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Editor's Foreword

The Trzciniec Culture, Trzciniec Cultural Circle and Trzciniec Horizon are the names of a cultural area in the borderland of Western and Eastern Europe at the 2nd millenium BC. For over half a century a discussion has been going on over the taxonomic identification (chronological and spatial) and genetic and ethnic interpretation of this cultural unit.

In the debate, the 1980's and 1990's mark a significant cognitive turn caused by the growth of the corpus of sources, the use of systematic methods for the study of mobile sources and the proliferation of regional ^{14}C datings.

The present volume of "Baltic-Pontic Studies" is an attempt to register this breakthrough and a proposal for a new fitting of the Trzciniec phenomenon into the synthesis of Early Bronze Age Europe. The records include rudiments of new regional systematizations, foundations of their chronologies based on radiocarbon datings and a discussion of the mechanisms of socio-cultural changes which gave rise to the Trzciniec cultural area and later contributed to its disintegration.

A long-term intention of this volume giving a multifaceted view of the effects of the said cognitive breakthrough is to encourage a careful scrutiny of the development mechanisms of the European Early Bronze Age Civilization, in particular the role played in them by the societies inhabiting the drainages of the Baltic and Pontic Seas.

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 (especially from the territory of the Ukraine) are standarized according to the English literature on the subject [e.g. Mallory 1989]. In the case of a new term, the author's original name has been retained.

3. The place names located in the Ukraine have been transliterat from the versions suggested by the author (i.e. from the Belorussian, Ukrainian, Polish or Russian originals).

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Jacek Górski

THE FOUNDATIONS OF TRZCINIEC CULTURE TAXONOMY IN WESTERN MAŁOPOLSKA

The paper covers an area located between the Vistula and Nida Rivers and the range of Jura Krakowsko-Częstochowska. Being an undulating country predominantly covered with loess deposits, the area is rather uniform in terms of natural conditions. A specific nature of certain phenomena taking place in the area in the times of the Trzciniec Culture (TC) was a reason for identifying there a separate group of the said culture [Blajer 1987:31, map 5]. In this zone of the TC range, settlement limits are mostly natural. The compact range of TC finds does not significantly cross the Dłubnia and Vistula. A visible scarcity of settlement points is observable in the north-western portion of the area. No barrier was formed by the Nida only — to the north-east of it a relatively dense TC settlement network is in place (Fig. 1).

In the area, the TC is an alien element, it appears in a final, classic form and is not genetically related to the older Mierzanowice Culture. This premise, formulated in the 1970's [Kempisty 1978:413], has not lost anything of its validity and continues to be used with only slight modifications [Górski, Kadrow 1996]. The oldest TC materials, which occurred in the fringes of the area, come from the cemetery in Żerniki Górne. On the basis of radiocarbon dating and bronze artifacts [two wire rings of return coil — *Noppenringe*], the founding of the cemetery should be dated to the first part of phase A2 of the Bronze Age (ca 1900-1800 cal BC) [Kempisty 1978:Fig. 256:16, 20; Kempisty, Włodarczak 1996:132, Tab. 5]. It is important to note that at Żerniki Górne, the TC follows the classic phase of the Mierzanowice Culture [Górski, Kadrow 1996:16]. The situation is different in the south-west of the area. In Iwanowice (site Babia Góra), a Mierzanowice Culture settlement together with an accompanying cemetery survived until the decline of phase A2 of the Bronze Age, i.e. until ca 1600 cal BC, which is also confirmed by ^{14}C dates [Kadrow 1991:57-60]. TC settlement could have begun there as late as the beginnings of the older period of the Bronze Age. This claim is supported by the presence of bronze pins of the Lochhalsnadel type [Gajewski 1969:Tab. 130/3:11, 12] dated to phase B of the same

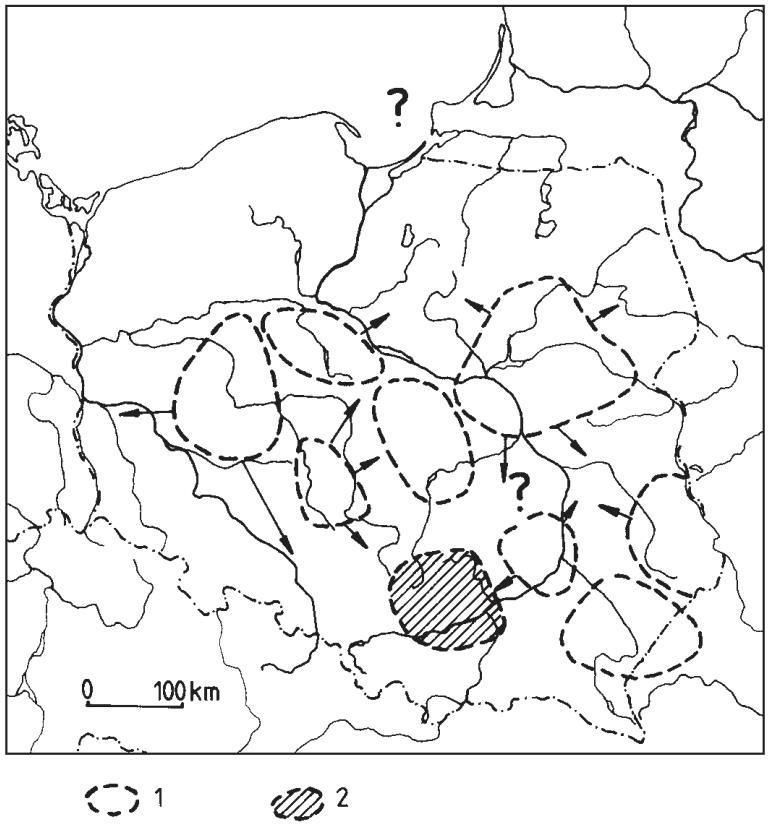

Fig. 1. Territorial diversification of the Trzciniec Culture (TC) in Polish lands: 1 - ranges of territorial groups; 2 - territorial range discussed in this paper (according to W. Blajer). Drawn by A. Mosio.

age [Gedl 1983]. In the light of the quoted examples from Żerniki and Iwanowice, one should consider a possibility that the time of TC appearance in the region may have varied from location to location. Generally speaking, it appeared first in the north-east and later in the south-west of the region. The advance of TC settlement largely depended on the decline of the late phase of the Mierzanowice Culture [cf. Machnik 1984:360].

The decline of the TC in the area is gauged on the basis of its relation to the early phase of the Lusatian Culture (LC). LC populations colonized areas in the vicinity of Kraków setting up settlements and cremation cemeteries on the fringes of the compact range of TC sites [Gedl 1982:21-22; Rydzewski 1983:216-217; 1991; Górski 1992]. Early Lusatian assemblages appeared in the vicinity of Kraków around the middle of the III period of the Bronze Age (BD/HaA1), which is corroborated by bronze pins with butt-like and cross-fluted heads found there [Gedl 1982:22, Fig.

13]. It was than that the process of taking over traits typical of the early phase of the LC by the societies of the late phase of the TC began, which led to the disappearance of Trzciniec traits. These processes must have taken place after 1250-1200 cal BC. Hence, the time of independent development of the TC in the area can be estimated at ca 500-600 years. On the scale of Paul Reinecke's relative chronology units, the period stretches from phase A2 of the Bronze Age to phase A1 of the Hallstatt period.

1. PREMISES. SOURCES AND METHODOLOGY

The number of bronze artifacts known from the territory occupied by the TC is rather small. Due to this fact, the basic source of information on the changes in time is ceramics. An additional difficulty is posed by the fact that it rarely comes from grave assemblages. Graves are few and grave-goods are scarce as a rule. On top of that some graves are common ones that had been used for a long time and finds obtained from them do not satisfy the criteria for compact assemblages. Thus, conclusions concerning changes in time are mainly based on settlement materials.

When constructing a system of TC periodization for western Małopolska, a specific characteristic of local settlement is used, namely the existence of stable settlements that were used for a long time and which supply numerous and varied series of ceramics of great variety of style. To solve the problem of chronological diversification of the TC relying on data from settlements, two fundamental conditions must be met. First, one must have materials from settlements studied over a large area. Second, one must apply appropriate procedures to identify materials that are closely related in time.

At present, the TC periodization system for western Małopolska is based on the study of artifacts from site 55 in Kraków-Nowa Huta-Mogiła [Górski 1993; 1994a]. The settlement has been studied over the area of about 2 hectares. The exploration has rendered over 220 features of that culture in which about 40,000 potsherds have been discovered. For the purpose of processing the materials from that settlement a method has been adapted which was used in the studies of spatial differentiation of the Mierzanowice Culture settlement in Iwanowice [Kadrow 1991]. Following the adopted procedure the contents of 65 pits (or their portions which were considered as closely time-related assemblages) were selected from the settlement in Kraków-Nowa Huta-Mogiła for the purpose of analysis. In this case the term "closely time-related assemblage" should be taken to mean an assemblage roughly corresponding in time to the period of use of a given pit. When defining

such deposits a more proper term is "accumulated assemblage" to distinguish it from a "compact settlement" in the strict sense of the word [Dąbrowski 1993:211]. The ceramics found in these features have been described with the use of about 80 characteristics and states of characteristics taking into account the typology of vessels, their ornaments, morphological details and technological traits. The use of statistical procedures permitted to group related types of material and distinguish three stylistically different groups of TC ceramics. They have been identified as assemblages of types A, B and C [Górski 1994:74ff, Fig. 2, 3, Tab. IV]. Non-homogeneous character of type A assemblages was the reason for their internal subdivision (subtypes A1, A2 and A3). At the site, type D assemblages have also been distinguished containing vessels from the early phase of the LC. Furthermore, a group of pits displaying the traits of types C and D (type C/D assemblages) has been identified, too. For each distinguished unit there are analogous groups of materials from different areas occupied by the TC.

2. CHRONOLOGICAL DIFFERENTIATION AND DESCRIPTION OF ASSEMBLAGE TYPES

The differentiation of pottery, which has been reflected in the distinguishing of several assemblage types, has a chronological significance (Fig. 2). Their temporal sequence has been borne out by examples of feature stratigraphy, analysis of co-occurrence and mutual exclusiveness of traits in assemblages, tracing of the sequences of typological and stylistic development of ceramics, planigraphic analyses and references to better dated analogous groups of materials [Górski 1994:74-108; 1997a].

Type A assemblages represent all the most typical traits of the TC common to the whole territory occupied by it. In the studied area they are synchronized with artifacts from tumulus cemeteries in Żerniki Górne, Rosiejów and Miernowo [Górski 1991:35; 1994:82ff]. On the scale of relative chronology units these artifacts can be dated to parts of phase A2 and phase B of the Bronze Age. This time attribution follows from the analysis of radiocarbon dates and the chronology of some vessels and metal goods discovered at the cemetery in Żerniki Górne [Kempisty 1978:401-408; Kempisty, Włodarczak 1996] and Iwanowice [Gajewski 1969]. The analysis of materials subsumed in type A assemblages has led to the distinguishing of three stylistic trends among them which reflect the evolution of this assemblage type. Subtype A1 assemblages (Fig. 3) are characterized by the co-existence of incised ornamentation (prevalence of horizontal patterns) and relief one (horizontal strips). The dominating forms are richly ornamented vases (Fig. 3:5) and very com-

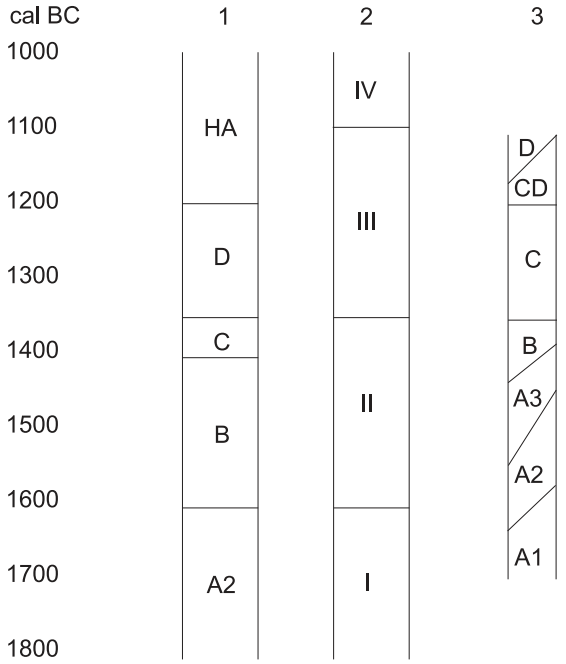

Fig. 2. Selected aspects of the chronology of the earlier and later periods of the Bronze Age in western Małopolska: 1 - chronology of the Bronze Age according to Paul Reinecke; 2 - chronology of the Bronze Age according to Oscar Montelius; 3 - development sequence of TC pottery in western Małopolska (according to the author). Drawn by A. Mosio.

mon sinuous pots decorated with relief strips and having a widened and slanted rim (Fig. 3:1). The set of used vessels is completed by conical, semi-circular or gently contoured bowls as well as cups and beakers (Fig. 3:2). Pottery ornamentation with incised patterns is not encountered in subtype A2 (Fig. 4) assemblages, which is related to the absence of the above mentioned vases. Relief ornamentation dominates (horizontal strips, infrequent buttons — Fig. 4:1, 3, 4). Analogous ornamentation is found in subtype A3 assemblages (Fig. 5), but the set of used vessels is expanded to include amphorae (Fig. 5:3). Additionally, there appear pots with underscored transition of the belly into the neck with the rim left unwidened.

Subtype A1 assemblages represent the oldest link in the stylistic development of TC ceramics in the loess areas in Kraków's vicinity. Despite the fact that the TC appeared in the final form in this area, in subtype A1 assemblages one may find a few elements testifying to its ties with older cultures. The co-occurrence of incised and relief patterns (horizontal strips) is typical of group 1 and group 2 of the "Trzciniec horizon" in Kujawy [Czebreszuk 1996: 159-164]. In these groups, the representation of "Iwno" traditions is still clearly visible. Some ornaments (especially vertical separators in the form of grooves or fins) on vessels decorated with

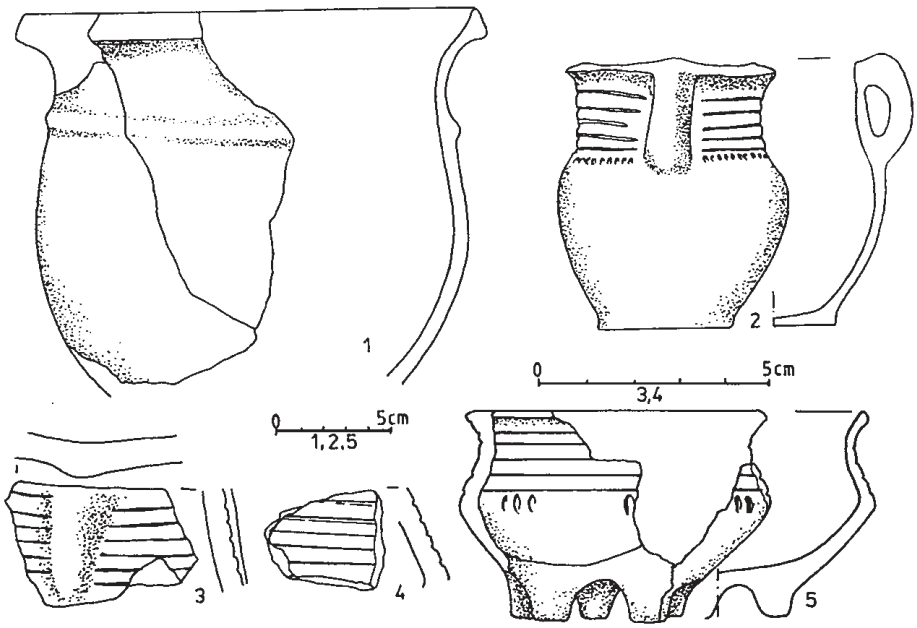

Fig. 3. Pottery characteristic of subtype A1 assemblages (early classic phase of the TC). 1-5 - Miernów, tumulus I, selection of materials (according to A. Kempisty). Drawn by A. Mosio.

horizontal grooves have also clear "Kujawy" ties [Czebreszuk 1996:159, 161]. As an "archaic" element one can also consider traces of cord impressions (known from Miernowo) [Kempisty 1978, Fig. 9:2-4]. In the southern TC zone, one can also find decorated vessel fragments bearing stylistic relations with the patterns known from the Samborzec group of the late phase of the Mierzanowice Culture [Górski 1997:17]. The early chronological position of subtype A1 assemblages is also confirmed by the finds of richly ornamented vases in the context of metal artifacts dated to phase A2 of the Bronze Age [Okalew — Abramek 1971, Fig. 4; Kłosińska 1994:9; 1997:53] or in radiocarbon dated features (Dubeczno) for which the date of ca 1880 cal BC was obtained [Taras 1995:89].

The pottery known from subtype A2 assemblages was not decorated with an incised ornament. The disappearance of the incised ornament is, however, a clear and permanent trend and not a conspicuous chronological phase. Consistently with this trend, a smooth transition to "pure" subtype A2 assemblages must have taken place. As an equivalent of these materials in other areas may be considered group 3 of the "Trzciniec horizon" distinguished in Kujawy. It has even been suggested that it was Małopolska influences that contributed to the emergence of these patterns in

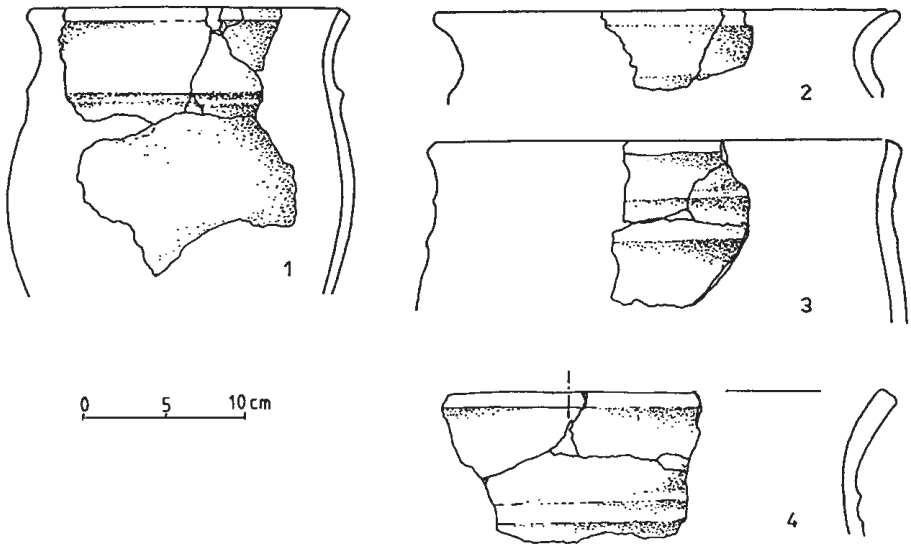

Fig. 4. Pottery characteristic of subtype A2 assemblages (classic phase of the TC). 1-4 - Nowa Huta-Krzesławice, site 47, feature 1, selection of materials (according to A. Kempisty). Drawn by A. Mosio.

the Kujawy environment [Czebreszuk 1996:164-165]. Similar materials can be also distinguished in the vicinity of Sandomierz [Górski 1994:83].

Subtype A3 assemblages apparently contribute little to the picture of ceramics that was sketched for the preceding group. The only new type of vessel that is introduced in this subtype is the amphora. It is important, however, that new types of pots lacking typically Trzciniec characteristics (horizontal strip and widened rim) appear in this time. Such pots are characteristic of successive assemblage types. Hence, subtype A3 assemblages have partially a transitional character and because of that they should be dated with considerable certainty to the second part of phase B of the Bronze Age. Since that time the TC had followed its own peculiar rhythm of development in the area under discussion. In view of this, it is difficult to indicate analogous materials from other territories occupied by the culture.

The problem of differentiation of type A assemblages is closely related to the crucial issue of the presence of pottery displaying traits of Otomani, Mad'arovce, Early Tumulus and Piliny Cultures at TC sites. This is a considerably large group of various types of vessels made in the stylistic conventions of the named cultures representing the fourth, independent stylistic trend. The presence of such sources on the loess soils of Niecka Nidziańska (Nidzica Trough) is not a result of a single wave of "influences" or an episode in the development of local societies, but rather an effect of permanent contacts.

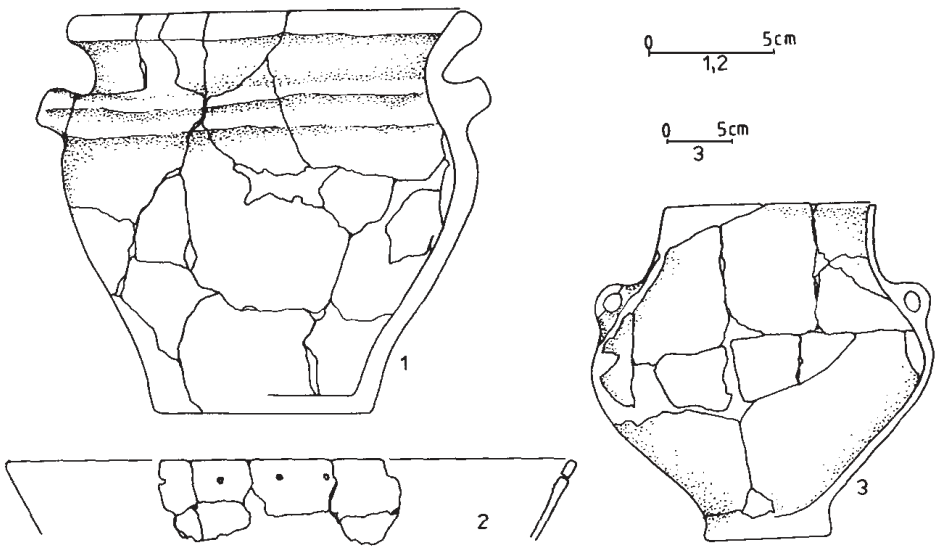

Fig. 5. Pottery characteristic of subtype A3 assemblages (late-classic phase of the TC). 1-3 - Nowa Huta, site 55, feature 34 (according to A. Rachwaniec). Drawn by A. Mosio.

Type B assemblages (Fig. 6) make a compact group of containers, the characteristic trait of which are vertical relief patterns (fins and "whiskers") placed on amphorae and beakers (Fig. 6:1, 13). There is an observable tendency to stress the structure of the vessels and pots by underscoring the transition of the belly into the neck (Fig. 6:3, 4, 11-13). The set of vessels is completed by simple bowl-like forms (Fig. 6:14). Similarly to subtype A3 assemblages, there are no analogous materials from other areas occupied by the TC. However, vessels decorated in a similar way are known from the Piliny Culture [Rydzewski 1991]. It follows from the planigraphic analysis made for the settlement at Kraków-Nowa Huta-Mogiła, site 55 that features containing vessels characterized above should be dated to phase C of the Bronze Age [Górski 1994]. This is not contradicted by dates obtained for similar artifacts from Piliny Culture cemeteries [Rydzewski 1991].

Type C assemblages are easy to distinguish (Fig. 7). They are characterized by the presence of analogous vessels as in type B, but decorated with wide, vertical grooves on the belly (Fig. 7:4-7). Their youngest chronological position is confirmed by its co-occurrence (in type C/D assemblages) with containers characteristic of the early phase of the LC. The latter, in turn, as it has been mentioned, are dated by bronze pins with butt-like and cross-fluted heads. In consequence of this, type C/D assemblages are contemporaneous with the oldest LC materials in Kraków's vicinity, dated in principle to phase A1 of the Hallstatt period while pure type C assembla-

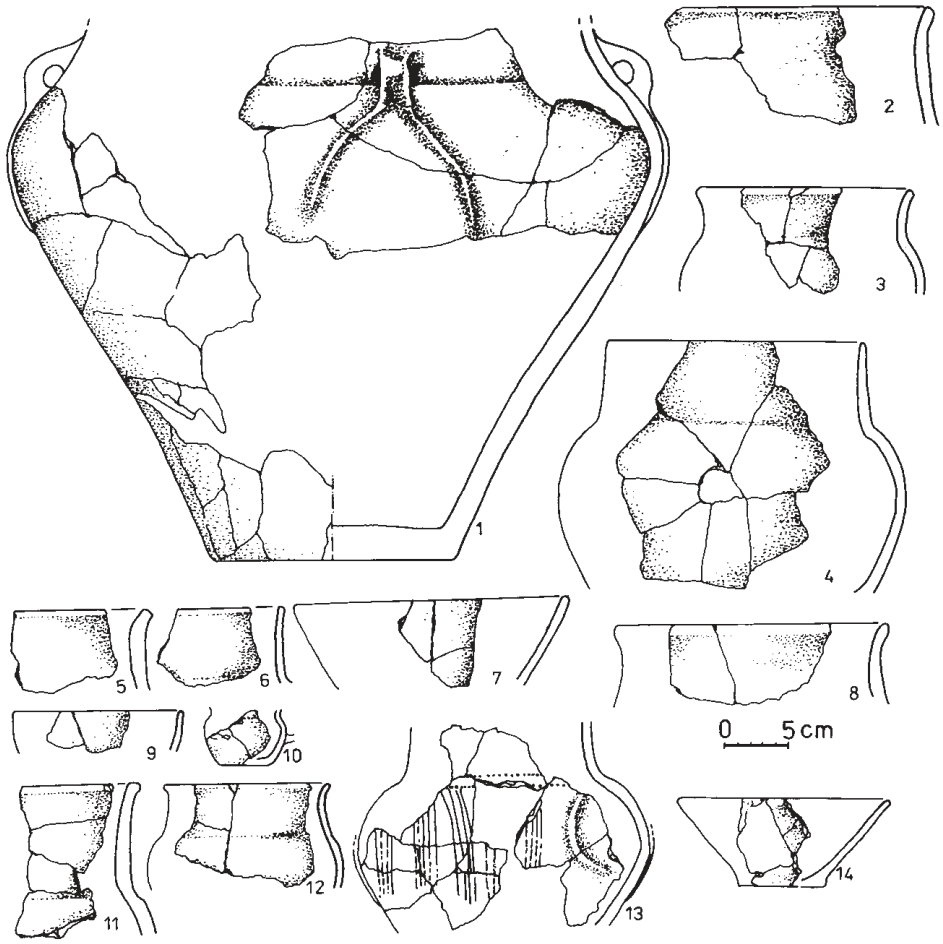

Fig. 6. Pottery characteristic of type B assemblages (post-classic phase of the TC). 1-14 - Opatkowice, site 2, feature 2. Drawn by A. Mosio.

ges immediately preceded them. Thus they can be synchronized with phase D of the Bronze Age. Vessels decorated with vertical grooves are also encountered at many sites located primarily west of the Vistula, but not as frequently as in western Małopolska settlements. Similarly dated and decorated specimens are known from the pre-Lusatian Culture [Gedl 1975:65ff, Tabl. XXVII:11-13; XXXII:1, 3, 8, 10].

