

AN ENEOLITHIC COPPER AXE DISCOVERED AT SEMLAC (ARAD COUNTY)

In spring of 1997, a copper adze-axe was discovered at the site of “La Hada” by local farmers working in the fields in Semlac commune (Arad County) (Pl. I1). This axe came to us through the kindness of prof. Lucian Horno¹ who is from the same locality.

The adze-axe is in relatively good condition. It has a slightly curved longitudinal profile. One of its arms was broken in ancient times. The arm with a transversal edge is thin. The edge is slightly widened and curved. There are hammering traces on the edge made as the axe was sharpened. On closer examination, one can see, on the median axis, traces of polishing of the margins left from moulding in the interior side of the arm with transversal edge. The ancient breakage of the arm with vertical edge is due both to its inappropriate use and to a moulding defect.

A few cavities indicating the presence of some air bubbles can be seen in the breakage section. The breakage has traces of uneven smoothing. These traces indicate the reparation and reuse of the axe for a certain period of time. There are a few striking traces in the interior side of the arm. Four of these traces are somehow grouped. One of the two other traces can be the consequence of striking the axe to an edged object.

The shaft-hole has a ring-shaped muff with successive cells resulted from hammering with an edged object. Beveling traces probably resulted from fixing some wooden wedges can also be observed. The position of the shaft-hole is slightly decentred and consequently the thinner butt/side is cracked. A slight widening probably produced by the stone or clay cork put in the patten can be observed in the interior of the shaft-hole towards the ring-shaped muff. In the exterior, opposite the maximum widening curved of the axe trunk, there are hammering traces.

The axe is dark-reddish in colour. The fair-greenish patina has been recently removed. But there are very small surfaces (spots) on the item that can be still seen. The arm with transversal edge presents traces of a recent breakage, a little deep, made by the person who discovered it to find out the metal.

¹ I thank again to Lucian Horno from Semlac.

The sizes of the axe are the following: total length = 23 cm; length of transversal edge = 11,6 cm; length of broken arm = 8 cm; interior diameter of the shaft-hole = 3,6 x 3,7 cm; weight = 1,03 kg (Pl. I/2).

From a typological point of view, this piece belongs to the category of the adzes-axes of Jászladány type², endowed with a ring-shaped muff at the inferior end of the shaft tube. The superior part is organically set off³. In Romania, the best analogies for this piece are within the *Petrești* variant: Bistrița (Viișoara commune, Neamț County)⁴, Voia (Balșa commune, Hunedoara County)⁵, Săcuieni (Bihar County)⁶, Moldova Veche (Caraș-Severin County)⁷, Poiana (Căzănești commune, Mehedinți County)⁸, Vermeș (Lechința commune, Bistrița-Năsăud County)⁹, Tăgădău (Arad County)¹⁰ and Timișoara¹¹. In Hungary, this axe has analogies with the discoveries from “Dabas” (Pest)¹², Kerepes (Pest)¹³, Syeged-*Tapé* (Csongrád)¹⁴, Hajdúhadház (Hajdú-Bihar)¹⁵, Debrecen (Hajdú-Bihar)¹⁶, Nyirtura (Szabolcs-Szatmár)¹⁷, Tószeg (Szolnok)¹⁸, and Tiszaigar (Szolnok)¹⁹, as well as a few samples from the private collection Borsos Béla from Budapest²⁰. In Austria, there is an axe found in an unknown place identical with that one discovered at Semlac²¹, and the axe discovered at Velký Blh (Rimavská Sobota region), in Slovakia, represents a good analogy for the piece in discussion²². In Yugoslavia, similar samples are at Negotin (Kraina

² Patay, 1945, p. 5-6, in accordance with the sample found in the grave M.18 from the eneolithic necropolis from Jászladány, associated to the Bodrogkeresztúr culture.

³ Vulpe, 1973, p. 226-227.

⁴ Vulpe, 1975, p. 42, no. 156, pl. 21/156.

⁵ Idem, no. 157, pl. 21/157.

⁶ Idem, no. 161A, pl. 22/161A.

⁷ Idem, no. 165, pl. 22/165.

