

**FLUTED MACES IN THE SYSTEM OF
LONG-DISTANCE EXCHANGE TRAILS
OF THE BRONZE AGE: 2350-800 BC**

Viktor I. Klochko

Aleksander Koško

Maciej Popko

Piotr Taracha

Witold Tyborowski

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61-809 Poznań (Poland)
Św. Marcin 78
Tel. (061) 8294799; 8294800, Fax (061) 8294788

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Editor's Foreword

Fluted maces (*Kannelierte Streitkolben*) have not been an object of a monographic study so far. The reasons for this deficiency was the paucity of assemblage finds (mainly grave ones) and the fact that they occurred in the borderland between the East and West of Europe. Both reasons made it difficult to identify them chronologically and keep a full record of finds. The present monograph sums up almost 25 years of studies that at the outset were limited to Poland and only gradually were expanded to include the whole continent. This was made possible owing to the goodwill of many people and institutions from the Danube area, the Balkans and the Russian Plain.

The present volume of *Baltic-Pontic Studies* consists of two parts devoted, respectively, to the current state of knowledge on the position of the mace in the Near East and North Pontic civilizations, and the forms, chronology, origins, functions and socio-organizational significance of one of its types, namely the fluted mace.

As in previous volumes in this series, our intention is to inspire team, interdisciplinary studies involving scholars from different centres and countries. Only such a wide-range co-operation will bring about new developments in the areas discussed in this volume.

Editorial comment

1. All dates in the B-PS are calibrated [see: Radiocarbon vol.28, 1986, and the next volumes]. Deviations from this rule will be point out in notes.
2. The names of the archaeological cultures and sites are standarized to the English literature on the subject (e.g. M. Gimbutas, J. P. Mallory). In the case of a new term, the author's original name has been retained.
3. The spelling of names of localities having the rank of administrative centres follows official, state, English language cartographic publications (e.g. *Ukraine*, scale 1 : 2 000 000, Kiev: Mapa LTD, edition of 1996; *Rèspublika BELARUS*; *REVIEW-TOPOGRAPHIC MAP*, scale 1:1 000 000, Minsk: BYELORUSSIAN CARTOGRAPHIC AN GEODETIC ENTERPISE, edition 1993).

ERRATA

BALTIC-PONTIC STUDIES, vol. 11

Page 45, fig. 11:

1 – single maces from the Baltic zone; 2 – sets of maces from the Baltic zone;
3 – single maces from the Pontic-Caspian zone; 4 – sets of maces from the
Pontic-Caspian zone

Page 53, fig. 16:

3 – southern limit of the Nordic circle; 6 – approx. borderline between
Corded Ware culture (west) and Fatyanovo culture (east)

Aleksander Koško

FLUTED MACES IN CULTURAL SYSTEMS OF THE BORDERLAND OF EASTERN AND WESTERN EUROPE: 2350–800 BC. TAXONOMY, GENESIS, FUNCTION

Social and organisational changes in central Europe at the decline of the Neolithic/Eneolithic and dawn of the Bronze Age were marked by a number of changes, one of which was the appearance of a vast range of stone maces in graves and hoards. Genetically, the maces were derived from the Near East tradition and indirectly from eastern Europe (Caucasus), where they functioned as an element of weaponry and a symbol of social rank-power [cf Berounská 1987: 48-49].

Basically, the central European finds of maces can be divided into three typological groups of forms: A – globular, non-ornamented maces, B – globular maces ornamented with vertical flutes (cannelured maces), and C – cruciform maces (this division leaves out developmentally marginal or incidental forms, e.g. ‘kidney-shaped’, ‘horizontally fluted’ or ‘zone decorated’ modelled on pottery [cf: ‘kidney-shaped’ — Makarenko 1933:72, Fig. 31:118; ‘horizontally fluted’ — Mozelevskiy 1970:9, Tab. 2:1; Klochko 2001:184, Fig. 74:6; ‘zone decorated’ — Edgren 1974: Fig. 12-16]), Fig. 1. This article is devoted to the second category of maces (type B) mentioned above, called *inter alia* fluted, grooved and lemon-shaped. The present author shall consider taxonomy, cultural identification, chronology of makers and users, and functional interpretation, i.e. social and symbolic. This consideration shall lead to conclusions identifying the emergence of the Pontic-Baltic ‘Crimea-Jutland Trail’ (specifically: the network of trails with diverse destinations); its genesis, course, and principles of functioning, which were mentioned in the author’s earlier works [Koško 1991:250-251; 2001; cf also Editor’s Foreword in this volume].

1. FLUTED MACES: HISTORY OF RESEARCH

Fluted maces appear in the studies of Germany's and Poland's prehistory at the beginning of the 20th century. In 1912 an assemblage which most probably included a fluted mace, i.e. a grave from the 2nd period of the Bronze Age in Masłowo (Massel) in Silesia, was first published [Seger 1912:12-13]. However, in subsequent decades of the 1st half and the start of the 2nd half of the 20th century, further unquestionable assemblages failed to appear [cf so called hypothetical assemblages: Laski — Wrzosek, Ćwirko-Godycki 1938:616; Wymysłowo — Jasnosz 1975]. That is why the cultural and chronological identification of fluted maces aroused controversy [v. Kostrzewski 1923a:29; Richthofen 1926:103n; Antoniewicz 1930:109; Jażdżewski 1936:286; cf 1970:18; Šturms 1936:37; Lichardus 1960:856-857; Pavelčík 1967; Gedl 1975:60-61; Machnik 1979:351; Kłosińska 1997:92], reducing their importance in synthesising the history of Europe.

This situation was not changed by the post-war discoveries of assemblages with fluted maces from Ukraine (Kalanchak, Mykhailivka) and Russia (Stepan Razin), published between 1962 and 1985 [Lagodovska, Shaposhnikova, Makarevich 1962:141, Fig. 39:2; Merpert 1967:95-96; Bratchenko, Shaposhnikova 1985:412-413, Fig. 110:26].

In the 1970s the first attempt was made to record and systematise fluted maces, however only the ones from the territory of Poland [Koško 1979:39-40, Catalogue V]. This resulted in compiling a complete catalogue containing 35 items: apart from the earlier mentioned Masłowo assemblage, several other maces were culturally identifiable (through the context of the finds — 'hypothetical assemblages'). Upon reviewing the data collected at that time, it was possible to incorporate fluted maces into the synthesis of the prehistory of Bronze Age beginnings on the territory of Poland [Koško 1979:194n]. The studies referred to above were expanded at the turn of the 1970s, as a result of which the preparation of a comprehensive catalogue of fluted maces on the European scale was initiated. Apart from reviewing literature and available museum sources (from Poland, Ukraine and subsequently from Belarus and Slovakia), the basic data was collected by means of a questionnaire sent to the leading archaeological centres of Central and Eastern Europe*.

Independently of this initiative, the issue of central European maces (of all typological groups) was undertaken by M. Berounská who covered all finds from the territory of Bohemia, Moravia, Silesia, Wielkopolska, Małopolska, southern Germany, Austria and Switzerland, trying to interpret them genetically and functionally

* The author would like to thank all persons who took part in the questionnaires (or related research initiatives). Their participation allowed the author to specify the territories where the maces appeared, make a list of finds of fluted maces and clearly characterise a number of forms. The list of persons the author is particularly grateful to can be found in the Catalogue: 'oral communication', 'letters' and 'archives'.

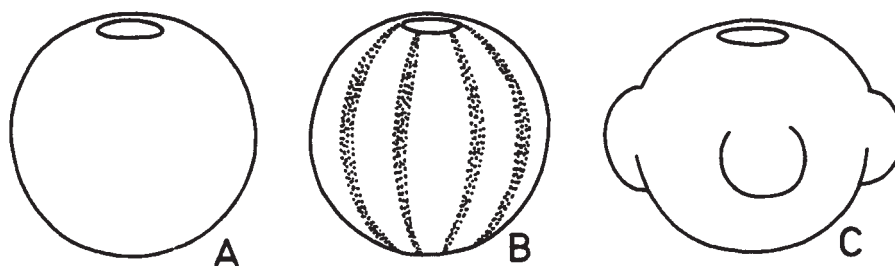


Fig. 1 Typological groups of stone maces. A - globular, undecorated; B - globular, decorated with flutes (fluted maces); C - cruciform

[Berounská 1987]. However, her research does not identify fluted maces as a separate phenomenon.

A turning point in the work on a monograph of a given category of sources occurred in 1988. It was then that for the first time the sources were interpreted as the evidence of 'the emergence of a permanent route of exchanging symbolic artifacts (insignia), the full development of which... is marked by distribution of lemon-shaped maces' [Koško 1988:179; 1989:179-180]. In 1991 the first all-European cartogram of the discussed typological group of maces was published [Koško 1991:250-251, Fig. 9]. This line of research was continued in a paper delivered at the international symposium on 'Archaeology Between the Black and Baltic Seas' ['Brześć Białoruski 2000' — Koško 2001], intended to initiate an interdisciplinary debate. The outcomes of the debate are drawn on by this volume of 'Baltic-Pontic Studies'.

The 1990s are also the decade which saw the publication of the first fully documented assemblage with a fluted mace, i.e. a grave from a cemetery in Kietrz in Silesia dated at the III period of the Bronze Age [Gedl 1996].

2. FLUTED MACES: CLASSIFICATION OF SOURCES

The fluted maces of typological group B are classified, according to the existing division, into three types [Koško 1979:39-40]:

- B1 (26,1) — maces with curvilinear contour in horizontal projection;
- B2 (26,2) — maces with visible flutes (or wide grooves) in horizontal projection;

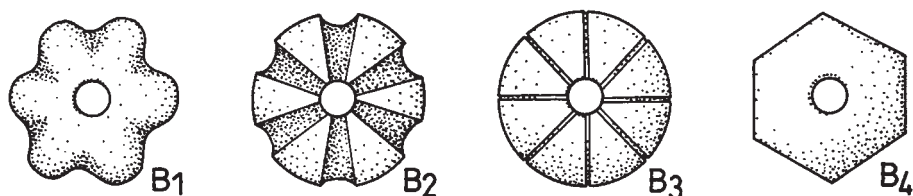


Fig. 2 Types of fluted maces (see text)

- B3 (26,3) — maces with incised lines (narrow, shallow cavities) in horizontal projection; cf Fig. 2:B1-B3.

The above division is supplemented by a new unit:

- B4 — maces with polygonal profile in horizontal projection-‘barrel-shaped’ (Fig. 2:B4).

However, adding the unit here may be considered disputable.

A list of 84 maces classified into the above types is presented in Catalogue 1; cf Fig. 3-10*. For a mapping of sources listed in the Catalogue, see Fig. 11.

A closer description of the discussed types should take into account (in a different sequence than in Catalogue 1) the applied techniques (stages of production): (a) information about raw materials (types of rock), (b) shape and dimensions, specifically the diameter and height, (c) the number of ‘flutes’ (i.e. arch-shaped cavities, flutes, incisions or flat surfaces), (d) other forms of surface marking and (e) technique of shaft-hole boring.

a. Little is known of the raw materials used to make lemon-shaped maces. Information on the vast majority of these maces comes only from literature and archives (including private ones) where identification of raw materials was marginal. Alternatively, intuition-based (macroscopic) evaluations are found. Catalogue 1 (point f) presents 19 petrographic assessments and 4 ‘macroscopic descriptions’ to be treated as reliable or relatively reliable.

B1. 14 items with identified raw materials: diorite – 7; granite – 3; serpentinite – 1; quartz – 1; sandstone – 1; monzonite (gabbro-gneiss) – 1. Moreover, four ‘macroscopic descriptions’ were recorded: ‘fine-grained crystalline dark-colour rock’ – 1; ‘black stone’ – 1; ‘grey rock’ – 1; ‘red-colour’, ‘hard’ – 1.

B2. One item with identified raw materials: granite.

B3. Two items with identified raw materials: granite.

B4. One item with identified raw materials: sandstone.

* The initial version of the Catalogue containing 79 forms was finished at the beginning of 2001, while the verification of ‘sites and doubtful zones’ was still in progress. The outcomes of the verification were added at the end of 2001 in a form of annexes (cf Catalogue) and figures (cf Fig. 10). It is worth mentioning that the final list of maces-84 items-excludes some of the items formerly described in literature, due to their doubtful documentation [e.g. Machnik 1979:351 Posądz, Małopolska region; cf Kłosińska 1997:92]

For a mapping of the above assessments (without general-term raw material descriptions), see Fig. 12.

b. The level of exact identification of the forms of maces is also hardly satisfactory. Only a little more than 69 percent of the items may be evaluated formally (taxonomically) in detail, i.e. may be subsumed under the previously distinguished types.

B1. 43 items.

B2. 4 items.

B3. 9 items.

B4. 2 items (however, it is possible that the share of this type has been considerably lowered by rejecting items in 'the preliminary production phase').

In view of the above list, it may be assumed that the overwhelming majority of the remaining 26 items, accounted for in Catalogue 1, on the basis of general descriptions in literature, falls under category B1, which was presented in the map of types of fluted mace shapes — Fig. 13.

Diameters of maces range between 40 and 88 mm (except for the dimensionally incidental form No. B21: 103-92 mm). Describing them more precisely means listing the average diameters for individual types.

B1. 70 mm (on the basis of 39 measured items).

B2. 66 mm (on the basis of 3 measured items).

B3. 66 mm (on the basis of 6 measured items).

B4. 66 mm (on the basis of 2 measured item).

The height of the maces ranges between 26 and 73 mm (with the exception, as was the case with diameters, of form No. B21: 23 mm). By analogy, these observations may be specified in terms of average uplands for individual types.

B1. 57 mm (on the basis of 33 measured items).

B2. 54 mm (on the basis of 1 measured item).

B3. 50 mm (on the basis of 5 measured items).

B4. 49 mm (on the basis of 2 measured item).

Only in three cases height is greater than width-types: B1 49 x 51 mm (form No. B39); B1 62 x 64 mm (form No. P10) and B3 40 x 45 mm (form No. P8).

c. The assessments of the number of flutes may be divided into detailed, i.e. based on the observation of the whole forms known from examination or literature, and hypothetical, i.e. reconstructed on the basis of analysed fragments of forms which allow to adopt the most reliable version. The following characteristics of individual types show only the former ('indisputable') assessment categories.

B1. 5 to 47 'flutes'; 10 odd, 14 even.

B2. 7 to 10 'flutes'; 2 odd, 2 even.

B3. 6 to 27 'flutes'; 2 odd, 3 even.

B4. 8 to 10 'flutes'; only odd (2).

For the mapping of distribution of all maces including the division into odd and even ornamentation patterns, see Fig. 14.

d. One mace of type B3 (form No. P14; Fig. 4:2) is decorated not only with 'flutes' (incised lines) but also with other forms, namely, lines composed of 'X' signs. However, with the available data it is impossible to reconstruct the pattern and number of ornamentations in detail.

e. Examination of shaft-holes — in all well-documented finds (including especially those known to the author) — shows that they were bored using a one-sided drill. Therefore, the shaft-holes differ in the degree of completeness. Some are 'only marked', others are bored only halfway ('partial'), while others still are bored all the way through ('full'). In 14 maces shaft-holes or their marked and halfway borings are missing (for mapping, v. Fig. 15). This applies to 13 items with a more precise typological identification.

B1. Missing shaft-hole — 2 item; marked shaft-hole (including 1 'marked or halfway bored') — 3 items; halfway bored shaft-hole — 1 item.

B2. Marked shaft-hole — 2 items; halfway bored shaft-hole — 1 item;

B4. Missing shaft-hole — 1 item; marked shaft-hole — 1 item.

3. CULTURAL AND CHRONOLOGICAL COMMUNITIES OF PRODUCERS AND USERS OF FLUTED MACES

The nature of available data determines in what mode and how precisely the producers and users can be identified.

3.1. CRITERIA OF TAXONOMIC IDENTIFICATION (DIRECT AND INDIRECT)

It is possible to single out three groups of evidence that justify the following identification: (a) assemblage finds and highly probable assemblage finds-settlements; (b) hypothetical assemblage finds-items discovered in cemeteries and (c) unattached finds discovered in areas with a clear cultural context. Here the author shall focus primarily on the first and the second group of evidence because analysing these two types determines the extent to which evidence 'c' can be used.

a. To date, seven finds of fluted maces have been made which — with occasional

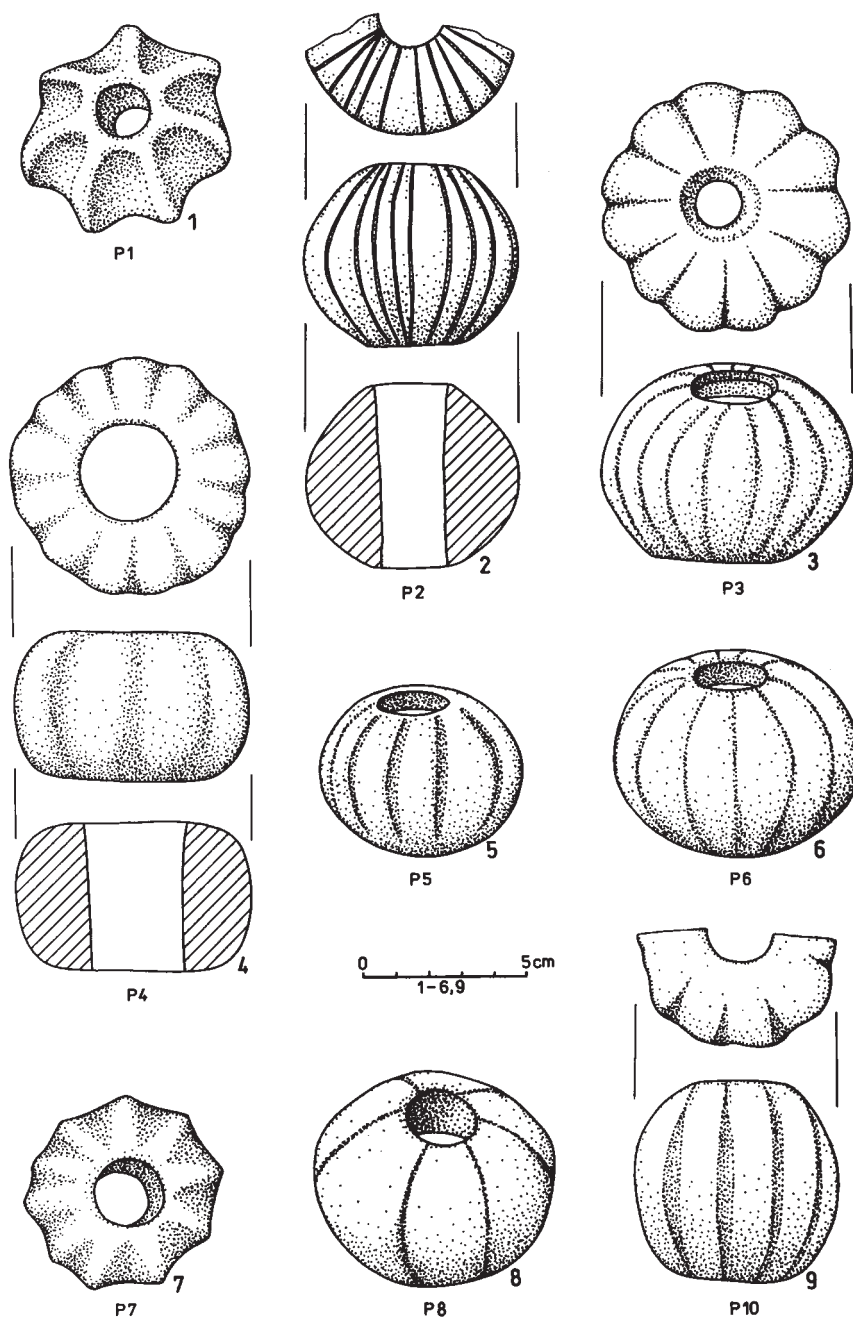


Fig. 3. Fluted maces from the Pontic-Caspian zone (P - artifact or site record number, see Catalogue)