Type C/D assemblages display mixed traits (Fig. 8). What sets them apart is the presence of vessels typical of the above defined type C (Fig. 8:1, 2, 10, 13)and others characteristic of the early phase of the LC in Kraków's vicinity (button vessels,

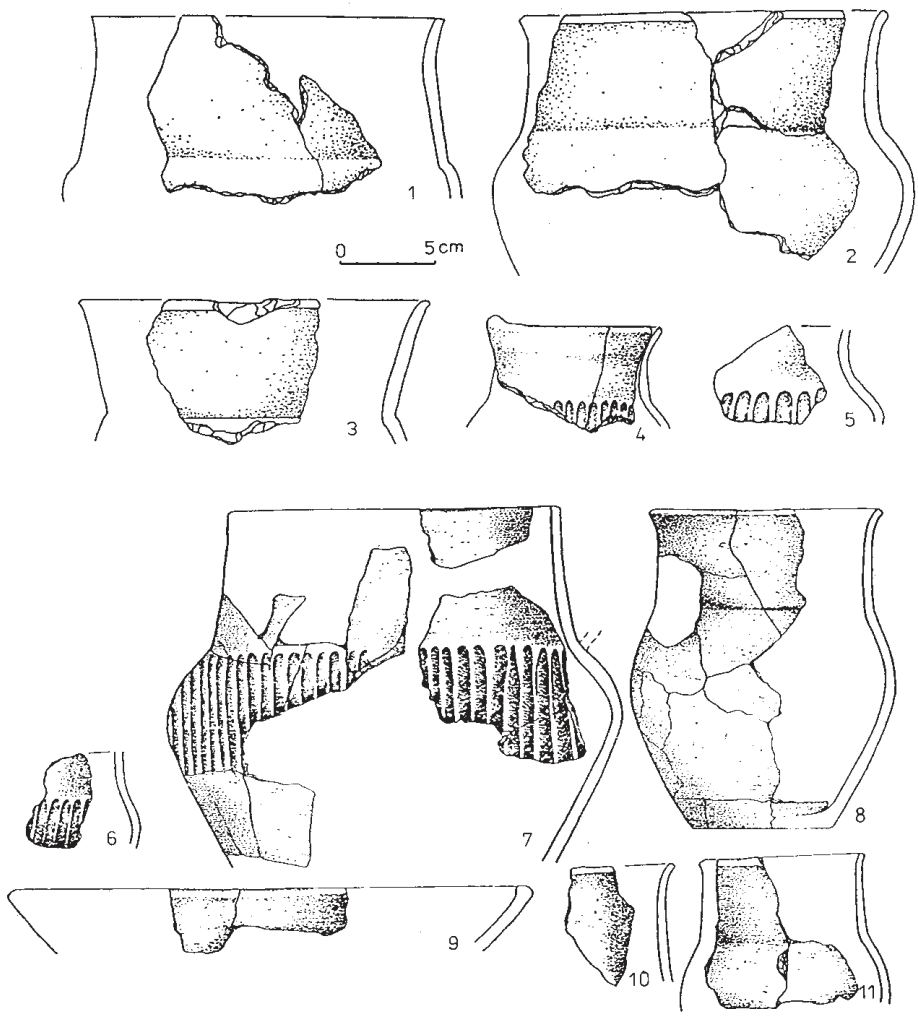

Fig. 7. Pottery characteristic of type C assemblages (late phase of the TC). 1-11 - Nowa Huta-Mogiła, site 55: 1-5 - feature 180; 6-11 - feature 85 (according to A. Rachwaniec and author). Drawn by A. Mosio.

sharp-contoured, ornamented bowls and vases corrugated at the bend of belly — Fig. 8:5, 6, 8, 11). Type D assemblages contain only above mentioned vessels (Fig. 9).

The above synchronization of successive assemblage types with relative chronology units can be supported also by the spatial development analyses of the settlement at Kraków-Nowa Huta-Mogiła, site 55 [Górski 1994:92-102], the development rhythm of which was measured with time intervals equal to the length of the construction phase (60-80 years). Owing to dendrochronological studies it is known [Randsborg 1992] that phase C of the Bronze Age in Paul Reinecke's periodization

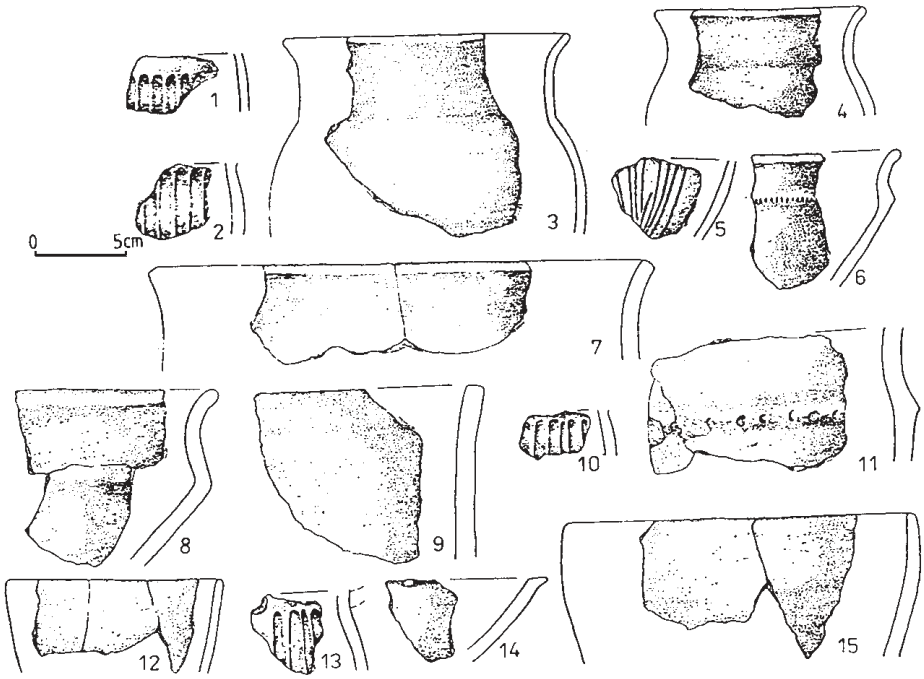

Fig. 8. Pottery characteristic of type C/D assemblages (decline phase of the TC). 1-15 - Nowa Huta-Mogiła, site 55, feature 32. Drawn by A. Mosio.

lasted about 50 years and that on the absolute scale it should be placed approx. between 1400 and 1350 cal BC. At the investigated settlement at Nowa Huta-Mogiła, phase C of the Bronze Age is synchronized with type B assemblages which correspond to only one, i.e. the fifth construction phase. The length of phase B of the Bronze Age may be estimated at ca 200 years while its beginnings in Central Europe are believed to have taken place around 1600 cal BC [Forenbaher 1993]. A simple calculation shows that the first four construction phases (I-IV) at the settlement at Nowa Huta-Mogiła, corresponding to the classic phase, lasted longer (240-320 years) than phase B of the Bronze Age. Hence, the beginnings of the TC settlement in the vicinity of Nowa Huta should be dated to 1700-1600 cal BC. Whereas the late phase, dated to phase D of the Bronze Age and identified with type C assemblages, is equivalent to two construction phases (VI-VII) or the period of 120-160 years. With the situation being as it is, the beginning of the influences of the early phase of the LC (C/D type assemblages — decline phase) occurred around 1200 cal BC or at the turn of phase D of the Bronze Age and phase A1 of the Hallstatt period.

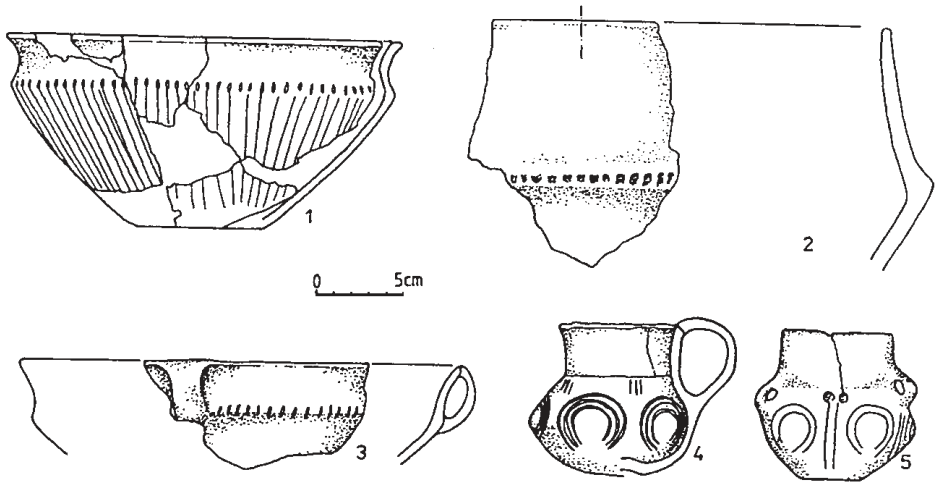

Fig. 9. Pottery characteristic of type D assemblages (early phase of the Lusatian Culture). 1-5 - Nowa Huta-Mogiła, site 55, selection of materials (according to A. Rachwaniec). Drawn by A. Mosio.

3. CONCLUSION

In the first period of its development, the TC is quite uniform throughout its range. Later (from phase C of the Bronze Age), it diversifies locally with its materials clearly departing from "classic" models and evolving in different ways in various areas. This is why only for the oldest stages of the TC development in Kraków's vicinity one can indicate analogous or similar groups of materials from other areas. One should also keep in mind that in various areas similar materials may come from different periods. For instance, subtype A1 assemblages from Małopolska, stylistically related to groups 1 and 2 of the "Trzciniec horizon" in Kujawy, are 100-200 years older.

Despite the synchronization with Paul Reinecke's system, it seems that in research practice it is more advisable to measure certain events and phenomena taking place in the TC against the periodization system constructed for the discussed settlement at Nowa Huta-Mogiła.

Translated by Piotr T. Żebrowski

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Przemysław Makarowicz

TAXONOMIC FOUNDATIONS OF THE TRZCINIEC CULTURAL CIRCLE ON THE LOWER VISTULA

The drainage of the Lower and Middle Vistula is believed to be one of the most important centers on the Polish Lowlands where Trzciniec groups formed [Gardawski 1959; Kośko 1979; Czebreszuk 1996; Makarowicz 1998b]. The river was a natural barrier separating the western (Kujawy) branch of the Trzciniec Cultural Circle (TCC) from the eastern (Chełmno Land and Mazowsze) one [Czebreszuk 1996:152ff]. However, the Vistula's river-bed was not a classic obstruction, being wide and rather shallow. This is visible in a greater similarity of cultural development between Kujawy and Chełmno Land than between the latter and Mazowsze and Podlasie traditionally believed to be territorial "cradles" of the TCC. Kujawy and Chełmno Land are the north-westernmost compact enclave of the Circle (Fig. 1).

The TCC is viewed by scholars in two ways. The older and more popular view which may be called *structural* believes it to be an archaeological culture included in a large circle of cultures, namely the Trzciniec-Sosnytsa-Komarov one [Dąbrowski 1972:81ff; 1987:6ff; Sveshnikov 1974:184; 1990a; Miśkiewicz 1978:195; Blajer 1989:441]. In early monographs the *Trzciniec Culture* (TC), both in its western and eastern versions [Berezanskaya 1972a; 1982; Dąbrowski 1972; Miśkiewicz 1978; Blajer 1989; Kryvaltsevich 1991; 1997; Kryvaltsevich, The Problems of Identification..., in this volume], was believed to have been a macrospatial communication society and was usually characterized on the basis of the traits of its classical phase. Within this macrostructure, smaller territorial units were distinguished and ranked as groups, the shape of which changed depending on the adopted criteria [Gardawski 1959:16ff; Berezanskaya 1972:126-131; 1982; Miśkiewicz 1978:180 and 190; Blajer 1987; 1989; Sveshnikov 1990a; Kryvaltsevich 1991; 1997; Taras 1995].

For a long time, the area on the Lower Vistula was included — following the first professional TC systematization proposed by Aleksander Gardawski — in its Łubna and partially Mazowsze-Podlasie group [Gardawski 1959; Miśkiewicz

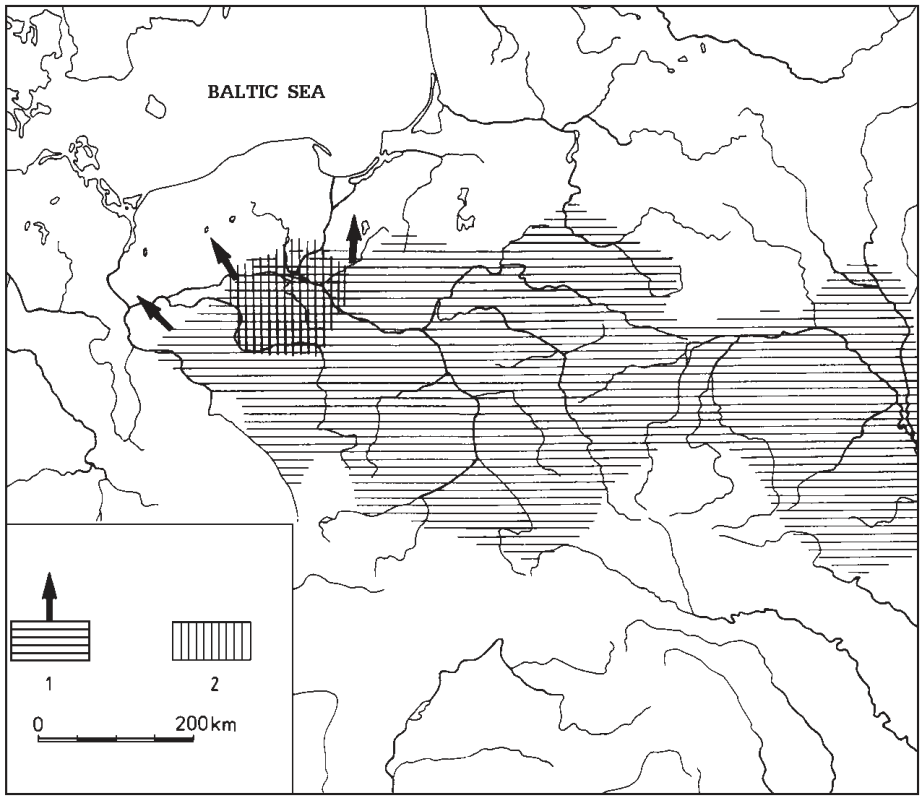

Fig. 1. The Lower Vistula enclave of the Trzciniec Cultural Circle (TCC): 1 - TCC range; 2 - area covered by the paper.

1978; Blajer 1989]. A single attempt to alternatively divide the territory occupied by the Trzciniec phenomenon, including the classification of its Kujawy-Chełmno component [Blajer 1987], has not evoked much response in synthesizing works.

The second proposal how to interpret the Trzciniec phenomenon, put forward by Aleksander Kośko [1979] and referring primarily to the Polish Lowlands, may be called *processual*. In this concept, Trzciniec phenomena are believed to be a sign that Decline Neolithic and Early Bronze societies of this area had reached a certain stage of cultural integration or unification. The stage is a manifestation of the process of varied dynamics of change in terms of chronology and space [Kośko 1979; 1991; 1994; 1994a]. This is why the concept of the *Trzciniec Horizon* (TH) was put forth stressing the processive and dynamic nature of the phenomenon of integration [Kośko 1979:197]. Under this concept, the classic package of "Trzciniec" indicators, proposed already by A. Gardawski [1959], does not relevantly characterize the Low-

lands groups of this cultural complex [Kośko 1979; Makarowicz 1995; 1998b; 1998c; Czebreszuk 1996]. The horizon, to put it briefly, is rather a stage when things take shape and develop than a culture in the sense of a stable structure. In the discussed concept traditional divisions into territorial groups have been dismantled. Instead, a hypothetical arrangement of spatial macrozones has been proposed in which integration factors, in the form of different cultural traditions, were very active [Kośko 1979:197ff; Czebreszuk 1996:155].

Within the outlined hypothesis one should also include the proposal of Janusz Czebreszuk [1996] referring to an earlier concept of Andrzej Kempisty [1978]. Czebreszuk's proposal entailed the division of TCC into the *northern* zone (basically "sandy soil") and *southern* (basically "loess soil"). The criteria of the division were certain rules of behavior in the spheres of settlement, economy and social organization following from "Trzciniec" populations' inhabiting different ecozones. The same author developed the TH concept in Kujawy distinguishing within it a number of taxonomic units having the rank of culture groups or development phases called TH *groups* or *structures* (TH 1-TH 5).

A record should also be made of the proposal to define the TCC as a *cultural package* referring to a cognitively very interesting attempt to explain the phenomenon of Bell Beakers [more: Czebreszuk 1998a; Czebreszuk, "Trzciniec". An Alternative..., in this volume].

To sum up these introductory remarks I would like to stress that the aim of this paper is to try to substantiate the outlined view of the Lower Vistula (basically Kujawy and Chełmno Land) branch of the TCC as a *cultural transformation horizon*. Therefore, I suggest to characterize the Trzciniec phenomena recorded in this region of the Polish Lowlands in the following categories: (**I**) conventional systematization and (**II**) real systematization.

1. CONVENTIONAL SYSTEMATIZATION

Within the Lower Vistula branch of the TCC one may distinguish seven taxonomic units now. These are structurally separate complexes of traits called *horizons*, referring to the terminology adopted in the literature, and numbered from TH 1 to TH 7. The distinguishing of two structures, TH 6 and TH 7, is a new proposal with little foundation in sources.

The characterization of indicators of individual TH complexes (their indicator assemblages) was based in principle on diagnostic traits of vessel pottery (macro- and micromorphological, ornamentation and technology traits of vessels), only to

a small degree did it rely on bronze artifacts. It is shown synthetically together with references to specific figures (Table 1). Radiocarbon dates of individual TH assemblages and cultures close chronologically are also presented (Table 2) [Makarowicz, Absolute..., in this volume].

Trzciniec Horizon 1. In A. Kośko's systematization this structure was equated with the decline phase (IIIa) of the Iwno Culture (IC) [Kośko 1979:86, Tab. 14]. In J. Czebreszuk's conception TH 1 is perceived as a Central Kujawy variety of the TCC, starting the process of acquisition of "Trzciniec" traits by local groups of Bell Beakers (BB), i.e. IC [Czebreszuk 1996: 152ff].

TH 1 complex occurred in central and northern portions of Kujawy and in the Chełmno Land. Its origins are related to the territorial differentiation of the late IC [Makarowicz 1998b:158 and 285ff].

The most significant TH 1 assemblages in terms of source potential include a ritual feature in Biskupin, site 2a (Fig. 2A:3, 8, 9, 13 — the youngest phase of its exploitation) [Gardawski et al. 1957; Grossman 1998] and the cemetery in Bożejewice, site 33 (Fig. 2A:5). The settlement and cemetery in Żegotki, site 3 (Fig. 2A:6, 7, 11) and the settlements in Piecki, site 1 (Fig. 2A:1, 2) and in Grudziądz-Mniszek, site 3 (Fig. 2A:10) represent a transitional state from the late IC (phase III) to TH 1 [Makarowicz 1998b:102ff; 1998c].

The structure characterized above may be dated, on the basis of analysis of material indicators and ^{14}C datings, to the period from 1950/1900 to 1700/1650 BC (Tab. 2; Fig. 3).

Trzciniec Horizon 2. This unit was previously known under the name of south-eastern group of the Iwno Culture [Kośko 1979:72ff; Czebreszuk 1988; 1996; Makarowicz 1989] and considered as belonging to its refuge trend. The studies carried out in the 1980's and 1990's have shown that the unit should be interpreted as a syncretic post-Iwno and early Trzciniec group [Makarowicz 1998a; 1998b:103ff; 1998c; Czebreszuk 1996:160ff].

The taxonomic unit was not a homogeneous structure in terms of material trait configuration. Generally speaking, its oecumene covered south-eastern and eastern Kujawy and north-eastern Wielkopolska as well as the Lower Vistula drainage. In similar stylistic configurations, the phenomenon is observable in Mazowsze [Gardawski 1959], central Poland [Gąsior 1975] and farther south-east [Taras 1995]. Hence, this is a phenomenon going far beyond the lowland areas. The rise of TH 2 complex was a result of an intensification of contacts between the groups of the late phase of the IC and mainly "forrest Trzciniec" communities from Mazowsze [Makarowicz 1998b:142-147; 1998c; Czebreszuk, Makarowicz, Szmyt 1998].

The most important sites of TH 2 are settlements in Rybiny, site 14 (Fig. 2B:14) and site 17 (Fig. 2B:8, 10-12, 18), Jeziory, Żakowice, Szczepidło (Fig. 2B:17) and Pruchnów, site 23 (Fig. 2B:9) as well as cemeteries in Sarnowo, site 2, (Fig. 2B:4, 15),

Table 1

Taxonomic characterization of Trzciniec Horizon structures on the Lower Vistula

Taxonomic unit	Preferred vessel types	Vessel micromorpholgy	Vessel ornamentation	Vessel technology	Non-ceramic indicators	Figure
TH 1	pot, bowl, beaker, vase, amphora handleless	preference for rounded, non-widened rims, few straight and widened rims, "tulip-like" rims, vessels on legs	domination of simple one-element patterns, preference for relief and incised ornamentation (relief strips and horizontal incised lines)	domination of middle-thickness walls (6-8 mm) and multicolored broken stone of varied coarseness, rare white broken stone	low-flanged axe (Wrocław-Szczytniki type), quadrilateral chisel	2A:1-13
TH 2	vase, bowl, beaker, pot, handleless amphora	preference for rounded, non-widened rims, more straight, slanted and widened rims, "tulip-like" rims, vessels on legs	domination of simple one-element patterns, more multi-element patterns, preference for relief ornamentation (strips and buttons), incised ornamentation, also impression/pricking, furrowing techniques, zone and quasi-metopic patterns, ornaments combining different techniques	domination of middle-thickness walls (6-8 mm) and multicolored broken stone of varied coarseness (domination of fine and middle coarseness), more frequent white broken stone, admixture of mica and sand	pins with a flattened end and wound into a "scroll" or a loop	2B:1-18
TH 1/3	bowl, handleless amphora, vase, pot	preference for widened, straight and slanted rims	domination of simple one-element patterns, domination of relief, incision and impression techniques, undulating lines, textile impressions	domination of middle thickness walls over thick walled vessels, preference for crushed granite of different colors, domination of fine and middle coarseness admixture	—	2C:1-4
TH 3	pot and beaker	more rims slanted towards the outside and widened, considerable number of rounded rims	domination of simple one-element patterns, preference for relief technique (horizontal strips) and impressions	admixture of crushed granite of various colors and varied coarseness	—	2C:5-9

Taxonomic unit	Preferred vessel types	Vessel micromorpholgy	Vessel ornamentation	Vessel technology	Non-ceramic indicators	Figure
TH 4	vase, bowl, beaker, pot, handleless amphora	domination of rounded rims over straight ones, balance of widened and unwidened rims	domination of simple one-element patterns, preference for relief technique (buttons), impressions/cutting, rare incision technique	domination of middle-thickness walls, preference of multi-colored broken stone of varied coarseness, more white and pink broken stone	—	2D:1-15
TH 5	pot, vase, beaker, pitcher, bowl, handleless amphora	domination of rounded rims over straight and slanted ones as well as of widened ones over unwidened	preference for simple patterns, incision and impression/cutting techniques, lesser of relif technique (undulating and corrugated relief strips)	preference for admixture of broken stone of various colors and middle coarseness and of gravel and sand, higher frequency of white broken stone	pins with semicircular heads, “sabre-like” pins, pins with flattened and perforated ends, bracelets with rectangular cross-sections and narrowing ends, buttons (tutulus)	2E:1-17
TH 6	handleless amphora, bowl, vase	domination of rounded rims over straight and slanted ones, more widened rims, bottoms sometimes flanged to form a short foot	poor ornamentation, relief (buttons and strips) and impression techniques	preference for admixture of middle coarseness broken stone of various colors (mainly white and pink), small incidence of sand	pin with semicircular head	2F:1-9
TH 7	vase, pitcher	domination of rounded rims, cylindrical vessel necks	domination of incision (vertical grooves) and relief (buttons) technique	preference for admixture of middle and fine pink broken stone	—	2G:1-4

Janowice (Fig. 2B:13), Nowy Młyn, Brześć Kujawski, site 13, grave 5 (Fig. 2B:9), and Pruszcz Gdański, site 10 (Fig. 2B:5-7) [Makarowicz 1998b; 1998c].

On the basis of the analysis of main material indicators and radiocarbon datings TH 2 may be placed in the period from 1850/1800 to 1650/1600 BC (Tab. 2; Fig. 3).

Trzciniec Horizon 3. This taxon comprises a group of sources exhibiting traits associated with Trzciniec groups from Małopolska. In the originally proposed form, TH 3 is a short-lived unit poorly documented with sources. These visible deficiencies make it hard to characterize it (especially spatially) in a way comparable to the previously discussed structures. On the Polish Lowlands, this complex ends a development stage of the Early Bronze culture dominated by IC patterns. Its origins are related to the interaction of TH 1 societies (to a lesser degree of TH 2) with the Małopolska and central Poland branch of the TCC [cf. Czebreszuk, Makarowicz, Szmyt 1998; Makarowicz 1998b:151-155; 1998c].

The most important TH 3 sites include features from Brześć Kujawski, site 4 (Fig. 2C:7) and site 5 (Fig. 2C:8, 9), Brześć Kujawski, site 24 [Czebreszuk 1996:165] and Machnacz, site 9 [Makarowicz 1998b]. On the basis of a radiocarbon date and identification of material culture traits this complex can be dated to the period from ca 1750 to 1650/1600 BC (Tab. 2; Fig. 3).

Assemblages illustrating the state of transformation from TH 1 to TH 3 include settlements at Borowo, site 12 (Fig. 2C:1-4) [Ignaczak 1996; Czebreszuk 1996; Makarowicz 1998b; 1998c] and Siniarzewo, site 1(Fig. 2C:5, 6) [Makarowicz 1998b; 1998d]. They combine southern traits of the Małopolska branch of the TCC, northern "Iwno" ones and those of the Mazowsze-Podlasie version of the Trzciniec Circle. This structure may be placed in the border zone between taxa TH 1 and TH 3 [Makarowicz 1998b:105ff; 1998c].

Relying on radiocarbon dates, the assemblage from Borowo, site 12, should be dated to the period from 1750 to 1700 BC. Slightly later (1700-1600 BC) on the chronological scale, one can place the feature from Siniarzewo, site 1 (Tab. 2; Fig. 3).

Trzciniec Horizon 4. This concept was initially believed to have been a separate cultural unit, namely the Goszczewo group, which combined southern patterns of the Mad'arovce (MaC), Věteřov (VC) and Otomani (OC) Cultures with northern ones, mainly of the IC and the Globular Amphora Culture (GAC) [Czebreszuk 1987; 1996]. Its territory was limited to eastern Kujawy. Assemblages of this type are associated at present with inspirations from the circle of the Füzesabony Culture (FC) and MaC transmitted mainly by Małopolska communities of the Trzciniec circle [Czebreszuk 1996; Czebreszuk, Szmyt, Makarowicz 1998; Makarowicz 1998b; 1998c].

The most representative assemblage of TH 4 is Goszczewo, site 14 (Fig. 2D:1--14) [Czebreszuk 1987; 1996:165ff). Next to it one can mention sites in Sędzin, site 49 (Fig. 2D:15), and Góra [Czebreszuk 1996].