⁸ Idem, no. 166, pl. 22/166.

⁹ Marinescu, 1979, p. 128-129, pl. II/5, that the author integrates in the Șincai variant, but, in my opinion, this sample rather combines the characteristics of the *Petrești* variant.

¹⁰ Boroffka, Luca, 1995, p. 226, 227, fig. 1/16.

¹¹ Milleker, 1906, p. 137, 2, this axe comes from the surroundings of Timișoara. It was donated, in 1902, to the Museum of Banat by Barbócz Mátyás; Lazarovici, 1975, p. 19, 29, fig. 9/8 a-b.

¹² Patay, 1984, p. 73, no. 354, pl. 31/354.

¹³ Idem, no. 355, pl. 31/355.

¹⁴ Idem, no. 356, pl. 31/356.

¹⁵ Idem, no. 359, pl. 32/359.

¹⁶ Idem, no. 360, pl. 32/360.

¹⁷ Idem, no. 364, pl. 32/364.

¹⁸ Idem, no. 371, pl. 34/371.

¹⁹ Idem, no. 384, pl. 36/384.

²⁰ Makkay, 1996, p. 45, p. 50, fig. 4/1-2, 4.

²¹ Mayer, 1977, p. 12, no. 25, pl. 3/25.

²² Novotná, 1970, p. 25, no. 107, pl. 6/107.

region)²³, Vršac-*Majdan*²⁴, Dobanovci (Srem)²⁵, Barbaroška Reka²⁶ and from an unknown place from Crna Reka region (east of Serbia)²⁷. In Bulgaria, the best analogy is the sample discovered at Teliš (Pleven region)²⁸. On the basis of these analogies, the adze-axe of Jászladány type from Sendlac is included into the Petrești variant.

Even from the beginning of the 20th century, the Carpathians Basin has been considered the origin place of the adzes-axes²⁹. Analyzing the map of findings of such axe type, M. Roska found the existence of four metallurgical centres whose products must have got beyond the Carpathians, in Moldavia and the south of Russia. New production centres appear in zones with copper deposits. D. Berciu considered that adzes-axes are characteristic to the southeast of Europe, especially to Transylvania with the adjacent regions from the northeast of Hungary and from Slovakia from where they spread in all directions³⁰. In a general analysis, R. Pittioni considered that both the axes of Mezökeresztes type and those of Jászladány type belong to the copper sources from Transylvania, Hungary and Slovakia³¹. B. Jovanović considers that the adzes-axes are the result of the experiments of improving the copper tools. He agrees that their origin must be searched in the hammer-axes whose backward part was lengthened in a transversal blade and the vertical blade was resized. Positioning the two blades in different angles, the shaft-hole indicates the effort of creating as specialized and efficient as possible tools³². Analyzing the evolution of the copper axes, Al. Vulpe considers that the simplest adze axe (Ariușd type) could derive from the hammer-axe of Vidra type. Thus, in his opinion, the genesis of this axe took place, very probably, in the east and the southeast of Romania, in the area of the eneolithic Cucuteni and Gumelnița cultures. It spread as a Jászladány type axe in all southeastern Europe³³ in a short time.

The rapid spreading of Jászladány type axes had, probably, more causes. One of them was the development of the eneolithic metallurgy. This process was possible only after constantly providing raw material in sufficient quantities³⁴.

²³ Garašanin, 1954, p. 50, pl. XXXIII/8.

²⁴ Batistič-Popadič, Uzelac, 1986, p. 20, 43, Pl. XII/84, Tasić, 1994, p. 33, fig. 24-25/23.

²⁵ Jovanović, 1971; p. 109, pl. VI/3.

²⁶ Idem, pl. VII/8.

²⁷ Garašanin, 1954, p. 48, pl. XXXIII/7.

²⁸ Todorova, 1981, p. 47, no. 164, Pl. 12/164.

²⁹ Nagy, 1913, 306, who considered that it had appeared in Hungary.

³⁰ Berciu, 1942, pp. 41-42.

³¹ apud Beșliu, Lazarovici, Olariu, 1992, p. 98.

³² Jovanović, 1971, p. 112.