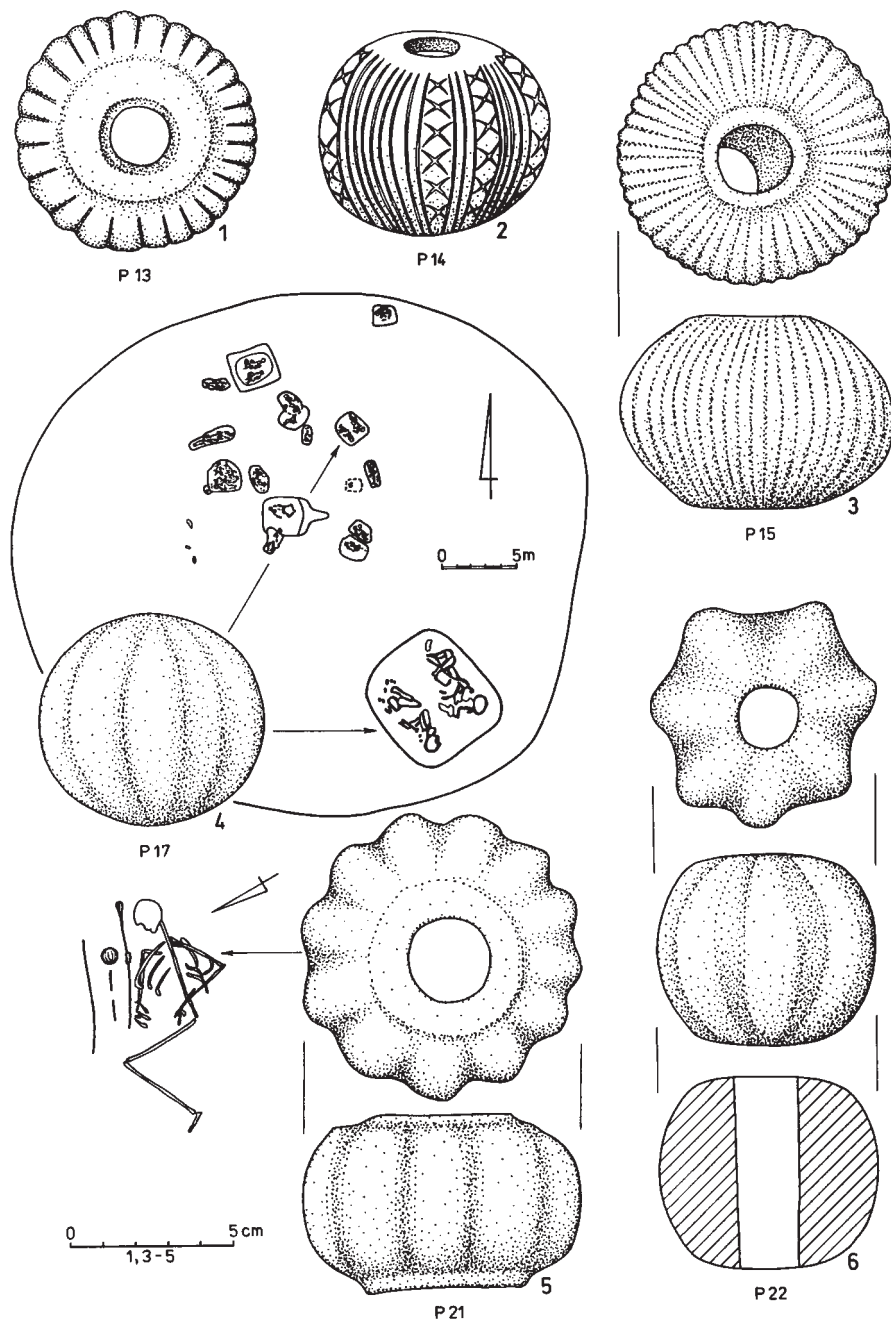


Fig. 4. Fluted maces from the Pontic-Caspian zone (P - artifact or site record number, see Catalogue)

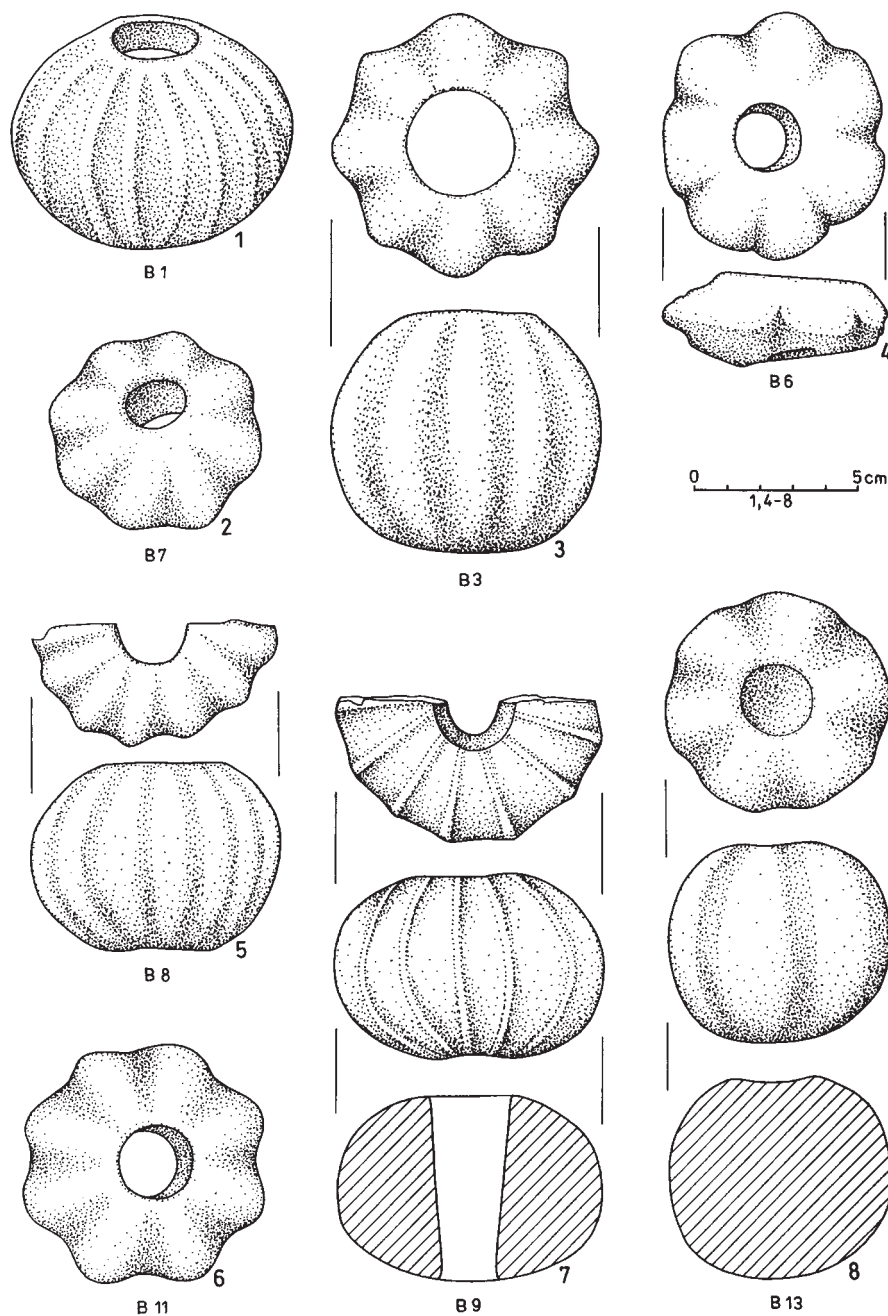


Fig. 5. Fluted maces from the Baltic zone (B - artifact or site record number, see Catalogue)

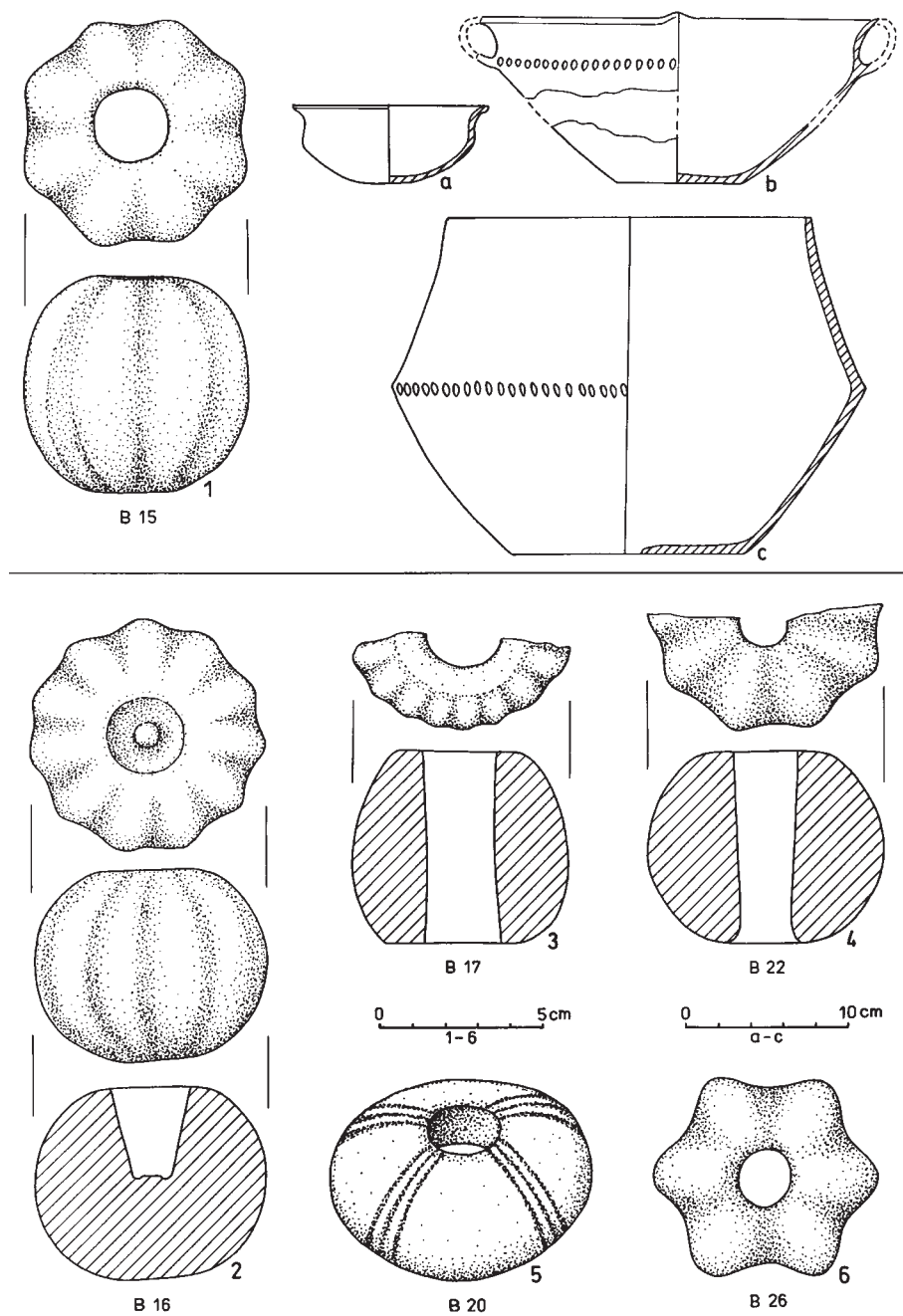


Fig. 6. Fluted maces from the Baltic zone (B - artifact or site record number, see Catalogue)

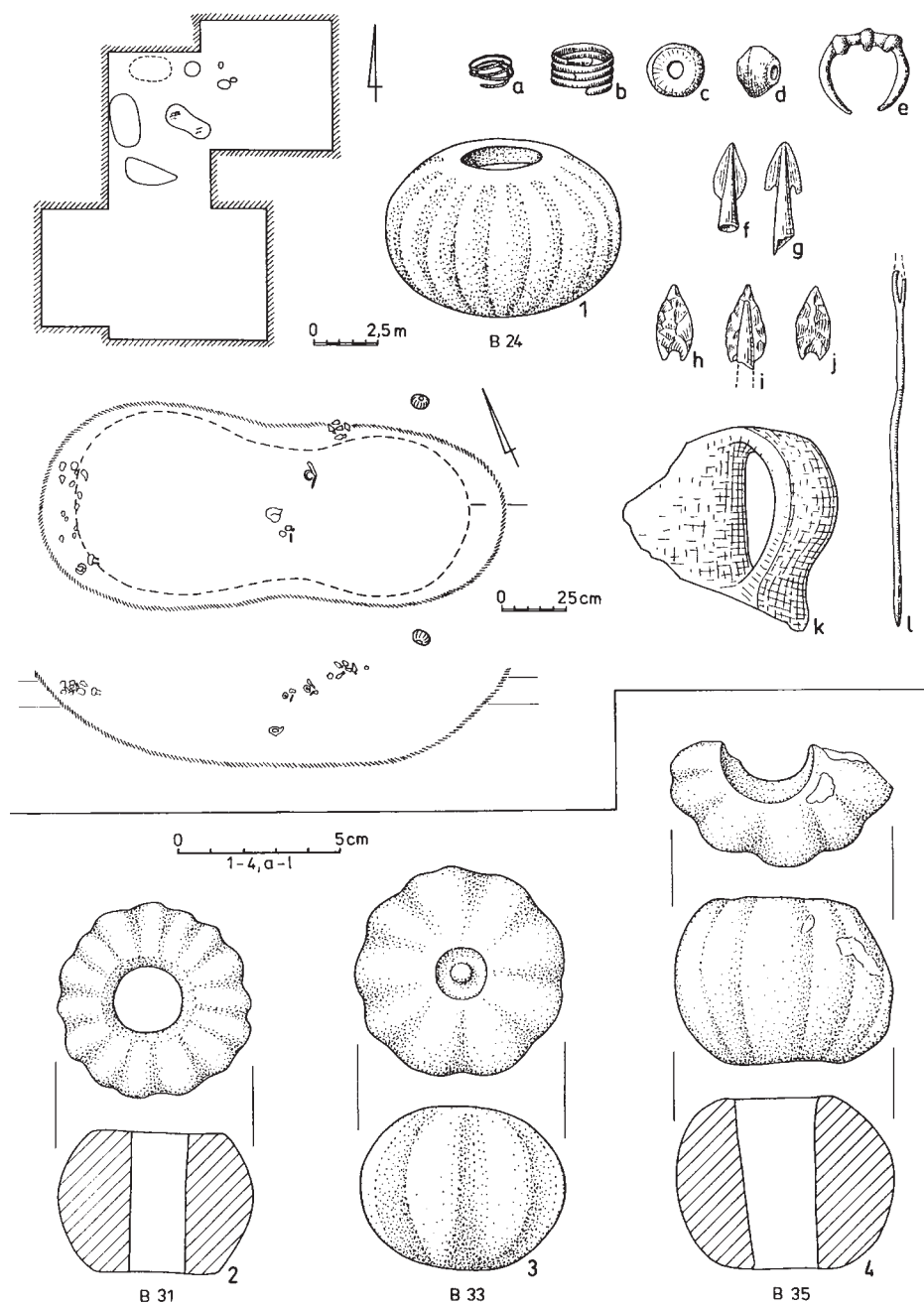


Fig. 7. Fluted maces from the Baltic zone (B - artifact or site record number, see Catalogue)

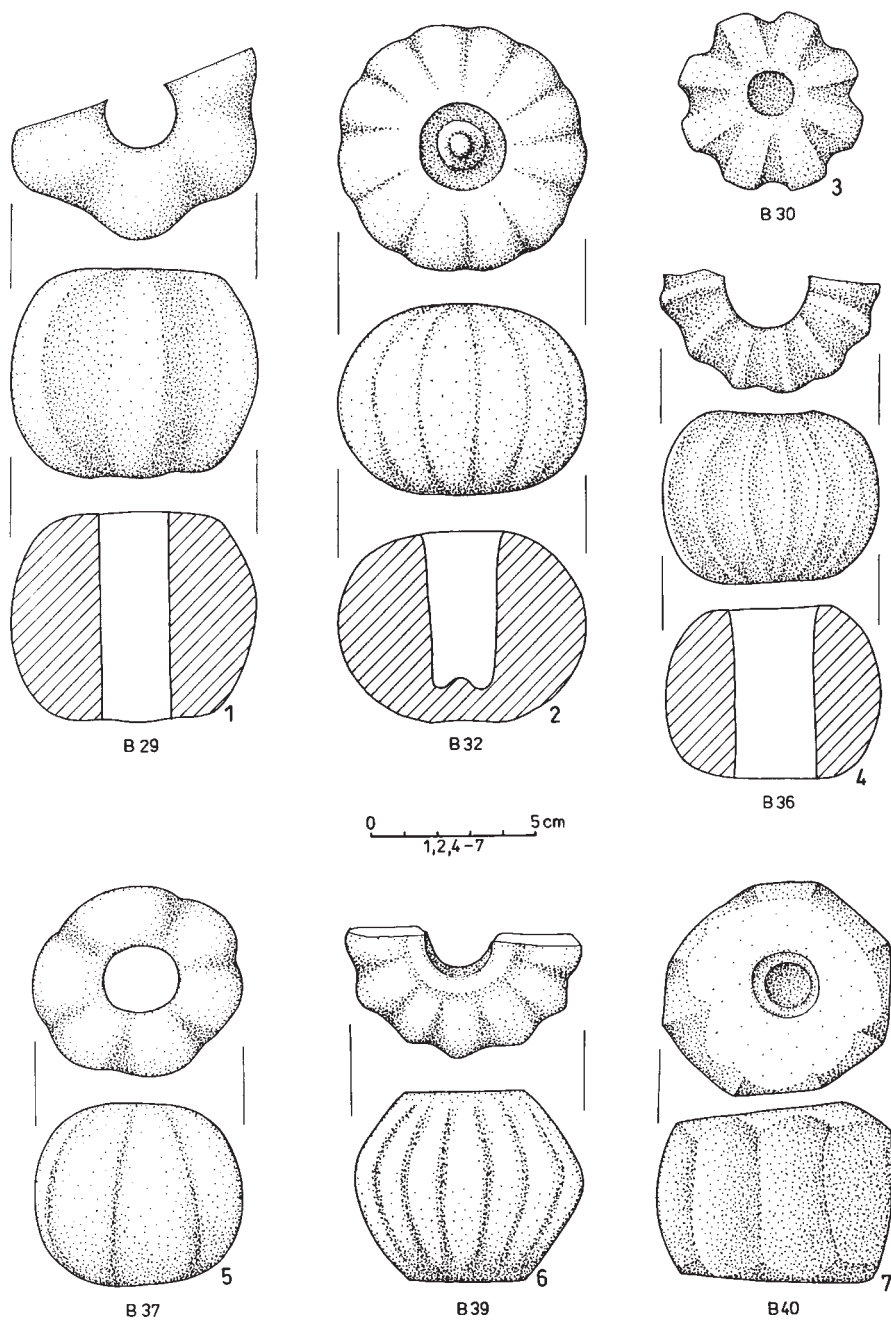


Fig. 8. Fluted maces from the Baltic zone (B - artifact or site record number, see Catalogue)