No radiocarbon dates have been obtained for TH 4 yet. This cultural structure may be dated roughly — following an analysis of pottery traits — to the period from 1750-1450(?) BC (Tab. 2; Fig. 3).

Trzciniec Horizon 5. This unit includes assemblages displaying clear traits of the Tumulus Culture (TuC). They have not been tied to any specific, compact territory [Czebreszuk 1996; Makarowicz 1998b; 1998c]. In A. Kośko's systematization [1979] assemblages classified as TH 5 have been, in principle, identified with post-Iwno and proto-Lusatian structures.

The most representative feature of TH 5 is the settlement in Opoki, site 7 (Fig. 2E:1-3, 9-13) [Woźniak 1988; Czebreszuk 1996]. The development of this complex may have something in common with cemeteries at Wolica Nowa, site 1 (Fig. 2E:4-8, 17), Gustorzyn, site 1 (Fig. 2E:14-16) [Grygiel 1987], Marcinkowo, site 9 and Wojdal, site 1 [Czebreszuk 1996]. The origin of TH 5 is related to the impact of TuC societies driving from the Middle Warta toward the north [Czebreszuk, Makarowicz, Szmyt 1998; Ignaczak, Makarowicz 1998; Makarowicz 1998c].

No radiocarbon dates have been obtained for TH 5 yet. Relying on the identification of pottery traits and the ornamentation of metal goods this structure may be approximately dated to the period from 1650 to 1300 BC (Tab. 2; Fig. 3).

Trzciniec Horizon 6. TH 6 represents one of the syncretization trends between "Trzciniec" and "Tumulus" patterns, i.e. the process of adaptation of TuC patterns by late Trzciniec societies [Ignaczak, Makarowicz 1998]. A very low number of assemblages do not permit us to assess the range of this phenomenon.

The most characteristic assemblages of this complex have been supplied by the settlements at Piecki, site 1 (Fig. 2F:3, 7-9) [Makarowicz 1998b] and Dobieszewice, site 2 (Fig. 2F:1, 2, 4-6), earlier subsumed under TH 5 [Czebreszuk 1996].

On the basis of ^{14}C datings and the analysis of movable sources, this taxon may be placed roughly in the period between 1550 and 1350 BC (Tab. 2; Fig. 3).

Trzciniec Horizon 7. The origins of TH 7 are related to the transformations of *late Trzciniec* structures into *proto-Lusatian* ones. In the Polish literature this state of cultural transformations became to be called the *Łódź phase* [Gardawski 1959; 1971; Wiklak 1963; Ignaczak, Makarowicz 1998]. The distinguished taxon — in the strict sense — should be identified rather with the rise of the Lusatian Culture (LC) on the Lower Vistula than with the "Trzciniec substratum". The inclusion of this structure in the TCC follows from still clear recessive TCC traits in TH 7 ceramics inventories.

Representative assemblages of this complex can be found in Kujawy. Among sepulchral ones are Brześć Kujawski, site 13 (the oldest stage of the cemetery; Fig. 2G:1) [Kraszewski 1996; Gardawski 1971], Krusza Podlotowa, site 8 [Czebreszuk, Ignaczak, Łoś 1997] and Wójcin (Fig. 2G:2) [Czebreszuk 1996:178]. Settlement assemblages include those from Kuczkowo, site 5 [Ignaczak, Makarowicz, The

Table 2

Radiocarbon datings of Iwno Culture, Trzciniec Horizon, Tumulus Culture and Lusatian Culture assemblages on the Polish Lowlands

No	Cultural unit*	Site, feature	Material	Context	Laboratory number	Conv BP	Cal BC
1	IC I	Narkowo 16, f. 23	charcoal	settlement feature	Ki-5604	3930±70	2380±101
2	IC II	Siniarzewo 1, f. H 21	bones	grave	Ki-6239	3820±50	2359±85
3	IC II	Siniarzewo 1, f. H 21	bones	grave	Ki-5908	3680±50	2044±80
4	IC II	Mycielewo 1	bones	grave	Ki-6334	3670±40	2028±73
5	IC II	Mycielewo 1	bones	grave	Ki-6333	3610±45	1948±64
6	IC III	Toruń 243, skupisko 1	charcoal	settlement feature	Gd-7228	3600±50	1942±75
7	IC III	Siniarzewo 1, f. H 201	bones	settlement feature	Ki-5916	3590±50	1928±80
8	IC III	Siniarzewo 1, f. H 201	bones	settlement feature	Ki-5917	3520±40	1815±58
9	IC III-TH 1	Żegotki 1, f. A 112	bones	settlement feature	Ki-6896	3605±50	1946±73
10	IC III-TH 1	Żegotki 1, f. A 89	bones	settlement feature	Ki-6102	3580±30	1900±55
11	IC III-TH 1	Żegotki 1, f. A 47	bones	grave	Ki-6902	3545±40	1837±64
12	IC III-TH 1	Żegotki 1, f. A 47	bones	grave	Ki-6103	3540±45	1835±67
13	IC III-TH 1	Żegotki 1, f. A 47	bones	grave	Ki-6908	3540±40	1831±63
14	IC III-TH 1	Żegotki 1, f. A 47	bones	grave	Ki-6904	3540±30	1829±55
15	IC III-TH 1	Żegotki 1, f. A 47	bones	grave	Ki-6905	3525±30	1819±51
16	IC III-TH 1	Żegotki 1, f. A 47	bones	grave	Ki-6903	3520±35	1816±54
17	IC III-TH 1	Żegotki 1, f. A 47	bones	grave	Ki-6907	3515±30	1811±51
18	IC III-TH 1	Żegotki 1, f. A 47	bones	grave	Ki-6906	3505±35	1805±55
19	IC III-TH 1	Żegotki 1, f. A 47	bones	grave	Ki-6101	3490±45	1798±65
20	TH 1	Biskupin 2a, ditch	charcoal	ditch I	Gd-6664	3630±100	1980±146
21	TH 1	Biskupin 2a, ditch	bones	ditch II	Ki-6308	3620±45	1954±64
22	TH 1	Biskupin 2a, ditch	bones	transversal ditch	Ki-6309	3610±45	1948±61
23	TH 1	Biskupin 2a, ditch	bones	ditch II	Ki-6307	3600±40	1938±77
24	TH 2	Rybiny 17, f. 1	bones	settlement feature	Ki-5589	3560±50	1854±77
25	TH 2	Rybiny 17, f. 1	charcoal	settlement feature	Ki-5125	3520±40	1815±58
26	TH 2	Rybiny 17, f. 1	charcoal	settlement feature	Ki-5590	3480±60	1780±81
27	TH 2	Rybiny 14, f. 9	charcoal	settlement feature	Gd-2297	3470±80	1777±105
28	TH 2	Rybiny 17, f. 1	bones	settlement feature	Ki-5128	3450±60	1732±90
29	TH 2	Rybiny 17, f. 1	bones	settlement feature	Ki-5127	3420±55	1686±76
30	TH 2	Rybiny 17, f. 1	shells	settlement feature	Ki-5126	3390±45	1667±63
31	TH 1/3	Borowo 12, f. 19E	charcoal	settlement feature	Ki-5608	3520±60	1814±78
32	TH 1/3	Siniarzewo 1, f. E 95	bones	settlement feature	Ki-5907	3410±40	1681±54
33	TH 1/3	Borowo 12, f. 19	charcoal	settlement feature	Ki-5605	3380±55	1635±76
34	TH 1/3	Siniarzewo 1, f. G 144	bones	settlement feature	Ki-6503	3310±45	1561±59
35	TH 3	Kuczkowo 1, f. D 105	bones	settlement feature	Ki-6490	3305±40	1559±54
36	TH 6	Piecki 1, f. 47	bones	settlement feature	Ki-5682	3240±25	1477±30
37	TH 7	Zgłowiączka 3, f. 3	bones	settlement feature	Ki-6886	3260±45	1499±58
38	TH 7	Krusza Podlotowa 8, f. 3	bones	grave	Gd-5118	3190±60	1446±58
39	TH ?	Radojewice 29, f. 110	bones	grave	Ki-6883	3590±40	1930±66
40	TH ?	Radojewice 29, f. 110	bones	grave	Ki-6884	3540±45	1835±67
41	TuC	Szczepidło 17, f. 5	bones	settlement feature	Ki-5591	3260±50	1502±63
42	TuC	Szczepidło 17, f. 12	bones	settlement feature	Ki-5592	3180±70	1438±75
43	LC	Narkowo 9, f. 1	charcoal	settlement feature	Gd-2288	3290±90	1540±99
44	LC	Siniarzewo 1, f. H 91	bones	settlement feature	Ki-6250	3160±40	1421±44
45	LC	Siniarzewo 1, f. H 91	bones	settlement feature	Ki-6251	3120±35	1373±47

No	Cultural unit*	Site, feature	Material	Context	Laboratory number	Conv BP	Cal BC
46	LC	Siniarzewo 1, f. H 114	bones	settlement feature	Ki-6248	3080±40	1331±58
47	LC	Siniarzewo 1, f. H 80	bones	settlement feature	Ki-6249	3070±40	1319±60
48	LC	Siniarzewo 1, f. J 103	bones	settlement feature	Ki-6574	3065±35	1315±57
49	LC	Siniarzewo 1, f. I 392	bones	settlement feature	Ki-6577	3040±40	1285±70
50	LC	Siniarzewo 1, f. I 95	bones	settlement feature	Ki-6578	3025±40	1265±76
51	LC	Siniarzewo 1, f. I 320	bones	settlement feature	Ki-6579	3010±35	1236±73
52	LC	Siniarzewo 1, f. I 1	bones	settlement feature	Ki-6576	2970±35	1162±70
53	LC	Siniarzewo 1, f. I 282	bones	settlement feature	Ki-6581	2960±40	1143±74
54	LC	Siniarzewo 1, f. H 54	bones	settlement feature	Ki-6580	2955±40	1139±73
55	LC	Siniarzewo 1, f. K 164	bones	settlement feature	Ki-6573	2950±40	1131±73
56	LC	Siniarzewo 1, f. J 202	bones	settlement feature	Ki-6575	2925±40	1094±73
57	LC	Narkowo 9, f. 175	charcoal	settlement feature	Gd-2619	2880±80	1029±119
58	LC	Bożejewice 8, f. 5	bones	grave	Gd-2171	2850±80	995±112

* IC - Iwno Culture, TH - Trzciniec Horizon, TuC - Tumulus Culture, LC - Lusatian Culture
Sources: Czebreszuk 1996; Grossmann 1998; Ignaczak, Makarowicz 1998; Makarowicz 1998b; 1998c

Problem..., in this volume] and Zgłowiączka, site 3 (Fig. 2G:3, 4) [Makarowicz 1998c].

Relying on ^{14}C dates and on identification of stylistic traits of pottery, the complex may be tentatively dated to the period between 1500/1450 and 1400/1350 BC (Tab.2; Fig. 3).

2. REAL SYSTEMATIZATION

The above presented evolution sequence of TH structures in Kujawy permits us to set the period of development of the Lower Vistula branch of TCC at the period from 1950/1900 BC to ca 1400/1350 BC, i.e. 550-600 years. Radiocarbon datings and an analysis of changes of characteristics of major material indicators confirm an earlier hypothesis about partial synchronous occurrence of these cultural structures (Table 3) [Makarowicz, Absolute..., in this volume]. This is strong evidence in favor of the hypothesis about many parallel lines of cultural development on the Lower Vistula in the times of the TH [Czebreszuk 1996; Makarowicz 1998b; 1998c].

On the scale of quintessential periodization [Topolski 1984] the distinguished taxonomic units may be subsumed under three horizons. It seems that they represent real (essential) cultural changes — social, economic, settlement, demographic, ideological and ritual — which generated communities representing individual TH

complexes and in which such communities participated. The full line of argument being the basis for distinguishing the *Early Trzciniec, Classic Trzciniec* and *Late Trzciniec Horizons* goes beyond the discussion of sources as such. This, however, is not the aim of this article (for broader discussion see Makarowicz 1998b; Czebreszuk, Makarowicz, Szmyt 1998]. Therefore, I shall restrict myself to a short taxonomic characterization drawing lines of division between successive, quintessential development stages of the TCC in Kujawy [more on this subject Makarowicz 1998b].

The **proto-Trzciniec Horizon** (2400/2350-1950/1900 BC; Fig. 3) comprises phenomena of various origin that initiate the process of acquisition of Trzciniec traits by societies of such cultures as the Single Grave Culture (SGC), BB, IC, the decline GAC and the so-called Linin group (LG) of the Nemen (Nemunas) Culture. In the Lower Vistula drainage, the main role in this process was played by the IC. It is within this culture that first models of cultural behavior and prototypes of material culture specific to the TCC appeared.

The **Early Trzciniec Horizon** (1950/1900 BC — 1850/1800 BC, Fig. 3) was an effect of transformations inside the IC, in particular of the beginnings of its territorial differentiation. TH 1, genetically related to the IC, exhibits also recessive traits of the decline GAC.

In the **Classic Trzciniec Horizon** (1850/1800 BC — 1650/1600 BC, Fig. 3) Trzciniec communities began to develop along parallel lines. The IC was then finally dismembered into smaller spatial structures. Around 1750/1700 BC there co-existed next to each other societies representing TH 1 (and TH 1/3), TH 2, TH 3 and TH 4 (in its initial stage of development). TH 1/3, TH 2 and TH 3 still display clear (TH 1/3 and TH 2) or less unequivocal (TH 3) "Iwno" patterns. In TH 2 assemblages, there are recorded traits of "forest-East European" cultures (LG) and those of the Mazowsze-Podlasie branch of the TCC. TH 3 also initiates contacts with the Małopolska and Central Poland branches of the Trzciniec Circle. These interactions are later continued by TH 4 societies whose material implements reveal MaC, VC and Füzesabony Cultur (FC) patterns.

Generally speaking, HT 1 (TH 1/3) and TH 2 structures represent Trzciniec societies of the "northern" type, whereas the remaining ones, beginning with TH 3, are examples of Trzciniec societies of the "southern" type.

The **Late Trzciniec Horizon** (1650/1600-1300/1250 BC, Fig. 3) is made up of structures of late TH 4 and especially of TH 5, TH 6 and TH 7 exhibiting TuC traits as well as proto-Lusatian ones of the so-called *Łódź phase* [Gardawski 1971] or *Łódź Horizon* [Kośko 1979]. This is a stage of gradual decomposition and disintegration of the Trzciniec phenomenon on the Polish Lowlands. The stage ushered a cultural change that gave rise to the LC — a stable farming culture — in that area after 1500 years of domination of societies preferring a mobile lifestyle.

A fundamental question calling for a solution is the interpretation of the taxonomic units distinguished in the Lower Vistula drainage. The question is: which

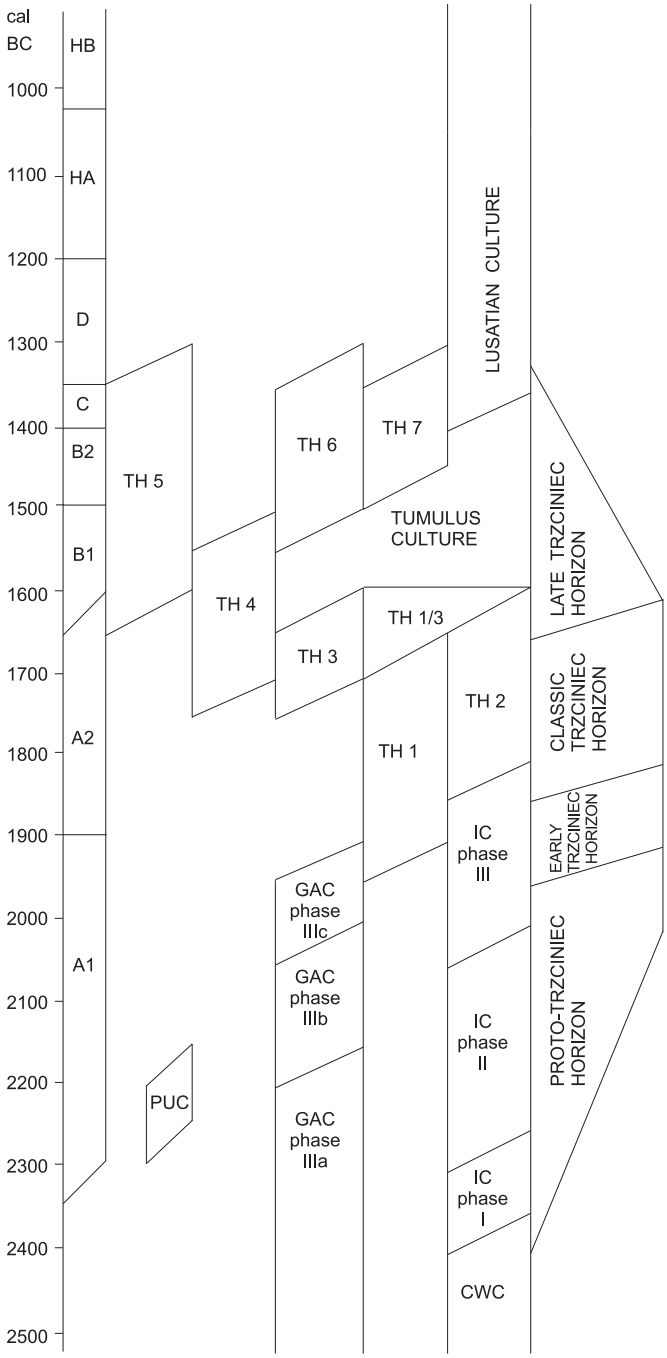

Fig. 3. Cultural and chronological systematization in the Lower Vistula zone of the Polish Lowlands. CWC-Corded Ware Culture; GAC-Globular Amphora Culture; IC-Iwno Culture; LC-Lusatian Culture; PUC-Proto-Únětice Culture; TH-Trzciniec Horizon; Tu-Tumulus Culture.

of them — in terms of real ("living") culture — are manifestations of spatial units (territorial groups) and which are rather emanations of chronological units (individual development phases of the TCC Lower Vistula enclave)? There is no clear answer to this question now.

It seems that some *Trzciniec Horizon* complexes: HT 1, HT 2 and possibly HT 5 can be identified with supralocal (or even supraregional) *groups* of the Great Valley branch of the TCC [more in Makarowicz 1998b]. Such an interpretation of the remaining complexes (TH 1/3, TH 3, TH 4, TH 6 and TH 7) is not possible at present because of the scarcity of sources, on the basis of which they were distinguished. It may be tentatively assumed that they reveal rather local states of transformation of above named structures.

3. CONCLUSIONS

The rise of the Lower Vistula branch of the TCC was a complex process generated by several interrelated factors [Makarowicz 1998b]. A major one, which may be taken to be the *prime cause*, was the intensification of intergroup contacts, both local and long-distance. An important role in the intensification of intercultural interactions was played by various forms of long distance and local exchange. What was exchanged were prestige objects, raw materials and livestock. Another factor was the spreading of specific economic and settlement rules and last but not least social and ideological patterns. The circulation of such patterns and ideas did not entail each time migrations of large human groups. A relative standardization of material culture and of economic, settlement and social behavior was rather an effect of the spreading of the network of contacts by setting up permanent forms of intergroup cooperation and competition following from the alliances of individual village and local communities. It was also a result of exogamy, participation in common ceremonies and rituals, approval for specific values, ideas and patterns of cultural behavior

A parallel development and the complexity of the processes taking place in the Eastern Great Valley zone of the Polish Lowlands — a cultural and settlement province located at the junction of parallel and meridian axes of important routes of movement of people and cultural patterns — brought about the rise of a number of TH structures, of supralocal dimension, on the Lower Vistula.

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Halina Taras

THE BASES FOR THE TAXONOMY OF THE TRZCINIEC CULTURE IN THE SOUTHERN PART OF THE AREA BETWEEN THE VISTULA AND BUG RIVERS

The identification of the Trzciniec Culture means here defining the character of the different occupations and types of production observed between the Vistula and Bug rivers, in the areas of eastern Małopolska and western Volhynia Uplands and in Polesie Lubelskie within the period of at least 500 years (from the second half of the Early Bronze till the end of the Middle Bronze period), i. e. these phenomena that, in their beginnings, are different from those associated with the Strzyżów and Mierzanowice Cultures and, towards their end, with the Lusatian Culture (Fig. 1).

Many types of production can provide no or little help in defining the identifying elements of the Trzciniec Culture. Metal artifacts are of no use, unless one wants to use them for chronological identification or to describe the contacts Trzciniec Culture communities had with other cultures. In the eastern zone of the culture, bronze was never a basic material, therefore no specific type of metallurgy had developed here, though it might be assumed that some repair work and some attempts at making bronze objects were made.

Flint work, the basic type of production, does not provide much help, either. The main reason for it is the small number of flint artifacts in inventories, particularly in compact sets. While they do allow one to prove that they were produced in the Bronze Age, this does not enable one, however, to conclude which tool forms or kinds of tool forms can serve as identifying markers of the culture. Some tendencies, however, can be easily observed in the Trzciniec Culture, e.g. the large number of flake tools, scaled pieces, knife tools and concave tools with gradual retouch, scrapers and side scrapers as well as bifacial tools [Taras 1997a]. In this period a new type of sickle appeared, namely one in which the broadest part was just over the base (Fig. 2:6, 6:9, 12) and the working edge, straight or concave, sometimes had denticulate retouch (Fig. 6:12). The described tool form marks an evolutionary-chronological stage rather than an archaeological culture (the shape of sickle is also found in Late Bronze and Early Iron Age cultures) and can be observed in the flint work of the Trzciniec Culture, too.

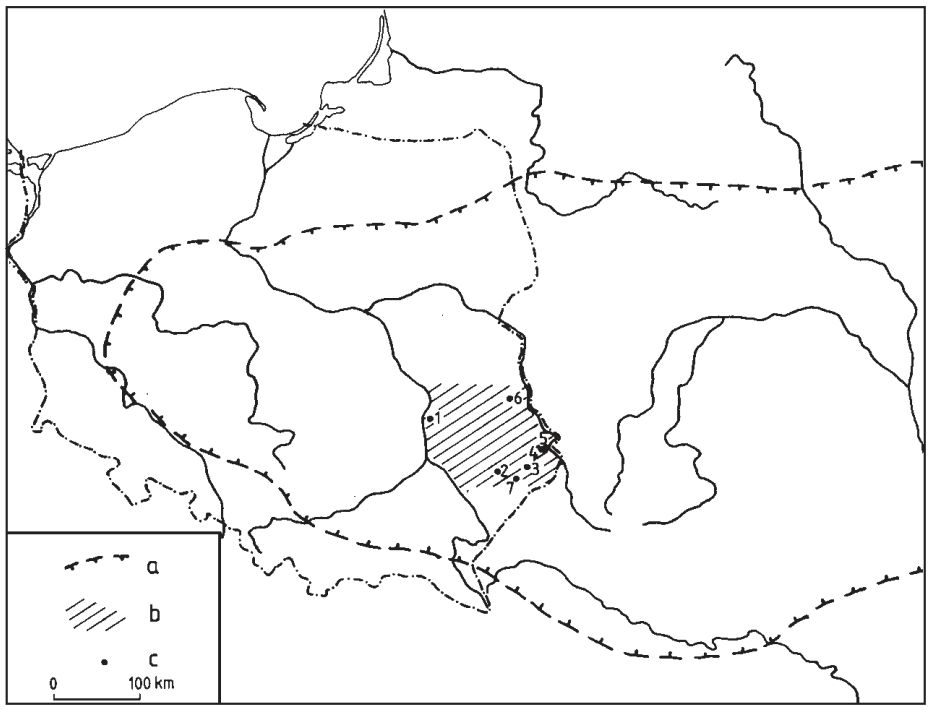

Fig. 1. The territorial range of the problem in question.; a - the Trzciniec complex range, b - the territorial range covered by this paper, c - location of more important sites. 1 - Trzciniec, 2 - Guciów, 3 - Tyszowce, 4 - Hrubieszów-Podgórze, 5 - Teptiuków, 6 - Dubeczno, 7 - Podlodów.

It is not possible as well to use the production based on organic materials (Fig. 9:5, 6) as a marker here due to a very small number of such artifacts in the Trzciniec Culture inventories as well as the universal character of tool concepts.

1. TAXONOMY BASES — THE MAIN CRITERIA OF THE IDENTIFICATION SYSTEM

The main source of our knowledge of the Trzciniec Culture in the area between the Vistula and Bug rivers is its pottery characterised by the unique way of preparing the material, the preference for some types of vessels and the techniques of forming them, as well as its quite sophisticated ornamentation. All these features underwent many changes throughout the Trzciniec Culture existence. The changes depended

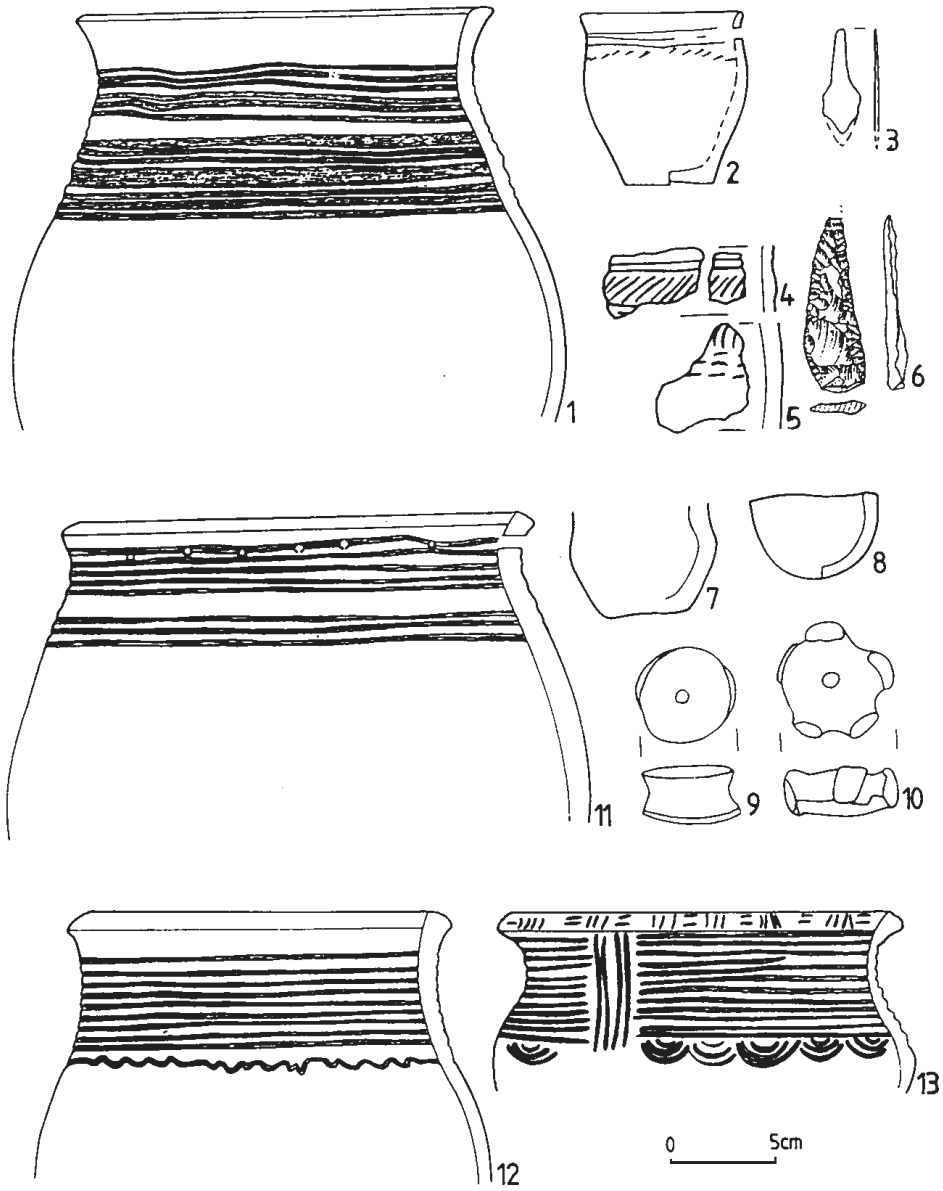

Fig. 2 Dubeczno, site 1. Material of the early phase (early classical).

