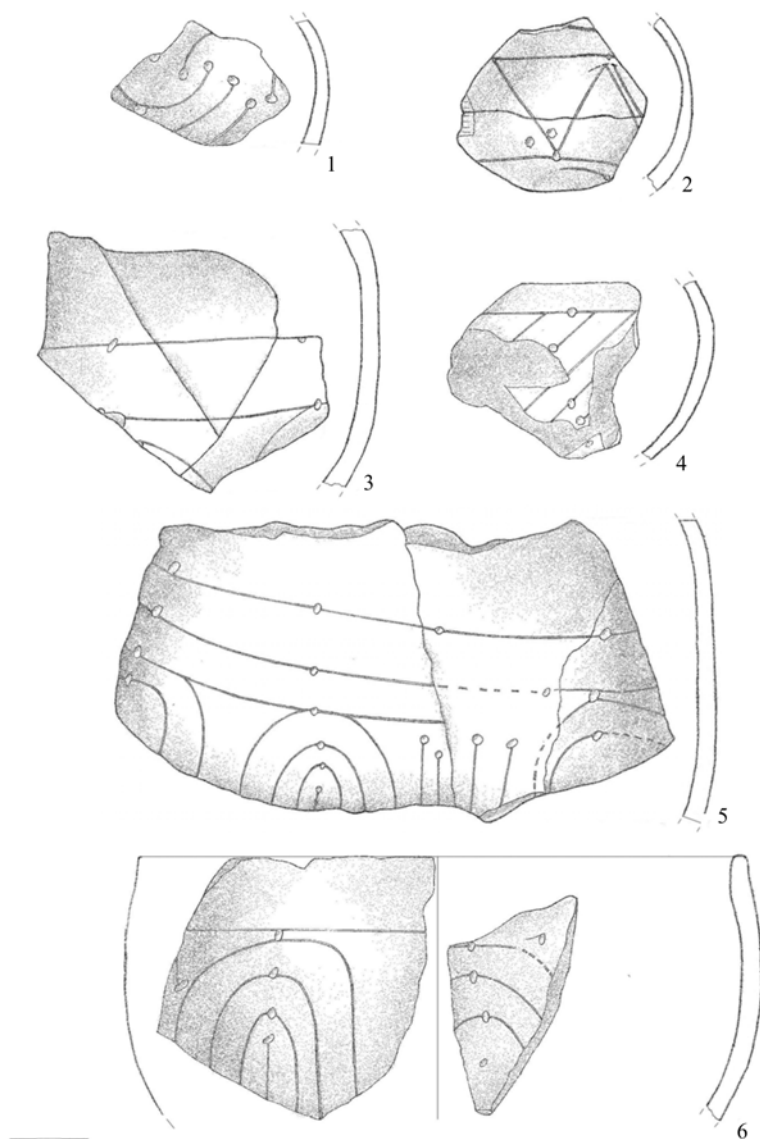


Fig. 16. Isaiia – *Balta Popii*. Fine ware

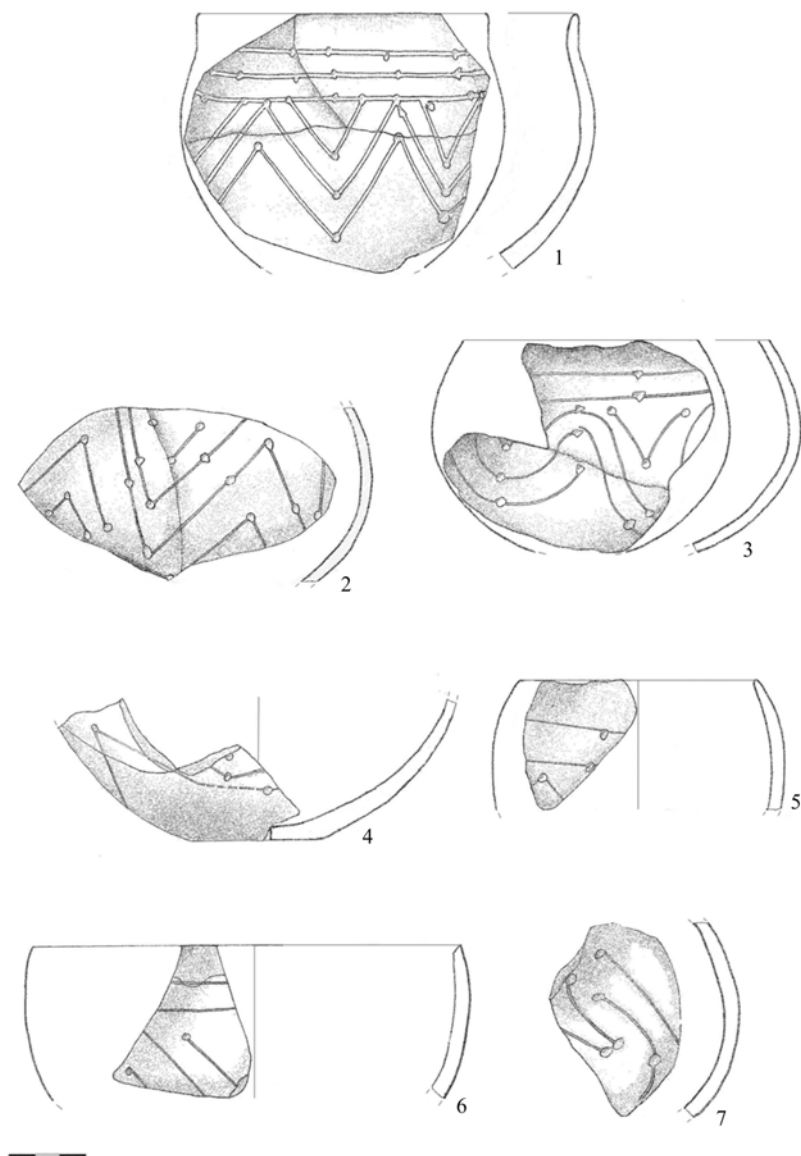


Fig. 17. Isaiia – *Balta Popii*. Fine ware; 1, 2, 4 from the foundation trenches of the house features 8/8A