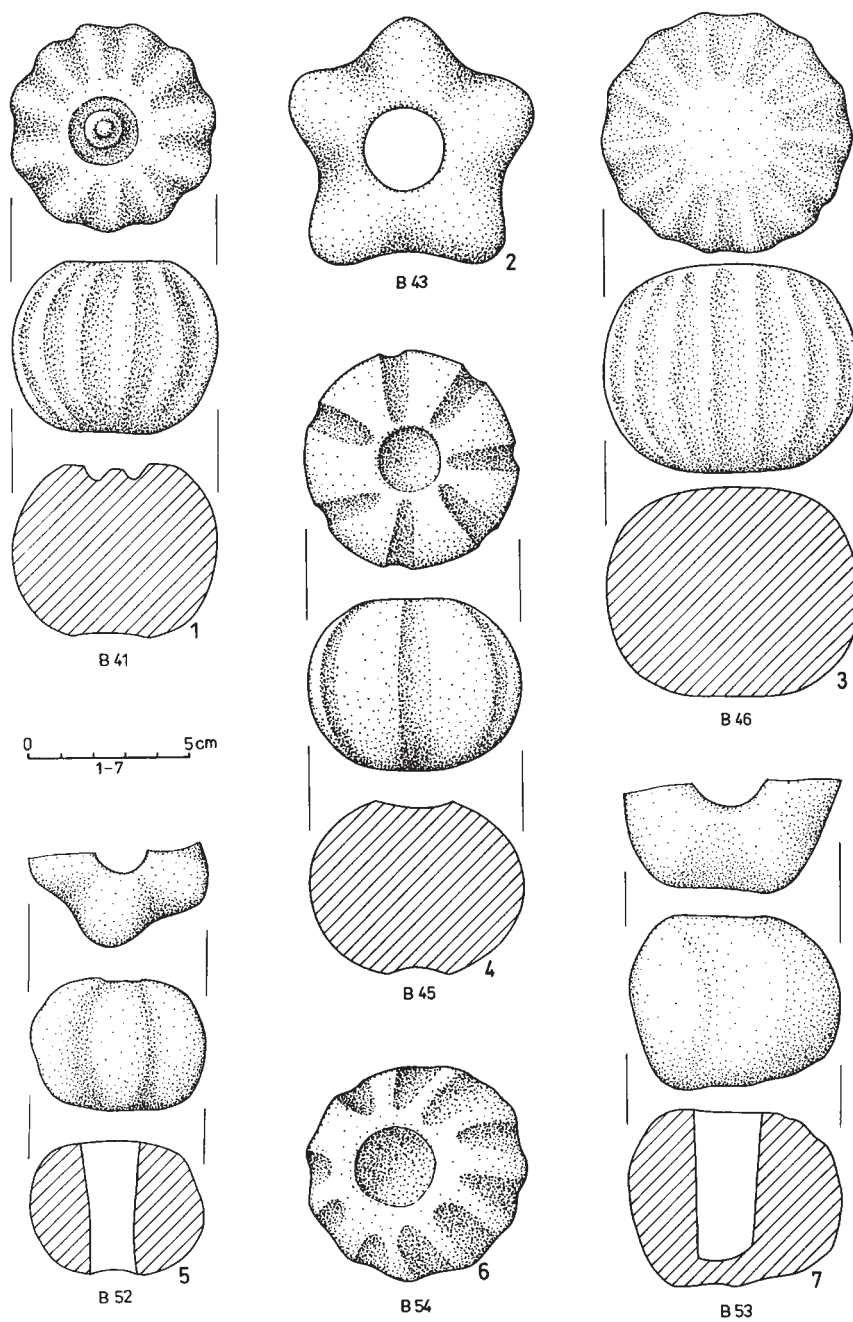


Fig. 9. Fluted maces from the Baltic zone (B - artifact or site record number, see Catalogue)

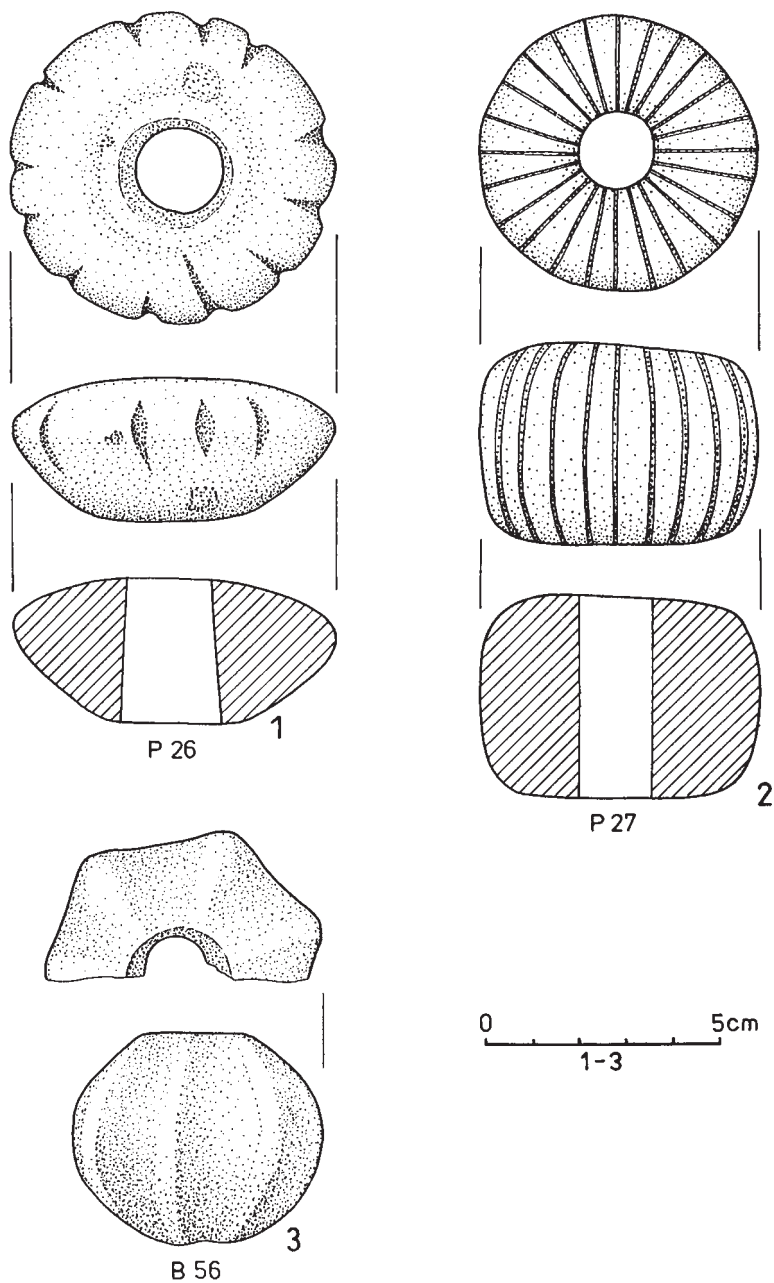


Fig. 10. Fluted maces from the Pontic-Caspian (P*) and Baltic (B*) zones - *artifact or site record number, see Catalogue: Annexes

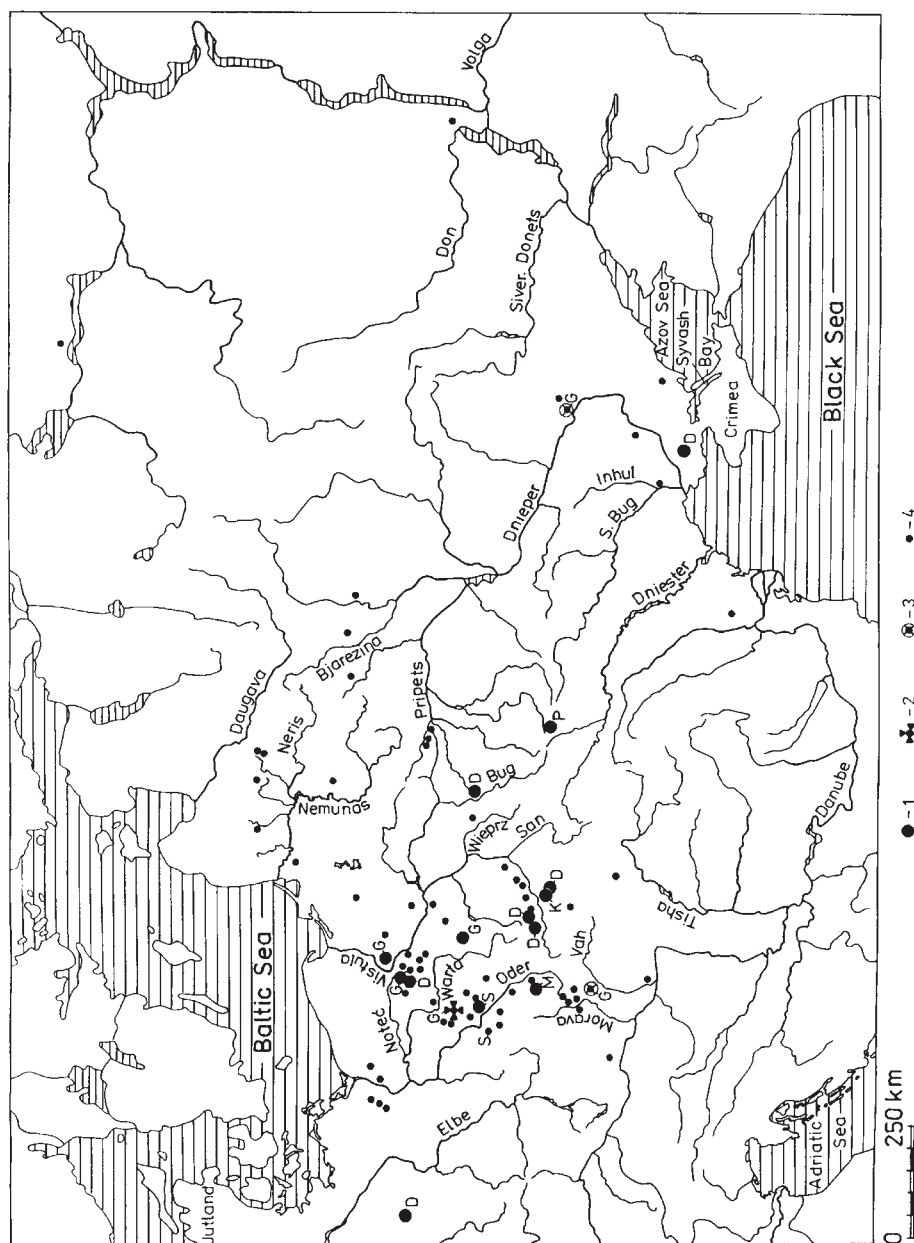


Fig. 12. Distribution of fluted maces giving type of raw material. 1 - type B1 or B1?; 2 - type B2; 3 - type B3; 4 - type?. D - diorite; G - granite; K - quartz; M - monzonite; P - sandstone; S - serpentinite

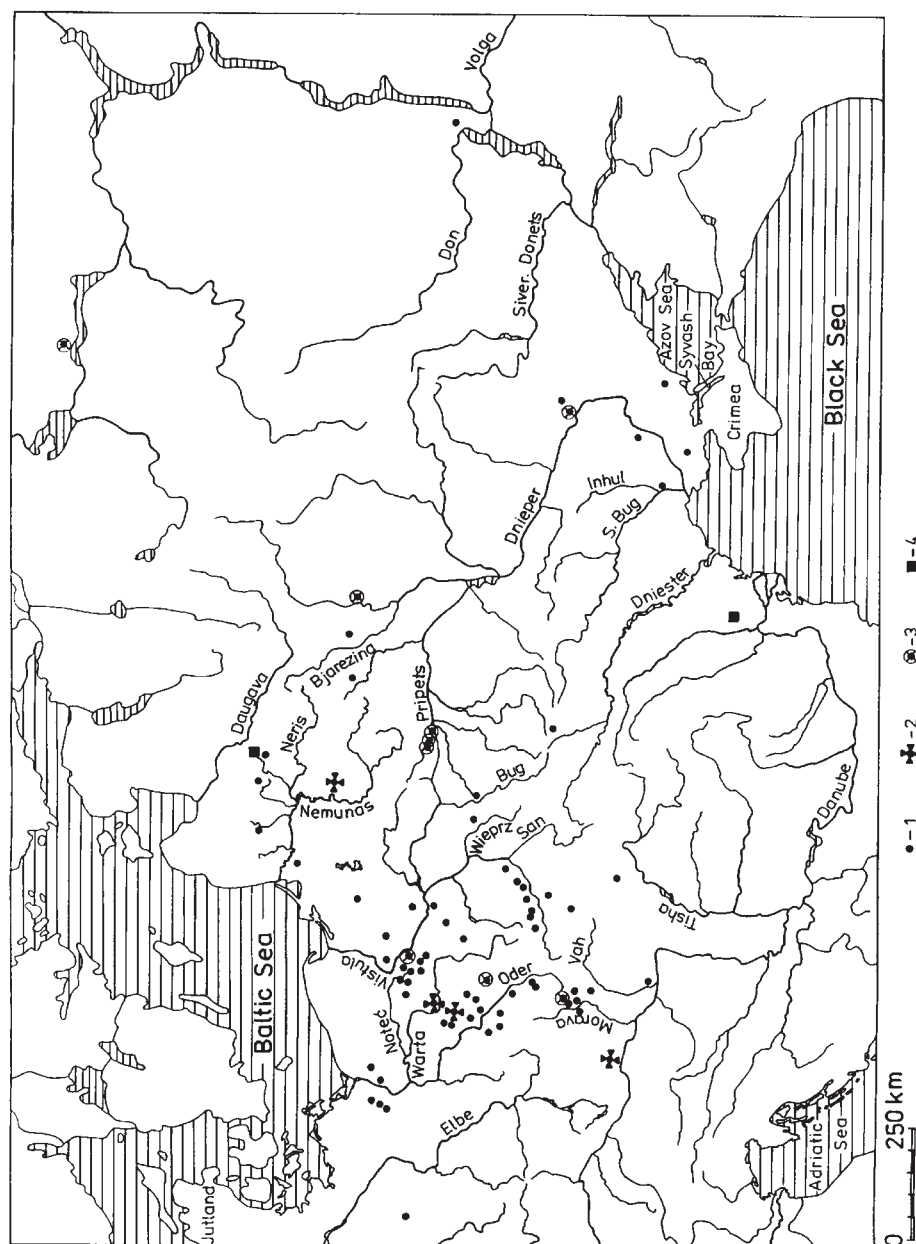


Fig. 13. Distribution of fluted mace types. 1 - type B1 or B1?; 2 - type B2; 3 - type B3; 4 - type B4

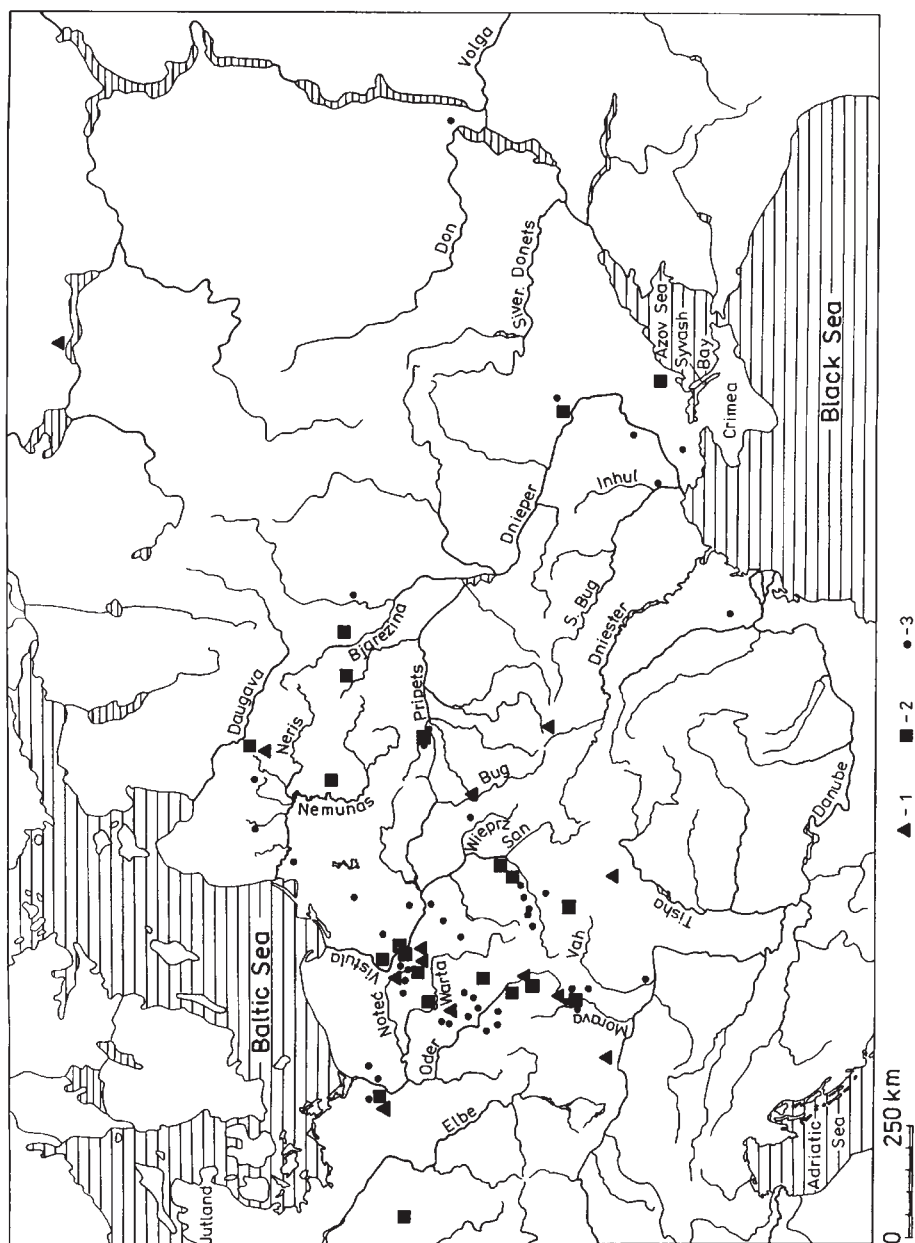


Fig. 14. Distribution of fluted maces of (1) uneven, (2) even, and (3) indeterminate (uncertain) number of flutes