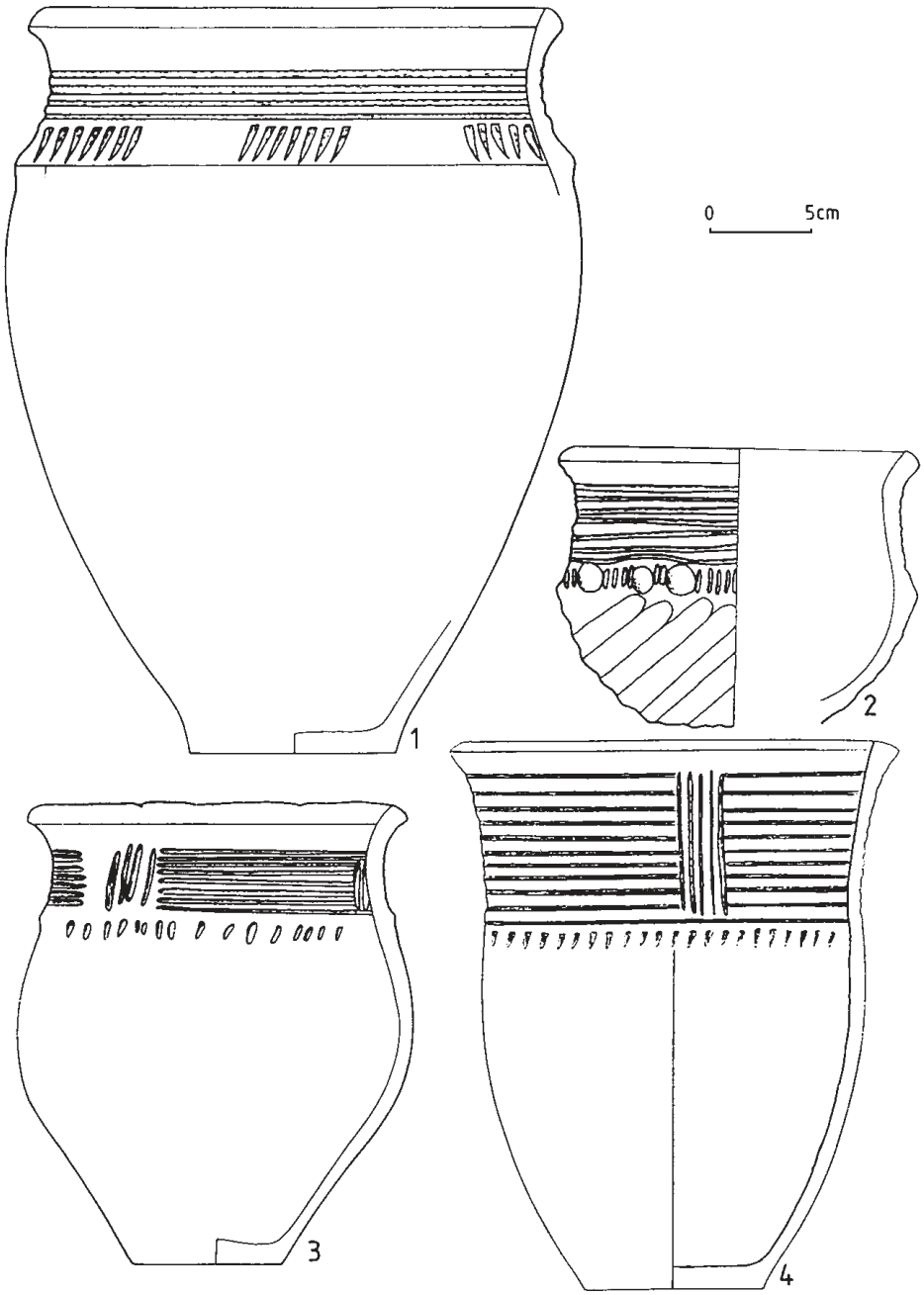

Fig. 3 Material of the classical phase. 1 - Chodlik-Podlesie, site 3 (after M. Matyaszewski), 2-5 - Lublin-Dąbrowa (after E. Kłosińska and H. Taras).

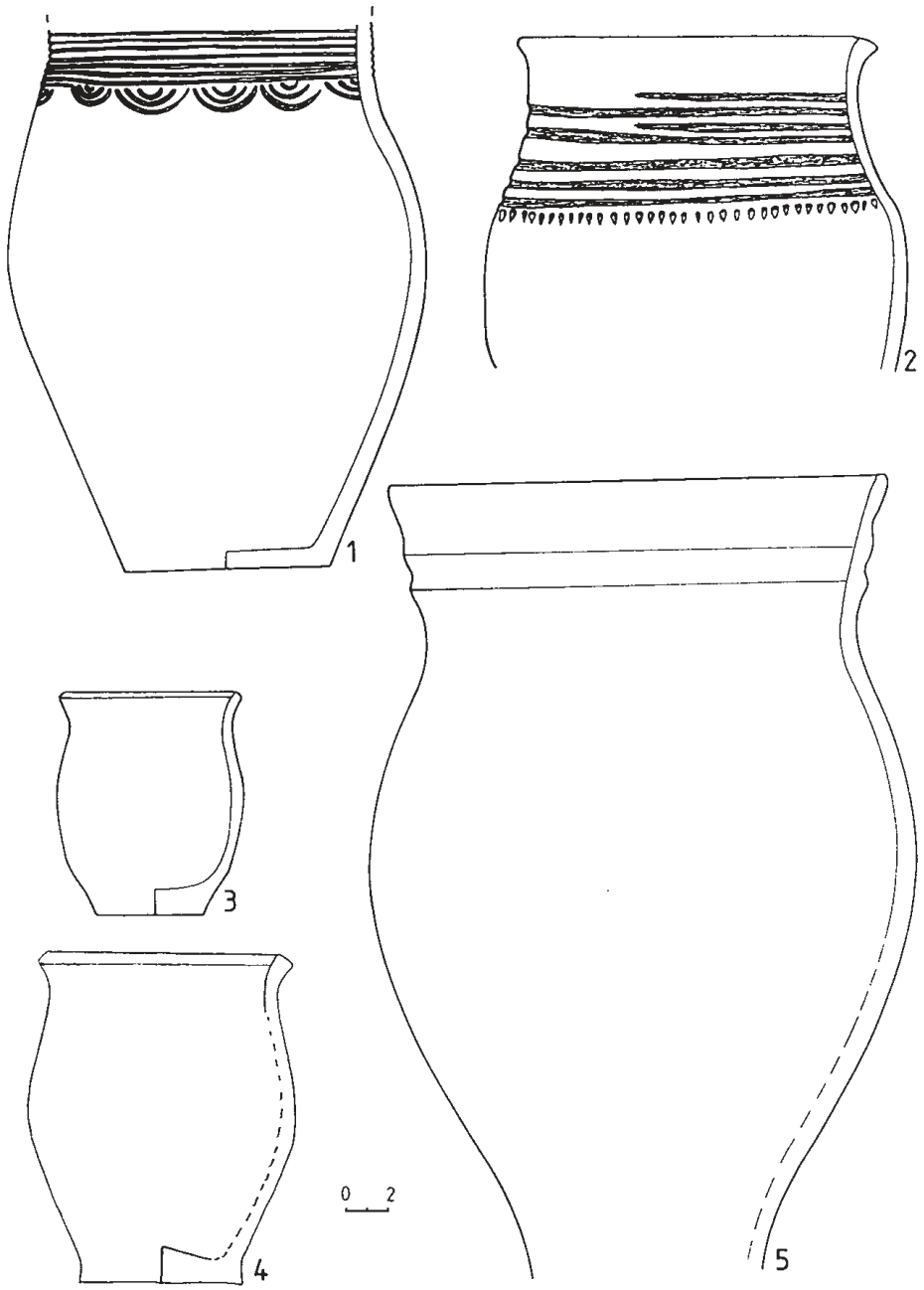

Fig. 4 Material of the classical phase. 1-2 - Tyszowce, site 25A, barrow No. 17 (after J. Kuśnierz), 3 - Guciów, site 6, barrow No. 13 (after E. Kłosińska), 4 - Putnowice- Kolonia, site 3 (after H. Taras), 5 - Dominikanówka, site 1 (after J. Machnik).

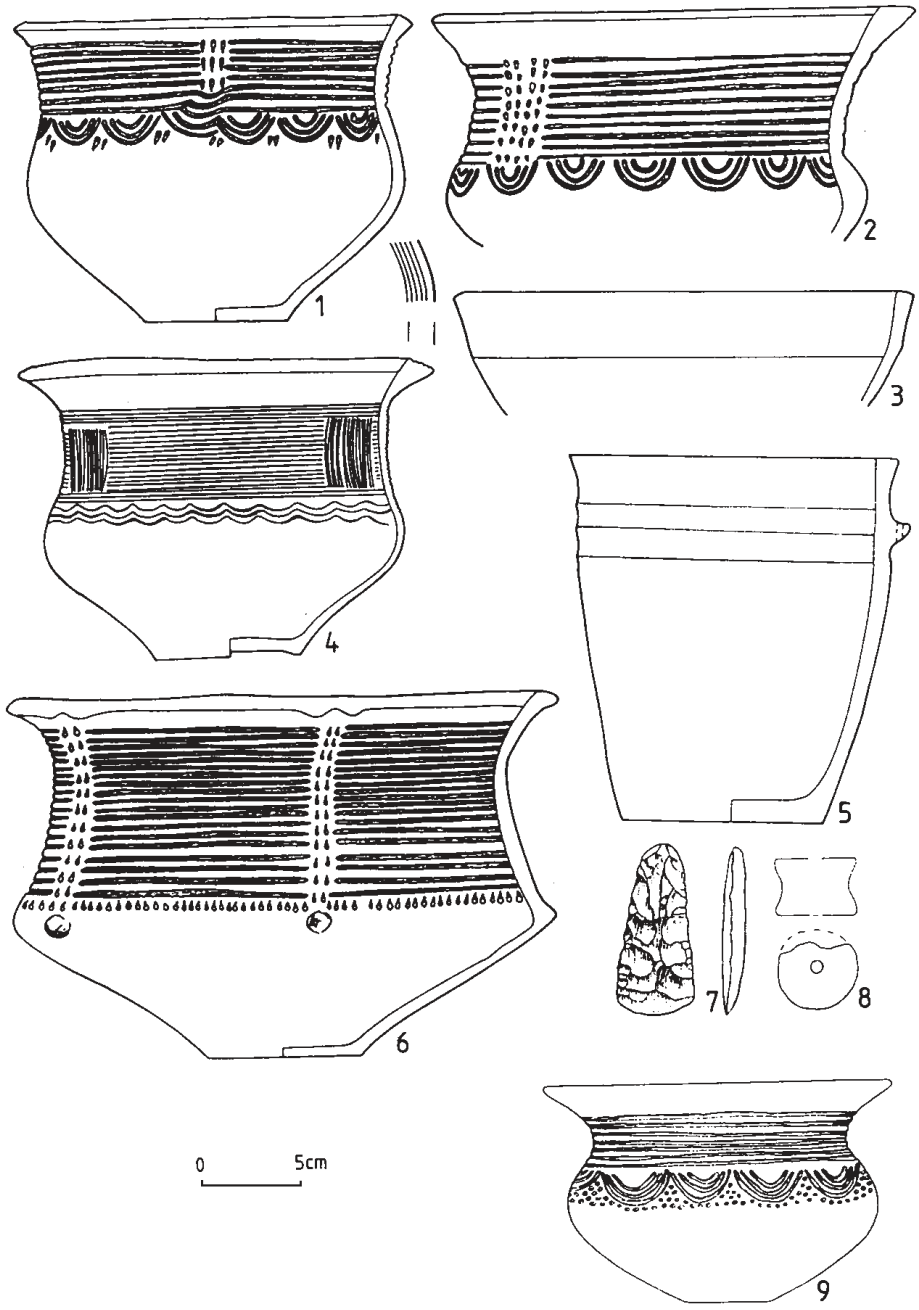

Fig. 5 Material of the classical phase. 1, 2, 5 - Tyszowce, site 25A, barrow No. 17 and 6 - barrow No. 15, 4 - Tyszowce, site 28, barrow No. 24 (after J. Kuśnierz), 3 - Guciów, site 6, barrow No. 6 and 7, 9 - barrow No. 13 (after E. Kłosińska), 8 - Gródek, site 1D (after A. Uzarowiczowa).

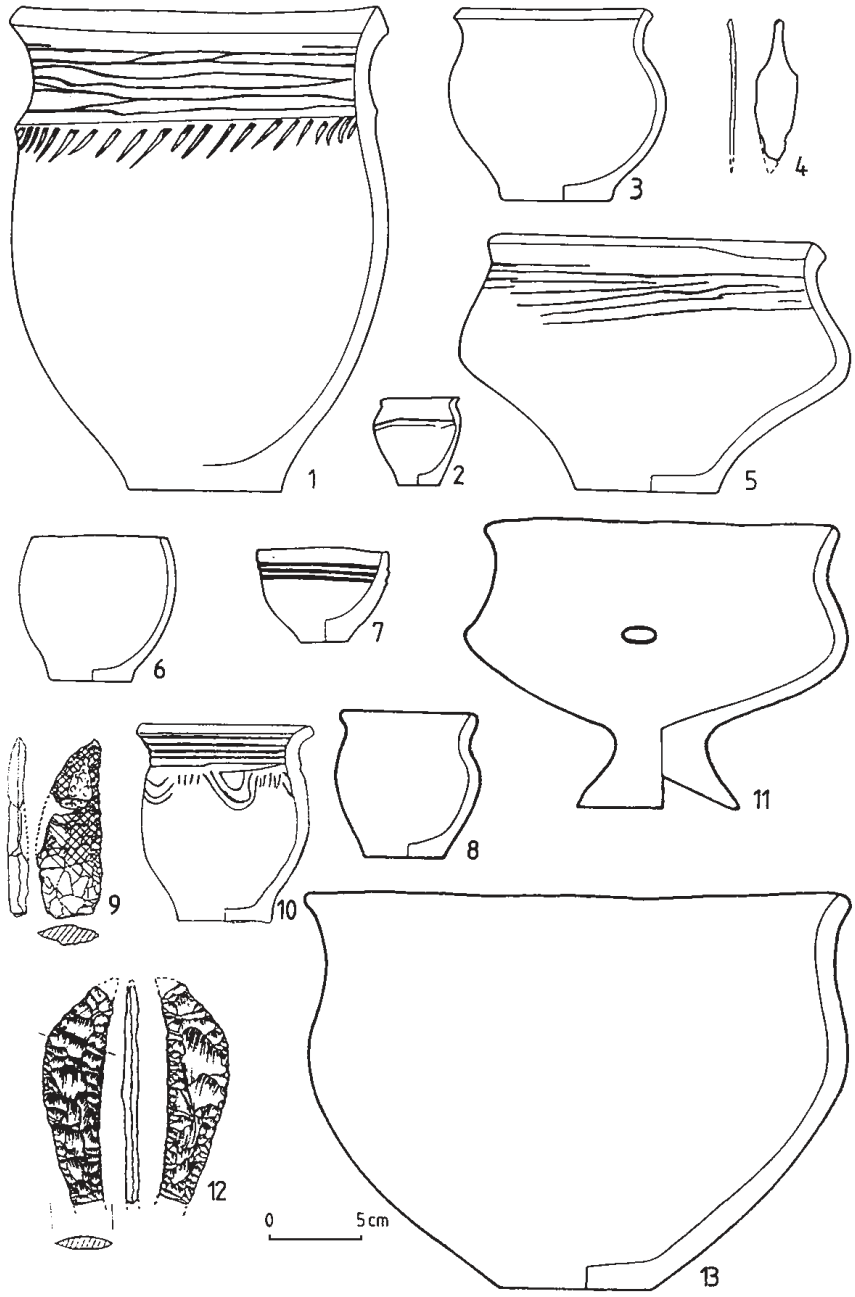

Fig. 6 Material of the late (late-classical) and terminal phases (8, 11, 13). 1-7 - Tyszowce, site 25A, barrow No. 16 (after J. Kuśnierz), 8, 11 - Tyszowce, site 25B, feature No. 16 (after J. Buszewicz), 9 - Tyszowce, site 1, barrow No. 6 and 10 - barrow No. 5, 12 - Hrubieszów (after H. Taras), 13 - Hrubieszów-Podgórze, site 5, feature No. 110 (after J. Niedźwiedź and W. Panasiewicz).

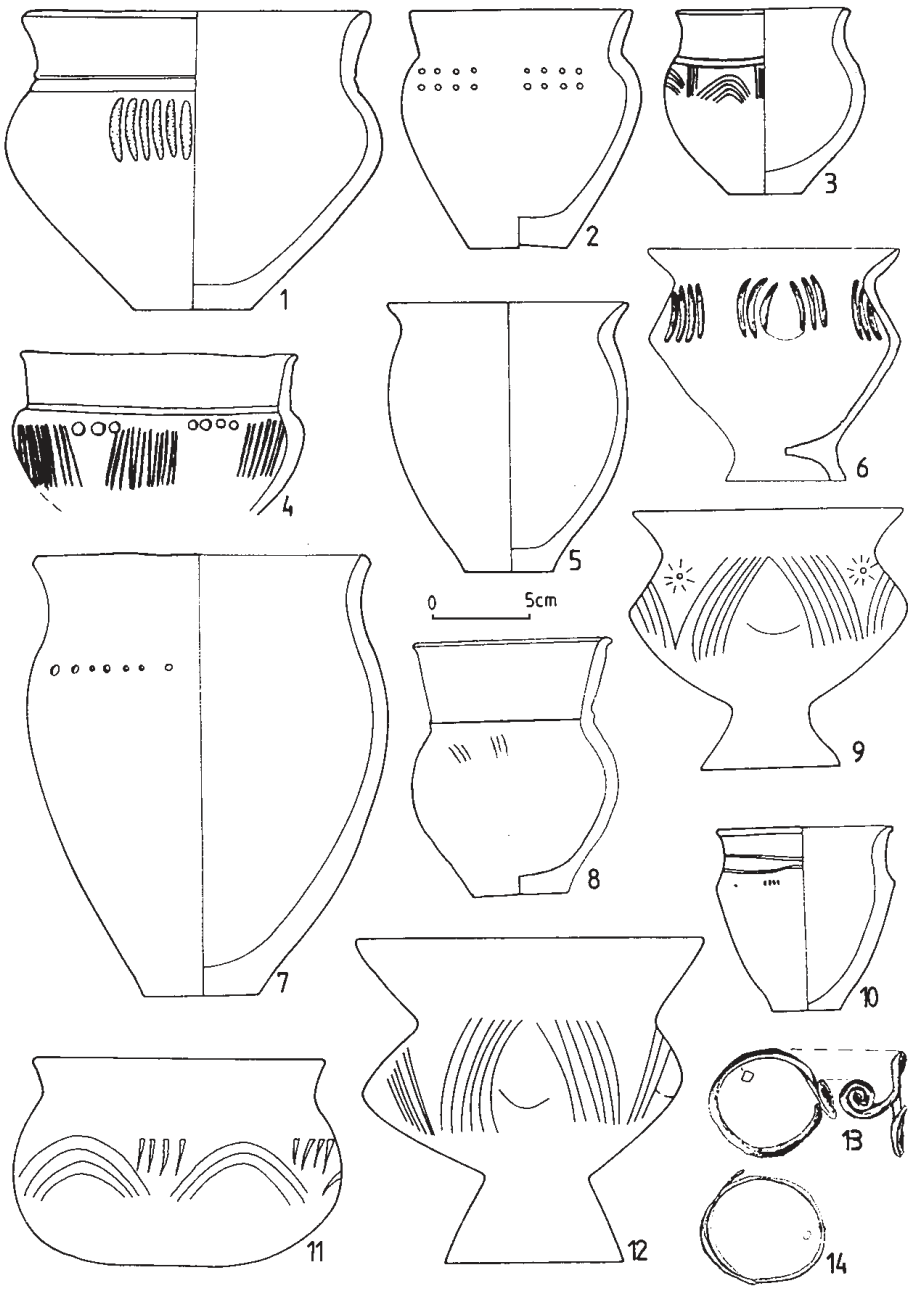

Fig. 7 Material of the terminal phase. 1, 2, 5, 9, 11, 12 - Trzciniec, site 1 (after A. Gardawski), 3, 4, 7, 10 - Kazimierzów, site 3 (after W. Misiewicz), 6 - Szczekarków (after A. Gardawski), 8, 13, 14 - Kosin, site 8 (after B. Chomentowska).

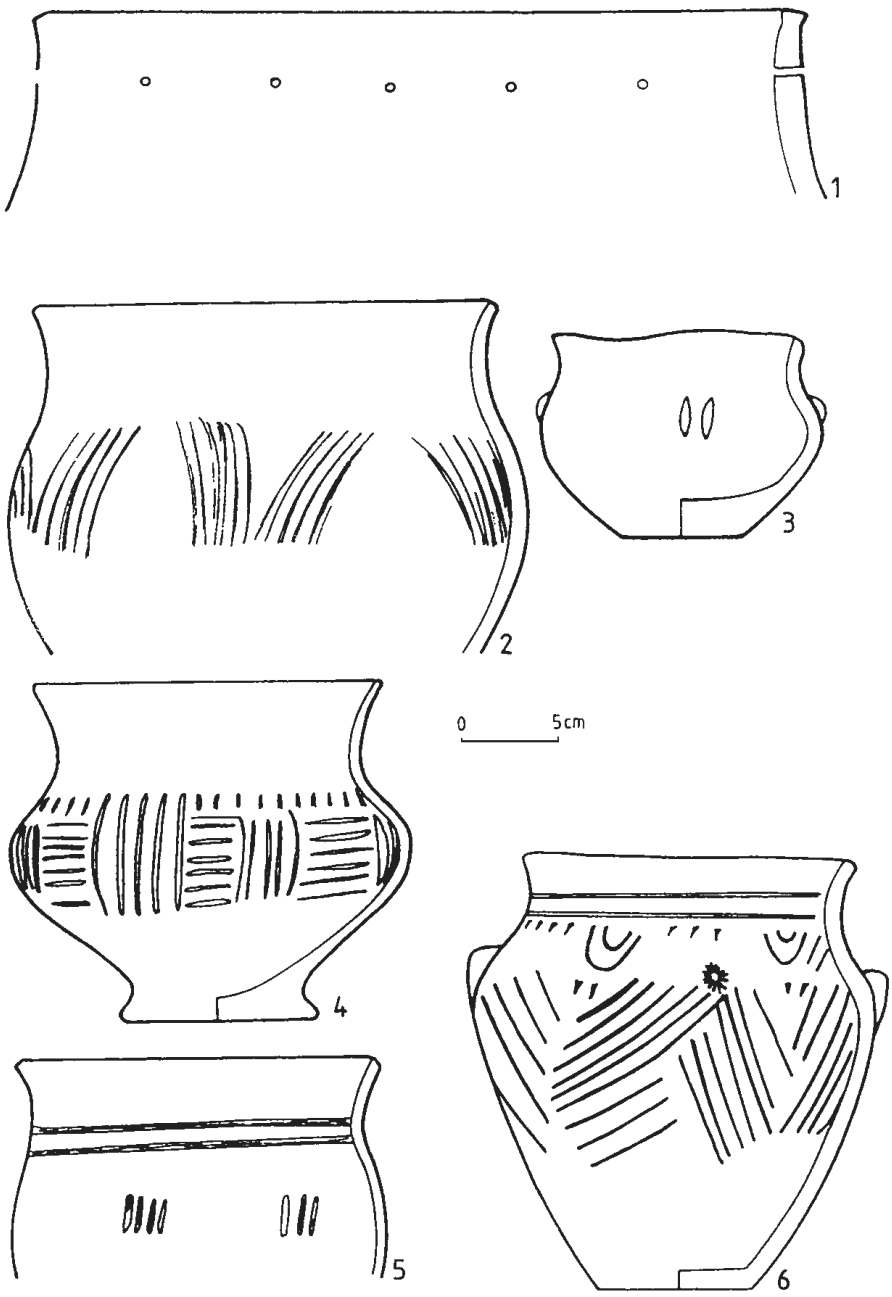

Fig. 8 Material of the terminal phase. Hrubieszów-Podgórze, site 5, feature No. 62 (1), No. 7 (2), No. 110 (3, 6), No. 63 (4) and No. 109 (5) (after W. Koman, J. Niedźwiedź, W. Panasiewicz).