³³ Vulpe, 1964, p. 463.

³⁴ Jovanović, 1995, p. 32.

The scientists who have studied this problem pointed out the concentrations of axes especially in the north-east of Hungary, north-east of Serbia, the centre of Transylvania and in Bihar³⁵, all these regions rich in copper ore (in the case of Transylvania and the north-east of Hungary there are also salt ores). This thing allows the correlation of the presence of these axes with mining activities.

At Rudna Glava³⁶, the mining activity is certified even during the period of Vinča B₂-C culture (or Vinča-Pločnik, phases I-IIa)³⁷. The beginnings of the exploitation can go back to the middle of the 5th millennium B.C. and even earlier on the basis of ¹⁴C data³⁸. Other eneolithic mining exploitations were those from Ai Bunar, in Bulgaria³⁹, and in the north-east of Serbia, close to Rudna Glava (located in the vein characteristic to the region Poreč-Stara Planina), those from Majdanpek (located in the vein characteristic to the region Bor)⁴⁰. Also in Serbia, there is the prehistoric exploitation from Yarmovac, that belongs, probably, to the early eneolithic⁴¹. From an archeometallurgic point of view, Majdanpek seems to have been the most important source known by now in the case of the eneolithic metallurgic centres from the north of the Balkans⁴².

Numerous copper items discovered in Transylvania throughout the eneolithic period (among which the adzes-axes occupy an important place) totalize more than 500 kg of metal⁴³ in weight that illustrates the activity of the metallurgic centre from Transylvania in a suggestive way⁴⁴. The Romanian Banat is, very probably, added to this taking into consideration the fact that the rich copper ores from Banat Mounts (Oravița, Moldova Nouă, Dognecea Mounts regions)⁴⁵ must have been known to the eneolithic miner.

The adze-axe of Jászladány type knew a large spreading in Transylvania⁴⁶, Hungary⁴⁷, Slovakia⁴⁸, Austria⁴⁹, Jugoslavia⁵⁰ (especially in the centre of the

³⁵ Vulpe, 1973, p. 228.

³⁶ Tasić, 1995, p. 157.

³⁷ Jovanović, 1971, p. 105-106; Brukner, 1990, p. 130; Jovanović, 1995, p. 33.

³⁸ Krajnović, Janković, 1995, p. 25; Jovanović, Antonijević, 1997, p. 245-246.

³⁹ Todorova, 1981, p. 16; Todorova, 1995, p. 88.

⁴⁰ Krajnović, Janković, 1995, p. 23-25.

⁴¹ Brukner, 1990, p. 130.

⁴² Krajnović, Janković, S., 1995, p. 26.

⁴³ Vulpe 1974, p. 245; Makkay 1996, p. 42.

⁴⁴ Makkay 1996, p. 43, who considers that the bearers of the Bodrogkeresztúr culture had not controlled the copper and gold deposits from Transylvania, but they had had access to the extracted metal.

⁴⁵ Wollmann 1971, p. 201-202; Petrescu - Popescu 1990, p. 65.

⁴⁶ Berciu 1942, p. 41-42; Vulpe 1973, p. 228; Vulpe 1975, p. 37-48 Taf.12/94-99A – 29/214-216A.

⁴⁷ Patay 1984.

⁴⁸ Novotná 1970.

⁴⁹ Mayer 1977.

Serbian Banat, around Vršac⁵¹) and in the north-west of Bulgaria⁵². Sporadically, this type of axe is also met in the Low Danube Plain⁵³. It is considered characteristic to Bodrogkeresztúr culture⁵⁴. B. Jovanović considers that the influence of this culture in the north-east of Yugoslavia is perceptible in ceramics, but it also decisively contributed to the spreading of the copper tools and weapons and of different types of jewelry⁵⁵.