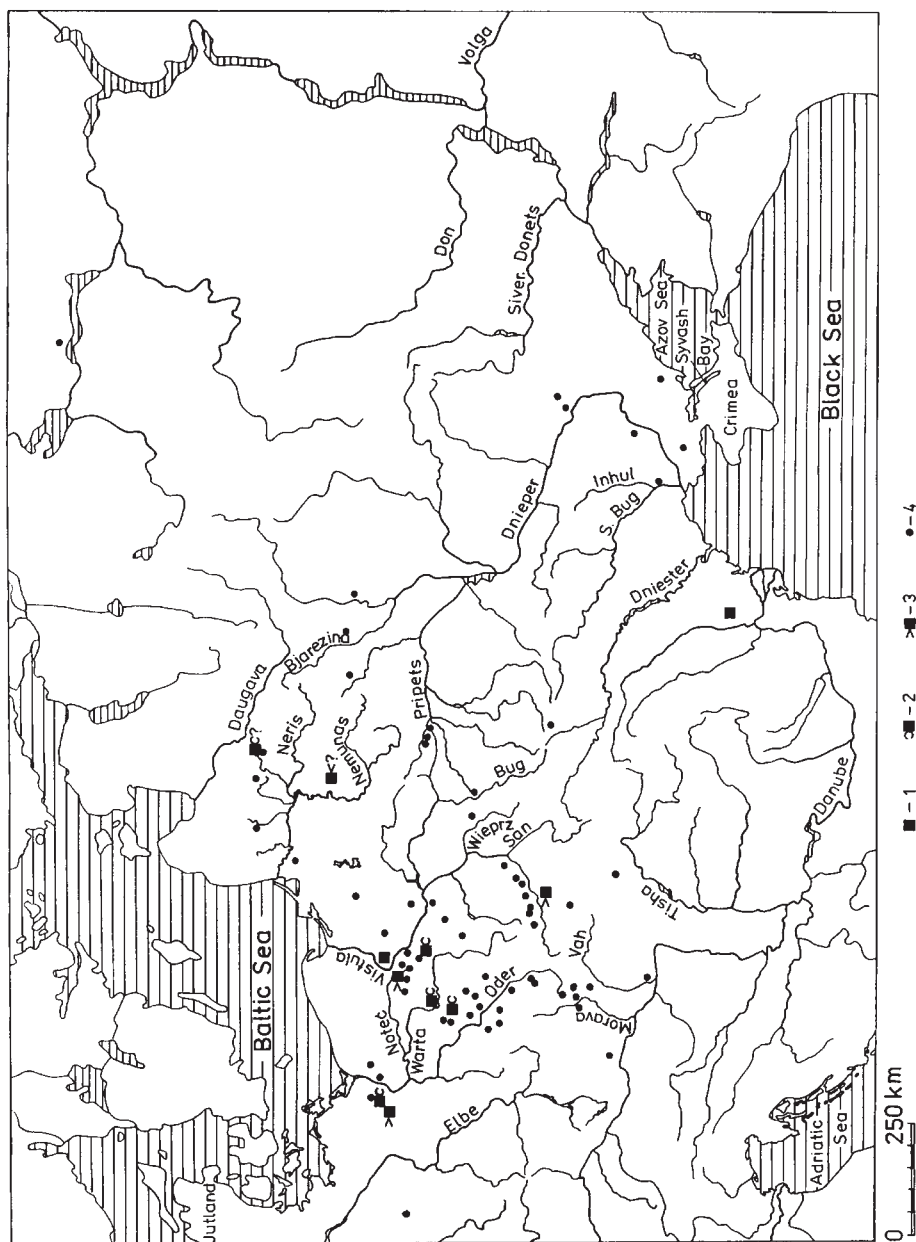


Fig. 15. Distribution of fluted maces: (1) with no holes (2) with a marked only hole, (3) with a partial hole (4) with a full or hypothetically full hole

doubts — are thought to have originated in assemblages. The taxonomic impact of these finds shall be discussed in two groups: (P) assemblages from the Pontic-Caspian zone and (B) assemblages from the Baltic zone (cf Catalogue 1).

P5 (type B1). Kalanchak: grave, unpublished (Fig. 3:5). According to S.N. Bratchenko and O.G. Shaposhnikova [1985:412-413, Fig. 110:26] and the oral assessment of I.L. Serdyukova, the feature should be related to an early phase of the Catacomb culture (CC).

P10 (type B1). Mykhailivka: settlement, published [Lagodovska, Shaposhnikova, Makarevich 1962:141, Fig. 39:2] (Fig. 3:9). The mace appeared in the 'upper layer' which, in the quoted publication, is linked with the late phase of the Yamnaya culture (YC). The layer also featured pottery from an early phase of the CC. The attempts made in the early 1980s to reanalyse the stratigraphy of the settlement (oral communication from O.G. Shaposhnikova) confirm that the little mace can be related to the period encompassing the late YC and early CC.

P17 (type B1). Stepan Razin: grave (under a tumulus), published [Merpert 1967:94, Fig. 7:1] (Fig. 4:4). The grave is connected with a cemetery from the end of the early phase and beginning of the developed phase of the Srubnaya culture (SC). According to V.I. Klochko (oral communication), both this feature and all other maces from the SC should be associated with its early phase [cf Klochko 2001:183-187].

P18 (type B4). Tarakliya: grave, published [Manzura 1984:110-112, Fig. 3:2]. The grave is identified with the late phase of the CC.

P21 (type B1). Volchansk: grave (under a tumulus), unpublished (Fig. 4:5). According to A.I. Kubyshev's oral report, the feature should be connected with the early phase of the CC.

B15 (type B1). Kietrz: grave, published [Gedl 1996] (Fig. 6:1). The grave is identified with the Lusatian culture (LC), phase Kietrz IIc, i.e. with the 'latter half' of the III period of the Bronze Age.

B24 (type B1). Masłów: grave (above the grave: the mace 'was found in pure sand at the edge of the grave'), published [Seger 1912] (Fig. 7:1). The grave is identified with the 'late' phase of the pre-Lusatian culture — Tumulus culture (TC), or more precisely with its 3rd (declining) phase [Gedl 1975:96; 1996]; i.e. with the III period of the Bronze Age.

b. Four unattached finds from 'hypothetical assemblages' were assessed through the context of cemeteries connected with cultural units or their chronologically corresponding taxons (i.e. generally from the end of the Neolithic and beginning of the Bronze Age). The cemeteries were recorded near the place where the maces were discovered, i.e. on the given site. These observations come only from the Baltic zone (B).

B12 (type ?). Inowrocław-Mątwy: context of an Iwno culture (IC) cemetery [Żurek 1938; Kośko 1979: Catalogue 1, No. 89]. In 1938, a mace was found on site 1 where

in 1970 a pit (possibly cremation) grave from phase IIIa of the IC was recorded. No other cemeteries have been documented on this site.

B20 (type B3). Laski: context of a LC cemetery [Wrzosek, Ćwirko-Godycki 1938:613, 615, Fig. 1:5,616; Kostrzewska 1953:247] (Fig. 6:5). A little fluted mace was found 'among LC graves' from the IV and V periods of the Bronze Age.

B41 (type B1). Wietrzychowice: context of an IC cemetery [Makiewicz 1969:26, Fig. 2; Jadczykowa 1970:137, Fig. 4; Knapowska-Mikołajczykowa 1956:88, Fig. 114; Koško 1979:Catalogue 1, No. 172] (Fig. 9:1). A mace appeared on the megalithic cemetery of the Funnel Beaker culture (FBC) in the mound of a grave (No. IV) — 'it was found in the earth thrown beyond the rubble structure surrounding the grave.' Also, in the neighbouring grave mound, another IC grave (grave vessel) from phase IIIa was recorded. The author believes that in some of the quoted works the dating of the mace is incorrect, because it was identified through the context of an FCB cemetery.

B45 (type B2). Wymysłowo: context of a cemetery from the beginning of the LC and the end of the TC [Jasnosz 1975:90, 92-93, Fig. 14; Gedl 1975:61]. A mace occurred in the cemetery of the 'latter phase' of the TC and 'the oldest phase' of the LC, dated at the end of the II and the beginning of the III period of the Bronze Age, 'near Bronze Age relics', 'counted among the forms from the III period of the Bronze Age.'

c. The above cultural assessments of fluted maces from assemblages or hypothetical assemblages determine the chronological brackets for identifying the communities of producers and users all over the area where the maces appeared. Such areas and communities shall be discussed later in this chapter.

3.2. AN ATTEMPT TO IDENTIFY THE COMMUNITIES OF PRODUCERS AND USERS

Comparing the distribution of fluted maces (chapter 2, Figs. 11-15) discussed above, as well as their cultural and chronological position (chapter 3.1), with the ranges of identified cultural units (YC, CC, SC, IC, TC, LC), neighbouring (spatially and chronologically adjacent) and successive (having evolutionary connection) cultures, justifies the distinction of five hypothetical communities of producers and users of fluted maces: (a) YC-CC-SC; (b) Fatyanovo culture (FC); (c) Corded Ware culture's (CWC), the east European groups; (d) CWC's, the west European groups — IC, i.e. 'Bell Beakers' [Czebreszuk 2001:117n] — the Trzciniec culture, more broadly, the 'Trzciniec horizon' (TH) [Koško 1979; 194n; cf Czebreszuk 2001:150n — Trzciniec-*Riesenbecher*]; (e) TC, the middle Silesia-Wielkopolska, Silesia, middle Danube (Moravia) — LC groups.

The scope of these taxons in view of the fluted mace distribution is illustrated in Fig. 16. Each of the taxonomically determined communities has its physiographically specific character. This issue shall be presented in chapter 3.3.

It may be assumed that fluted maces were made in all of the above mentioned cultural communities. However, there are no semi-finished maces that would directly confirm their presence in the FC area (although so far only one item has been discovered here), Fig. 15. Besides, connecting positively each type of fluted maces (B1-B4) with particular communities is difficult. Instead, the currently documented distribution of maces proves that in the said cultural communities various types of maces were manufactured, primarily type B1 maces (Fig. 13; cf also Fig. 14). Hypothetically, they evolved in the following sequence: B1-the oldest forms → B2 → B3-B4 (probably the last-mentioned ones 'completed the sequence' only in the Pontic zone — Fig. 13:4). Moreover, it is possible that the number of ornaments evolved: odd number of 'flutes' → even number of 'flutes' (Fig. 14)*.

The issue of the relation between initial forms (B1) and their derivatives (B2-B4) shall be discussed at length later in this article.

3.3. CHRONOLOGY

The currently available 'evidence for taxonomic identification' of fluted maces in a series of assemblages, supported by hypothetical assemblages (chapter 3.1.), enables archaeologists to estimate the brackets of absolute dating (calibrated radiocarbon chronology: BC — i.e. historical chronology) of mace production and use. The estimates shall be presented for the previously distinguished communities (chapter 3.2), Fig. 16.

a. Black Sea and Caspian steppe/forest-steppe. Of key importance here are the following investigations: historical chronology of the late YC and dawn of CC (aa), as well as the early phase and the beginnings of the developed phase of the SC (ab).
aa. According to A.V. Nikolova's latest findings [Nikolova 1999], the late phase of the YC in the right-bank, lower Dnieper drainage (probably left-bank as well) should be dated at 2550-2250 BC. Although the oldest CC assemblages are also dated at this period, clear chronological brackets of this taxon (a 'typical CC') should be dated at 2250-2000 BC*. Taking into consideration the extreme taxonomic evaluations of the oldest fluted maces in this cultural community, i.e. the end of the early phase of the YC and beginnings of the early phase of the CC (P10 — Mykhailivka), and the late

* Suggestions of J.J. Langer [Report on the statistical analysis of ornamentation of fluted maces from group B (the Baltic drainage) and group P (the Black Sea drainage), Poznań 2001-typescript] which lay foundations for broader studies of insignia ornamentation from the Baltic-Pontic zone (forthcoming).

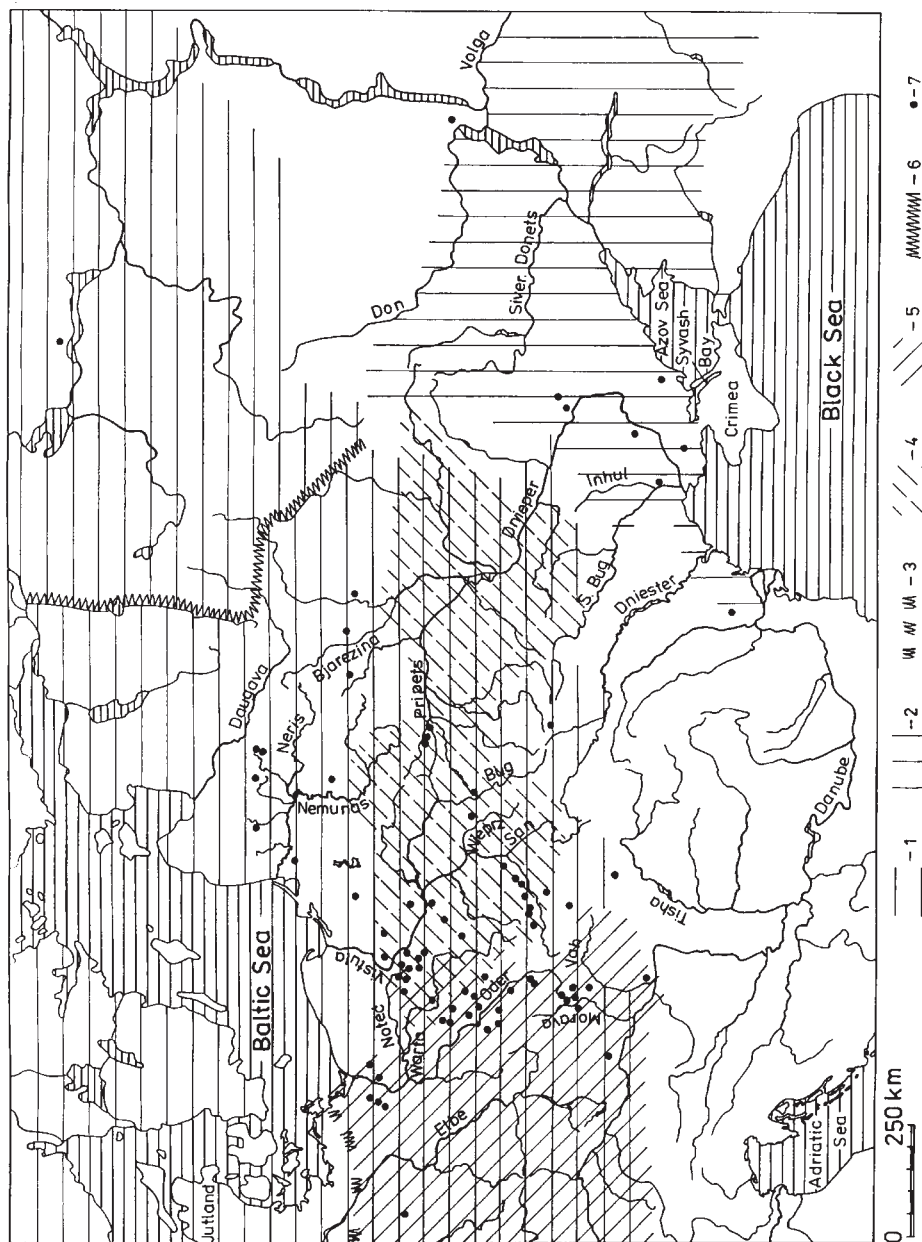


Fig. 16. Distribution of fluted maces against culture areas of the 3rd/2nd millennium BC (hypothetical mace users): 1 - Corded Ware cultures; 2 - Catacomb culture; 3 - approx. borderline between Corded Ware culture (west) and Fatyanovo culture (east); 4 - Trzciniec Horizon; 5 - Tumulus culture; 6 - southern limit of the Nordic circle; 7 - fluted maces

phase of the CC (P18 — Tarakliya), the chronological brackets may be reasonably determined at about 2350-2000 BC [cf Nikolova 1999:127, Fig. 11].

ab. The currently accepted chronology of the SC was based on the non-calibrated, 'rough' ^{14}C (bc) chronology, in which radiocarbon dating was marginal, originating mainly from areas along the Volga River [Berezanska, Cherednichenko 1985:472 and oral assessments of V.I. Klochko]. The SC along the Volga should be dated between 1750 and at least the 12th century, while the early period presumably covered years from 1750 to 1550 BC [cf Kurylenko, Otroshchenko 1998:101 who suggested an earlier chronology of SC beginnings, Tab. 4]. Consequently, the isolated find of a fluted mace on the Volga, which the discoverer associated with the end of the early and the beginning of the late phase ('period') of the SC (P17 — Stepan Razin), may be dated at ca. 1500 BC. It is possible to place it earlier, i.e. between 1750 and 1550 BC [for the methodological and comparative aspect, see the ongoing discussion about the 'rough' calibration of dating the end of BB and the beginning of BC in the Bronze Age in the Oder and Vistula drainages: 1400 BC — Makarowicz 1998:58, Fig. 19, and 1650 BC — Bukowski 1998:Tab. I].

To conclude, the chronology of producing and using fluted maces in the Pontic-Caspian steppe/forest-steppe zone is dated between 2350 and 1300 BC (cf Fig. 16).

b. Taiga: the Volga drainage. Similarly to the SC chronology described above, the FC chronometry is based on non-calibrated, 'rough' ^{14}C scale, complemented by several direct dates referring to this taxon. Distribution of the dates is inconsistent. Furthermore, there are no datings for the upper Volga group where a fluted mace was discovered (P13 — Oganino) [Kraynov 1987:60-61, Fig. 5:b, e; 1992]. The above chronometry places the FC between the 20th and 15th century bc (phases: 1 – 20th-18th century; 2 – 18th-17th century; 3 – 17th-16th century; 4 – 16th-15th century bc) [Kraynov 1987:74]. Thus, the discussed mace, according to the calibrated radiocarbon chronology, may be dated between 2450 and 1750 BC. The nature of the find, however, makes it impossible to make a more specific assessment (cf Fig. 16).

c. Taiga: the upper Dnieper and Nemunas drainages. Of vital importance in this case are the following identifications: chronology of the Middle Dnieper culture (MDC) (ca) and chronology of the Corded Ware culture (CWC) in the 'eastern Baltic States' zone — the Primorie culture (CWCP) (cb).

ca. The latest M. Kryvaltsevich and N. Kovalyukh's study of the MDC radiocarbon chronology shows that this taxon can be dated at 2350-1700 BC [Kryvaltsevich, Kovalyukh 1999]. There is also evidence to assign an earlier date to its beginnings, i.e. about 2700 BC [Machnik 1999; Klochko, Koško, Szmyt 1999:266, Fig. 1]. Since the maces found in the Dnieper area are unattached (P2 — Guta; P7 — Klichav), it is impossible to specify the outlined chronology more accurately.

cb. According to D.A. Kraynov and I. Loze, the origins of CWCP (the so-called CWC of 'eastern Baltic States'), on the strength of ^{14}C direct datings, may be con-

nected with the dates of ca. 2700/2650 (the region of Lithuania) and 2350/2150 BC (the region of Latvia-Estonia). The chronology of the end, based on an uncalibrated, 'rough' ^{14}C scale, should be connected to the following dates: 1750 bc (Lithuania), i.e. 2100 BC and after 1500 bc (Latvia-Estonia), i.e. 1750 BC [Kraynov, Loze 1987:56]. The maces found around the Nemunas (mainly Lithuanian, as concerns administration) are unattached (B6 — Dusetos; B18 — Kapiskis; B21 — Lygšilis; B30 — Orany; B40 — Vielikuskesk; B42 — Wissritten), therefore, it is impossible to make their dating more specific.