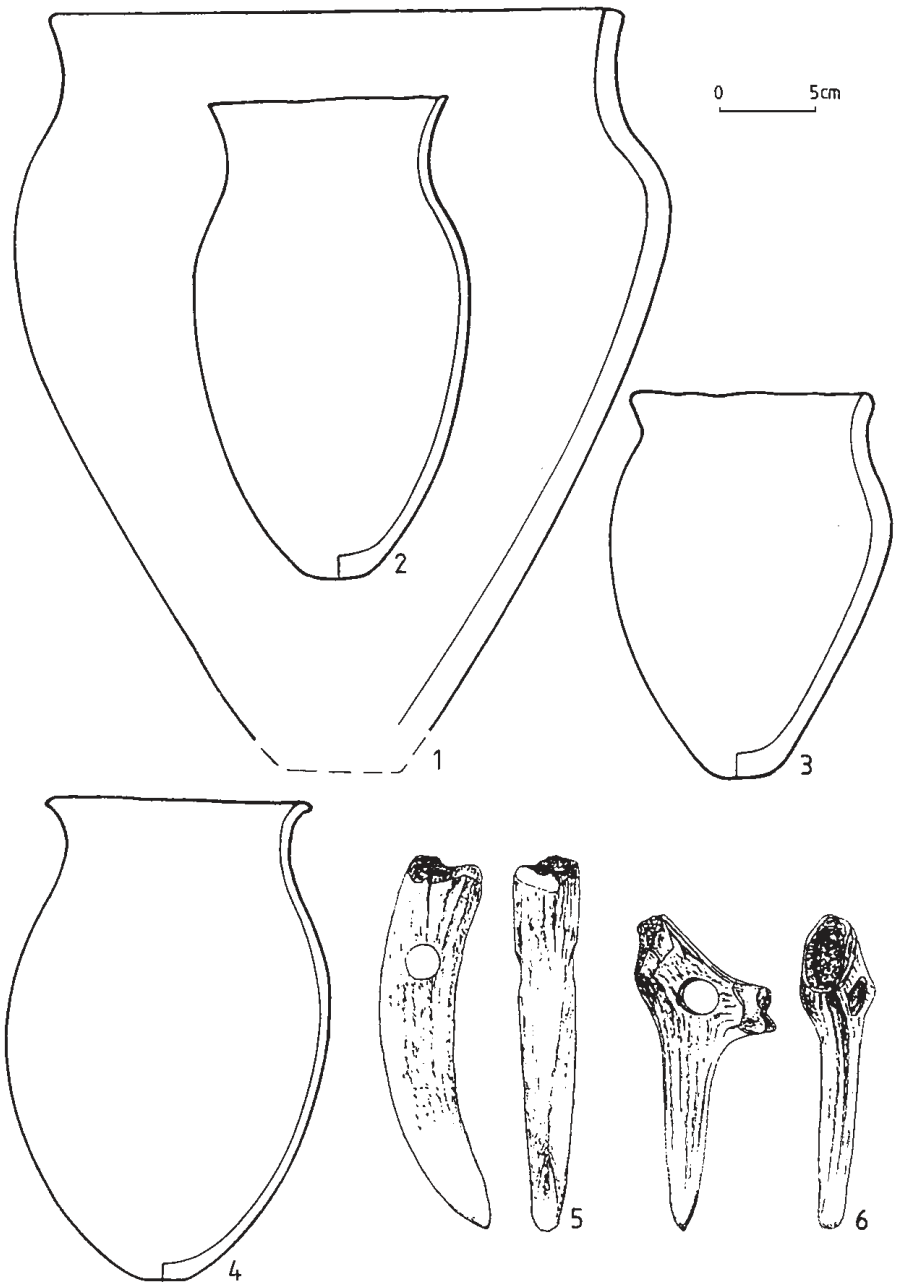

Fig. 9 Material of the terminal phase. 1 - Hrubieszów-Podgórze, site 5, feature No. 110 and 2, 4 - feature No. 95 (after W. Koman, J. Niedźwiedź, W. Panasiewicz), 3 - Teptiuków, site 6, feature No. 29 (after J. Niedźwiedź, H. Taras), 5, 6 - Podlodów, site 2, feature No. 14 (after J. Bagińska, H. Taras).

on local traditions, the kind of relations with other communities or lack of such contacts, as well as the creativity of the individuals who produced the vessels. Below are presented the pottery markers of the Trzciniec Culture in the area between the Vistula and Bug rivers:

1. The addition of granite breakstone to clay. The pottery is made of clay with an admixture of granite breakstone (usually quite ample). Vessel surfaces are very smooth, and fractures are monochromatic, porous or layered. These features are typical of the Trzciniec Culture technology in the area in question in its classical stage. With time some changes were introduced and so, in the terminal stage, as site 25B in Tyszowce shows, the dominant kind of pottery is one made of clay mixed in equal proportions with sand and granite breakstone or with sand only; the fractures are usually monochromatic, porous or compact [Gosik 1997:34-36 and 69-74].

2. The characteristic shape of the rim. The typical way of forming the rim is thickening and cutting it obliquely or, rarely, horizontally. This kind was gradually replaced by non-thickened, cut and rounded rims. In the terminal stage non-thickened, rounded rims dominate (Fig. 7-9) [Taras 1995:63-75; Gosik 1997:63-68].

3. Basic vessel types: S-shaped pot, profiled bowl, hemispherical bowl. The dominant kind are S-shaped pots of several types (Fig. 2:1, 2, 11, 12; 3:1, 3; 4:1-4; 6:1, 8, 10), and the differences concern their proportions, and particularly the level of the widest part of the belly [Taras 1995:63-75]. Pots of various forms can be found: tulip-shaped ones, where the rim is bigger in diameter than the belly (Fig. 3:4), pots with a funnel-shaped neck distinctly separated by a fault (Fig. 7:2, 5, 8), spherical ones and those with cylindrical necks (Fig. 8:1).

The proportions of pots change gradually: the belly is raised (vessels with a "shoulder"), the neck is shortened, the height of vessels is smaller (low pots), the bottom gets smaller and narrow-bottomed (pointed-foot) pots begin to appear (Fig. 9). In later phases fewer and fewer decorated pots are made.

Bowls are represented by hemispherical forms (in minority) and S-shaped, profiled ones of various types (Fig. 3:2; 5:1, 2, 4, 6, 9; 6:3, 5, 13; 7:1, 3, 4, 11; 8:3, 4). This type of vessels is characterised by very sophisticated ornamentation, which can be still found even in the terminal phase (Fig. 7:1, 3, 4, 11; 8:3, 4), i.e. in the period when the number of decorated pots is decreasing.

Various kinds of beakers have been ascribed to the Trzciniec Culture. These are: forms with hollow stems, beakers with depressed or attached knobs on the bellies (Fig. 6:11; 7:6, 9, 12) and flowerpot-like (mortar-shaped) ones (Fig. 5:5).

Other types of vessels, like mugs, jugs, amphorae or flat plates are scarcely represented in the sites of the Trzciniec Culture in central-eastern Poland. Fragments of sieve-like vessels have been frequently found, but it is not possible to reconstruct them due to the bad condition they are in.

4. Typical ornamentation: horizontal, vertical and oblique grooves, concentric arches, horizontal attached boards [Taras 1995:table 1]. The motifs are often combined, e.g. horizontal grooves with festoons in the form of arches are frequently found especially on profiled bowls. Horizontal grooves alternating with vertical ones are often combined with a circular row of vertical or oblique pricks. Attached or depressed knobs are used to decorate beakers on stems, mugs, jugs and, though rather seldom, profiled bowls. In later phases small depressions and hollows appear on vessel necks and oblique grooves on bellies. The most typical decorative motif of the Trzciniec Culture are clay spindle whorls (Fig. 2:9; 5:8) and "horn-like whorls". The latter are found along the eastern border of Poland, e.g. in Dubeczno (Fig. 2:10), Hanna, Rogatka, Guciów, Teptiuków and are obviously a continuation of the phenomenon known at that time in the Ukraine. Simultaneously other "oriental" elements appear in pottery [Taras 1995:map No. 5]: decorative motifs in the form of oblique grooves bounded by horizontal ones (Guciów, Żurawce), "dangling" triangles (Jeziernia, Żurawce), the repetition of the shape and proportions of bowl types typical of the Komarów Culture (Tyszowce, Guciów) and, in the terminal stage, narrow-bottomed (pointed-foot) vessels [Taras 1997:374] or vessel handles of the Noua Culture type (Podlodów).

The Trzciniec Culture is associated with a specific form of environment occupation and the structure of settlements. Although our knowledge of the structure is still not satisfactory, it is possible to observe assemblies of 1-3 settlements of permanent character (0,5-1 ha in area) and several smaller ones around grave sites. Such a concentration was found near the tumuli in Tyszowce ond Guciów. The settlements are sometimes located on sandy meadow terraces of big valleys, more often on the edges of small valleys, usually on sandy soils. In most cases, then, the settlements are situated on the frontiers of settlement zones (soil-wise). The relatively high mobility of settlement, typical of the early phase, decreased with time, particularly in upland areas.

Taking into consideration the archaeological and natural science sources known so far, the economy of the Trzciniec Culture communities in the area in question can be defined as typically agricultural, most probably with livestock farming dominating over crop cultivation.

The unsatisfactory degree to which the settlements have been examined makes it impossible to reconstruct closely their organization and construction. It can be only said that the preferred type of houses were overground, post constructions, rectangular in shape, sometimes with 2 chambers, e.g. in Żurawce [Gurba, Kutyłowski 1970], Wronowice-Paprzyca [Koj 1987:193-194], Hrubieszów-Podgórze [Niedźwiedź, Panasiewicz 1994:52-53].

The dominant type of grave is a barrow, usually over 10 m in diameter. Most of the barrows examined so far are located in river valleys, typically on sandy meadow terraces, e.g. in Guciów, Dominikanówka, Tyszowce. Some barrows were ra-

ised on hills dominating the area, e.g. in Haliczany [Bronicki 1997:56]. Their function was usually not only to cover the remains of the dead; under the mounds some cremation graves have been discovered, e.g. in Guciów [Rogozińska 1961], Lublin-Dąbrowa (?) [Kłosińska 1987], biritual — in Guciów [Rogozińska 1963], Kazimierzów[1]. Some evidence for the fact that together with cremation skeleton burial was practised can be provided by the empty, regular grave pits found in Tyszowce [Kuśnierz 1989:Fig. 9] and Zienki [Bronicki 1997a:53]. Also in Dubeczno, an example of a secondary skeleton burial covered with a cremation layer containing animal remains was excavated. In the terminal stage, the tradition of raising barrows gradually disappears and flat graves begin to appear, where bones have been cremated to a different degree, e.g. in Tyszowce [Gosik 1997:29] or Trzciniec [Chotyński 1911:61-63).

Among the grave goods, relatively moderate in number, pottery dominates. It is located in various ways. Whole pots are placed in the centre of the barrow, near grave pits, or the suspected burial place, e.g. in Tyszowce. Intentionally broken vessels are placed in different parts of the barrow or below it, usually in groups, e.g. in Guciów [Rogozińska 1961; 1963], Dominikanówka [Machnik 1960:80], Dubeczno [Taras 1995:202].

2. STAGES OF DEVELOPMENT

The changes of the Trzciniec Culture with the course of time in central-eastern Poland can be reconstructed as follows (Fig. 10).

The culture appears in the upland part of the Lublin Region as a completely formed, external phenomenon probably at the beginning of period BA2. The early--Trzciniec (early classical) circle is characterised by high settlement mobility — small and temporary settlements and camps. Some burial sites provide evidence for such dating. The barrow in Dubeczno points to a relatively early occupation of the area by the people of the Trzciniec Culture and the evidence is provided by the dating of the hearth below the mound — 3520±50 BP (1880 BC). It is quite possible that some mounds in Guciów can be dated similarly, the conclusion, however, is based on the analysis of the materials, mainly ceramic ones, rather than on laboratory dating. This stage can be also represented by small settlements in Las Stocki, site 7, Wąwolnica, site 6 and Nowy Majdan, site 1.

In pottery, all basic technological and stylistic elements are present: the characteristic form of the rim, engraved ornaments and relief strips and forms such

[1] Unpublished materials from Lublin Museum, the information made available by Mrs Waleria Misiewicz.

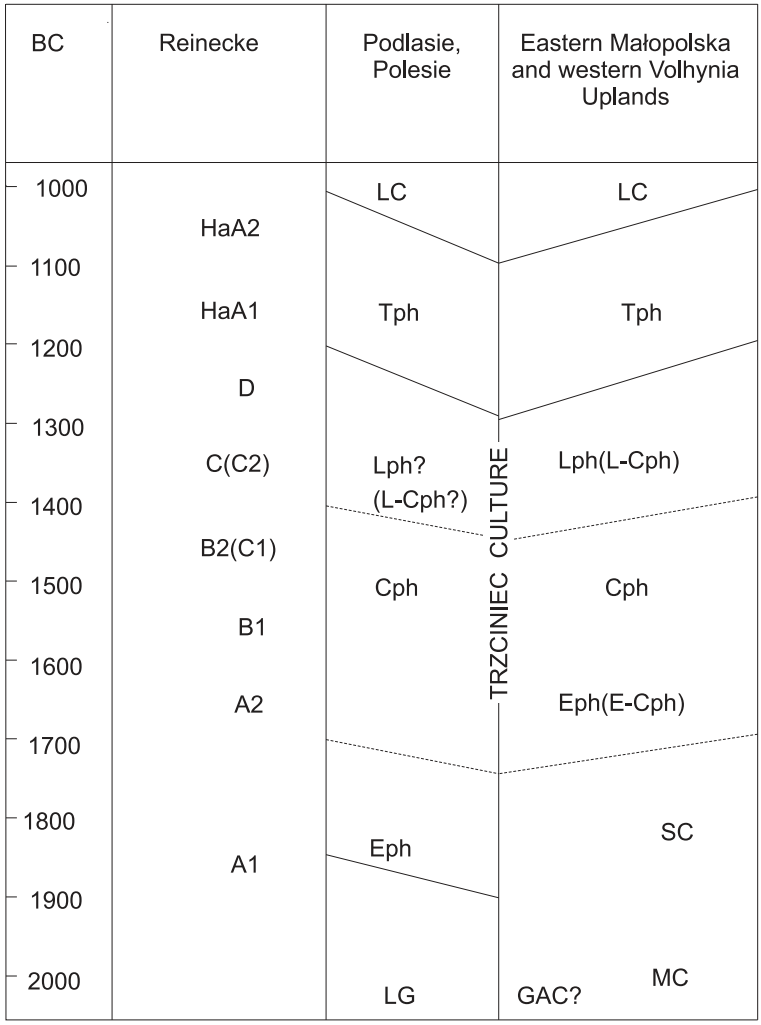

Fig. 10 Periodization of the Trzciniec Culture in the southern part of the area between the Vistula and Bug rivers. Eph - early phase, Cph - classical phase, Lph - late phase, Tph - terminal phase (Trzciniec Culture); LG - Linin Group of the Nemen Culture; GAC - Globular Amphora Culture; MC - Mierzanowice Culture; SC - Strzyżów Culture; LC - Lusatian Culture.

as the S-shaped pot, the hemispherical and the profiled bowl. At the end of the period there appear clear signs of successful contacts or "absorption" of the local, post-cord structures by the Trzciniec Culture. At this stage, the relations between the groups, strange to each other, can be detected in the stylistic influence observed in pottery work, particularly in the western Volhynia Upland, e.g. in Wrono-

wice-Paprzyca, site 5 [Kadrow 1988], Mohyliany [Sveshnikov 1967:Table XIII:14], Włodzimierz Wołyński [Taras 1995:Table XXVII:1] and others.

The regional influence gets stronger in the developed classical period, which started at the earliest in BA2/BB1 — at the beginnings of BB1, as a reflection of the local, diversified background and as a result of various contacts. It is easy to observe contacts with the South as well as characteristic, mainly for the Bug river zone, contacts with the East and South — East (a local trend in the Trzciniec – Komarov Cultures zone).

The classical stage is the period of stabilisation for the Trzciniec Culture. In the area in question two distinct stylistic and settlement structures can be observed: the western one — in the western part of the Lublin Upland and in the north — west of the Sandomierz Basin, and the eastern one — in the western Volhynia Upland, the eastern part of the Lublin Upland, Roztocze and the north — east of the Sandomierz Basin. North of these areas — in Polesie and Podlasie — there are very strong "old Trzciniec" tendencies, exemplified by traditional forms of vessels and their ornamentation.

In the remaining areas the basic set of pottery and decorative elements gets much richer. Besides various forms of pots and bowls, new ones, such as mugs, jugs and beakers begin to appear. New ornamentation motifs are used together with the basic ones that still dominate: pricks, small depressions, outlined knobs, wide, oblique cannelures and others.

The evolution and regionalization of the Trzciniec Culture can be observed in the gradual decrease in the number of classical stylistic markers and their replacement with new ones, e.g. the proportions of vessels change — the maximum diameter of the belly is located in the upper half of the vessel. The changes are characteristic already towards the end of the late classical phase. Some changes in burial customs can be observed, too. The barrow and the form of burial (layered cremation, suspected skeleton burial) are still significant, however, sometimes there are no traditional grave goods. Broken pottery and other objects are located at random in mounds. The phase lasts until the beginning of the 3rd period of the Bronze Age (BD).

The close of the Trzciniec Culture is the time of looking for new models and balancing of opposing influences: the ones from Volhynia and the Noua Culture zone in the basin of the upper Dniester river, and those from the circle of Urn Fields Cultures and mainly from the early Lusatian Culture. It all takes place in the first half or around the middle of the 3rd period of the Bronze Age and lasts until the turn of the 3rd period of the Bronze Age. These processes have been recently observed in the settlements examined in the basin of the Bug river, in Tyszowce, Teptiuków, Podlodów and Hrubieszów – Podgórze.

In the inventories of the eastern Lublin Region there are slim, unornamented narrow-bottomed (pointed-foot) vessels or ones with small, unstable bottoms, ra-

ised maximum diameter of the belly and short necks. The rims are rounded and non-thickened and new decorative motifs appear, besides the few traditional ones: depressions and hollows in the necks and groups of vertical or oblique grooves on the bellies.

In the west of the Lublin Region, low vessels (tall bowls or vases) dominate, apart from slim vessels with small bottoms. The increase in the number of unornamented pots and the presence of richly decorated bowls can be observed here as well.

The discussion over the role of the Trzciniec Culture in the formation of the Lusatian Culture in the Lublin Region leads to the following conclusions: the local people gradually got assimilated into the Lusatian Culture groups of Central Poland type. The process, however, did not leave permanent traces. It can be observed, for instance, in the cemetery of the Lusatian Culture in Wołkowiany[2], where narrow-bottomed vessels were used as urns, while other vessels were decorated with motifs typical of the Trzciniec Culture. The stylistic relics are also visible in other sites of the early Lusatian Culture.

Translated by Joanna Berej

[2] Unpublished cemetery, examined Mrs Waleria Misiewicz; the materials deposited in Lublin Museum.

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Victor I. Klochko

THE ISSUE OF THE EASTERN BORDER OF THE EASTERN TRZCINIEC CULTURE (LOBOIKIVKA METALLURGY)

Metallurgical traditions of the Bronze Age have been studied insufficiently and are particularly hard to relate to individual archaeological cultures. However, detailed investigations of metal items and remainders of production provide additional data for ethno-cultural studies.

According to I.I. Artemenko [1987], the Sosnytsa Culture, or rather, the Kiev and the Sosnytsa versions of the Eastern Trzciniec Culture, as well as the Lebedivka group of sites, according to S.S. Berezanskaya [1985], occupied the Middle and the Upper Dnieper areas. Early-stage sites date back to the 15-13th century BC*, middle-stage sites date back to the 13-11th century BC, and late-stage sites belong to 11-9th century BC [Artemenko 1987:106-113]. The Loboikivka metallurgy of the Late Bronze Age is, in a certain way, connected with that territory [Klochko 1994:123-124].

The Loboikivka metallurgical centre was first identified by E. N. Chernykh [1976:190-195] as a special Late Bronze metallurgical district with a specific selection of types of artifacts and technology, typical of the left-bank Ukraine (first referred to as Zavadovo-Loboikivka hearth). A.M. Lescov related the Zavadovo foundry workshop to the Belozerka period, and included the Holovuriv foundry workshop in the "hearth". He broadly defined its chronological and territorial boundaries, and was the first one to point out to the so-called "foundry workshops", i.e., complex finds of foundry moulds, having described them as old production centres. A.M. Lescov broadened the specific set of items from that centre and proposed a thesis about its inclusion in the Srubnaya (timber-grave) Culture [Lescov 1981], referring to it as "Holovuriv-Loboikivka". I suggested that the centre be given the name of "Loboikivka" [Klochko 1993].

N.N. Cherednichenko approached the issue of cultural affiliation of that metallurgical tradition rather cautiously (referring to it as "metal of the Srubnaya tribes of the Dnieper area"), pointing out to a substantial difference between it and metal

* Author used an uncalibrated version of ^{14}C chronology (Editor).

items of the Don and the Volga Srubnaya Culture [Cherednichenko 1986:44-82]. He quoted this difference between metal artifacts of the Dnieper area and the Don-Volga region as an argument in favor of the need to divide the Srubnaya Culture-historic community into a number of local groups which, "most probably should be called independent cultures" [Cherednichenko 1986:42].

S.I. Tatarinov [1990] connects the Loboikivka metallurgy with the Donets mining-metallurgical centre of the Srubnaya Culture, though his opinion is based only on a single find, near the village of Pylypchatyno, of a foundry mould used to make a Kabakovka-type celt.

A clear difference between the Loboikivka, the Krasnyi Mayak (Noua-Sabatinovka) and the Srubnaya metal artifacts, revealed by E.N. Chernykh, as well as the territory outlined by A.M. Lescov, once allowed me to include this metallurgical tradition in the Sosnytsa Culture [Klochko 1994], though the hypothesis proved to be a wrong one.

Taking into account new finds of the Loboikivka artifacts in graves of the Srubnaya Culture, V.V. Otroshchenko and Y.Y. Rassamakin raised again the issue of the "Srubnaya" affiliation of that metallurgical tradition [Otroshchenko, Rassamakin 1997]. Meanwhile, they practically ignored the location of most of the Loboikivka foundry workshops and the finds of foundry moulds in the settlements, thus, confusing the question of cultural affiliation of manufacturers of the metal items with that of consumers of those foundry workshops' products.

Therefore, let us consider the Loboikivka metallurgical complexes in detail.

A. METALLURGICAL COMPLEXES

1. The largest collection of foundry moulds for manufacturing items of the oldest Loboikivka types comes from the village of Holovuriv of the Boryspil district, the Kiev region (the Holovuriv foundry workshop) (Fig. 1:1). A larger part of the collection was published by I.N. Sharafutdinova [1973], and later on, five more fragments of moulds were found at the same site. Some of the new fragments were successfully glued to the old pieces. Most of foundry moulds from this workshop were cut in bars of quality light talc slate, and only one of them — for casting a single-lugged ornamented celt, hexahedral in section — was made of ceramics. The moulds are kept in the Boryspil Museum of Local History, the Kiev region. The finds of the Holovuriv foundry workshop include:

Fragments of a two-fold mould for casting spearheads (Fig. 2:1, 2). One fold is well-preserved; the other one exists only in two small fragments. This mould was

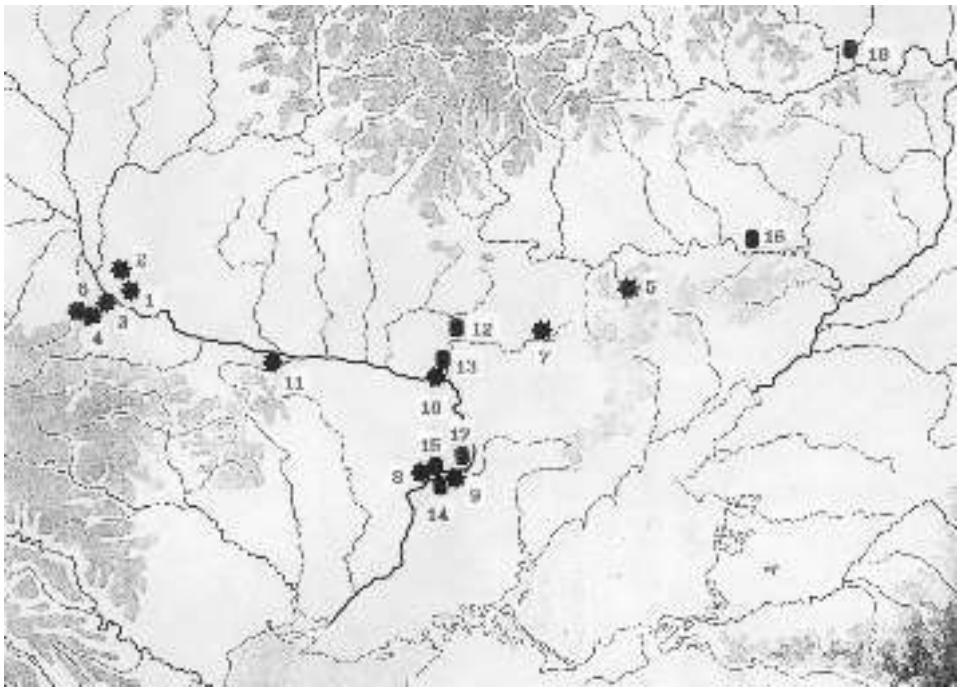

Fig. 1. The Loboikivka workshop in Ukraine. I. Foundry "workshops" and individual moulds: 1. the Holovuriv workshop; 2. the Zazymye settlement; 3. the Derevyane workshop; 4. the Mazepyntsi workshop; 5. Pylypchatyno; 6. Ivannya; 7. Vyazovok; 8. Kapulivka; 9. Zlatopol; 10. the Vovnygy settlement; 11. the Subotiv site. II. Hoards: 12. Kabakovka; 13. Loboikivka; 14. Blahovishchenka; 15. Borysivka; 16. Tryokhizbenka; 17. Nyzhnya Khortytsa; 18. Tereshkovo.

used for making rather big socketed spearheads with lugs on sockets and sharp-leaf or leaf-shaped blades.

Fragments of a double-sided mould for making dart heads with lugged sockets on the one side, and small hatchets on the other (Fig. 2:3, 4).

A fragment of a double-sided matrix for casting hatchets and some other flat items (Fig. 2:5).

Fragments of two parts of a two-fold mould for making a single-lugged (?) celt, hexahedral in section (Fig 2:6).

Half of a ceramic two-fold mould for casting a single-lugged ornamented celt, hexahedral in section (Fig 2:7).

A two-fold fragmented mould for producing large double-lugged asymmetrical celts (Fig. 2:8-9).

Half of a ceramic two-fold mould for making daggers of the Krasnyi Mayak type with round stops (Fig. 3:1).

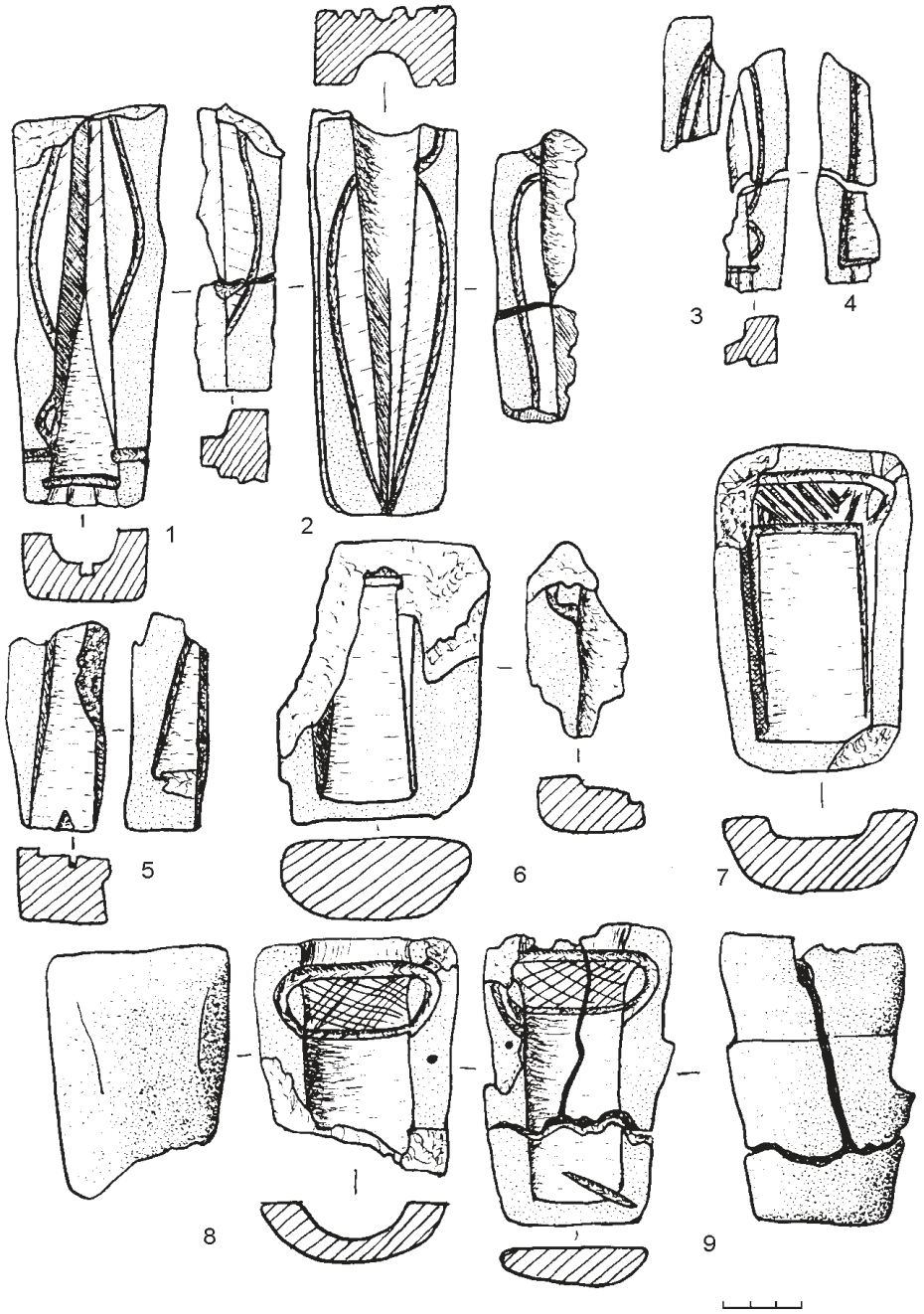

Fig. 2. The Holovuriv workshop.