Analyzing the catalogue of the finds of Jászladány type axes⁵⁶, Al. Vulpe distinguishes more variants that, on the other hand, could represent the products of some distinct metallurgic centres. The Orşova variant is spread in Banat and in the region of the Iron Gates, the Târnăviţa variant is met in the west of Transylvania, the Şincai variant in the centre of Transylvania, the Petreşti variant on the middle course of the Mureş in the north-west of Transylvania, the east of Hungary, Oltenia and the east of Serbia. The Bradu variant is spread in the east of Transylvania and in Moldova and it is partly overposed to the spreading area of the Cucuteni culture⁵⁷. There are also present hybrid forms so that their correct determination becomes more difficult⁵⁸. It is not possible a chronological delimitation in the case of different variants, but it can propose the hypothesis that the first variants were *Târnăviţa* and *Orşova*. The axes of the *Petreşti* variant derive from the *Orşova* variant probably⁵⁹ because the evolution of the Jászladány type ends with the *Bradu* variant⁶⁰.

From a chronological point of view, the axe of Jászladány type was used during the period corresponding to Bodrogkeresztúr⁶¹ and Cucuteni (phases A-b and B) cultures⁶². None of the findings from the west of Romania does allow a

⁵⁰ Jovanović, 1971; p. 112, pl. VI/1-3; VII/1-6, VIII/4-9, IX/1-10,19.

⁵¹ Garašanin, 1954, p. 48-50, pl. XXXIII/4-11 and pl. XXXIV/3; Brukner, Jovanović, Tasić 1974, p. 445; Batistić - Popadić, Uzelac, 1986, p. 20, 43; Tasić, 1994, p. 33, fig. 24-25/23.

⁵² Todorova 1981.

⁵³ The sample from Cătina, Buzău County (Tudor, 1972, p.26, with the old bibliography).

⁵⁴ Patay, 1945, p. 10; Luca 1999, p. 33; as a rule, the adzes-axes from Banat are attributed to the Bodrogkeresztúr culture. Such an axe was found in Banat, at Sânpentru German, Arad County, near a Bodrogkeresztúr grave (Dörner, 1970, p. 454-456, fig. 11/5, Roman, 1973, p. 60; Lazarovići, 1975, p. 19, 25, 29; Luca 1999, p. 54).

⁵⁵ Brukner, Jovanović, Tasić, 1974, p. 445.

⁵⁶ In M. Garašanin's typology the adzes-axes (Jászladány type) are grouped in the II2b2 type (Garašanin, *O poreklu I hronologiji balkanskog neolita*, în *Starinar*, n.s., VII-VIII, 1956-1957 (1958), apud Brukner, Jovanović, Tasić 1974, p. 138, 151, note 196 and p. 445.

⁵⁷ Vulpe 1975, p. 47-48.

⁵⁸ Vulpe 1975, p. 37.

⁵⁹ Vulpe 1975, p. 41.

⁶⁰ Vulpe 1975, p.46.

⁶¹ According to more recent opinions, the Bodrogkeresztúr culture could continue Tiszapolgár culture, phase III (Maxim 1999, p.124).

⁶² Magda-Mantu 1995, p. 220

later framing of this type in Baden-Coțofeni horizon⁶³. On the basis of the synchronisms between Bodrogkeresztúr, Sălcuța IV cultures (the latter that had contributed to the formation of this culture) and Cucuteni A-B, B, it can be considered that this type of axes was used between 3200-2900 B.C.⁶⁴.

The discussion concerning the purpose for which these adzes-axes were used determined different interpretations. At the end of the 19th century, Pulszky F. considered that this type of axe was used as a tool⁶⁵, while Nagy G. considered either that they are signs of the social status or that they are items with religious significance⁶⁶. M. Roska included them in the category of tools⁶⁷ taking into consideration their place of discovery in salt mines and copper deposits. The presence of this type of axes in regions without deposits, as well as in the inventory of some graves determined D. Berciu assert that the adzes axes were “especially war axes and their use as tools had a secondary importance”⁶⁸. The scientist however agreed that the axes spreading is somehow dependant on the presence of the copper deposits from where the raw material was taken and where the metallurgical workshops⁶⁹ also functioned. Nor D. Popescu does agree to the use of axes of Jászladány type in mining because they were made of a too soft metal for attacking the copper vein⁷⁰. E.F. Meyer does not exclude the possibility that the adzes-axes could have been weapons or prestige signs⁷¹. B. Jovanović and E. Comșa integrate the adzes axes of Jászladány type in the category of the huge copper tools⁷². It was even heard the hypothesis of their use as a premonetary means⁷³. To support this hypothesis one can take into consideration the large number of axes without any traces and even unfinished, discovered especially on the river course which had been the main commercial routes in ancient times.