The above data shows that the general chronology of producing and using fluted maces in the taiga zone of the upper Dnieper and Nemunas drainages should be dated between 2700 and 1700 BC (cf Fig. 16).

d. Taiga/forest-steppe: the left-bank of the Pripet and the upper Dniester drainages; lowlands/uplands: the upper and middle Vistula and the upper Warta drainages. Of significance are the chronological assessments of the Corded Ware Culture Małopolska (CWCM), continued as the Mierzanowice culture (MC) (da), the late IC from phase IIIa — more broadly phase III (db), as well as the western and eastern TH (dc).

da. The latest research by P. Włodarczak into the radiocarbon chronology of the evolutionary brackets of the CWCM show that this culture developed between 3000 and 2200 BC; but the dates of the 'classical' version (Cracow-Sandomierz group) should be narrowed down to 2800-2200 BC [Włodarczak 1998:38, Fig. 3]. As concerns the MC, S. Kadrow and J. Machnik argue for a ^{14}C chronology between 2250/2300 and 1600 BC [Kadrow, Machnik 1997:169, Fig. 70]. The above assessments can be transferred to the peripheral zones of the CWCM and MC (or their impact zone): central Poland, Volhynia and Podolia. It is difficult to estimate which fluted maces recorded in the earlier mentioned territories can be connected with the said taxons (cf Fig. 16).

db. In light of the latest studies by P. Makarowicz of radiocarbon chronology of the IC, its phase III is dated between 2100-1850 BC, while its older period that occurred before TH — the period that could fully correspond with phase IIIa [Koško 1979] — falls between 2100 and 1950 BC [Makarowicz 2000; J.Czebreszuk et al. 2000:570, Fig. 1]. Another, 'narrower' dating can be fairly reliably related with two other maces from the 'hypothetical assemblages' (B12 — Inowrocław-Mątwy; B41 — Wietrzychowice). Conceivably, phase III of the IC can be connected also with some other maces, mainly from Kujawy and the Chełmno Land, i.e. from the lower Vistula and upper Noteć drainages (cf Fig. 16).

dc. The study of radiocarbon chronology of the TH west segment was recently summed up by P. Makarowicz who documented the following borderlines: 2000-1500 BC — the lower Vistula region (Kujawy), 1950-1100? BC — the upper Vistula region (Małopolska) [Makarowicz 1998:154, Fig. 5]. In the case of the TH east segment, the assessments of N. Kovalyukh, V. Skripkin, V. Klochko and S. Lysenko

are now binding. The borderlines are: 1600-1200 BC [Kovalyukh et al. 1998; cf the latest approach extending the period from 1800 to 1000 BC: Lysenko 2001]. The TH in both territorial versions can be associated with some maces recorded in the discussed community ('d') (cf Fig. 16).

To conclude the above findings, the general chronological brackets of producing and using fluted maces on the border of taiga/forest-steppe and lowlands/uplands (community 'd'), i.e. on the west-east physiographic frontier of Europe (including the Baltic and Pontic drainages), may be either broad — years 3000-1100 BC — or narrow, bearing in mind the criterion of 'hypothetical assemblages'('db'), namely, 2100/1950-1100 BC (cf Fig. 16).

e. Lowlands/uplands: the Oder drainage (excluding the upper Noteć), the lower Elbe and the middle Danube drainages. Here the chronological assessment of two taxons: (ea) of the TC and (eb) of the LC, particularly its early phase corresponding to periods III-V of the Bronze Age, are instrumental.

ea. The chronometry of the TC in the middle Danube, Oder and Elbe drainages involved mainly non-calibrated, 'rough' ^{14}C scales. Thus, this taxon could be classified between 1700/1650 and 1350 BC. Such assessment was further corroborated by the first direct dating from the middle Warta River [Makarowicz 1998:154, Fig. 5; 1998a:Fig. 38]. The only TC assemblage with a fluted mace (B24 — Masłów) was taxonomically assessed as having originated in the declining phase of the TC (at the beginning of LC). With this in mind, it is possible to assume that these forms appeared in the Middle Silesia, Silesia and the middle Danube groups of the TC around 1400-1350 BC (cf Fig. 16).

eb. The above dating is closely related to the determination of chronological brackets of three fluted maces discovered in an assemblage (B15 — Kietrz) from the 'latter half' of the III period of the Bronze Age, in 'hypothetical assemblages' (B45 — Wymysłowo) from the end of the II and the dawn of the III period of the Bronze Age (though more from the III period), as well as (B20 — Laski) from IV-V period of the Bronze Age. Similarly to the previous case, the non-calibrated, 'rough' ^{14}C chronology scale dominates here while direct dating plays only a minor role. The above assessment is enough to date this period of LC development (alternatively, the end of TC and the start of LC) between 1400 and 800 BC [Bukowski 1998:Tab. I; cf Czebreszuk, Ignaczak, Łoś 1997:38-44].

In conclusion, on the basis of the above evidence from the Oder drainage, all items recorded within the eastern TC and the 'western' LC (post-TC) groups, i.e. within the 'e' community may be assigned to the period of 1400-800 BC (cf Fig. 16).

Having reviewed the historical chronology (BC) within the five distinguished physiographic and cultural communities ('a'-'e'), in which fluted maces appeared, the author states that:

- only in two communities, namely the extreme eastern ('a') and the extreme western ('e') can the maces be dated directly (the presence of assemblages);

- the dates for community 'a' (YC, CC, SC), mean that the maces appeared earlier, but were used for a shorter period in the Pontic zone (from 2350 to 1300 BC);
- dates obtained for community 'e' (TC, LC) are much younger against the background (from 1400 to 800 BC);
- in the 'transitional territory', i.e. in communities 'b','c','d', only thanks to the last one ('db') is it possible to indicate a 'relatively direct' ('hypothetical assemblages') mace appearance chronology (from 2100 to 1950 BC).

The ranges covered by the above-discussed evidence of the historical chronology in the case of individual communities is synthetically represented in graphic form in Fig. 17.

4. GEOGRAPHICAL ORIGINS AND MORPHOGENESIS OF FLUTED MACES

The European prehistoriography provides two conceptions explaining the appearance of stone maces: the major (dominant) one-exogenous and definitely the minor one-endogenous. According to the former there were hypothetical prototypes of insignia (mostly made of metal) from the east Mediterranean-Near East civilisation circles [cf Montelius 1900:99,102; Jażdżewski 1981: 223; v. Bonnet 1926:1-16]. The latter points to the early agricultural trend of tool evolution: 'globular hammers' — known i.a. in the Band and post-Band cultural circles, initiated here by the disc-shaped forms connected with land cultivation technology [cf Vencl 1960:36]. In both of the above conceptions, European maces appear in the early metal cultures (i.e. after 5200/5000 BC), namely in the Eneolithic of the Carpathian Basin-Balkans and Northern Pontic region — Caucasus.

As it was said in chapter 1, this literature does not mention any precise assessments of (a) geographical origins and (b) morphogenesis of maces from the discussed typological group B (fluted maces).

a. In order to identify the 'original territory' of fluted maces (stage I of geographical origin), it is vital to know earlier findings concerning their extent of occurrence and particularly their chronology (chapter 3). The oldest items from typological group B are recorded in the steppe of the Northern Pontic region, in the interfluvial area of the Dnieper and Donets rivers ('Crimea base' region), in the settlements from the end of the YC and the start of the CC, i.e. about 2350 BC. Concurrently, the territory of Europe did not feature any older or contemporaneous 'generally analogous forms'. These could be items of a similar shape but clearly different functions, e.g. 'rock-crystal headed bronze pin' (Ø 58 mm) from Mainland Greece,

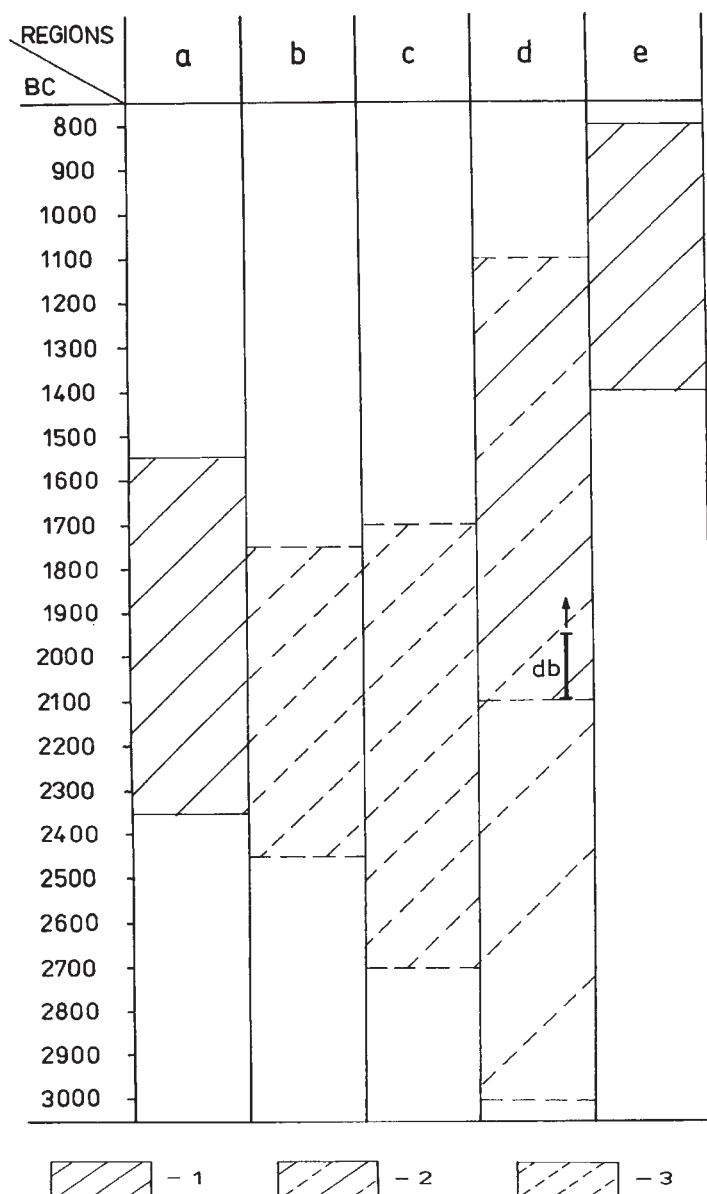


Fig. 17. Cultural environments of makers and users of fluted maces: chronology. a - Yamnaya culture - Catacomb culture - Srubnaya culture; b - Fatyanovo culture; c - Corded Ware culture, East European groups; d - Corded Ware culture, West European groups + Iwno culture + Trzciniec Horizon (da - Corded Ware culture, Małopolska region + Mierzanowice culture; db - Iwno culture; dc - Trzciniec Horizon); e - Tumulus culture + Lusatian culture. 1 - chronological assessments based on assemblages; 2 - chronological assessments based on hypothetical assemblages; 3 - chronological assessments based on a putative taxonomic identification

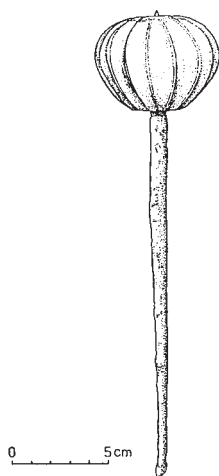


Fig. 18. 'Rock-crystal headed bronze pin' - an example of an object that is morphologically similar to fluted maces (Shaft Grave III, Middle Helladic period: 2090/2050-1600 BC). After Dickinson 1994

from Shaft Grave III dating back to the middle Helladic period of about 2090/2050-1600 BC [Dickinson 1994:182, Fig. 5.39-9], Fig. 18. Outside Europe, there are no forms either which would be older or formally similar to the Baltic-Pontic fluted maces [cf Taracha, *The mace...*, in this volume].

Accordingly, it may be assumed that the invention of the fluted mace (type B1) has its roots in the Northern Pontic region and it should be related to the early CC community (specifically YC/CC) within its Inhul and Dnieper-Azov groups [cf Bratchenko, Shaposhnikova 1985:412-417]. This form's further stages of geographical origins (II, III...) are broadly dated at the decline of the 3rd and the beginning of the 2nd millennium BC, which is documented by its derivatives: B1 → B2, B3, B4 (Fig. 13). Fluted maces were transported outside the CC thanks to trading and 'migrations of the elite'. The mechanisms of reception of fluted maces can be better identified upon analysing their social and symbolic meaning (chapters 5 and 6).

b. The Northern Pontic region, especially along the Dnieper, is the area among European cultural communities where the non-ornamented globular maces (typological group A) were received particularly early. On the basis of a holistic analysis of all mace types, this assessment has recently been made more specific by V.I. Klochko [Klochko 2001:31; cf also Klochko, *Maces...* in this volume].

Here the maces appeared as early as the end of the Neolithic and the beginning of the Eneolithic in the late stage of the Mariupol horizon ('community'), ca. 5500-5000 BC [cf Telegin et al. 2001:132, Fig. 61] and were used by successive 'communities' that inhabited the steppe during the Eneolithic and the Bronze Age:

Sredni Stog — Khvalynsk, Novodanilovka (Petro-Svestunovo — Casimcea), the YC and CC [Makarenko 1933:61, Fig. 11 — grave 8; 72, Fig. 24 — grave 24; 75-76, 78, Fig. 37-38 — grave 31; 111, Fig. 91 — found in one of the earth layers; Vasilyev, Sinyuk 1985:103, Fig. 22; Telegin et al. 2001; cf also Koško 1985]. That is why, the fact that the range of maces was extended (ca. 2350 BC) by fluted maces (typological group B) means that the endogenous trend of formal changes came to the fore. However, it was impossible to evaluate the meaning of the extension: the functional and symbolic reasons for applying the flutings (cf chapter 5).

In the 3rd millennium BC, on the borderland of the east and west of Europe, in the area where maces from typological group B are recorded (cf Fig. 11), two clear centres of applying flutings to stonemasonry are observed: (a) the Inhul group and (b) the Elbe-Oder group.

a. Until the prologue of the CC, the peoples of the Pontic steppe/forest-steppe did not continue the fluting tradition in their stonemasonry, e.g. axe surfaces or other tools. This assertion, however, excludes occasional, chronologically unclassified applications of flutings, for instance in ‘horse-head scepters’, among the Eneolithic steppe/forest-steppe cultures and along the western Pontic region in the second half and at the turn of the 5th millennium BC [cf Govedarica, Kaiser 1996 — further reference in that volume], i.e. when maces were used on these territories as well. Yet, such ornamented forms were not found in successive taxons of the 4th and 3rd millennia BC: the ‘pre-Yamnaya’ and YC. The situation changed at the beginnings of the CC, i.e. around 2350 BC. It was then that flutes became ‘one of the characteristic peculiarities of the CC stone working techniques’ [Popova 1955:168]. Flutes were found on axes ‘with distinct butts’ (‘battleaxes’ — Fig. 19), on maces and other objects, i.e. insignia and casual artifacts, as well as on production tools.

b. The tradition of fluting ‘casual’ stone artifacts in the Oder-Elbe zone in the 3rd millennium BC is older and connected with groups of the early CWC stage, i.e. ‘old corded-ware group’. This refers mainly to ‘battleaxes’ — the Ślęża type axes and the faceted axes [Machnik 1979:356-361; cf also Buchvaldek 1967:52-53, Fig. 7, Map 25 — type FHA, ‘*Facettierte Hammeraxt*’], Fig. 20. In light of the latest findings, this stage (i.e. the emergence of the Ślęża type axes) may be dated at 2850-2650 BC [Włodarczak 1998:38, Fig. 3], which corresponds to the beginnings of maces-but only the non-ornamented globular maces from typological group A-among local CWC communities [Buchvaldek 1967:56-57; cf Buchvaldek, Koutecky 1970]. When the CWC died out, the tradition of ‘fluted axes’ suffered recession, but individual cases of axe-fluting were still recorded in the TC [Kłosińska 1997:92], i.e. in the era of the ‘tumulus’ prologue of maces from typological group B, i.e. 1400 BC.

Both discussed cases show that the evolution of fluted maces is connected with a large-scale use of particular symbols-ornaments in the production of stone insignia. However, in these cases it is hard to trace the genetic and semiotic background of flutings. In the Northern Pontic region both forms of decorated insignia-axes and

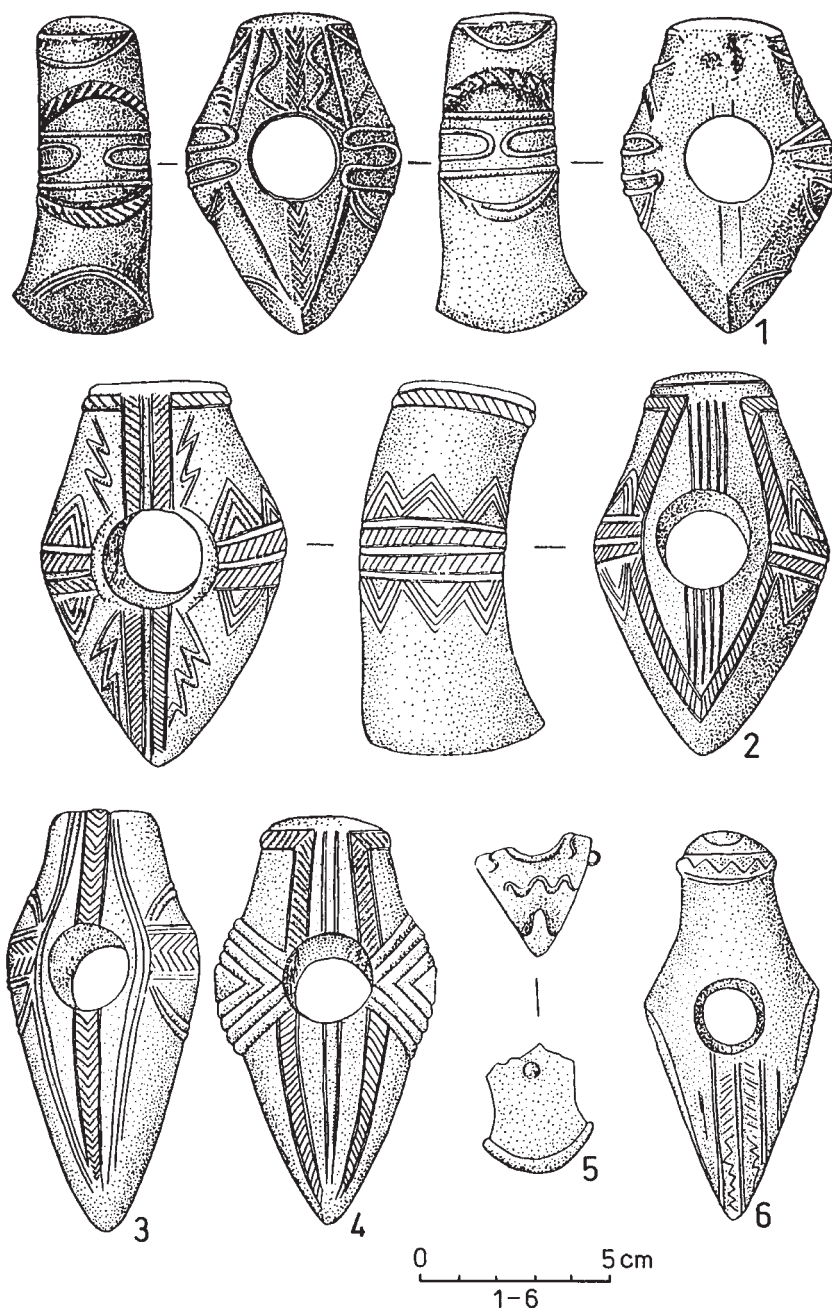


Fig. 19. Fluted decorations of battle-axes of the Inhul Catacomb culture. After Sharafutdinova 1980

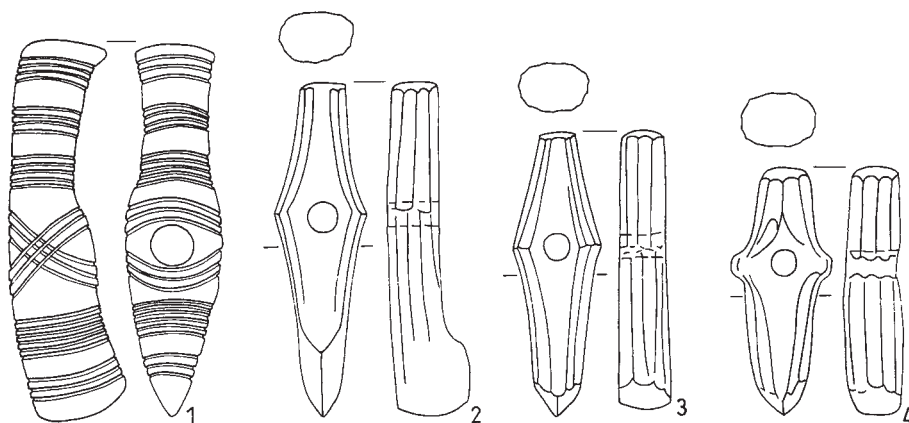


Fig. 20. Fluted decorations of battle-axes of the Corded Ware culture, Ślęza type (1) and faceted type (2-4). After Smutek 1950; Buchvaldek 1967

maces appeared simultaneously, while in the Oder drainage the latter ones occurred about 1200 years later. Conceivably, the 'Pontic models' stimulated the renaissance of the local (Elbe-Oder) fluting traditions.