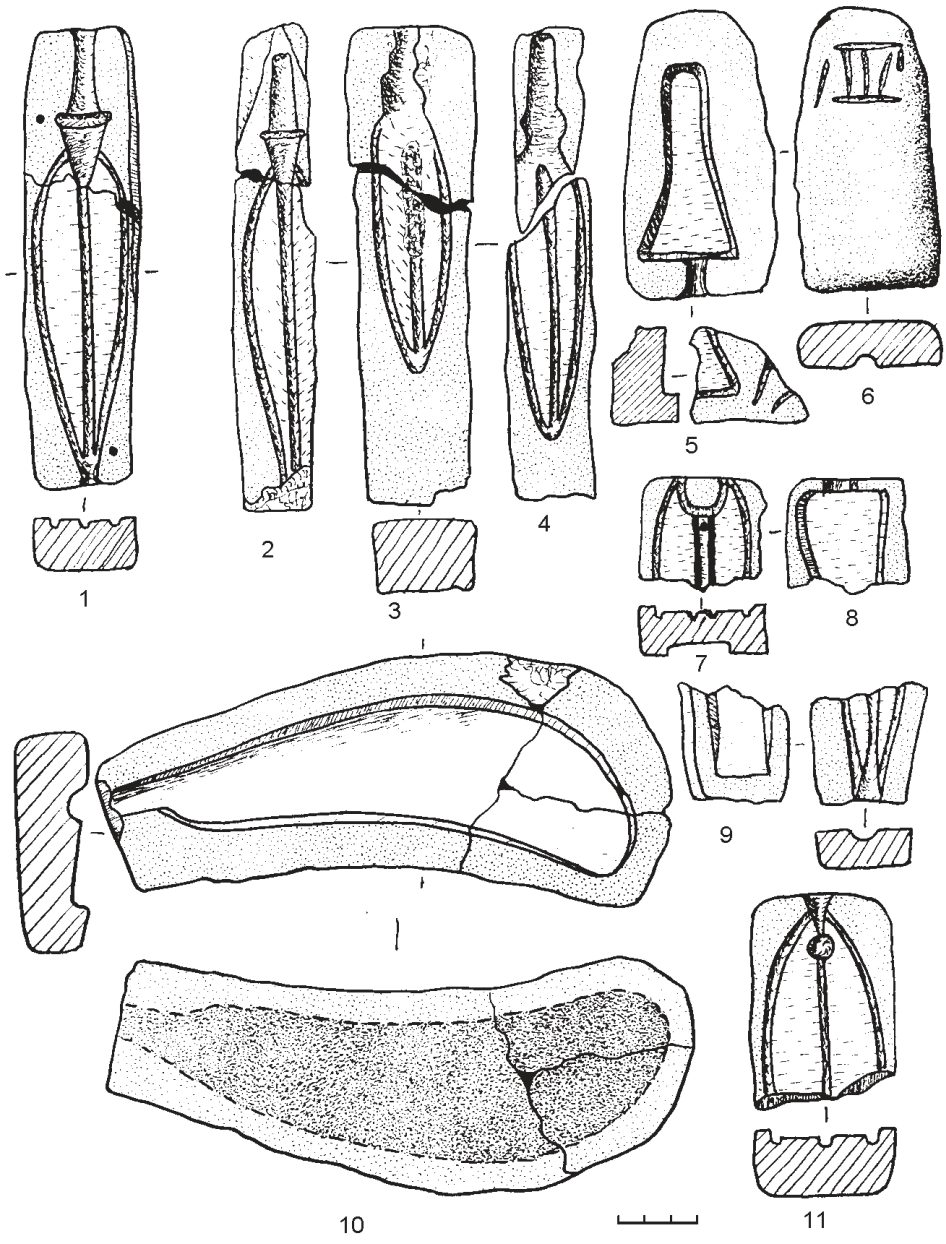

Fig. 3. The Holovuriv workshop.

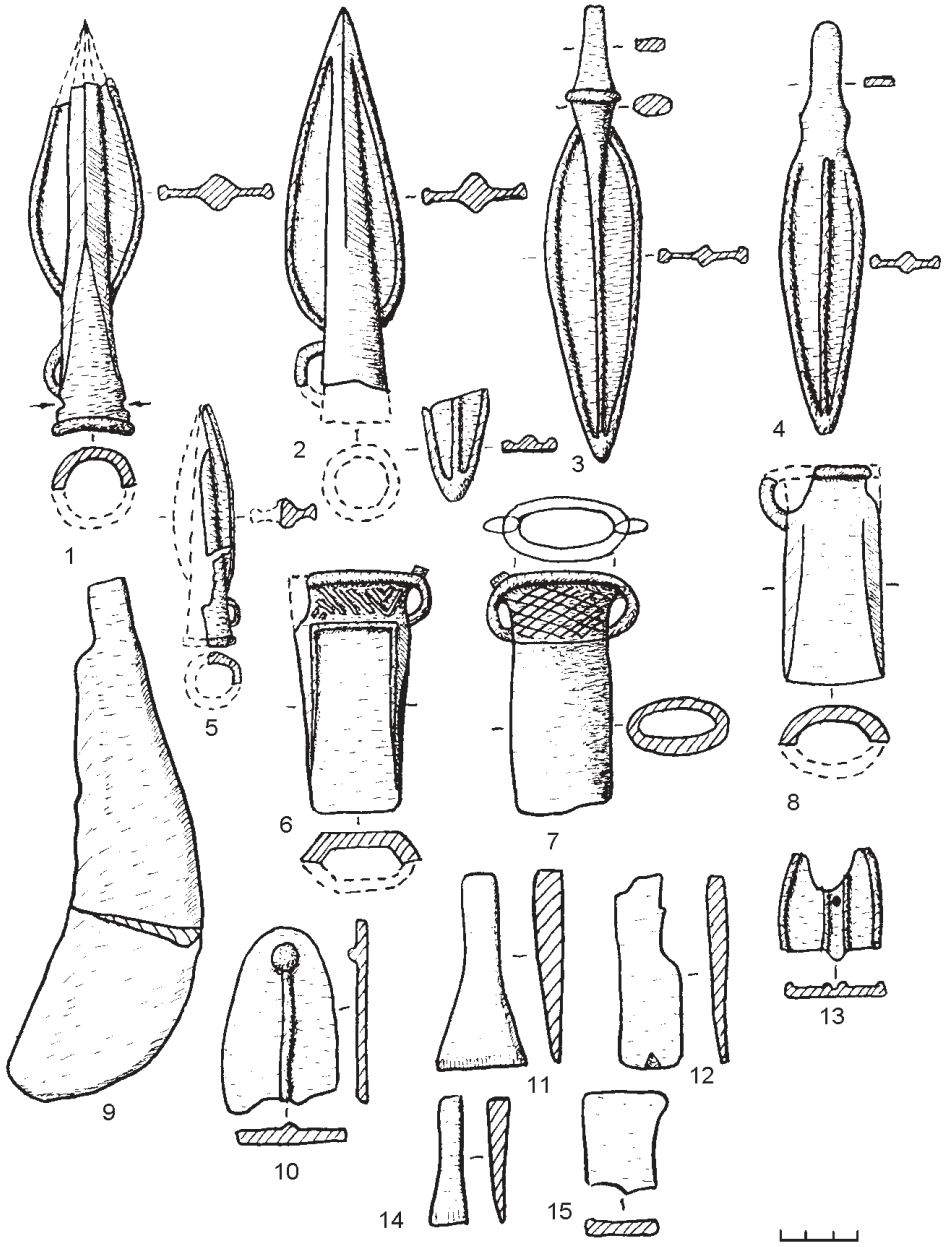

Fig. 4. The Holovuriv workshop. Reconstruction of the items.

A bar of talc slate, rectangular in section, with a partially preserved negative of a Krasnyi Mayak type dagger on one side, and a partially ground off, old Holovuriv--type knife with a "belted" tange, and another Holovuriv knife, cut on one of the wide sides (Fig. 3:2-4).

A half and a fragment of the other half of a two-fold mould for making small hatchets (or probably, chisels (?). The back side of the mould bears a carved sign (Fig. 3:5, 6).

A fragment of a double-sided mould for making razors and chisels (Fig. 3:7, 8).

A fragment of a double-sided mould for making chisels and daggers (Fig. 3:9).

A single-sided mould for casting choppers of the Kabakovska type: a part of a multicomponent set, in which every mould's back side was a cover for the next one. The set was fixed with a scale on the back side of the matrix (Fig. 3:10).

A fragment of a two-fold mould for making items of unknown purpose (Fig. 3:11).

The following tools were reconstructed with the help of the Holovuriv negatives:

Spearheads, with leaf-like blades, rhombic in section, with a lug and a rim on the socket — the Holovuriv-type spearheads (Fig. 4:1, 2).

The Holovuriv-type spearheads are the oldest in the Loboikivka metallurgical tradition. They are close to spearheads of the Borodino hoard, the Seima burial sites and the Pokrovka burial mounds (spearheads of the Seima type). Their common features include general shapes and forms of feathers/blades and lugs on their sockets. However, the Holovuriv spearheads have different proportions, shorter sockets and rims on their sockets. Later on, this line of development brought about spearheads with cuts on their blades (which helped save metal without reducing the size of items, and also served to strengthen the spearhead) — spearheads of the Zlatopol type [Klochko 1993:59-61].

Leaf-like dart heads with a lug and a rim on the socket are the Holovuriv-type dart heads (Fig. 4:5). I do not know of any other similar heads which in general represent smaller copies of the spearheads.

A tanged dagger with a leaf-like blade, enhanced, rhombic in section, and with a ring stop on the tange — a dagger of the Krasnyi Mayak type (Fig. 4:3).

Daggers of the Loboikivka tradition are represented predominantly by versions of the Krasnyi Mayak dagger that differs from similar southern tools by its more flattened top and a broader and shorter tange. These features appear the in clearest way in relatively late items (Derevyane, Mazepyntsi). Daggers from the oldest Loboikivka site, the Holovuriv workshop, are practically identical to the Krasnyi Mayak (Old Sabatinovka) items — a fact that allows to trace the borrowing of this type of tools from the Krasnyi Mayak centre to Loboikivka at the early stage of their development.

A tanged knife (a dagger?) with a flattened tange, a leaf-like blade, an enhanced oval section and a "belt" on the tange is the Holovuriv knife (Fig. 4:4). Such

knives were found in the Loboikivka hoard and in several sub-mound, so-called "late Srubnaya", graves at the left-bank Ukraine.

Edges of dagger blades and spear- and dart-heads are enhanced with rims that were flattened during the founding process — a typical technique of founding specialists of Ukraine's Late Bronze Age. The technique was used for riveting the tool blades in order to strengthen the bronze [Klochko 1994].

Single-lugged celts, hexahedral in section, with oval sockets , one of them decorated with an ornament under the socket (Fig. 4:6, 8). Rather similar to the oldest Sabatinovka celts, (for instance, the Mali Kopani workshop) [Klochko 1993:37, 55] from which they differ by the absence of a "cavity".

A double-lugged asymmetric celt, oval in section, ornamented with oblique cuts (Fig. 4:7) — the Holovuriv-type celt, the prototype of the Kabakovka celts. These celts, alongside with cut spearheads, are the most characteristic types of the Loboikivka weapons. Early celts of these types display similarity to the Seima and early Kardashynka forms, while later ones (in fact, the Kabakovka forms) are close to the Bondarykha and the Zavadovo celts of the Belozerka period, which represent a further development of this line.

A chopper of the Kabakovka type (Fig. 4:9). Sometimes such tools are called sickles, but their blades are almost straight, and, therefore, in terms of use, these definitely agrarian tools were, most probably, close to small scythes and choppers.

Small hatchets or chisels (?) (Fig. 4:11, 14).

A razor, with a thin double section and a deep groove in the upper part — the Loboikivka type (?) (Fig. 4:13).

Artefacts of indefinite purpose (Fig. 4:10, 12, 15).

2. The mould from the Zazymye settlement of the Brovary district, the Kiev region (Fig. 1:2) dates back to approximately the same period [Berezanskaya 1985:Fig. 119:11]. It represents a four-sided matrix made of talc slate, with carved moulds of a celt, a flat axe (or a hatchet), a socketed chisel and a half-finished bar, rather large in diameter (Fig. 5). The celt, carved in the mould, is the oldest celt in the Kardashynka metallurgical tradition (which existed in the Middle Dnieper area practically synchronously with the Loboikivka tradition) [Klochko 1994]. It is a double-lugged celt, hexahedral in section, with two widely-set rollers on the socket and an ornament in the form of lowered "moustache" cords (Fig. 5:4), similar in form and proportions to the Seima celts [Chernykh 1970]. The assumed early dating of the Zazymye celt is supported by the Seima appearance of the celt and the items carved on other sides of the mould: a socketed chisel and a flat axe-hatchet (Fig. 5:2, 3). A similar socketed chisel was carved on a foundry mould from the Early Sabatinovka foundry workshop Mali Kopani which I refer to the 16th century BC. Flat axes, similar to the Zazymye item, come from the Odaili-Podari hoard in Romania, which was dated by A.M. Lescov to the 16-15th century BC [Lescov 1981]. He based his argument on a rather large, strongly curved hooky sickle of the "early

Srubnaya" type, which actually is the prototype of the Kabakovka sickles. A flat axe, very similar in form and size to the axe found in Zazymye, was discovered in the tolos grave in Zafer Papoura, Knoss, on Crete, dated back to the 15th century BC [Müller-Karpe 1980:Taf. 199:4]. The latter complex is particularly important for determining absolute dates of those artifacts because its dating is based on the historical Egyptian chronology.

Finds of prototypes of the Kardashynka celts in the Middle Dnieper area allow us to identify that region as the centre of their origin and, hence, as the centre of origin of the whole Kardashynka metallurgical tradition which requires a special study. However, the find of the mould in the Zazymye settlement (i.e. rather close to the Holovuriv workshop) explains the relation between these two metallurgical traditions that is reflected in a rather large number of common features in the forms of items and technologies.

3. A workshop in the village of Derevyane, Obukhiv district, Kiev region (Fig. 1:3) [Tallgren 1926; Bochkarev, Lescov 1979:Taf. 1:14, 16; 2:15, 17]. All moulds were made of quality light talc slate. Currently, they are kept in the Ukrainian National History Museum (Kiev). The site contained the following finds:

Part of a cut half of a two-fold mould of a dagger with a leaf-like blade and a flattened stop at the tange. Two pendants — "ducks" are carved at the back side of the bar (Fig. 6:1). A part of the cut other half of the same two-fold mould for making daggers displays part of a dagger blade and half-finished item; a negative of a flat hatchet is carved on the back side (Fig. 6:2).

Half of a two-fold mould for making tanged razors. There is a carved groove on the back side of the matrix, the purpose of which is unknown (Fig. 6:3).

A fragment of a single-sided mould for two choppers of the Kabakovka type (Fig. 6:4).

Half of a two-fold mould for casting double-lugged celts of the Kabakovka type (Fig. 6:5).

The moulds found at the Derevyane workshop may be used to reproduce the following items:

A flat hatchet with a slightly widened blade; choppers, most likely, of the Kabakovka type; a double-lugged celt, oval in section, of the Kabakovka type (Fig. 6:6); a tanged razor with a ring stop — the "Derevyane" version of the Loboikivka type, which differs from the Loboikivka razors by the absence of a groove at the top of the blade (Fig. 6:7); a dagger with a leaf-like blade; a flattened stop; a flattened short tange and a thin rhombic section — the "Derevyane" version of Krasnyi Mayak daggers (Fig. 6:8).

4. A workshop in the village of Mazepyntsi of the Velyko-Polovetsky district, Kiev region (Fig. 1:4) [Tallgren 1926; Bochkarev, Lescov 1979:Taf. 2:20, 21], currently kept in the Museum of Archaeology in Kraków, Poland. The moulds are made

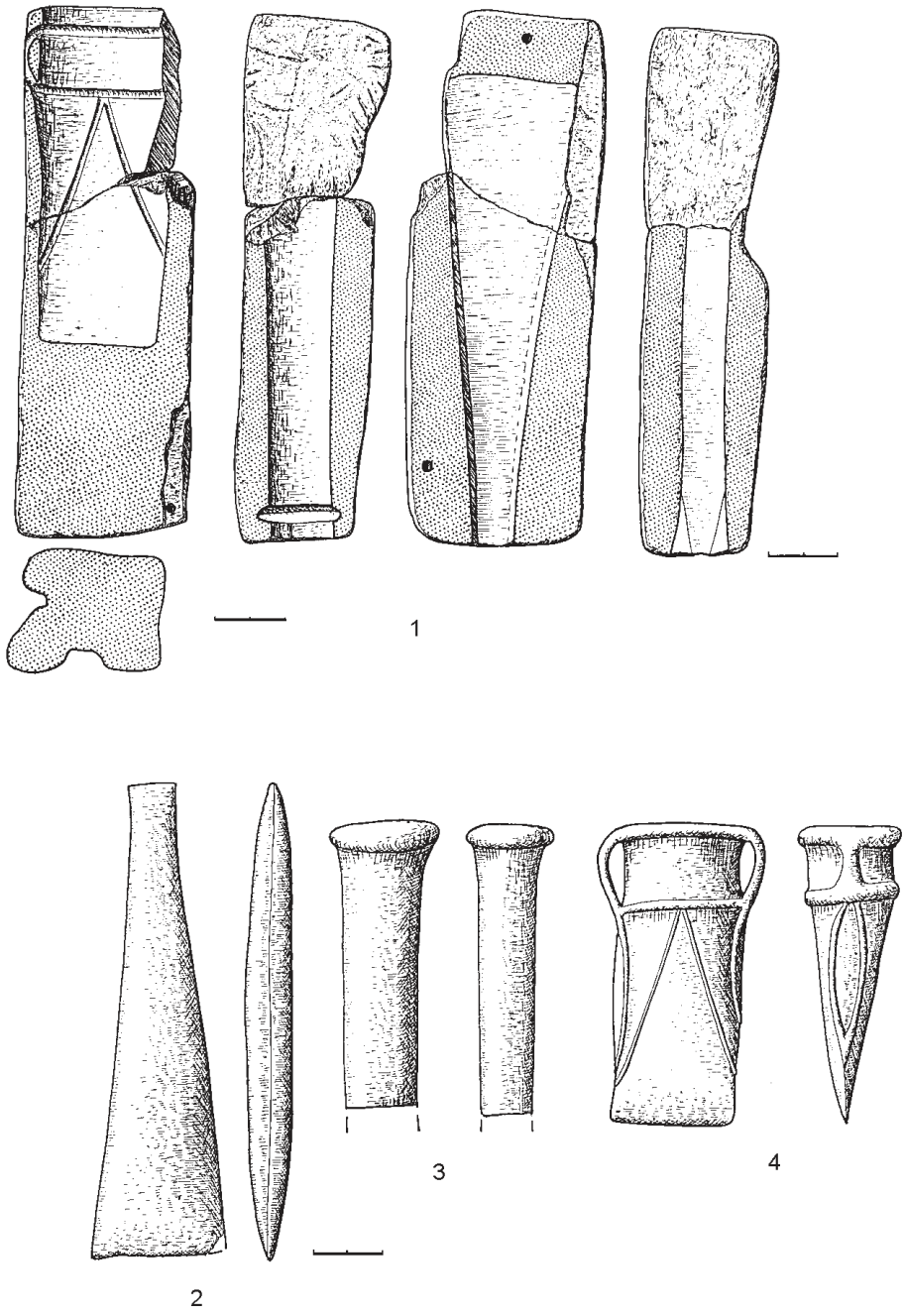

Fig. 5. Casting mould and bronze items. The Zazymye settlement.

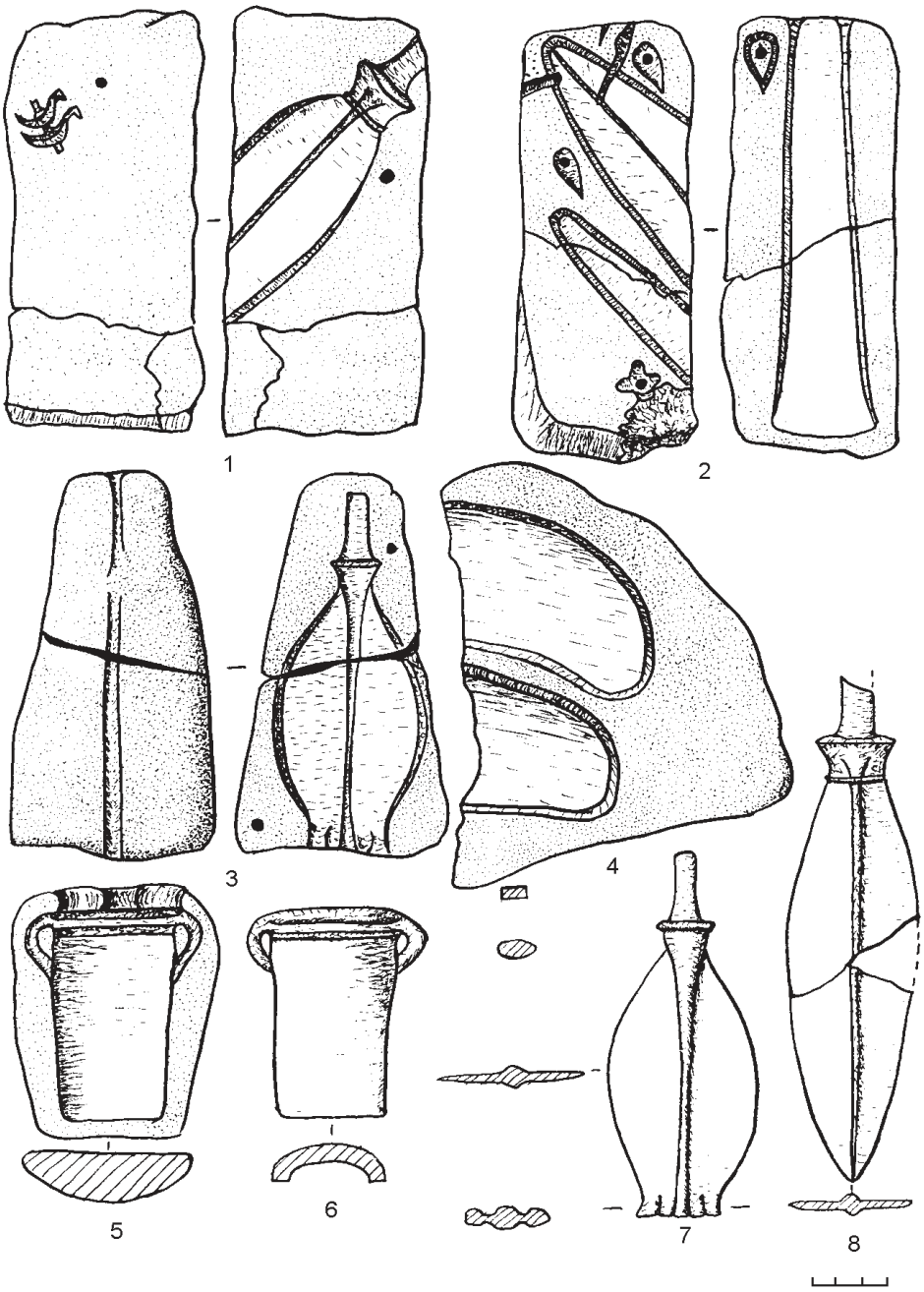

Fig. 6. The Derevyane workshop.

of dark talc slate. The collection includes: a two-fold mould for making a double--lugged celt, oval in section, ornamented with a "cord" on the socket (Fig. 7:1), and half of a two-fold mould for making daggers with ring stops (Fig. 7:2). The moulds of the Mazepyntsi workshop can serve to reproduce a double-lugged celt of the Kabakovka type (Fig. 7:3) and a dagger with a leaf-like blade and a ring stop on the tange, i.e., a dagger of the Krasnyi Mayak type (Fig. 7:2).

5. Half of a two-fold, double-sided mould from the village of Pylypchatyno of the Artemivsky district, Donetsk region (Fig. 1:5) [Tatarinov 1977:Fig. 2:1] designed for making double-lugged celts, hexahedral in section, of the Kabakovka type and socketed hooks (Fig. 7:4-5).

6. Half of a two-fold, double-sided mould from the village of Ivankovychi (previously Yankovychi) of the Vasylkiv district, Kiev region (Fig. 1:6) [Tallgren 1926; Bochkarev, Lescov 1979:Taf. 13:118], made of dark talc slate. The upper part of this mould is kept at the Kharkiv History Museum, and its lower part is in the Ukrainian National History Museum in Kiev. This mould was used to cast cut spearheads of the Zlatopol type; an artifact, the purpose of which is unknown (Fig. 7:6-8).

7. A mould from the village of Vyazovok of the Pavlograd district, Dniepropetrovsk region (Fig. 1:7) [Bochkarev, Lescov 1979:Taf. 2:22] — half of a two-fold mould for making daggers of the Krasnyi Mayak type with a flattened ring stop, and a tanged razor with an additional hole in the upper part of the blade — the "Vyazovok" version of the Loboikivka razors (Fig. 8:1-3). The item, made of talc slate, is kept in the Dniepropetrovsk History Museum.

8. Moulds from the village of Kapulivka of the Nikopol district, the Dniepropetrovsk region (Fig. 1:8) [Sharafutdinova 1960], made of talc slate: a fragment of a two-fold mould for making a hexahedral ornamented celt of indefinite type (Fig. 8:4); half of a two-fold mould for making double-lugged celts, oval in section, of the Kabakovka type (Fig. 8:5, 6); a lid of a mould for making Kabakovka-type choppers (identified by the shape of the snuff smear) (Fig. 8:7). The items are kept in the storage facilities of the Institute of Archaeology of the National Academy of Science of Ukraine in Kiev.