Within this large palette of hypotheses concerning the use of adzes axes, the presence of samples of big dimensions with up to 18 kg in weight, as the

⁶³ Vulpe 1973, p.227.

⁶⁴ Magda-Mantu 1995, fig. 2; Luca 1999, p. 47-48, in whose opinion, the Bodrogkeresztúr culture can be included between 3300-3000 (2800 ?) BP 1950. It is fit to mention the discoveries of axes in the area of the Tiszapolgár culture. Only a few of them appear in sure contexts (Lazarovici 1983, p. 12-13).

⁶⁵ Pulszky 1883, p.55.

⁶⁶ Nagy 1913, p.306.

⁶⁷ Roska 1928, p.52-53

⁶⁸ Berciu 1942, p.40

⁶⁹ Berciu 1942, p. 40-41.

⁷⁰ Popescu 1956, p. 197.

⁷¹ Mayer 1977, p.14.

⁷² Jovanović 1971, p. 112; Comșa 1987, p. 104

⁷³ Nestor, in *Studii și referate privind istoria României*, I, București, 1954, p.50, apud Marinescu 1979, p. 124, note 9.

sample from Osijek (Croatia)⁷⁴ plead in favour of their ritual and probably votive character⁷⁵. The wide area where the axe of Jászladány type spread, inclusively in the field regions, clearly indicate that the axe was not used only as a mining tool. The reduced hardness of copper hinder from their natural and long use in the extractive process. Even if certain concentrations of axes could suggest their using in mining, we do not have to forget that their spreading area is in a certain dependence also on the presence of the copper mines. The metallurgic workshops probably functioned in their proximity⁷⁶. Many of the adzes-axes have deformations resulted from their intense use. They were also reused after breaking one or the both arms. The axes discovered at Sohodor (Horgești comm., Bacău County)⁷⁷, Bogdănești (Bacău County)⁷⁸, Cărășeu (Culciu Mare comm., Satu Mare County)⁷⁹, Turdaș (Hunedoara County)⁸⁰, Alba Iulia (Alba County)⁸¹, have either transversal blade or vertical one, and in some cases the both broken arms (e.g. Bogdănești, Cărășeu) deformed in the active parts. Traces of use are present also to the axes of Jászladány type discovered in Jugoslavia, at Jagodina (Svetozarevo)⁸² and Hungary⁸³, as for example those from Isaszeg (Pest comm.)⁸⁴, Tiszanagyfalu⁸⁵, Ajak⁸⁶, Nyírtura⁸⁷, Szabolcs⁸⁸, all of them in Szabolcs-Szatmár County, or those discovered at Szendrő (Borsod-Abaúj-Zemplén comm.)⁸⁹ and Szeged (Csongrád comm.)⁹⁰.

Another argument invoked in favour of using the axe of Jászladány type as a tool is the relatively reduced number of fragmentary samples or with fissures near the shaft-hole. The cause of these fissures could be the wooden wedges introduced in or the strong tensions to which the tool was submitted

⁷⁴ Jovanović 1971, p. 109, Pl. V/1; *Praistorija Jugoslovenskih...*, 1979, pp.41-42 and pl. II/1-3; Makkay 1996, p. 42; Tasić 1995, pl. IV.

⁷⁵ *Praistorija Jugoslovenskih...*, 1979, pp.41-42 and pl. II/1-3; Makkay 1996, p. 42.

⁷⁶ Berciu 1942, p. 40-41.

⁷⁷ Vulpe 1975, p. 43, no. 175, pl. 23/175; Comșa 1987, p. 173, fig. 19, C/2.

⁷⁸ *Idem*, p. 45, no. 202, pl. 28/202.

⁷⁹ *Idem*, no. 203, pl. 28/203.

⁸⁰ *Idem*, no. 205, pl. 28/205.