5. SOCIAL AND SYMBOLIC INTERPRETATION

As it was said earlier in this article, in social interpretations, the oldest Eneolithic maces are recurrently identified as forms of insignia. They signified the emergence of 'chiefdoms' or, more generally, stratified societies. Such assessment was adopted thanks to the Near East sources, mainly iconography [e.g. Montelius 1900:177, Fig. 128; Jażdżewski 1936:286; cf Berounská 1987:48-49 — further references *ibid.*]. The complete analysis of these indications is presented in the first part of this volume of *'Baltic-Pontic Studies'*, in the articles by M. Popko and P. Taracha.

Closer studies of the context of finds of fluted maces, particularly from (a) the Northern Pontic region and from (b) the Oder drainage, make the discussed trend of interpretation more plausible.

a. The most important body of evidence in tracing the social function of fluted maces from the CC is a grave from Volchansk (P21). The grave was supplied not only with a stone mace but also with a bow (straight) and a 'crosier', both made from wood (Fig. 4:5). The same model can be found in the said Near East iconogra-

phy and on Northern Pontic steles [e.g. Berounská 1987:46, Fig. 16; cf Danilenko 1974:82-83; Mezzena 1998]. These relations induce one to interpret the indications in historical and religious categories. For instance, the figure from a stele found in Natalivka on the Dnieper (Fig. 21) might conceivably be Teshub, 'the god of tempest and strength' [Danilenko 1974:83]. Therefore, it is highly likely that the fluted maces from the Northern Pontic region can be connected with chiefs-priests or (following the interpretation of N.I. Sharafutdinova concerning fluted axes, a category of sources close to maces) 'persons of high social class': shamans [Sharafutdinova 1980:67-68]. The image of mace users is significantly marked by the fact that the maces appear in the CC as an element of a broader 'eastern Mediterranean' inspiration [Klein 1968; Zanotti, Rhine 1974]. With this in mind, an attempt has been made to 'interpret' the communities of the Northern Pontic region (i.e. CC) from the perspective of economic and social relations in Mesopotamia at the turn of the 3rd millennium BC. The interpretation involved incorporating this region into the circumponic system of circulation of cultural models [Koško 2001:284 — hypothesis about a circumbaltic-wide 'kin-based trade companies'].

b. The social interpretation of fluted maces recorded in the Oder and Vistula drainages, presented by the author in 1979, argued that the maces served as 'attributes of secular and sacred power like some metal objects' functioning in the Únetice culture (UC) and the IC [Koško 1979:200-201]. The appearance and distribution changes of the maces supposedly determined the 'popularisation of the metallurgist-wizard-chief office within all post-Iwno cultural structures'. Extending the perspective to the Northern Pontic region modified the principally endogenous model of social reasons of the 'substitution process' — the metal UC-IC insignia were replaced by fluted stone maces. However, the question of how far afield the 'Pontic social model', stimulating the development of 'fluted insignia', was transmitted, remains unanswered.

The Northern Pontic (ba) and southern Baltic (bb) zones, more specifically the area between the Vistula and the Oder, differed significantly in terms of economic, social and ideological structures. Yet, this evaluation cannot be justified in-depth due to lack of relevant comparative studies. The economic differences concerned variations in the status of rearing/breeding as the dominant trend. The steppe/forest-steppe of the Northern Pontic area facilitated the dynamic development of the nomadisation of breeding and the formation — in the CC — of quasi-pastoral forms (often treated already as 'typically pastoral') [cf Koško, Klochko 1994]. One can hardly assume an equally dynamic trend of changes in the environmentally different zone of the southern Baltic drainage, even though various forms of nomadisation of breeding are observable. These similarities and differences may be extended to the social and ideological sphere. The elements signalling continuation in this matter are the growth of social hierarchy and the ideological search for the identifying factors of such hierarchy in the Near East civilisation circles. It was observed whether

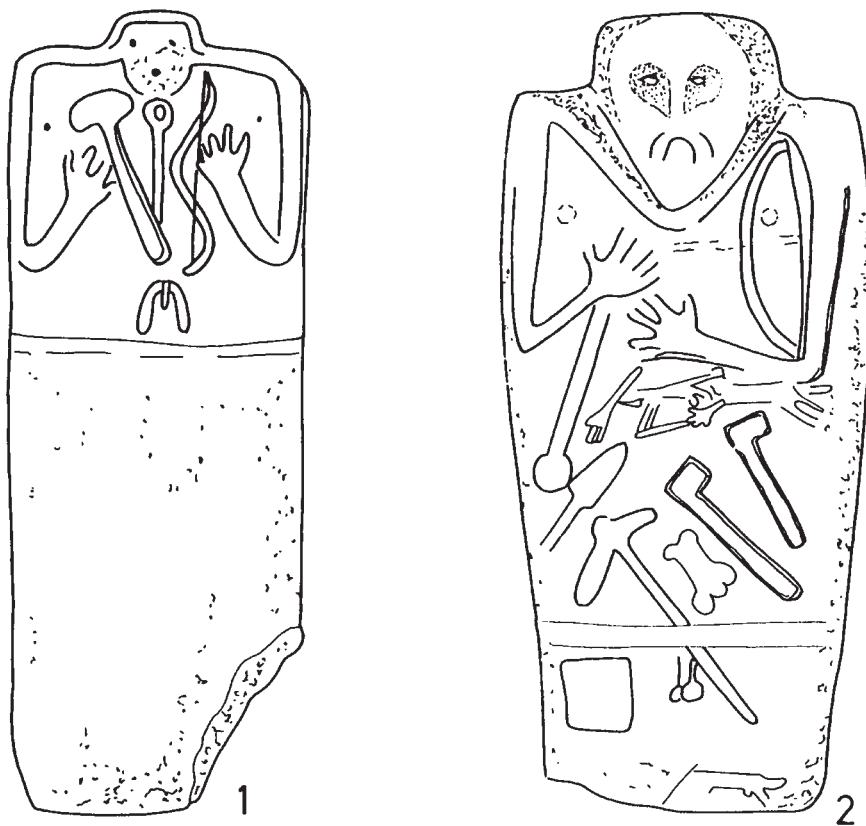


Fig. 21. Anthropomorphic stelae of northern Pontic cultures with a mace motif marked. After Koško 2001

the identifiers existed in the CC, TC and in the Nordic Circle [Pustovalov 1992; 1993; 1994; 1999; Vandkilde 1996; Czebreszuk 2001; Kadrow 2001:219n — bibliography of older works is compiled in these works]. However, it was also noticed that in the Northern Pontic region, the Near East models were being received more broadly [cf contrastive approach — Kadrow 2001:Fig. 55]. What stage of development the societies of the ‘middle zone’, the Vistula and Oder drainages, achieved, is still an open question.

ba. Evaluations of the social and ideological structures in the Northern Pontic region are clearly marked by the watershed of the early stages of the CC. This concerns both social ranking, as well as religion and rituals of the Near East. The YC societies, the predecessors of the CC societies, are referred to as ‘dual-function societies’,

i.e. composed of people of cult and people of economy (mainly breeders). However, these societies failed to form the 'military estate' [Ivanova 2001:156-159]. What is more, there are hardly any signs of the merchant class or other broader symptoms of an organised trade system. As far as rituals are concerned, the YC society continues old local 'Eneolithic steppe/forest-steppe' traditions. In contrast to the society in question, the CC peoples exhibit numerous features of a 'civilisational breakthrough', i.e. early stages of a complex social ranking accompanied by elite systems of religion and rituals [Pustovalov 1992; 1994:128-134]. Arguably, this breakthrough may have been inspired by the circles of the Near East civilisation. Such a conclusion emerged at various stages of studies of CC origins [Pustovalov 1993-earlier references *ibid.*]. However, in the last decade, the issue of Near East inspiration was shed a new light on following the studies of organised CC cult features. According to S. Pustovalov, the studies reveal a number of close references to those 'elite cults' [Pustovalov 1993; 1999; Mozolevskiy, Pustovalov 1999]. Still, the social background of transmitting these models is unknown. One of the possible hypotheses is that the territories inhabited by the CC peoples remained under the influence of trade activities of the Mesopotamian Civilisation [Koško 2001].

bb. Economic and social relations at the time when fluted maces were used in most parts of the Oder drainage (the Warta and the upper and middle Oder drainages) were not evaluated in any systemic way [Butent-Stefaniak 1997; Kłosińska 1997; Lasak 2001]. A tentative analysis was carried out and presented only for the upper and middle Noteć River [Makarowicz 1998a:256-265]. P. Makarowicz claimed that potential mace users from the area of the upper Noteć lived in 'moderately stratified' groups of 16-25 breeders with dominance of adult men. Therefore, the occasional artifacts (metal, amber)-including also maces-did not 'signify wealth of an individual but were tokens of wealth and power of the whole group'. J. Czebreszuk in his broader territorial representation claims that this is the period when 'a particular type of society' with rudiments of 'stable stratification' died out. This denoted a return of 'egalitarianism of a kind', which was typical of the LC [Czebreszuk 2001:204-205]. The above mentioned evaluation is of no help when looking for local recipients of the 'Pontic insignia'. Hence, it seems that in this case the earlier traditions were continued, namely the tradition of a 'trail' where development was stimulated by the external Northern Pontic community. Still, archaeologists are yet to discover the scope of this stimulation. Was the appearance of fluted maces in the Vistula and then in the Oder drainages connected only with transmitting organisational models of long distance trade, or was it associated with the flow of Pontic 'people of trail' as well? As yet, there is no answer to this question (cf chapter 6). With the current knowledge of the relations at the end of the CC and the beginning of the CWC-HT (particularly in the Vistula drainage) it is impossible to identify them conclusively.

6. THE ORIGINS OF THE 'CRIMEA-JUTLAND TRAIL'

The 'Crimea-Jutland Trail', or rather a system of trails that linked the cultures of the Baltic and Northern Pontic drainages, is traditionally difficult to evaluate as concerns the circulation of cultural models on the borderline of eastern and western Europe. It may be assumed that the Crimea and Jutland were the leading centres (in both communities). Until recently the issue of the 'trail' was mentioned mainly in the studies of the Iron Age. The early stages of the trail were connected with the distribution of the Stanonim type artifacts (the Hallstatt period)-in which: 'the Vistula route (...) and its branch running along the Bug River, which brought the goods to the Red Ruthenia, were easily noticeable. Further eastwards, the route went clearly across the steppe' [Kostrzewski 1954:44; v. Cofta-Broniewska 1982:159; cf Koško 2001:283].

6.1. THE SIGNS OF FUNCTIONING OF THE 'TRAIL' IN THE ENEOLITHIC AND EARLY BRONZE AGE

In light of the most recent research, the discussed 'trail' can be outlined following the observations of how the Cucuteni-Tripolye culture (C-TC) influenced areas lying to its north-west or, more broadly, how the Funnel Beaker culture (FBC) was tripolysed. This concerns the studies of both the Mątwy cultural component [Koško 1981] and the scope of cultural relationships of the inhabitants of Gródek Nadbużny. In the latter case, W. Gumiński [Gumiński 1989:175] writes: 'it seems that the import of pottery and raw materials from outside the FBC Małopolska group undoubtedly also triggered the influx of various cultural models from territories inhabited by the C-TC. What is more, this trend reached further to the north-western region, i.e. deep into Wielkopolska'. Clearly, 'the influence ran straight from the south-east to the north-west, i.e. to the area of the C-TC up the Southern Bug and Seret rivers, next on the territory of FBC Małopolska group, along the upper Bug towards the confluence with the Huczwa River. Then it ran in the same direction as the morphologic sequence of the Lublin Uplands towards the Nałęczów Plateau, from where it went through the Vistula and Warta interfluvial area across Kujawy and Wielkopolska towards the mouth of the Oder'. Regarding the well dated observations from Bronocice, the above system may be dated at 3540/3340-2870 BC [Koško, Langer, Szmyt 2000], with a particular emphasis on the older part of this period, which is suggested by the latest studies of the reception of C-TC traits in the settlement in Zimne [Bronicki 2000, FBC phase II: 3000-2700/2600 BC]. The above assessment seems to

be authenticated also by the latest studies of trypolisation of the Globular Amphora culture (GAC) and the CWC, supported by i.a. finds of pottery dyed with mineral (red) pigment [Włodarczak 1998; Szmyt 1999; Koško, Langer, Szmyt 2000], recorded in the CWC settlements along the Vistula (GAC:3000-2400 BC; CWC: 2754±99 BC).

All of the above analyses of the 'trail' course in the Baltic drainage point particularly at Kujawy, where the accumulation of the Pontic models and raw materials is exceptionally dense. This may even suggest that Kujawy was a 'border/destination area' of the discussed circulation system. However, it should be remembered that the territories to the west of this mesoregion, especially the Pyrzyce Land, are not fully comparable due to a poor archaeological exploration (mainly as concerns the present issues).

Trypolisation of FBC, GAC, CWC communities was accompanied by opposite processes, i.e. reception of FBC artifacts by the C-TC societies [Kruts, Ryzhov 2000] and then penetration of the C-TC ocumene by the GAC and CWC. In particular, a great deal is known about the extensive settlement process and various forms of GAC influence [Szmyt 1999]. What is currently known about the circulation of CWC settlements — within the 'trail' in question — shows that it is necessary to identify the nature of their relations with the 'pre-Yamnaya' Zhivotilovka-Volchansk group [Rassamakin 1994; Koško 2000]; i.e. with a cultural system connecting the Balkan and Caucasus (including the Crimea) civilisation centres (since 3500 BC). Additionally, their successive YC Budzhak group (since 2400 BC), situated in the steppe part of the Dniester and Prut interfluvial area, exhibits many traits of the CWC [Yarovoy 1985:95].

A review of archaeologically distinctive circumponctic traits in the west and circumbaltic traits in the east leads to two conclusions:

- a. Between 3540 and 2400 BC, but mainly between 3000 and 2700 BC, there was a relatively permanent flow of cultural information between the south-western Baltic and north-western Pontic drainages incorporating the cycle of the following cultures: FBC, GAC, CWC, C-TC, pre-Yamnaya and YC. However, the available signs of this process are insufficiently documented. Hence, it is difficult to assess the course of the trail, the functions of its individual territorial units (e.g. the Hrubieszów Basin or the central part — the Bachorza drainage, the Kujawy Plateau), as well as the reasons for particular initiatives to relocate people, raw materials, artifacts and models.
- b. These phenomena bear hardly any signs of stable forms of organisation, i.e. permanent (long-lasting) 'contact points on the trail' (conceivably, such a role could be played by the region of Gródek Nadbużny), not to mention — culturally distinguishable — 'people of the trail'. Therefore, it can be assumed that the phenomena discussed above should be treated only as another stage of stabilisation of early agricultural interregional relationships, which were established with an increasing

role of exchange [Koško 1989], and whose outline was sketched probably as early as in the Proto-Neolithic era [Domańska 1990:61].

The borderlines of the above 'map of interregional relationships' should be connected with the early stages of bronze and metallurgy centres. The establishment of these centres facilitated the development of copper and tin distribution. This, in turn, promoted consolidation of the existing trends in interregional, long distance trade (extension of the array of raw materials and products that played a utilitarian and simultaneously symbolic and prestigious role). The 'trails' of the Bronze Age linked remote civilisation centres and raw material centres, often situated on the periphery of the former ones. The courses of the trails-on the borderlines of eastern and western Europe-were comprehensively identified by Gimbutas [1965; 1991:Fig. 13-modified version]. Her approach shall serve as a point of reference for further discussion [cf Sarnowska 1975:26] — Fig. 22.

6.2. USERS OF FLUTED MACES AS 'PEOPLE OF THE TRAIL'?

The social and ideological image of the users of fluted maces outlined above leads one to connect the distribution of maces-between the Elbe and the Volga (Fig. 11) — with the transmission of social and organisational models of the Near East civilisation. In brief, below, the author shall try to identify the Pontic-Baltic trail with long distance trade routes organised on the basis of non-European traditions. Possibly, the traditions originated in the communities of the Mesopotamian Civilisation.