9. Two-fold mould from the village of Zlatopol of the Vasylivka district, Zaporizhya region (Fig. 1:9) [Bodyansky, Sharafutdinova 1967], made of dark talc slate; currently kept in the storage of the Institute of Archaeology of the National Academy of Science of Ukraine in Kiev. This matrix was designed for making spearheads with cut sharp-leaf feather, rhombic in section, and three rims on the socket — spearhead of the Zlatopol type (Fig. 9:1, 2, 3) [Klochko 1993:61].

10. Half of a two-fold mould for making double-lugged celts, oval in section, of the Kabakovka type, made of dark talc slate (Fig. 9:5). The item comes from the

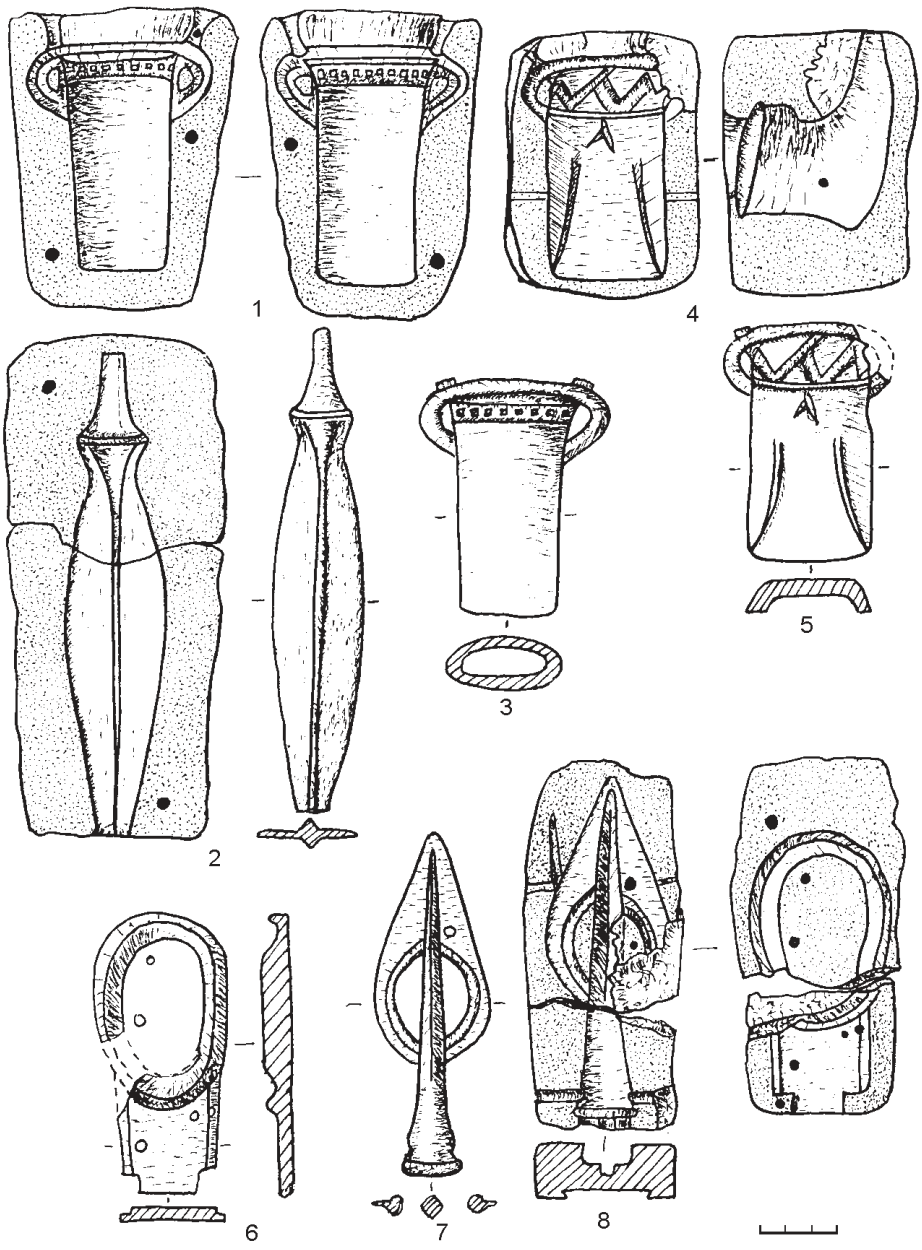

Fig. 7. 1-3 - the Mazepyntsi workshop; 4-5 Pylypchatyno; 6-8 - Ivannya.

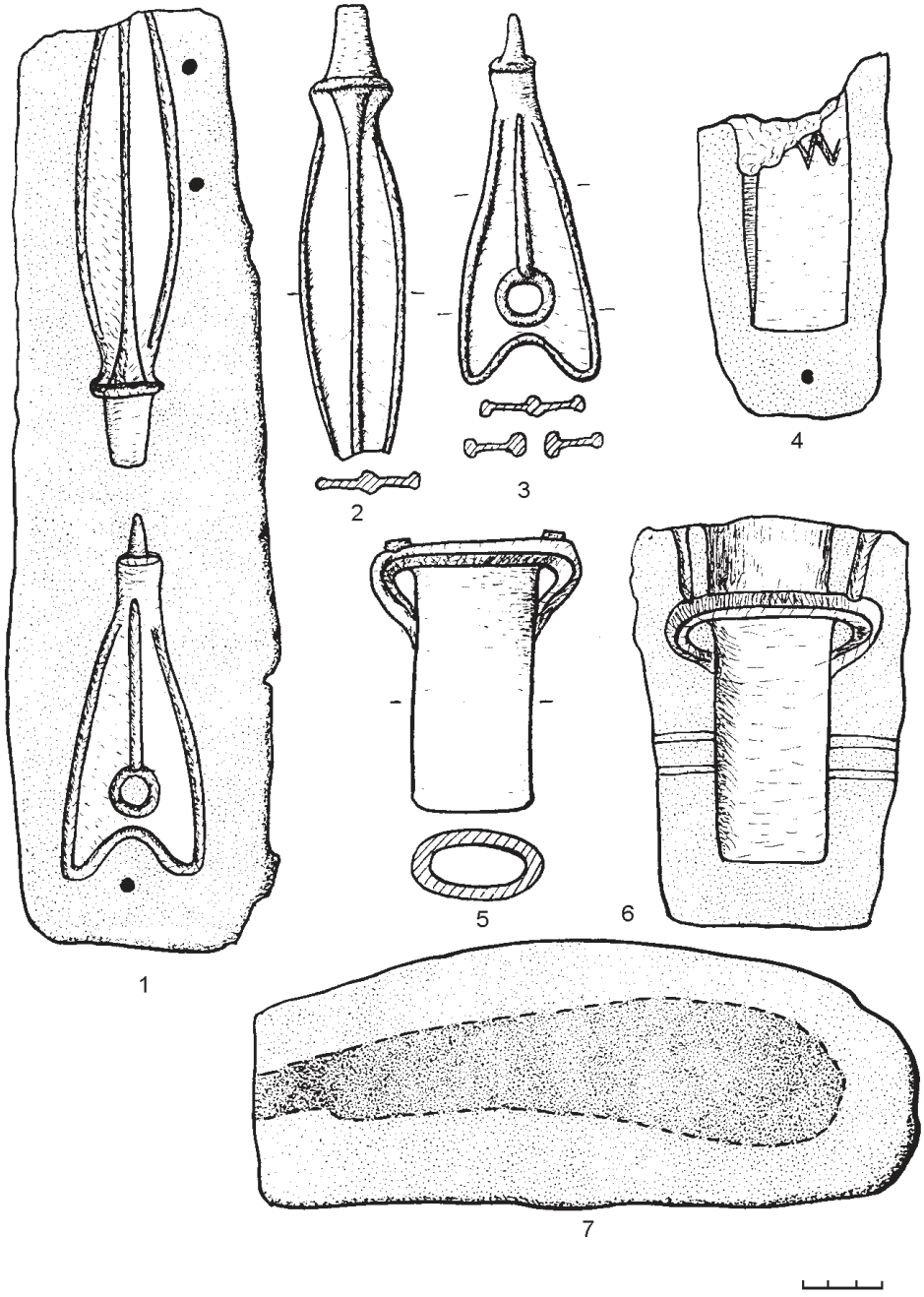

Fig. 8. 1-3 - Vyazovok; 4-7 - the Kapulivka settlement.

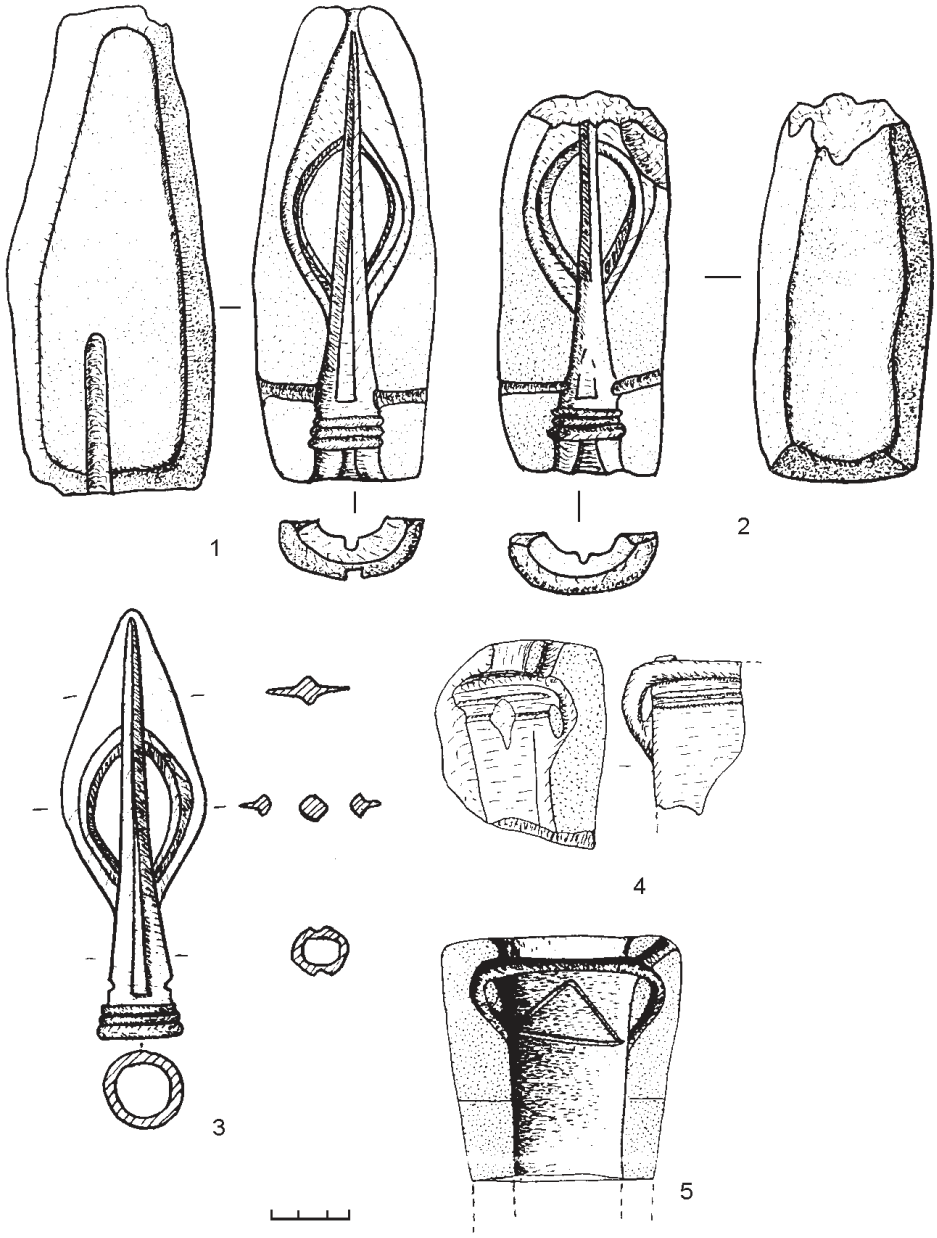

Fig. 9. 1-3 Zlatopol; 4 - the Subotiv site.

Vovnygy settlement in the Dniepropetrovsk district (Fig. 1:10). Currently it is kept in the storage of the Institute of Archaeology of the National Academy of Science of Ukraine in Kiev.

11. Fragment of a talc mould for making the Kabakovka-type celts (Fig. 9:4). From the Subotiv site, the Chyhyryn district of the Cherkasy region (Fig. 1:11). Currently it is kept in the storage of the Institute of Archaeology of the National Academy of Science of Ukraine in Kiev.

B. HOARDS OF METAL ARTEFACTS OF THE LOBOIKIVKA TYPES, FOUND TO THE SOUTH AND THE SOUTH-EAST OF THE MAIN CENTRES OF MANUFACTURE

12. The Kabakovka hoard was found in 1915 in the north-western sector of a major barrow situated on the right bank of the Orel river near Kabakovka khutors in the Kobelyaky district, Poltava region [Rudynsky 1928:Fig. 1:12]. The hoard is kept at the Poltava Natural History Museum. The items were found in a sharp-edged pot of the Srubnaya type with a short straight edge and traces of stripy smoothing on the surface.

The hoard consisted of six sickles, three celts and a dagger. The sickles — with hooks, curved backs, wide salient points and slightly concave, almost straight blades — in fact are not sickles but choppers of the Kabakovka type. The choppers were cast in a closed mould, but after further smith finishing the shape of the mouldings was changed substantially: the mouldings were given rectangular hooks and stretched blades. After that, the chopper could be slightly curved. Due to the further smith finishing, choppers of the Kabakovka hoard, although cast in the same mould, differ substantially in details (Fig. 10:1-6).

Celts — double-lugged, with oval sockets — belong to the Kabakovka type. In places where lugs join the socket, celts of this type often display traces of one or two cut-off or ground-off stalks of additional nozzles (ukr. term *litnik*). The use of such additional nozzles is a distinguishing feature of the Loboikivka celt-casting technology. Two celts are oval in section; the third one is hexahedral in section, ornamented with a relief "cord" under the socket (Fig. 10:8-10).

The dagger with an oval stop on the tange, with a flattened tange and a wide leaf-like blade, rhombic in section (Fig. 10:7) is a version of the Krasnyi Mayak dagger. Daggers of the Krasnyi Mayak type were also typical of the Sabatinovka and the Noua cultures [Klochko 1993].

13. The Loboikivka hoard was found in 1966 in the village of Loboikivka, a suburb of Dniepropetrovsk (currently within one of the city's outskirts) (Fig. 1:13) by local

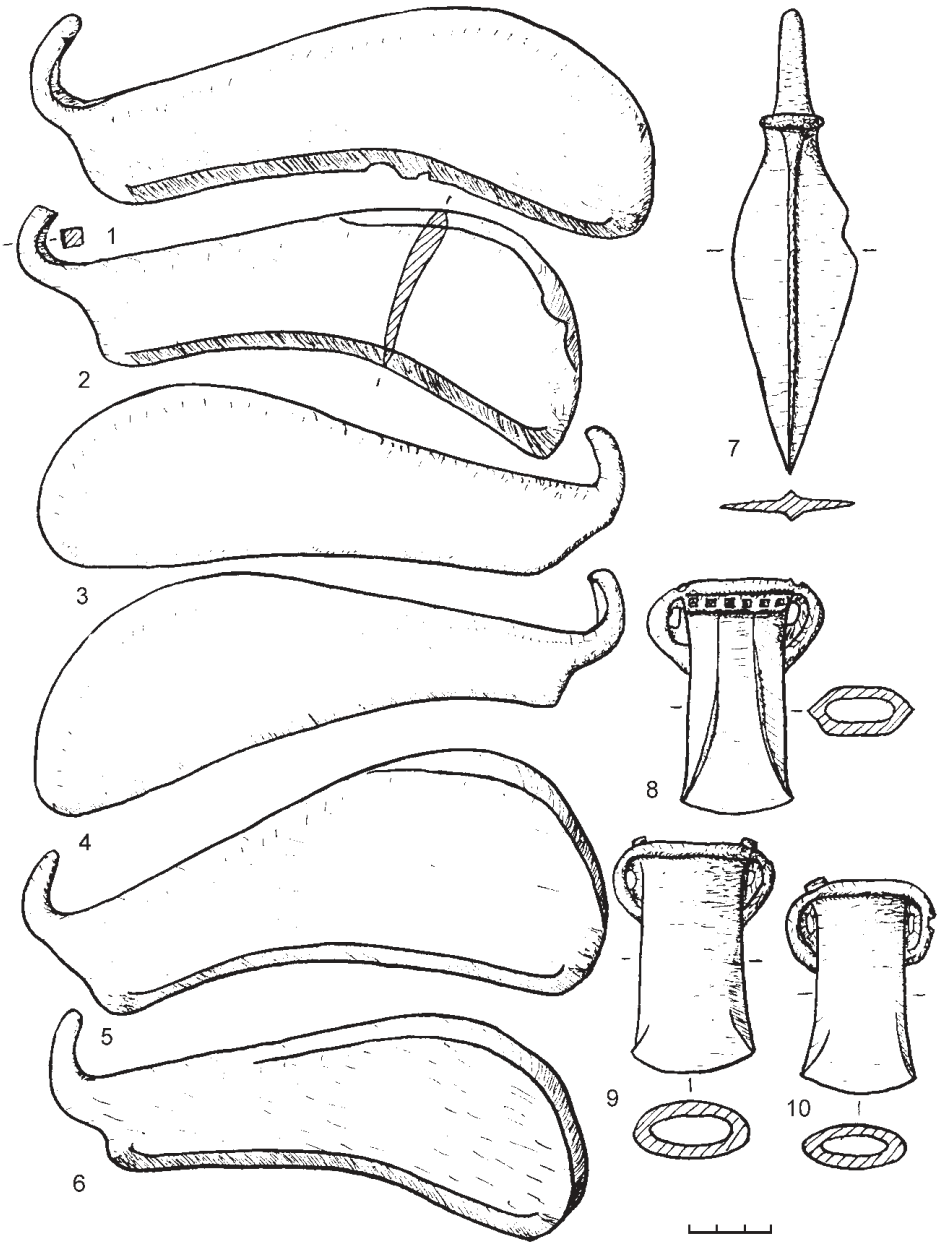

Fig. 10. The Kabakovka hoard.

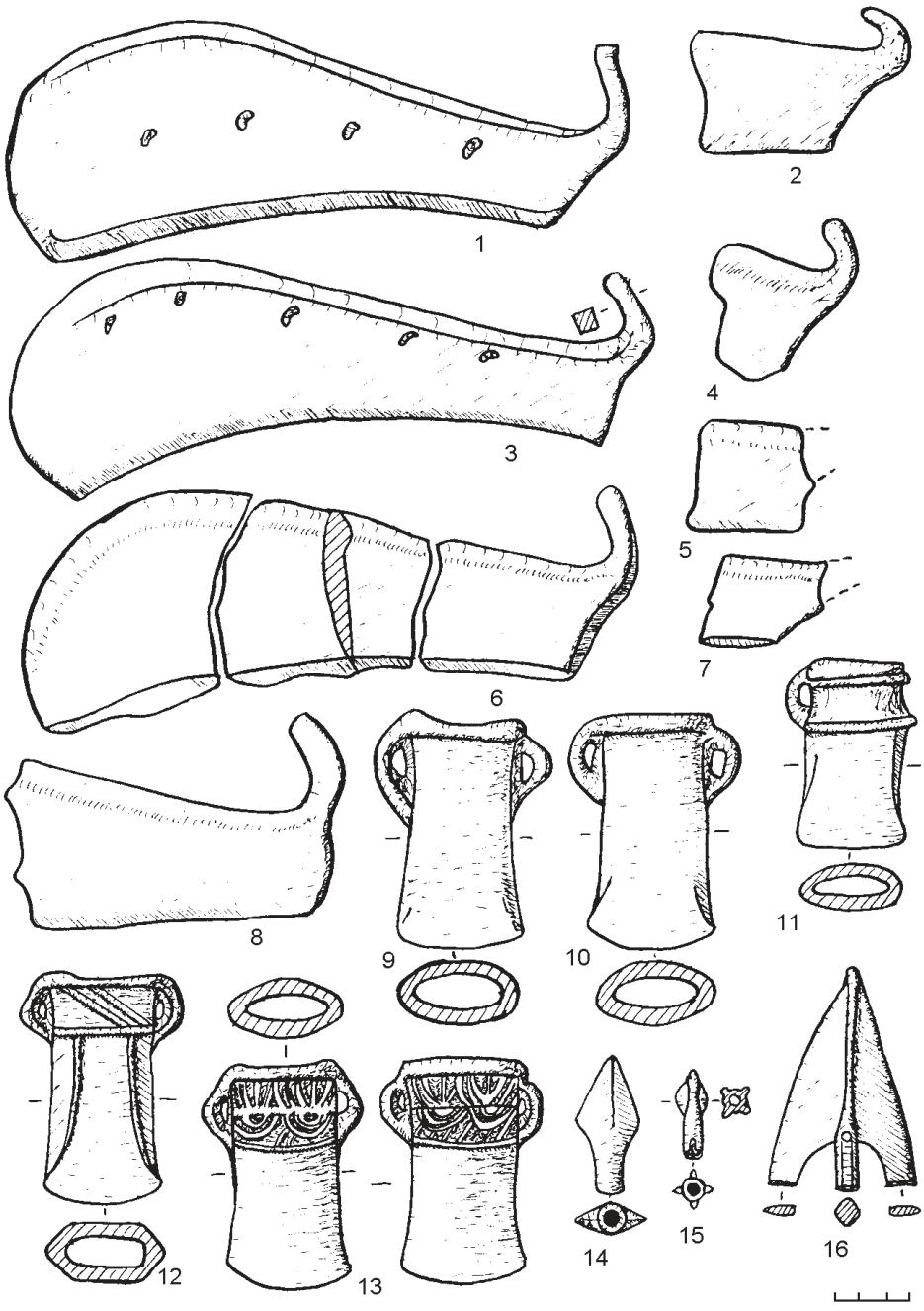

Fig. 11. The Loboikivka hoard.

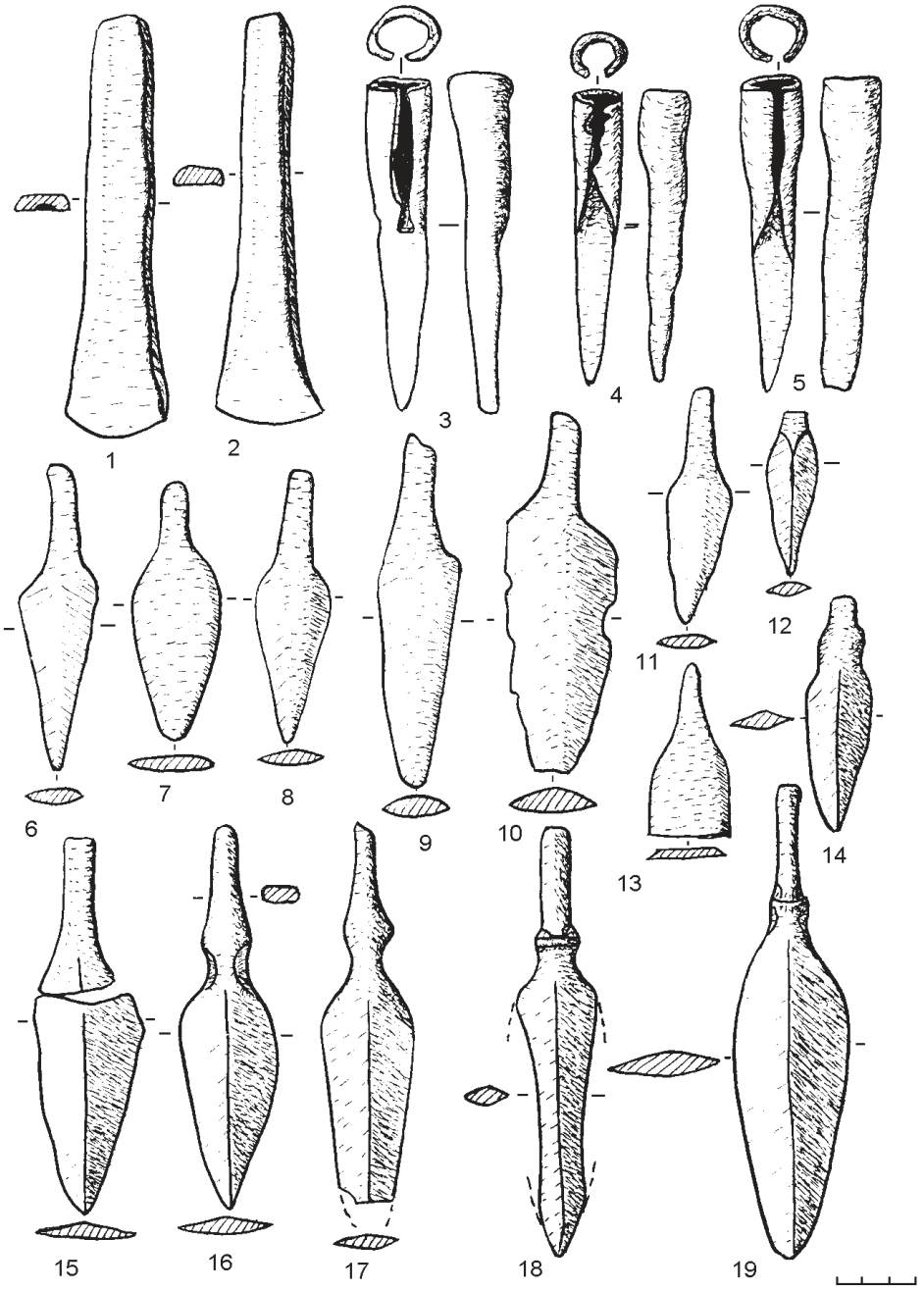

Fig. 12. The Loboikivka hoard.

dwellers who were digging a well near the Chaplynka river, the old bed of the Orel river. According to the men who found the hoard, the items were covered with "some dust", i.e., the hoard, most probably, had been kept in a wooden container. Currently the hoard is kept in the Dniepropetrovsk History Museum. It is the largest of the Loboikivka hoards found to date: it included eight Kabakovka choppers (two of them preserved intact, the third broken into three pieces, and fractions of back sides of five other choppers) (Fig. 11:1-8). The hoard also included twelve more fragments of choppers of indefinite type (most likely, those were also Kabakovka choppers), most of them are fragments of the middle part of the blade.

The hoard also contained two double-lugged celts, oval in section, of the Kabakovka type, one of them decorated with a sophisticated ornamental composition in the socket (Fig. 11:9, 10, 13); a double-lugged celt, hexahedral in section, of the Kabakovka type, decorated with two rollers on the socket and oblique lines (Fig. 1:12); a single-lugged celt, oval in section, with two "cords" on the socket (Fig. 11:11).

Arrowheads — a socketed bullet-shaped head with a four-petal point (Fig. 11:15) and socketed head with a wide, triangular body, rhombic in section, with well-hammered blades (Fig. 11:14). Similar arrowheads were found in the left-bank Ukraine, as well as in the Volga and the Ural regions [Klochko 1993:31].