⁸¹ *Idem*, p. 46, no. 216A, pl. 29/216A.

⁸² Garašanin 1954, p. 50, pl. XXXIII/11.

⁸³ Lots of them come from isolated findings whose discovery place is unknown (Patay, 1984, p. 71, no. 343, pl. 30/343, no. 345, pl. 30/345, no. 348, pl. 30/348, p. 72, no. 352, pl. 31/352, p. 79, no. 427, pl. 42/427, p. 81, no. 449, pl. 44/449, p. 82, no. 451, pl. 45/450, no. 445 “near Nyirpazony, Szabolcs-Szatmár commune”, Pl. 45/455.

⁸⁴ Patay 1984, p. 76, no. 395, pl. 37/395.

⁸⁵ Patay 1984, p. 81-82, no. 450, pl. 45/450.

⁸⁶ Patay 1984, p. 82, no. 452, pl. 45/452.

⁸⁷ *Idem*, no. 453, pl. 45/453.

⁸⁸ *Idem*, p. 82, no. 454, pl. 45/454.

⁸⁹ *Idem*, p. 83, no. 464, pl. 46/464.

⁹⁰ *Idem*, no. 466, pl. 45/466.

during repeated actions. Within the *Petrești* variant, beside the sample from Semlac, there are the axes from Tăgădău (Arad County), Timișoara and Vermeș (Bistrița-Năsăud County) from the above-mentioned analogies that can be mentioned as having fissures which suggest their use as a tool.

The large number of axes with using traces motivate, in my opinion, the hypothesis of their use in other domestic activities, too. It is not excluded that this multifunctionality of the adzes axe (weapon, tool, religious sign, premonetary commodity) would have determined the generalisation of the Jászladány type shape. The particularities of the variants were given by the metallurgical centres that produced them.

The place of discovery of the axe from Semlac situates this sample relatively far away by the possible exploitation place of copper ores. The broken arm and the reusing traces come to support this hypothesis of using this type of axe as a tool, too. From the point of view of the geographical location (on the Mureș course), the axe from Semlac points out a certain aspect of the spreading of the *Petrești* variant axe. Following their geographical distribution (Pl. II), all these are concentrated in the north-east of Hungary (where they can be related to the copper exploitations), on the courses of the Tisa and Mureș, as well as in the centre of Transylvania (metallurgic centre and probably of salt exploitation). This spreading area of *Petrești* variant suggests the force of the exchange relationship existent at the end of the 4th millenium B.C. on the middle course of the Danube and of its majoritary rivers as for example the Mureș and the Tisa, relationship that can be integrated in the category “of the regular primitive exchange”⁹¹ where the copper and salt from Transylvania played, very probably, a decissive role.

ALEXANDRU SZENTMIKLOSI

Un topor eneolitic de cupru găsit la Semlac (jud. Arad)

(Rezumat)

Cu ocazia lucrărilor agricole efectuate în hotarul comunei Semlac (jud. Arad) (pl. I/1), în punctul “La Hadă”, în primăvara anului 1997, a fost găsit un topor de cupru cu brațele “în cruce”, care, prin amabilitatea prof. Lucian Hornoi, din aceeași localitate, ne-a fost oferit spre publicare.

Toporul are o culoare brun-roșcată și prezintă evidente urme de folosire. Patina verzui-deschisă a fost înlăturată recent, păstrându-se doar pe foarte mici suprafețe din piesă. Brațul cu tăiș transversal prezintă pe una din muchiile laterale urmele unei tăieturi recente, puțin adânci, făcută de descoperitor pentru a verifica natura metalului. Ruptura antică a brațului cu tăiș vertical se datorează fie unei folosiri inadecvate, fie unui defect de turnare. În planul rupturii pot fi observate câteva cavități indicând prezența unor bule de aer. Ruptura prezintă urme de netezire inegală. Acestea, laolaltă cu muchiile pe care se văd semne de ciocănire, indică repararea și reutilizarea toporului pentru o anume perioadă de timp. Dimensiunile toporului sunt următoarele: lungime

⁹¹ Comșa 1987, p. 113.

totală = 23 cm; lungimea tăișului transversal = 11,6 cm; lungimea brațului rupt = 8 cm; diametrul interior al găurii de înmănușare = 3,6 x 3,7 cm; greutatea = 1,03 kg (pl. I/2).