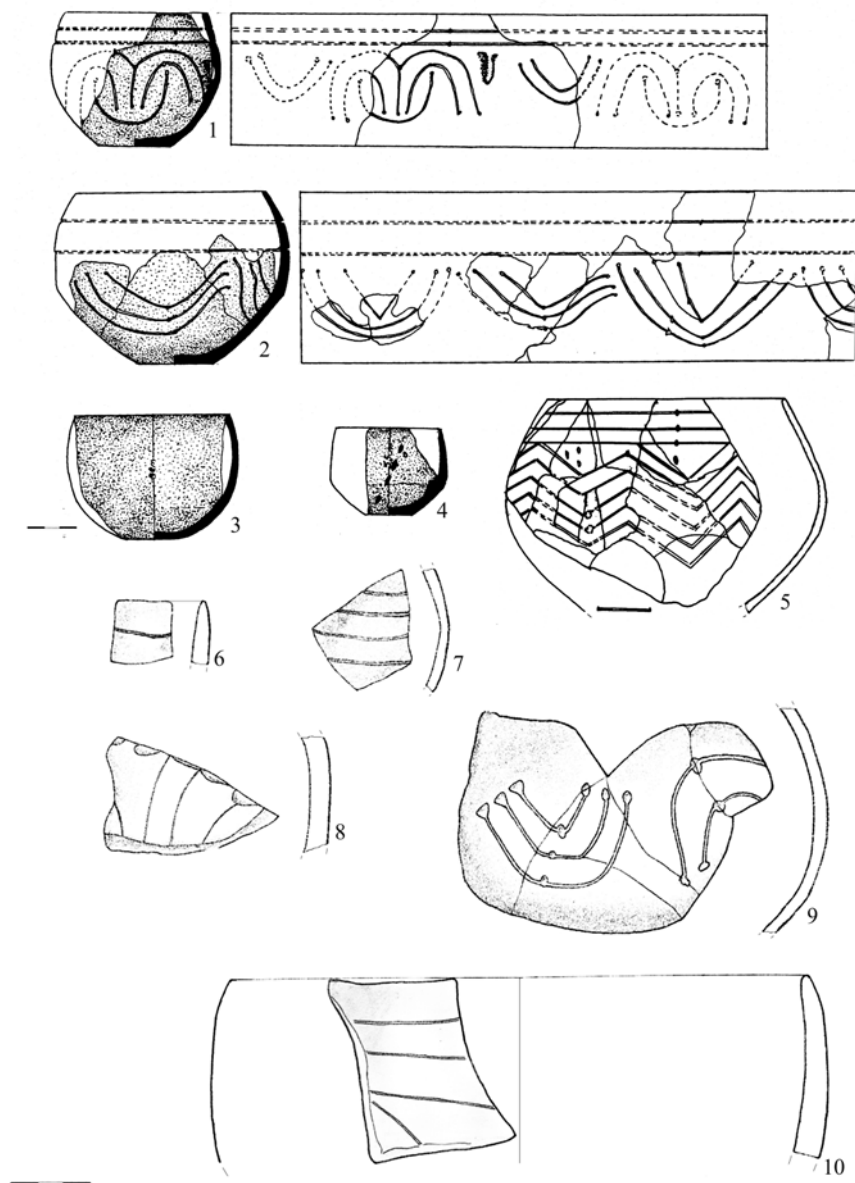
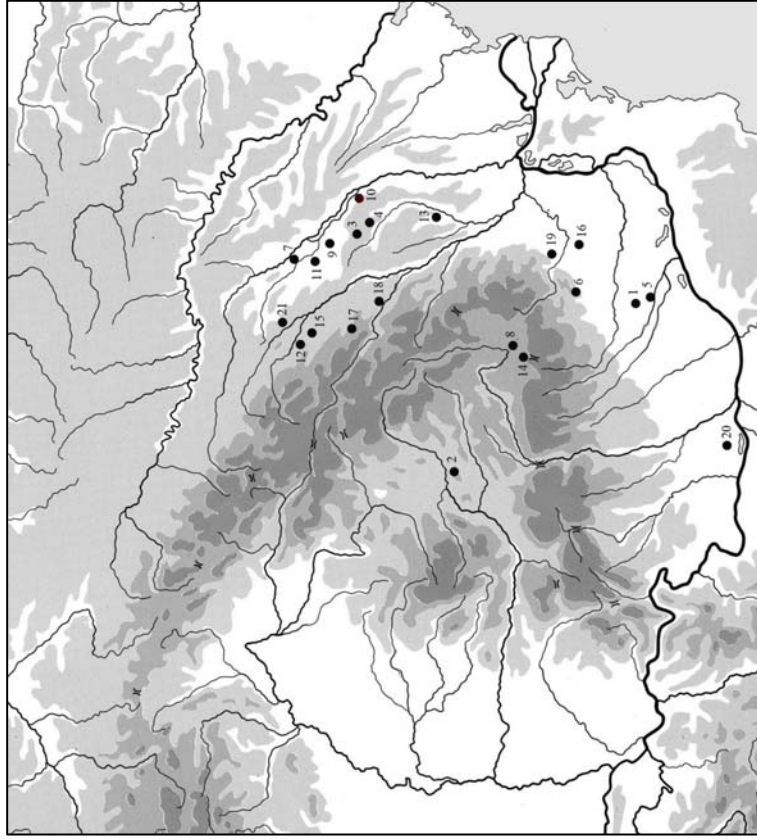