Fluted maces belong to the first category of 'insignia' — based sources which clearly links the cultural centres of the Pontic-Baltic drainage. Symbolism of the sources is also undoubtedly rooted in the Near East [Popko, Mace-heads...; Taracha, The mace..., in this volume]. The maces started being transported from their original Northern Pontic region towards the Baltic drainage in the first half of the 2nd millennium BC. This period coincided with the development of 'Old-Babylonian' long distance trade routes in the Anatolia Plateaus (2000-1600 BC — the period of 'Fighting Kingdoms', particularly 1819-1782 BC), where kin-based societies traded thanks to credits from great possessors [Leemans 1950; 1960; cf Arnaud 1982:83]. No source, however, confirms the existence of the Northern Pontic branches of these trails. Thus, the area in question was not included in the historical descriptions of the peripheral sphere of the Mesopotamian civilization circle [cf the attempt to correct the already mentioned 'cognitive blockade' — Tyborowski, Mesopotamia... in this volume]. The assertion of the 'lack of evidence' concerns both historical and archaeological sources, e.g. in the Meso-

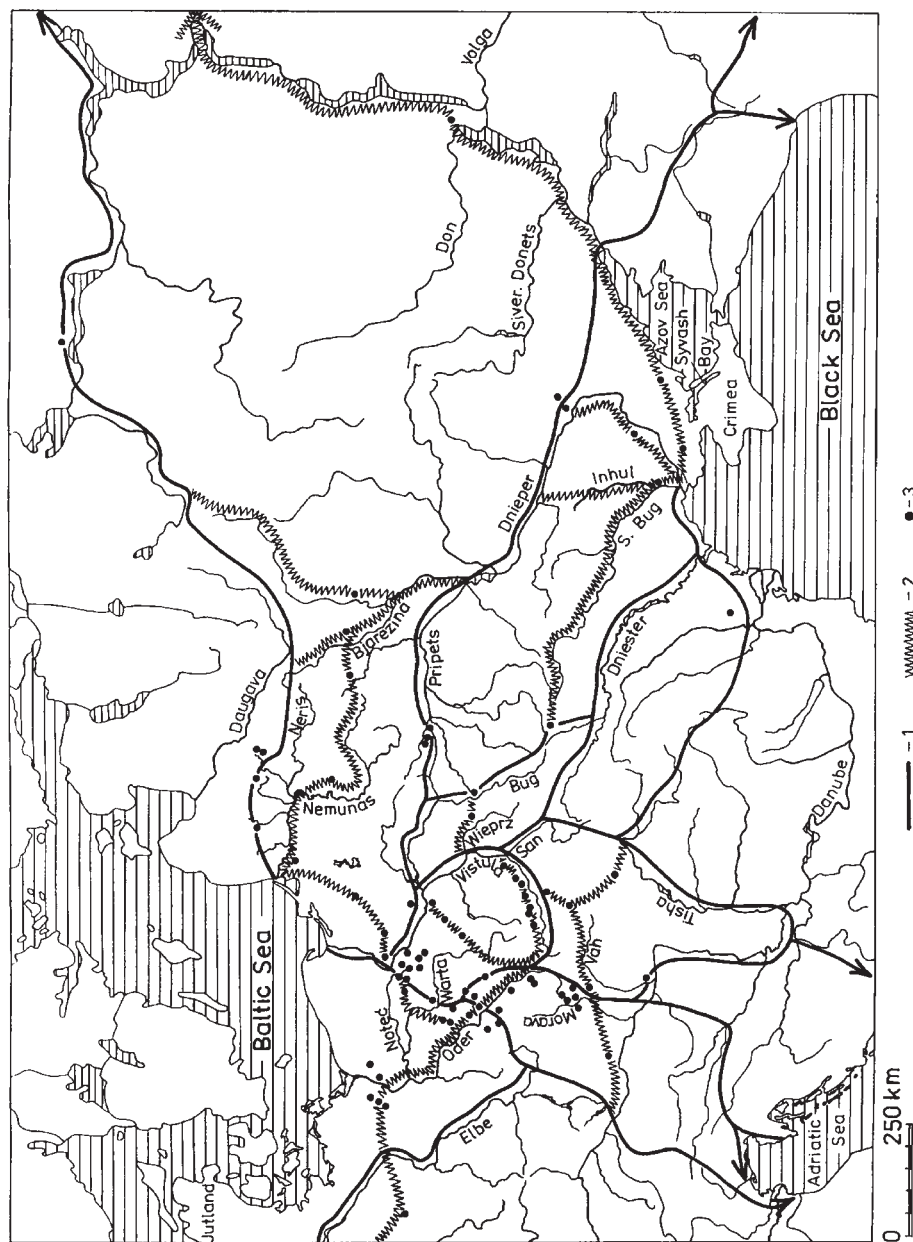


Fig. 22. Trails of long-distance trade in the 2nd millennium BC. 1 - according to Maria Gimbutas [1965]; 2 - corrections and supplements following from the analysis of fluted mace distribution; 3 - fluted maces

potamian region there are no forms analogical to fluted maces ('prototypes') [cf Taracha, The mace..., in this volume]. However, the already mentioned studies of the 'southern' stimulation in the CC development should prove to be a turning point.

In assessing the distribution of fluted maces, the model of 'Old-Babylonian' long distance trade routes was applied. But this distribution may be interpreted in more than one way. It can be assumed that among the components of the 'Near East impulse' that was reaching the CC territory, there was also the model of kin communities, specialised in long distance trade [Leemans 1950:7ff — *tamkarum*]. The rise of the local, Northern Pontic version of such communities (through co-optation of local populations) was supposedly stimulated by 'exchangeable goods': local natural resources of salt in the Syvash Bay (Fig. 22). These resources constituted an attractive commodity in the Russian Plain and have been well recognised since the Middle Ages [Kudriashov 1948:103ff]. However, the 'Syvash salt' and its 'commercial value' must have been discovered considerably earlier—in the early agricultural era, because salt was indispensable in crop processing and conservation. Salt played special role in breeding as well. Consequently, when the quasi-pastoral and pastoral communities appeared in this region (the Bronze Age), the demand for salt grew. It is highly likely that the 'Northern Pontic' reserves comprised resources not only from the Crimea base region, e.g. still only preliminarily analysed (V. Klochko's assessment) copper reserves from the Donbass region or other regions of the Black Sea Plate [Klochko, Manichev et al. 2000]. In this approach, the fluted maces were symbols of high rank — power in the emerging kin communities and their non-Pontic trails of distribution may be treated as signs of co-optation of particular segments of local societies. Probably, the segments should be identified with the communities of metallurgists-wizards-chiefs from the circle of UC influence [cf Koško 1979:172ff; Czebreszuk 2001:193ff]. When the circle disintegrated, the communities were forced to seek a new system of justifying their position (economic and ideological), i.e. to survive the threat of losing their identity. Such an interpretation may be justified by the already mentioned substitution of insignia: the 'ntice style' metal insignia were replaced by fluted maces.

It is difficult to assess the chronological brackets of the discussed 'trail', especially its individual variants. The assessment may be based on any of the following clues: distribution of particular types of maces (assuming that e.g. type B1 is the oldest as concerns evolution) and typo-chronology of bilateral 'imports' from the 2nd millennium BC ('eastern' in the Baltic drainage and 'western' in the Black Sea drainage) [cf among the well-recognised eastern 'imports': 'hammer pins' — Latynin 1967:14-41, 92; Artemenko 1967:80ff; Okulicz 1973:Fig. 45, 117, or elements of the Middle Dnieper culture in the Baltic littoral sphere — Machnik 1979:376, 379]. Regrettably, a detailed record and precise chronology of these phenomena have never been comprehensively studied.

Analysing the distribution of maces leads one to distinguish five potential variants of the 'trail'. Probably, they ran alongside water-courses or in connection with their drainages, which in the past were considered to be the main transportation routes (Fig. 22). Therefore, the 'trail' variants might have run as follows:

- a. Southern Bug — Bug — Wieprz — Vistula (or Vistula — Nemunas).
- b. Southern Bug — Bug — Vistula (or Vistula — Nemunas).
- c. Dnieper (or Inhul — Dnieper) — Pripets — Bug — Vistula (or Vistula — Nemunas).
- d. Dnieper (or Inhul — Dnieper) — Bjarezina — Nemunas.
- e. Dnieper (or Inhul — Dnieper) — Bjarezina — Neris — Nemunas.

If the above variants of the 'trail' course are compared with the environmental and cultural background, they may be grouped in two categories (also treated as stages of development):

- the 'Southern Bug variation' — expeditions leading through forest-free or considerably deforested areas (variants a-b) and
- the 'Dnieper variation' — expeditions leading partly through taiga (variants c-e).

The 'Southern Bug variation' connects the settlement and cultural communities having old agricultural traditions (Pontic steppe/forest-steppe or Central European Plain). That is why, it may be assumed that the earlier mentioned Eneolithic and early Bronze Age origins of the 'trail' directly stimulated the development of this variation. The fact that the Southern Bug variation of the 'trail' continued to be used also in the 2nd millennium BC is amply proved by the tumulus cemetery in Hordeevka (Vinnytsa Region), dated at 1400-1200 BC, abounding in amber artifacts (1502 items including beads of the Tiryns type) and bronze objects, with numerous east-Mediterranean and middle-European formal references [Berezanska, Klochko 1998; Klochko 1996; Ślusarska 2003]. On the other hand, the 'Dnieper variation' seems to have evolved later, with the emergence of agriculture in the taiga societies. This process started at the onset of 2nd millennium BC and involved mainly the penetration of this territory by the CWC. This conclusion may be confirmed by typological classification of fluted maces recorded in the taiga, i.e. in the area where the derivatives of the developmentally oldest type B1 dominate (Fig. 13).

Of key importance in the establishing of the 'Southern Bug variation' was-located on the borderline of the Vistula and Oder drainages-the mesoregion of Kujawy, identified on the Polish Lowlands as an enclave of the 'Danube cultures' [Koško 1989; 1991]. Most probably it was in this region that the said ('Mesopotamian-Pontic') models of long distance trade were adopted from the UC. One of the signs showing that the adoption took place was the already mentioned fact that metal UC-IC insignia were being substituted by stone fluted maces (ca. 1500 BC). Subsequently, the 'Kujawy' tradition was extended to the Oder drainage (later: Morava ⇔ Danube) and the middle and upper Vistula drainage (and later through the Raba,

Poprad or Wisłoka rivers-towards the Vah \Leftrightarrow Danube) [Górski 1999:Fig. 11; Makarowicz 1999:Fig. 1]. Societies of the late UC-IC and TC, as well as the TH and Madarovce/Otoman cultures blended fluted maces into the already existing system of meridional 'trails', which connected the cultural communities of the Aegean Sea, Adriatic Sea and Baltic Sea (Jutland, Sambia) [Bouzek 1966; Tasić 1973; Vladár 1973; Harding 1984; Czebreszuk 2001:200ff] (Fig. 22).

Apart from the above mentioned trails, fluted maces were undoubtedly used also on the Baltic-Ural and the Pontic-Ural routes (Fig. 22). However, only very few items (identified with the FC and SC — Fig. 16.) were found on these routes, particularly in the Volga drainage. Therefore, such occasional finds should incline one to be cautious in attempting to interpret more broadly this trend of using maces, i.e. on the trails of distribution of raw materials from the southern Ural metal deposits and of products from the metallurgical centres located along the Volga River.

The courses of the trails ('variants') outlined above, as well as stages of the 'trail' evolution require specification through a series of regional studies. The studies should not only aim at building a more detailed and exhaustive list of 'import' sources but also involve interdisciplinary research on:

- environment of the given variant of 'trail' (paleoecological studies) and
- historical and ethnologic evidence where and how that the borderline of western and eastern Europe was penetrated (retrospective studies).

CONCLUSIONS

Throughout this article the author has tried to answer the questions of where, when and in what context the fluted mace appeared. The outcomes of this research are not clear-cut. Without a shadow of doubt, fluted maces were produced and used on the territory between the Elbe and the Volga rivers (Fig. 11), generally between 2350-800 BC. However, the limiting dates for individual parts of the territory in question are considerably varied and at present often difficult to determine (Fig. 17).

The most contentious issue is the question of cultural context. Fluted maces appeared in the Northern Pontic region as a reflection of the Near East civilisational tradition, probably as a component of a long distance trade model (the Old-Babylonian merchant: *tamkarum*). What still needs to be found out is the form in which the traditions were applied outside the Northern Pontic steppe/forest-steppe, namely in the following regions: middle and upper Dnieper, Bjarezina, Neris, Nemunas, Vistula, Oder, Morava, Vah. It may be assumed that in the eastern territory,

i.e. between the Dnieper and the Vistula, the traditions initiated the linking of local exchange systems, i.e. the development of the so-called 'chain of commodity exchange' [current approach: Dąbrowski 1972:193]. In the western part, namely on the Oder and Morava, the Pontic impulses — in the region of Kujawy — encountered the systems of older long distance trade traditions (UC-IC), stabilised them at the time of the UC decline and extended the range of application to the middle and upper Vistula drainage [current approach: Koško 1979:200ff]. Further specification and confirmation of these hypotheses go beyond the scope of data provided by the sources analysed in this article. Therefore, it is necessary to look at them from a wider perspective, i.e. the study of the trade systems and trails on the borderlines of eastern and western Europe.

CATALOGUE 1

FLUTED MACES (VERTICALLY GROOVED) — LIST OF FINDS

[(a) — site, find classification; (b) — mace type; (c) — hole type: no hole, marked only, partial, full; (d) — flute number; (e) — mace dimensions: diameter \times height \times hole diameter in mm; (f) — material; (g) — environment-functional context (: settlement?, cemetery?, grave — grave?) and state of preservation (: 100%, 50% — i.e. ca. 50%); (h) — cultural context, chronology; (i) — principal source of information: collections — archives, literature, oral/written communication; (j) — Fig.].

PONTIC-CASPIAN ZONE — P:

- P1 a — Eggenburg, Austria, Niederösterreich Region; b — B2; c — full; d — 7; e — $\sim 65 \times ? \times \sim 16$?; f — ?; g — ?, 100%; h — ?; i — Much 1889:35, Fig. 9:8; j — Fig. 3:1
- P2 a — Guta, Belarus, Homel Region, Ragachov District; b — B3; c — full; d — ?; e — $66 \times 56 \times 21$ -19; f — ?; g — ?, 50%; h — ?; i — oral communication: M.N. Kryvaltsevich, J. Czebreszuk; Collection of Tourism Museum in Bobrujsk; j — Fig. 3:2
- P3 a — Hlinsko, Czech Republic, Severomoravsky Region, Prerov District; b — B1; c — full; d — 11; e — $\sim 71 \times \sim 57 \times \sim 19$ -16; f — ?; g — ?*, 100%; h — ?*; i — Pavelčík 1967: Tab.8:140 (*Baden culture settlement, phase I); Berounská 1987:55; written communication: M.Berounská i A. Lanting; j — Fig. 3:3
- P4 a — Horodnee (Horodno), Ukraine, Luts'k Region, Liubomir District; b — B1; c — full; d — 13; e — $72 \times 45 \times 31$ -27; f — diorite; g — ?, 100%; h — ?; i — MAK collection no. 741; archival information: I.K. Sveshnikov and oral communication: J. Górski; j — Fig. 3:4
- P5 a — Kalanchak, Ukraine, Zaporizhia Region; b — B1; c — full?; d — ?; e — $\sim 62 \times ? \times ?$; f — diorite; g — grave, 100%; h — CC, early phase; i — Bratchenko, Shaposhnikova 1985:412-413, Fig. 110:26 and oral communication: I.L. Serdyukova; j — Fig. 3:5
- P6 a — Kladniky, Czech Republic, Severomoravsky Region, Prerov District; b — B3?; c — full; d — 11?; e — $\sim 74 \times \sim 56 \times \sim 22$?; f — ?; g — ?, 100%; h — ?; i — Přikryl 1891:19,23; Berounská 1987:55; written communication: M. Berounská, A. Lanting; j — Fig. 3:6
- P7 a — Klichav, Belarus, Mahilev Region, Klichav District; b — B1; c — full; d — 10; e — ?; f — ?; g — ?, 100%; h — ?; i — Isaenko 1976:136, 76-77, Fig. 11:20; j — Fig. 3:7
- P8 a — Lotsmanska Kamenka*, Ukraine, Dnipropetrovsk Region; b — B3?; c — full?; d — 6?; e — $40 \times 45 \times ?$; f — granite; g — ?, 100%; h — ?; i — Catalogue 1893:25, no. 375; *as Nikolaevka: Popova 1955:119; j — Fig. 3:8
- P9 a — Mykhailivka, Ukraine, Dnipropetrovsk Region, District; b — ?; c — ?; d — ?; e — ?; f — ?; g — ?; h — ?; i — Popova 1955:168; j — no fig.

- P10 a – Mykhailivka, Ukraine, Zaporizhia Region, Vilniansk District; b – B1; c – full; d – ?; e – 62 x 64 x 20; f – ‘fine-grained crystalline dark-colour rock’; g – settlement, 50%; h – YC, late phase (*‘upper layer’ of site where pottery typical of CC was found as well); i – Lagodovska, Shaposhnikova, Makarevich 1962:141, Fig. 39:2; *Shaposhnikova 1971:332 and oral communication: O.G. Shaposhnikova; j – Fig. 3:9
- P11 a – Nemetice, Czech Republic, Severomoravsky Region, Vsetin District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Červinka 1908:90; Berounská 1987:55 and written communication; j – no fig.
- P12 a – Nesvady, Slovakia, Zapadoslovensky Region, Kamárno District*; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Lichardus 1960:856 (collections of Magyar Nemzeti Múzeum, Budapest; *wrongly assigned to Hurbanovo District); written communication M. Berounská; j – no fig.
- P13 a – Oganino, Russia, Kostroma Region; b – B3; c – full; d – 27; e – ~74 x ? x ~24; f – ?; g – settlement, 100%; h – ?; h – FC; i – Kraynov 1972:81, Fig. 31:5; j – Fig. 4:1
- P14 a – Pinsk, Belarus, Brest Region, Pinsk District; b – B3; c – full; d – ?; e – ?; f – ?; g – ?; 100%; h – ?; i – Isaenko 1970:Fig. 42:13; 1976:58, 76-77, Fig. 11:26 and oral communication M.N. Kryvaltschevich (collections of Pinsk Museum); j – Fig. 4:2
- P15 a – Shily, Ukraine, Ternopil Region, Zbarazh District; b – B1; c – full; d – 47; e – 85-82 x 60 x 28-20; f – ‘grey sandstone’; g – ?, 100%; h – ?; i – archival information: I.K. Svishnikov (collections of the Historical Museum in Lviv); j – Fig. 4:3
- P16 a – Slatinky, Czech Republic, Jihomoravsky Region, Prostějov District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Gottwald 1906:57; Berounská 1987:55 and written communication; j – no fig.
- P17 a – Stepan Razin, Russia, Volgograd Region, Lugo-Prolejsk District, kurgan 1, grave 18; b – B1; c – no hole; d – ?; e – ~68 x ~65 x -?; f – ?; g – grave, next to head, eastwards, 100%; h – ZC, early/developed phase; i – Merpert 1967:94, Fig. 7:1,95; j – Fig. 4:4
- P18 a – Taraklija (Svetlyj), Moldavia, Taraklija Region, kurgan 1, grave 2; b – B4; c – no hole; d – 10; e – 65 x 45 x ?; f – ‘grey sandstone’; g – grave, 100%; h – CC, late phase; i – Manzura 1984:110-112, Fig. 3:2; j – no fig.
- P19 a – Tršice, Czech Republic, Severomoravsky Region, Olomouc District; b – ?; c – marked only; d – ?; e – ~80 x ? x ?; f – ?; g – ?, 100%; h – ?; i – Berounská 1987:55 and written communication (collections of Přerou Museum); j – no fig.
- P20 a – Veletiny, Czech Republic, Jihomoravsky Region, Uherské Hradiště District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Kučera 1910:60-61; Berounská 1987:55 and written communication; j – no fig.

- P21 a – Volchansk, Ukraine, Kherson Region, kurgan 1, grave 40; b – B1; c – full; d – 12; e – 88 x 54 x 35-?; f – ?; g – grave, 100%; h – CC, early phase; i – oral communication: A.I. Kubyshev; j – Fig. 4:5 (grave-goods arrangement according to a hand drawing by A.I. Kubyshev)
- P22 a – ?, Slovakia, Vychodoslovensky Region, ‘District on the Hungarian border’; b – B1; c – full; d – 7; e – ?; f – ?; g – ?, 100%; h – ?; i – Lichardus 1960:843, Fig. 311:30, 856-857 (collections of the Vychodoslovénske Museum in Košice); j – Fig. 4:6
- P23 a – ?, Ukraine, Mykolaiv Region, unattached find of 2-3 maces; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – oral communication: I.T. Chernyakov; j – no fig.
- P24 see 23
- P25 see 23

ANNEX

- P26 a – Adyn, Belarus, Minsk Region, Cherven District; b – B1 (lub B1/B2); c – full; d – 12; e – 70 x 30 x 22-19; f – ? ‘red-coloured’, ‘hard’; g – ?, 100%; h – ?; i – Kryvaltsevich 2001 and written communication; j – Fig. 10:1
- P27 a – Druzhylavichy, Belarus, Brest Region, Ibarlaycki District; b – B3; c – full; d – 24; e – 60 x 44 x 17-?; f – ?; g – ?, 100%; h – ?; i – written communication M. Kryvaltsevich (collections of the Muzeum of the School in Druzhylavichy); j – Fig. 10:2
- P28 a – Druzhylavichy, Belarus, Brest Region, Ibarlaycki District; b – B3; c – full; d – ?; e – ?; f – ?; g – ?, 100%; h – ?; i – written communication M. Kryvaltsevich; j – no fig.