Din punct de vedere tipologic, piesa se încadrează în categoria topoarelor cu brațele dispuse “în cruce” de tip Jászladány și are numeroase analogii în România, Ungaria, Austria, Slovacia, Jugoslavia și Bulgaria.

Locul de descoperire a toporului de la Semeac situează acest exemplar relativ departe de posibilele exploatări de minereu cuprififer, iar brațul rupt și cu urme de re folosire vine în sprijinul ipotezei utilizării acestui tip de topor și ca unealtă. Din punctul de vedere al amplasării geografice (pe cursul Mureșului), toporul de la Semeac subliniază un aspect particular al răspândirii topoarelor din varianta *Petrești*. Urmărindu-se distribuția lor geografică (pl. II), acestea se concentrează în NE Ungariei (unde pot fi puse, probabil, în legătură cu exploatările cuprifere), pe cursul râurilor Tisa și Mureș, precum și în centrul Transilvaniei (centru metalurgic și, probabil, de exploatare a sării). Această arie de răspândire a variantei *Petrești* sugerează intensitatea relațiilor de schimb existente la sfârșitul mileniului IV a.Chr. pe cursul mijlociu al Dunării și al afluenților ei majori precum Mureșul și Tisa, relații care pot fi integrate în categoria “schimbului primitiv regulat” în care cuprul și sarea din Transilvania, au jucat foarte probabil, un rol determinant.

Explicații foto

Pl. I - 1. Harta Banatului; 2. Toporul de tip Jászladány, varianta *Petrești*, descoperit la Semeac

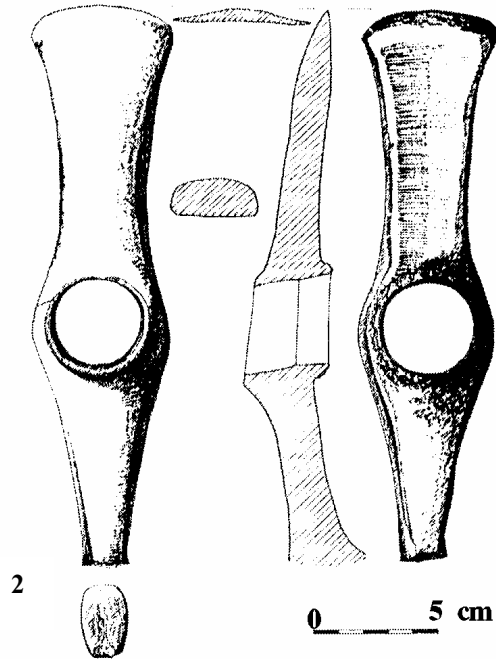
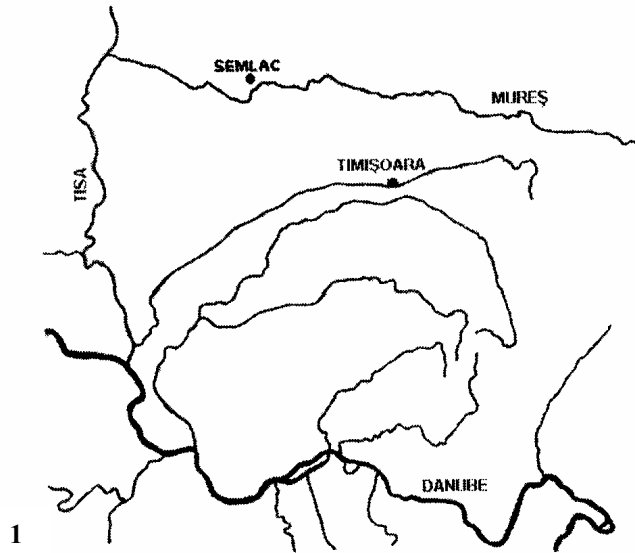
Pl. II - Răspândirea topoarelor de tip Jászladány, varianta *Petrești*, în Bazinul Carpatic