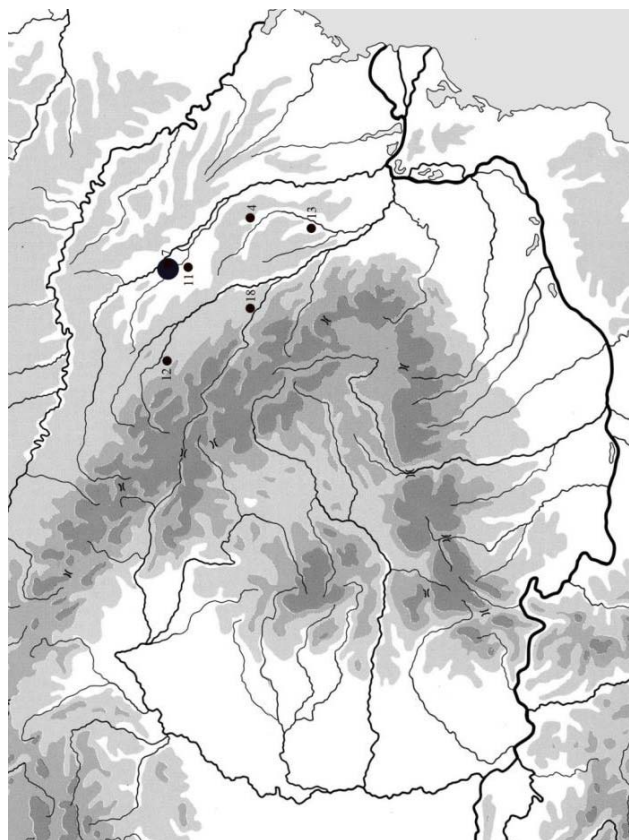