BALTIC ZONE — B:

- B1 a – Barczewo, Poland, Warmińsko-Mazurskie Region, Olsztyn District; b – B1; c – full; d – ?; e – ~85 x ~73 x ~28; f – ?; g – ?, 100%; h – ?; i – Šturms 1936:36, Fig. 9e; Okulicz 1973:172, Fig. 64g, 173; Dąbrowski 1997:77, 156; j – Fig. 5:1
- B2 a – Białcz, Poland, Wielkopolskie Region, Kościan District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Kostrzewski 1923a:241 (collections of exMTPN); j – no fig.
- B3 a – Borek, Poland, Świętokrzyskie Region, Busko Zdrój District; b – B1; c – full; d – 8; e – 82 x 74 x 32-?; f – ?; g – ?, 100%; h – ?; i – Antoniewicz 1928:Fig. 19:10; j – Fig. 5:3
- B4 a – Bychowo, Poland, Dolnośląskie Region, Milicz District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Richthofen 1926:103-104; j – no fig.
- B5 a – Dłużniewo, Poland, Mazowieckie Region, Płońsk District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Šturms 1936:37 (collections of exMEM); Dąbrowski 1997:77, 158; j – no fig.

- B6 a – Dusetos, Lithuania, Dusetos Region; b – B1; c – full; d – 7; e – 74 x 26 x ~18-?; f – ?; g – ?, 100%; h – ?; i – Lietuvos 1974:121, Catalogue 260:1, 100-Fig. 15:8; j – Fig. 5:4
- B7 a – Frydman, Poland, Małopolska Region, Nowy Targ District; b – B1; c – full; d – 8; e – 68 x 64 x 19-17; f – ?; g – ? ('near the Dunajec River*'), 100%; h – ?; i – Żaki 1967:60-61; *Gedl 1975:60; j – Fig. 5:2
- B8 a – Gorczenica, Poland, Kujawsko-Pomorskie Region, Brodnica District; b – B1; c – full; d – ?; e – ~75 x ~58 x ~20-?; f – ?; g – ?, 50%; h – ?; i – Dąbrowski 1997:77, Fig. 64:b,159 (collections of the Brodnica Museum); j – Fig. 5:5
- B9 a – Grochowiska Książę, Poland, Kujawsko-Pomorskie Region, Żnin District; b – B1; c – full; d – ?; e – 83 x 56 x 24-16; f – ?; g – ?, 50%; h – ?; i – Rajewski 1965:35 (collections of MAB); Horst 1981:81; j – Fig. 5:7
- B10 a – Güstow (Gutzkow), Germany, Macklenburg Region, Prenzlau District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Blume 1908:26, Fig. 23; Busse 1915:228-232; Horst 1981:81; j – no fig.
- B11 a – Hohenhameln, Germany, Niedersachsen Region, Peine District; b – B1; c – full; d – 8; e – 77 x 46 x 23-21; f – diorite (from the Harz Mtns.); g – ?, 100%; h – ?; i – Lampe 1963:57, Fig. 2:7; j – Fig. 5:6
- B12 a – Inowrocław-Mątwy, site 1, Poland, Kujawsko-Pomorskie Region, Inowrocław District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – IC, phase IIIa?; i – Żurek 1938; Koško 1979:Catalogue 1:89; 5:12; j – no fig.
- B13 a – Inowrocław-Mątwy (Tupadły), site 3, Poland, Kujawsko-Pomorskie Region, Inowrocław District; b – B1; c – marked only; d – 6; e – 68 x 60 x -; f – ?; g – ?, 100%; h – ?; i – collections of ZPP IP UAM no. 535; Koško 1979:Catalogue 5:13; j – Fig. 5:8
- B14 a – Jordanów, Poland, Dolnośląskie Region, Dzierżoniów District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Richthofen 1926:103-104; j – no fig.
- B15 a – Kietrz, site 1, Poland, Opole Region, Głubczyce District, grave 1129; b – B1; c – full; d – 8; e – 74 x 66 x 23-?; f – monzonite? ('igneous rock, of the gabbrosyenite type'); g – cemetery, secondary cremation grave of two women (?) aged *adultus* and *maturus*, 100%; h – LC, Kietrz IIc phase ('younger half of III period of the Bronze Age'); i – Gedl 1996:36-38, Fig. 1-2; j – Fig. 6:1
- B16 a – Kościelec Kujawski, site 17, Poland, Kujawsko-Pomorskie Region, Inowrocław District; b – B1; c – partial, d – 11; e – 74 x 60 x 23; f – fine-grained granite; g – ?, 100%; h – ?; i – collections of ZPP IP UAM no. 161; Koško 1979:Catalogue 5:8; Prinke, Skoczylas 1980:84; j – Fig. 6:2
- B17 a – Krusza Zamkowa, site 3, Poland, Kujawsko-Pomorskie Region, Inowrocław District; b – B1; c – full; d – ?; e – ~70 x 58 x 22-21; f – diorite; g – ?, 50%; h – ?; i – collections of W. Kaczorowski and oral communication: P. Chachlikowski i J.Skoczylas; j – Fig. 6:3

- B18 a – Kupiskis, Lithuania, Kupiskis Region; b – B1; c – full; d – ?; e – 87 x 30 x ?; f – ?; g – ?, 100%; h – ?; i – Lietuvos 1974:143, Catalogue 574:4; j – no fig.
- B19 a – Kuznocin, Poland, Mazowieckie Region, Sochaczew District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?, h – ?; i – Šturms 1936:37; j – no fig.
- B20 a – Laski, Poland, Wielkopolskie Region, Kępno District; b – B3; c – full; d – 12; e – 82 x 47 x 23-?; f – granite; g – cemetery?, 100%; h – LC? from the IV period of the Bronze Age; i – Wrzosek, Ćwirko-Godycki 1938:615, Fig. I:5,616; Kostrzewska 1953:247; j – Fig. 6:5
- B21 a – Lygšilis, Lithuania, Kelmes Region; b – B1; c – full; d – ?; e – 103-92 x 23 x ?; f – ?; g – ?, 100%; h – ?; i – Lietuvos 1974:147, Catalogue 633; j – no fig.
- B22 a – Łatanice, site ‘field in S.Kalisz’ Poland, Świętokrzyskie Region, Busko Zdrój District; b – B1; c – full; d – ?; e – ~72 x 59 x 23-16; f – ‘black stone’; g – ?, 50%; h – ?; i – MAK no. 4204; j – Fig. 6:4
- B23 a – Łubnice (Massel), Poland, Świętokrzyskie Region, Staszów District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Šturms 1936:37 (collections of exMEM); j – no fig.
- B24 a – Masłów, Poland, Dolnośląskie Region, Trzebnica District, grave 2; b – B1; c – full; d – ?; e – 72 x 32 x 24-?; f – serpentinite?; g – cemetery; h – TC ‘late phase’*; i – Seger 1912:9, 10, 13, Fig. 6, 7, 14-23, 26, 28, 31; Šturms 1936:37; *Gedl 1975:96 — ‘decline phase’; 1996 — ‘late phase’; j – 7:1
- B25 a – Maszewo, Poland, Zachodniopomorskie Region, Goleniów District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Šturms 1936:37; j – no fig.
- B26 a – Mydlów, Poland, Świętokrzyskie Region, Opatów District; b – B1; c – full; d – 6; e – 65 x 40 x 18-16; f – ?; g – ?, 100%; h – ?; i – Kowalski 1975:Fig. 3:d,411; j – Fig. 6:6
- B27 a – Niegibalice, Poland, Kujawsko-Pomorskie Region, Radziejów District, ‘two items’?*; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Wawrzyniecki 1913; Kostrzewski 1923a:241; Jażdżewski 1936:286 — *mentions a single mace; j – no fig.
- B28 a – Nielązkowo, Poland, Wielkopolskie Region, Kościan district; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Šturms 1936:37; j – no fig.
- B29 a – Ojców, site of Ciemna-Obrzysko Wielkie Cave, Poland, Małopolskie Region, Olkusz District; b – B1; c – full; d – ?; e – 76 x 61 x 25-23; f – diorite; g – settlement? (cave encampment?), 50%; h – ?; i – collections of MAK no. 839 and oral communication: J. Górski; j – Fig. 8:1
- B30 a – Orany (Varena), Lithuania, Alytus Region; b – B2; c – full; d – 8; e – ?; f – ?; g – ?, 100%; h – ?; i – Szukiewicz 1904:58, Tab.3:9; Antoniewicz 1930:135, Fig. 12; j – Fig. 8:3

- B31 a – Ostrowo nad Gopłem, Poland, Kujawsko-Pomorskie Region, Inowrocław District; b – B1; c – full; d – 15; e – $\sim 60 \times 43 \times \sim 16$?; f – ?; g – ?, 100%; h – ?; i – Kostrzewski 1923a:241 — collections of the Pasztalski Family; MAP Archives no. 4141; j – Fig. 7:2
- B32 a – Prenzlau, Germany, Mecklenburg Region, Prenzlau District; b – B1; c – partial; d – 12; e – $74 \times 58 \times 22$ -18; f – ?; g – ?, 100%; h – ?; i – ZFE 1882:112; Horst 1981:Fig. 1:a; j – Fig. 8:2
- B33 a – Prenzlau, Germany, Mecklenburg Region, Prenzlau District; b – B1; c – marked only-partial; d – 9; e – $64 \times 50 \times 16$?; f – ?; g – ?, 100%; h – ?; i – ZFE 1882:112; Horst 1980:Fig. B19:6; 1981:Fig. 1:b; j – Fig. 7:3
- B34 a – Przedzrowice, Poland, Dolnośląskie Region, Wrocław District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Richthofen 1926:103-104; j – no fig.
- B35 a – Puczniew, site 'J. Staszek's field' Poland, Łódzkie Region, Pabianice District; b – B1; c – full; d – ?; e – $67 \times 51 \times 29$ -18; f – grey granite; g – ?, 50%; h – ?; i – Chmielewska, Góra 1987; j – Fig. 7:4
- B36 a – Smroków, Poland, Małopolskie Region, Miechów District; b – B1; c – full; d – ?; e – $\sim 66 \times 52 \times 28$ -23; f – diorite; g – ?, 50%; h – ?; i – collections of MAK no. 8931 and oral communication: J. Górski; j – Fig. 8:4
- B37 a – Sokolniki, Poland, Opolskie Region, Opole District; b – B1; c – full; d – 6; e – $60 \times 55 \times \dots$; f – ?; g – ?, 100%; h – ?; i – Gedl 1964:42, Fig. 12:9; 1996:41, Fig. 6; j – Fig. 8:5
- B38 a – Sulmierzyce, Poland, Wielkopolskie Region, Krotoszyn District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Kostrzewski 1928b:227; collections of MAP no. 1924:107a; j – no fig.
- B39 a – Sumin, Poland, Lubelskie Region, Chełm District; b – B1; c – full; d – ?; e – $49 \times 51 \times 20$ -18; f – 'grey rock'; g – ?, 50%; h – ?; i – Skibiński 1964:106, Fig. 5; collections of Museum in Chełm; j – Fig. 8:6
- B40 a – Wielikuskesk, Lithuania, Zarasu Region; b – B4; c – marked only?; d – 8; e – $67 \times 53 \times \sim 18$?; f – ?; g – settlement (fortified?), 100%; h – 'Bronze Age'; i – Lietuvos 1974:194, Catalogue 1321:4,100, Fig. 15:5; j – Fig. 8:7
- B41 a – Wietrzychowice, site 1, Poland, Kujawsko-Pomorskie Region, Włocławek District; b – B1; c – marked only; d – 11; e – $59 \times 49 \times 18$; f – granite; g – grave?, 100%; h – IC, phase IIIa?*; i – Makiewicz 1969:26, Fig. 2, 28; Jadczykowa 1970:137, Fig. 4 (as FBC); *Koško 1979: Catalogue 1:172
- B42 a – Wissriten (current name of locality?), Russia, Kaliningrad Region, Polesk District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Okulicz 1973:173-174 (collections of former Museum in Königsberg); j – no fig.
- B43 a – Wronin, Poland, Opolskie Region, Kędzierzyn-Koźle District; b – B1; c – full; d – 5; e – $\sim 42 \times ? \times \sim 24$?; f – ?; g – ?, 100%; h – ?; i – Mertins 1904:23, j – Fig. 9:2

- B44 a – Wygoda, Poland, Łódzkie Region, Łowicz District; b – ?; c – ?; d – ?; e – ?; f – ?; g – settlement? — ‘on a dune’, 50%; h – ?; i – Wykaz 1939:69; collections of PMA; j – no fig.
- B45 a – Wymysłowo, Poland, Wielkopolskie Region, Gostyń District; b – B2; c – marked only; d – 7; e – 66 x 54 x ?; f – grey granite; g – grave?, 100%; h – TC, late phase or LC, early phase?; i – collections of MAP no. 1950:215; Jasnosz 1975:90, 92, 93-Fig. 14; Gedl 1975:60; j – Fig. 9:4
- B46 a – Zelgno, Poland, Kujawsko-Pomorskie Region, Toruń District; b – B1; c – no hole, d – 14; e – 76 x 61 x ?...; f – fine-grained granite; g – ?, 100%; h – ?; i – collections of MOT no. MT/A/EK/86; oral communication: S. Kukawka, J. Skoczylas, B. Wawrzykowska (drawing documentation); j – Fig. 9:3
- B47 a – Żelisławiec, Poland, Zachodniopomorskie Region, Gryfino District; b – ?; c – ?; d – ?; e – ?; f – ?; g – ?; h – ?; i – Kunkel 1936:396; Horst 1981:81; j – no fig.
- B48 a – ?, Poland, Dolnośląskie Region; b – ?; c – ?; d – ‘over ten’; e – ?; f – serpentinite; g – ?; h – ?; i – collections of MAW; Koško 1979:Catalogue 5:32; j – no fig.
- B49 a – ?, Poland, Kujawsko-Pomorskie Region; b – B1; c – ?; d – 14; e – 74 x 62 x 21; f – ?; g – ?, 100%; h – ?; i – collections of MK-I no. 431; Koško 1979:Catalogue 5:28; j – no fig.
- B50 a – ?, Poland, Kujawsko-Pomorskie Region; b – B1; c – ?; d – 8; e – 71 x 61 x 22-20; f – ?; g – ?; h – ?; i – collections of MK-I no. 432; Koško 1979:Catalogue 5:29; j – no fig.
- B51 a – ?, Poland, Kujawsko-Pomorskie Region; b – B3; c – full; d – 6 x 2?; e – ?; f – ? g – ?, 50%; h – ?; i – collections of MLW; Koško 1979:Catalogue 5:31; j – no fig.
- B52 a – ?, Poland, Małopolskie Region; b – B1; c – full; d – ?; e – 60 x 40 x 16-?; f – diorite; g – ?, 50%; h – ?; i – collections of MAK no. 955 (former Dydyński collection —cf MAK Archives) and oral communication: J. Górski; j – Fig. 9:5
- B53 a – ?, Poland, Małopolska Region; b – B1; c – partial?; d – ?; e – 66 x 55 x 22-17?; f – quartz; g – ?, 50%; h – ?; i – collections of MAK and oral communication: J. Górski; j – Fig. 9:7
- B54 a – ?, Poland, Wielkopolskie Region; b – B2; c – marked only?; d – 10; e – ~66 x ? x ~25; f – ?; g – ?, 100%; h – ?; i – Kostrzewski 1923a:28, Fig. 65; j – Fig. 9:6

ANNEX

- B55 a – Bronocice, Poland, Małopolska Region, Kazimierza Wielka District; b – B1; c – full; d – ? (‘around 10’); e – 51 x 44 x 18; f – ?; g – ?, 50%; h – ?; i – oral communication: P. Włodarczak; j – no fig.

B56 a – Brzezina (Pakosławka*, Grabownica**), Poland, Dolnośląskie Region, Milicz District; b – B1; c – full; d – ?; e – ?; f – ?; g – ?, 50%; h – ?; i – *Gedl 1975:120; **Lasak 1996:30, no. 330; 2001:109 and correcting oral communication; j – no fig.

ABBREVIATIONS OF CULTURE GROUPS:

CC — Catacomb culture
 FBC — Funnel Beaker culture
 FC — Fatyanovo culture
 IC — Ivno culture
 LC — Lusatian culture
 TC — Trzciniec culture/Trzciniec Horizon
 YC — Yamnaya culture
 ZC — Srubnaya culture

ABBREVIATIONS OF MUSEUM & INSTITUTIONAL NAMES:

exMEM — (former) Muzeum Erazma Majewskiego w Warszawie
 exMTPN — (former) Muzeum Towarzystwa Przyjaciół Nauk w Poznaniu
 MAB — Muzeum Archeologiczne w Biskupinie
 MAK — Muzeum Archeologiczne w Krakowie
 MAP — Muzeum Archeologiczne w Poznaniu
 MAW — Muzeum Archeologiczne we Wrocławiu
 MK-I — Muzeum Kujawskie w Inowrocławiu
 MLW — Muzeum im. Leona Wyczółkowskiego w Bydgoszczy
 MOT — Muzeum Okręgowe w Toruniu
 PMA — Państwowe Muzeum Archeologiczne w Warszawie
 ZPP IP UAM — Zakład Prahistorii Polski Instytutu Prahistorii Uniwersytetu im. Adama Mickiewicza w Poznaniu

Translated by Piotr T. Żebrowski

ABBREVIATIONS

AJA	– American Journal of Archaeology, New York
AnOr	– Analecta Orientalia, Rome
AnSt	– Anatolian Studies, London
BPS	– Baltic-Pontic Studies, Poznań
ČVSMO	– Časopis Vlasteneckého spolku musejního v Olomouci, Olomouc
IEJ	– Israel Exploration Journal, Jerusalem
JARCE	– Journal of the American Research Center in Egypt, Boston
M.A.R.I.	– MARI. Annales de recherches interdisciplinaires, Paris
MDP	– Mémoires de la Délégation archéologique en Iran, Paris
RA	– Revue d'assyriologie et d'archéologie orientale, Paris
RIA	– Reallexikon für Assyriologie und Vorderasiatische Archäologie, Berlin – New York
TGIM	– Trudy Gosudarstvennogo istoricheskogo muzeia, Moskva
WVDOG	– Wissenschaftliche Veröffentlichungen der Deutschen Orient-Gesellschaft, Leipzig – Berlin
ZČSSA	– Zprávy Československé společnosti archeologické při ČSAV, Praha – Brno – Nitra
ZfE	– Zeitschrift für Ethnologie, Berlin

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LIST OF AUTHORS

Victor I. Klochko
Ministry of Culture and Arts of Ukraine
Institute of Monument Preservation
and Research
Petropavlovsk Street 15
04086 Kyiv, Ukraine
E-mail: archaeo@naverex.kiev.ua

Aleksander Koško
Institute of Prehistory
Adam Mickiewicz University
Św. Marcin 78
61-809 Poznań Poland
E-mail: antokol@hum.amu.edu.pl

Maciej Popko
Institute of Oriental Studies
ul. Krakowskie Przedmieście 26/28
00-927 Warszawa, Poland
E-mail: Maciej.Popko@mail.uw.edu.pl

Piotr Taracha
Institute of Archaeology and Ethnology
Polish Academy of Sciences
Al. Solidarności 105
00-140 Warszawa, Poland
E-mail: taracha@iacpan.edu.pl

Witold Tyborowski
Institute of History
Adam Mickiewicz University
Św. Marcin 78
61-809 Poznań Poland
E-mail: witoldtyborowski@wp.pl

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