Bibliography

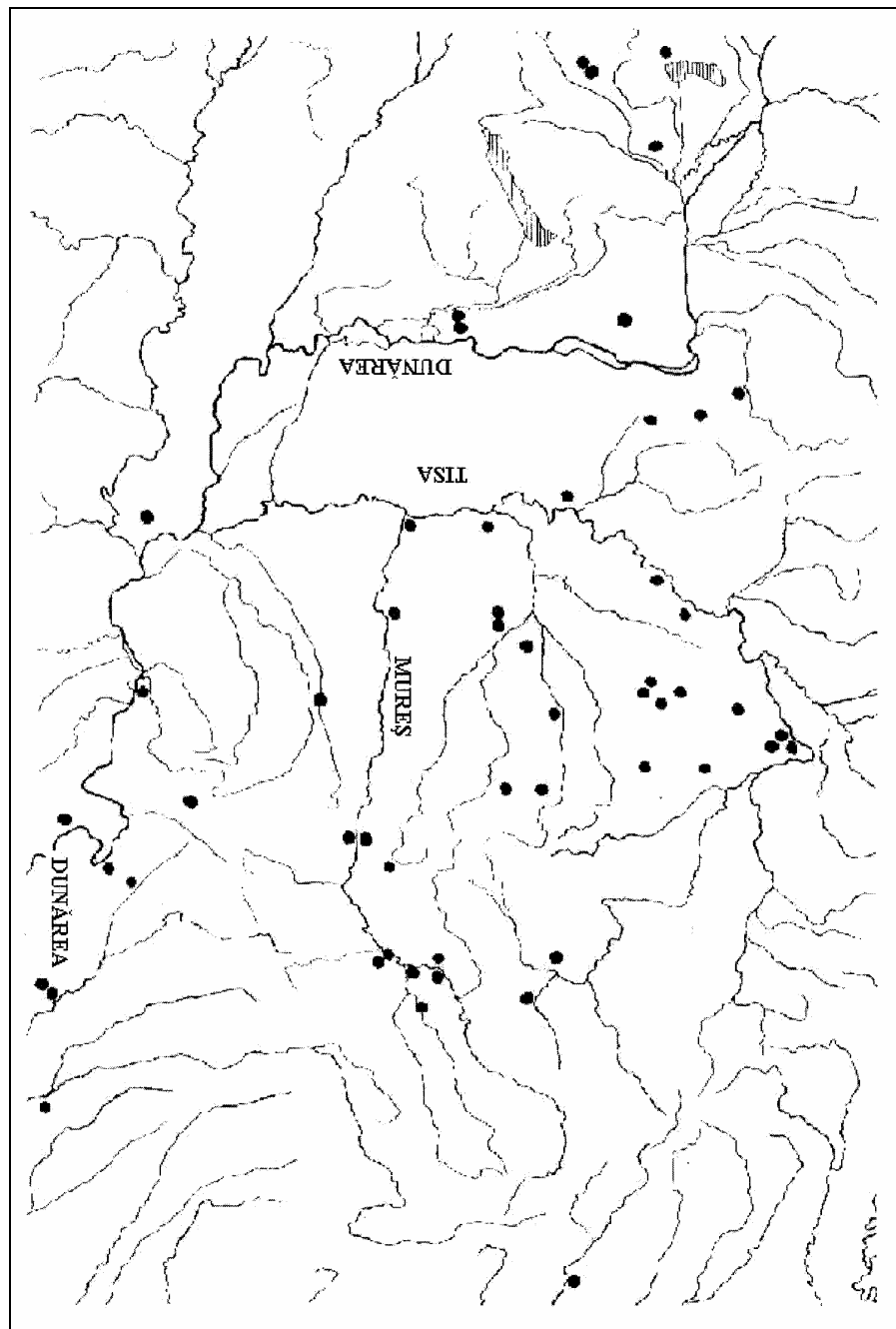
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Pl. I - 1: The map of Banat; 2: The Jászladány type axe, the Petrești variant, discovered at Semlac



Pl. II – Spreading of the Jászladány axes within the Carpathians Basin