Fig. 18. Isaiia – *Balta Popii*. Fine ware; 1-7 from the house feature 4



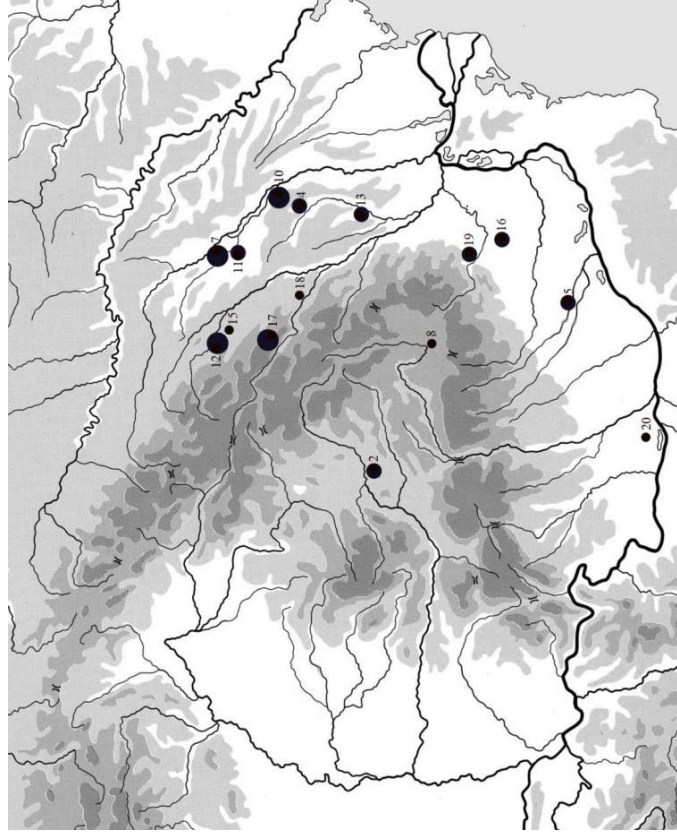
Map I. Sites of the Music-note Linear Pottery culture in Romania: 1. Cernica; 2. Cipău-Gară, Cipău-I.C.I.A.; 3. Ciurea; 4. Dănești; 5. Dudești; 6. Ghinoiaia; 7. Glăvăneștii Vechi; 8. Harman; 9. Iași; 10. Isăia; 11. Larga Jijia; 12. Mihoveni; 13. Perieni; 14. Rupea; 15. Șcheia-Siliște; 16. Suditri; 17. Târpești; 18. Traian; 19. Vadu Sorești; 20. Vădastra; 21. Vâlcelele-Găureanca



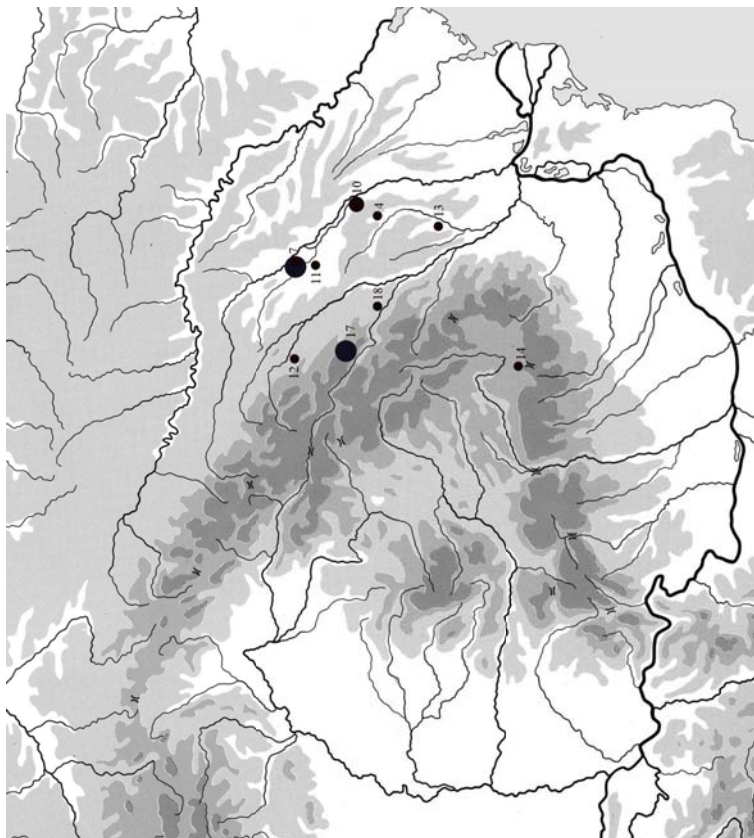
Map II. Music-note Linear Pottery sites in Romania (for site numbers see map I): Early phase

Number of significant sherds (applies also to map III and IV):

- 1-2 sherds
- 3-6 sherds
- more than 6 sherds



Map III. Music-note Linear Pottery sites in Romania (for site numbers see map I): Middle phase



Map IV. Music-note Linear Pottery sites in Romania (for site numbers see map I): Late phase

Southwestern Slovakia		Moravia	Southeastern Poland	Ukraine	Romania
Želiezove-group	Early phase	IIc	II	III	III
	Late phase	IIb	I,3	II	II
Younger Linear Pottery culture	Middle phase	IIa ₂	I,2		
	Early phase	IIa ₁	I,1		
					I Starčevo-Criș

Table 1. The relative chronology of the Music-note Linear Pottery culture in southwestern Slovakia, Moravia, southeastern Poland, Ukraine and Romania (J. Braungart)