The upper part of a large spearhead (Fig. 11:16), which allows reconstruction of the rest of the head: a wide leaf-like blade with large oval cuts and a rhombic section — a spearhead of the Zlatopol type.

Two flat hatchets, trapeziform in section, with curved blades (Fig. 12:1, 2). The trapeziform section indicates that the blades were cast in a single-sided mould with a lid. Such hatchets are rather common in the Krasnyi Mayak and the Loboikivka metallurgical traditions.

Three socketed beak-axes [Klochko 1993:62] with hammered folded sockets and a long narrow blade (Fig. 12:3-5).

Nine small tanged knives with leaf-like or triangular blades, rhombic or oval in section (Fig. 12:6-12, 15). All of them are heavily ground off. Similar knives are rather common in the Late Bronze sub-barrow tombs in the right-bank Ukraine: the so-called "Srubnaya graves".

Three tanged knives with "belts" on their tanges near leaf-like blades, rhombic in section (Fig. 12:14, 16, 17) are the Holovuriv-type knives.

Two daggers with ring stops of the Krasnyi Mayak type (Fig. 12:18, 19); one of the daggers has a strongly ground-off blade.

Fragments of knives of indefinite type (Fig. 13:1, 2).

A razor on a short tange with a ring stop, an oval, strongly hammered blade with a groove in its upper part, and rhombic in section (Fig. 13:4) is a razor of the Loboikivka type.

Four hammered hooks with folded sockets that display holes for nails. Three of the hooks are intact, while only the socket of the fourth one remains (Fig. 13:4, 5-8).

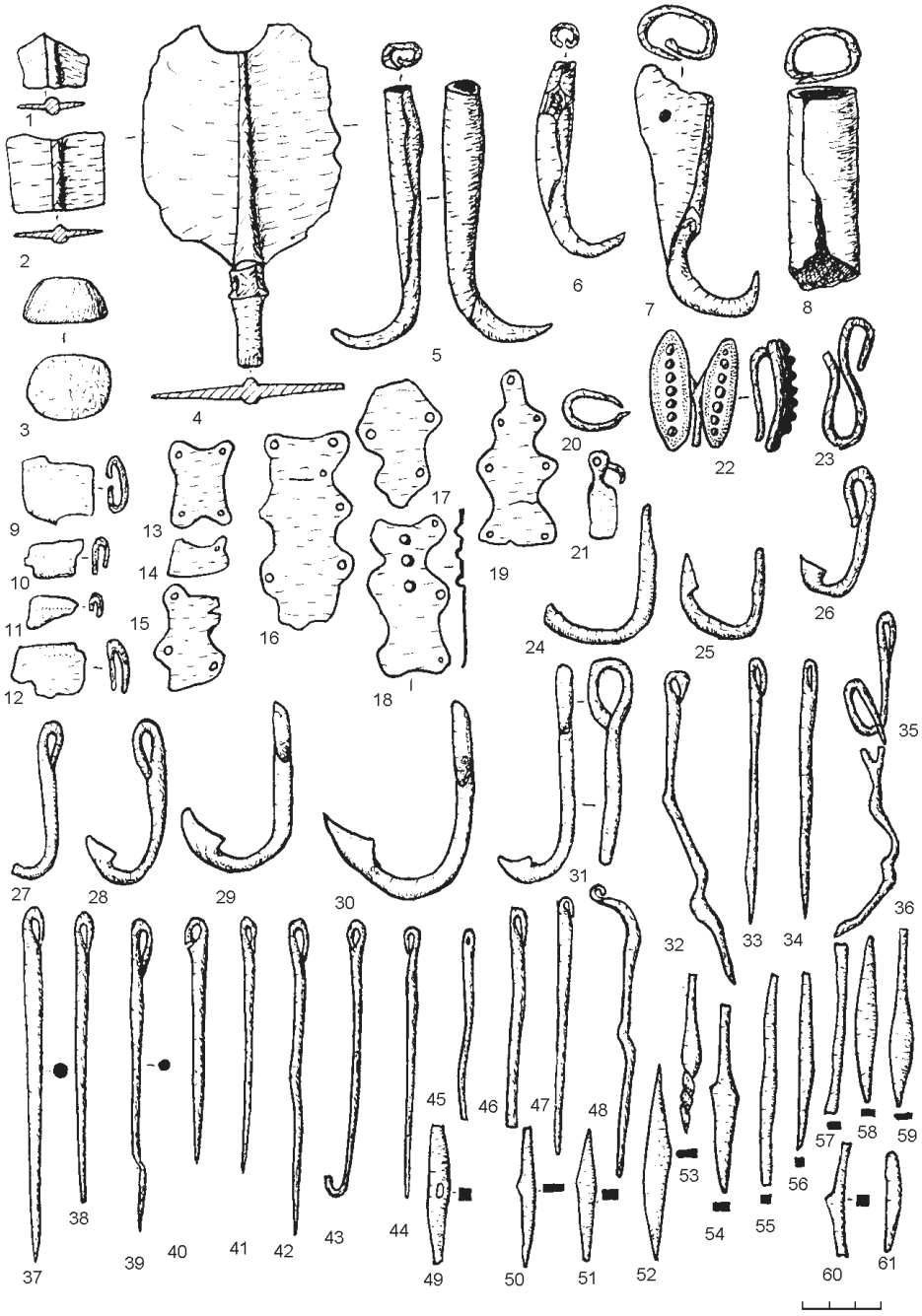

Fig. 13. The Loboikivka hoard.

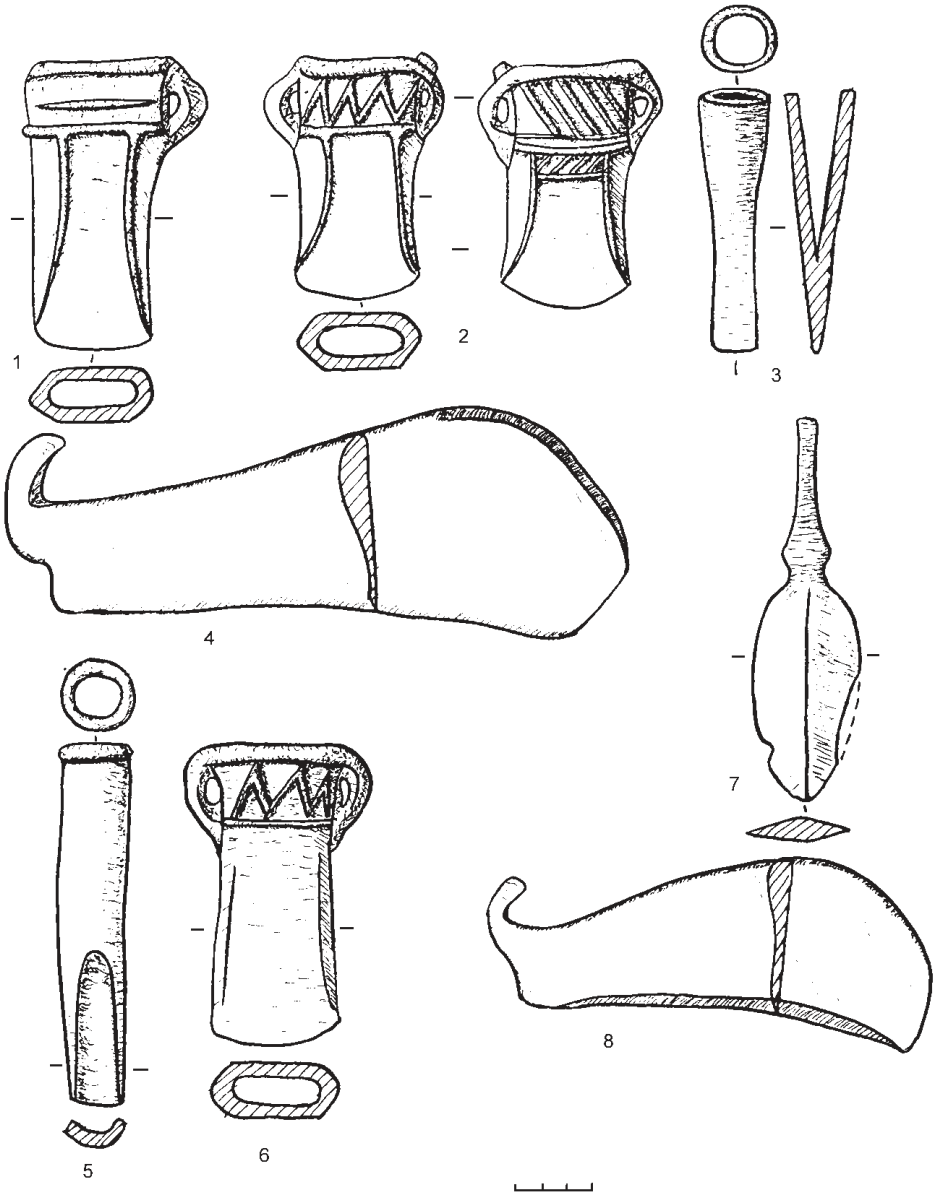

Fig. 14. 1-4 - the Blahovishchenka hoard; 5-6 - the Tryokhizbenka hoard; 7-8 - the Borysivka hoard.

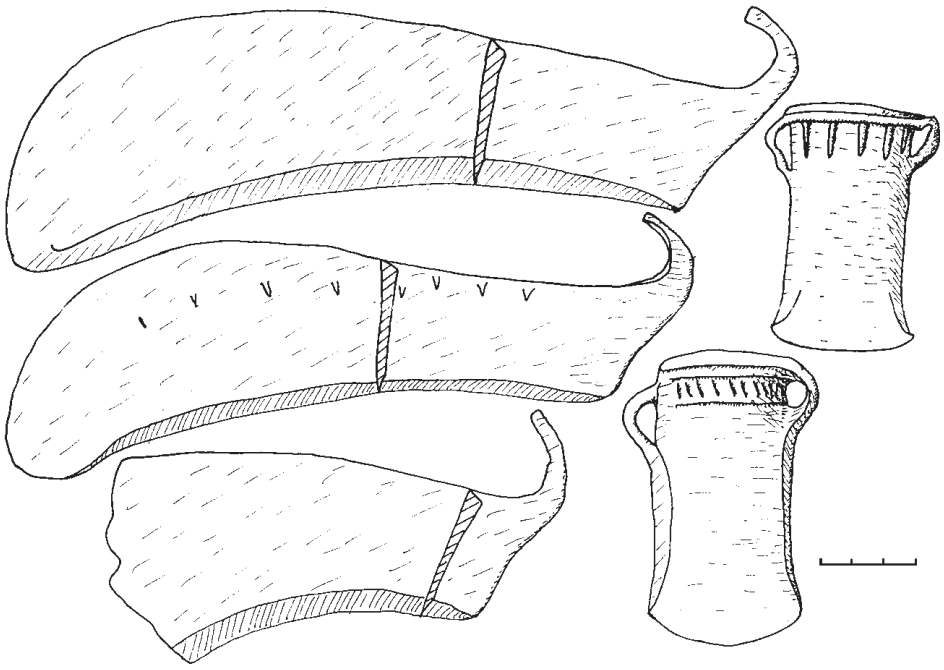

Fig. 15. The Nizhnya Khortytsa hoard.

Bronze bondage of wooden vessels of the Srubnaya type; some of them are like crampons, others like staples or braces with polished surfaces (Fig. 13:9-21). One of the items is decorated with a poinson ornament, the others display nails up to 1 cm long.

A miniature ring, rolled from a narrow plate. (Fig. 13:20)

A cast bronze pendant of sophisticated form. Its curved petals are wrapped in a golden sheet and decorated with a poinson ornament (Fig. 13:22). No items, similar to it, are known to the author.

Eight hammered fishing hooks, made of a four-edged rod, six of them are fitted with one rolled lug each (Fig. 13:24-31).

Seventeen sawing needles, hammered from a rod (Fig. 13:32-48).

Nineteen hammered awls, rectangular or square in section (Fig. 13:49-61).

Also, the hoard contained a grinding stone, 3.3 cm in diameter (Fig. 13:3).

14. The Blahovishchenka hoard, found near the village of Blahovishchenka of the Kamaynka-Dnieprovsky district, Zaporizhye region (Fig. 1:14). Currently the hoard is kept in the Zaporizhye Natural History Museum. It includes a chopper of the Kabakovka type (Fig. 14:4), a single-lugged celt, hexahedral in section, decorated

with three "cords" on the socket (of the Blahovishchenka type) (Fig. 14:1), a double--lugged ornamented celt of the Kabakovka type, hexahedral in section (Fig. 14:2), and a cast socketed chisel (Fig. 14:3).

15. The Borysivka hoard was found in 1928 near the village of Borysivka of the Nikopol district, Dniepropetrovsk region (Fig. 1:15), at the north-western side of a major burial mound under a 1-ton stone block. The hoard contained a knife with "belt" on the Holovuriv-type tange (Fig. 14:7), a chopper of the Kabakovka type (Fig. 14:8), and a hammered socketed hook (was not preserved).

16. The Tryokhizbenka hoard, found near the village of Triokhizbenka of the Slovyanoserbsk district, Lugansk region (Fig. 1:16), is currently kept in the Poltava Natural History Museum. The hoard contained a cast socketed chisel with a grooved blade, and a double-lugged celt of the Kabakovka type, hexahedral in section, decorated with a triangular ornament (Fig. 14:5, 6).

17. The Nizhnya Khortytsya hoard, found near the village of Nizhnya Khortytsya at the right bank of the Dnieper (Fig. 1:17), is currently kept in the Zaporizhye Natural History Museum. It included three choppers of the Kabakovka type (one of them with a broken edge), and two double-lugged celts of the Kabakovka type (Fig. 15).

C. CONCLUSIONS

Metal artifacts of the Loboikivka center were made of high-quality Pb bronze [Chernykh 1976] with the use of a foundry technology of pouring metal into moulds made of talc slate. The artifacts include a variety of tools and weapons: tanged knives, awls, needles, hatchets, socketed chisels, choppers, arrowheads, dart heads and spearheads, celts, socketed beak-axes, and daggers. All those artifacts have no counterparts among artifacts of the Carpathian metallurgical centres; moreover, they differ significantly from metal items of the Srubnaya Culture. Meanwhile, the Loboikivka metallurgical tradition, both in terms of technology and forms of artifacts, is close to local Pontic types: the Krasnyi Mayak and the Noua-Sabatinovka) as well as the Kardashynka [Chernykh 1976] metallurgical traditions.

The complexes that contain artifacts of the Loboikivka and the Sabatinovka types (the Holovuriv and the Mali Kopani workshops, the Khrystych and the Loboikivka hoards) allow the synchronisation of the Krasnyi Mayak and the Loboikivka metallurgical traditions and date the latter back to the 16-13th century BC

[Klochko 1993]. Therefore, the majority of hoards that contain items of the Loboikivka types were found along the lower part of the Dnieper from Kremenchuk to Zaporizhya, further to the south than most of foundry workshops, the most northern of which — Holovuriv, Derevyane and Mazepyntsi — were located in the Kiev region (Fig. 1). The development of that production centre, judging from the situation of the oldest workshops, began in the Kiev region. Gradually, its products began to spread down the Dnieper basin and further to the east.

This metallurgical tradition does not fit the traditional concepts of either the Eastern Trzciniec or the Srubnaya Cultures. Presently, it appears that a more likely hypothesis is presented by the view of V.V. Otroshchenko about the existence of two lines of development of cultures of the Srubnaya community, and the distinguishing, within that community of tribes, of two archaeological cultures: Pokrovka and Berezhnivka-Mayivka [Otroshchenko 1994:150-153]. I link the Loboikivka metallurgical tradition with the latter. The ancient production indicates that in the second half of the 2nd millennium BC the Middle Dnieper area was populated by the people whose origin was not linked either to the Carpathian region or the East.

Hence, the Loboikivka metallurgy, together with the new Malopolovetske burial mound, opened in the Fastiv district of the Kiev region [Lysenko 1998], show that the eastern border of the Eastern Trzciniec Culture did not reach the right bank of the Dnieper, but ran further to the west.

The issue of the eastern boundaries of dissemination of this metallurgical tradition deserves to be addressed separately. Some artifacts of the Loboikivka types and whole hoards of such items have been found rather far to the east, on the territory of Russia, e.g. the Tereshkovo hoard in the Voronezh region [Pryakhin, Siniuk, Matveev 1981], the Karmanovo hoard in the Trans-Kama area [Kuzminykh 1981], the Ilderyakovo and the Derbedeniovo hoards, and a number of other finds in the Volga region [Chernykh 1970], finds of artifacts of the Loboikivka types in the features of the Andronovo Culture in the Trans-Ural region [Chernykh 1983]. All those items belong to relatively late versions of the Loboikivka types; therefore, I regard the dissemination of the Loboikivka metallurgical tradition eastwards as a relatively recent phenomenon [Klochko 1994], which points out to the participation of eastern Ukrainian culture elements in the cultural process of the late Bronze Age at the east of Eastern Europe, namely in the Volga region and Western Kazakhstan, primarily in the development of the Kazan Culture, as well as the Fedorovka and the Sargara features of the Andronovo Culture.

Finds of metal items of the Loboikivka types also make us reconsider culture affiliations of many settlements and graves of the Late Bronze Age in the left--bank Ukraine that have been traditionally referred to the Srubnaya Culture. At the late stage of their development, Srubnaya tribes borrowed this metallurgical tradition and contributed to its dissemination far eastwards. However, such a far dissemination of this specific technological and cultural tradition, in my view, would

be impossible without the integration of Berezhnivka-Mayivka Culture elements into the Srubnaya Culture and their migration far eastwards, as far as the Western Kazakhstan. It was this migration that, in my view, was linked to the formation of the community of roller ceramics culture of the Late Bronze Age in Eurasian steppes, as modelled by E.N. Chernykh [1983]. The reason of that migration, most probably, was the eastbound movement of cultures of the Carpathian circle that began in the early 12th century BC and resulted in the formation of the Chornolis Culture.

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THE SOUTH-WESTERN BORDERLAND OF THE TRZCINIEC CULTURAL CIRCLE

INTRODUCTION

The question of the south-western frontier of the Trzciniec Cultural Circle (TCC), i.e. the relations of Trzciniec societies with Tumulus Culture (TuC) populations, has taken a permanent place among the most important issues of the Bronze Age in the Polish literature (cf. recently Czebreszuk 1996; Ignaczak, Makarowicz 1998; Makarowicz 1998c]. The issue has been raised many times in textbook syntheses, works dealing with individual regions or monographs of settlements and cemeteries. Interactions between the societies of both cultural units have been discussed especially in connection with two phenomena. In the spatial dimension, the interactions have been associated with the so-called *Trzciniec-pre-Lusatian mixing zone* [Gardawski 1959; Kostrzewski 1961; Dąbrowski 1972; 1987; Gedl 1975; Gediga 1978; Blajer 1989; Kłosińska 1997] while in the taxonomic dimension they have been related to the *Łódź phase* [Gardawski 1959; 1971].

The *mixing zone* has been interpreted as an area of syncretization of the *Trzciniec Culture* (TC) and TuC or as co-occurrence of Trzciniec and Tumulus assemblages within the same settlement or cemetery or in single settlement and sepulchral features. The areas where the contact was taking place were believed to have been located in the left-bank drainage of the Prosna River, between the Prosna and Warta Rivers, in part of Kujawy or on the Middle Warta. The limits of the area, however, have been differently drawn [Gardawski 1959; Cabalska 1961; Kostrzewski 1961; Dąbrowski 1972; 1987; Gediga 1978; Miśkiewicz 1978; Blajer 1989; Kłosińska 1994; 1997]. There have been opinions expressed that the *mixing zone* is "...a typical contact zone of two cultures..." [Gediga 1978] or that the presence of both groups is an effect of their temporal sequence [Gedl 1975]. Different cultural attributions have also been assigned to complexes of sources recorded in the area. At times, this led to the distinguishing of temporary or ephemeral syncretic taxonomic units.

In most cases, however, no attempt has been made to theoretically interpret this phenomenon that would go beyond a purely taxonomic aspect and enter the domain of the theory of cultural change. The debate over the status of the *mixing zone* has been in a sense an effect of the controversies concerning the autonomy of TuC groups in the drainages of the Oder and Warta Rivers. That is why, for instance, the term *pre-Lusatian Culture* has been coined by some scholars to name that branch of the Tumulus Circle [Kostrzewski 1924; 1958; Gedl 1975; 1989].

The *Łódź phase* (ŁP) has been perceived as a taxonomic unit reflecting a stage of transformation from the TC to the LC [Gardawski 1959; 1971; Wiklak 1963; cf. also Jażdżewski 1948]. Stress has been laid on its non-homogeneous character with at least three territorial groups being distinguished or even units of lower order in some cases [e.g. Gardawski 1971]. This led to a paradoxical situation in which "spatial" taxa having the rank of culture groups made up a taxon of a higher order having the status of a chronological rather than spatial unit (phase). The suggestion to interpret the ŁP in processive terms was made by A. Kośko [1979] who perceived this set of phenomena as an indicator of the next, after the *Trzciniec Horizon* (TH), stage of cultural integration. The stage was supposed to vary from region to region and to exhibit both TuC and proto-Lusatian patterns [Kośko 1979]. The originating mechanism of these cultural transformations were explained by the said author with the help of the then trendy acculturation model.

In our opinion any characterization of the transformation of Trzciniec groups into Tumulus ones should answer the following question: What was the nature of relations of both cultural communities and how can one explain — on the level of the socio-cultural process — the course and nature of these intergroup interactions? The purpose of this contribution is an attempt to provide answers to these questions. At present, the only possible approach to the problem is the one dealing with its selected aspects. Consequently, we are not going to deal with all the aspects of the "Trzciniec-Tumulus transformation", but we shall focus on the most important, in our opinion, dimensions of the said cultural change.

1. CHRONOLOGICAL AND SPATIAL RANGE

In this paper we shall discuss the cultural situation in two different, in respect of settlement and culture, reception zones of Tumulus patterns, i.e. in Kujawy and the Middle Warta Valley (Fig. 1.).

The chronology of the phenomena discussed in this paper is primarily based on an attempt to trace the changeability in time of the material indicators of the Trzci-

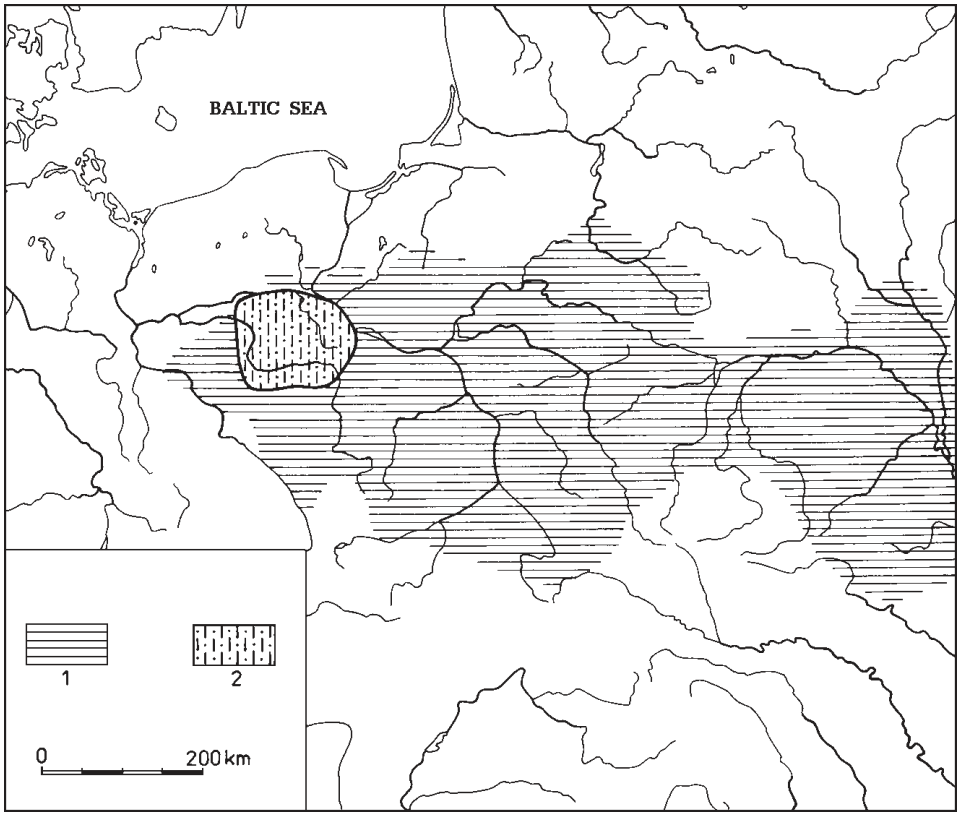

Fig. 1. Western frontier of the Trzciniec Cultural Circle (TCC). 1 - territorial range of the TCC; 2 - Kujawy and the Middle Warta Valley (reception zone of Tumulus Culture patterns).

niec complex that reveal patterns specific to the Tumulus one. The measurements of these tendencies will base on obtained radiocarbon dates for assemblages representing both cultural formations. Due to a lack of stratigraphic records, the dates are of special importance. In this respect greater interpretation opportunities are provided by information from Kujawy from where most ^{14}C datings come as far as structures distinguished here are concerned [Kośko 1979; Czebreszuk 1996; Makarowicz 1998b and 1998c]. From the Middle Warta Valley, a single radiocarbon date has been obtained for one of Tumulus assemblages. However, we do not have any dates from that area for Trzciniec assemblages [Kłosińska 1994; 1997; Makarowicz 1998c].

To complete these introductory remarks it has to be mentioned that information value of source materials from both areas varies [Ignaczak, Makarowicz 1998].

The Kujawy zone is unique in that the transformation process of the TCC's local branch developed along several parallel lines. Tumulus traits appear in the period equated with the time when TH 5, TH 6 and TH 7 societies developed, i.e. in the late Trzciniec Horizon [Czebreszuk 1996; Makarowicz 1998c; Makarowicz, Taxonomic..., in this volume]. These complexes may be interpreted as three independent trends of reception of TuC patterns. The other peculiar characteristic of the area is syncretization which is materially evidenced by a rather frequent co-occurrence of Tumulus traits with indicators of other cultural traditions. The syncretization is particularly visible in the early stage of TH 5.

In Kujawy, only a small number of finds has been recorded, mostly grave ones, where a TuC component has been identified. Only in five sites metals co-occur with ceramics. These are TH 5 grave features at Gustorzyn, site 1; Wolica Nowa, site 1; Marcinków, site 9 and Wojdal, site 1 as well as a TH 6 settlement assemblage at Dobieszewice, site 2 [Ignaczak, Makarowicz 1998; Makarowicz 1998c]. In all these cases bronze objects of Tumulus provenience, i.e. leg and arm ornaments and parts of clothing, are accompanied by vessels associated with the TCC style. An absolute majority of metal finds in Kujawy occurs in ceramics-less contexts making there — in each TuC development phase as distinguished by Marek Gedl — a clear cluster [Gedl 1975, maps 4-6; Czebreszuk 1996:178; Ignaczak, Makarowicz 1998]. Such a characteristic disproportion in the presence of the two kinds of material indicators of the TuC is almost a repetition of the situation from periods BA1b and BA2 when in the area under investigation a large number of Únětice style metal goods are recorded with almost no pottery of Únětice Culture (UC) populations.

The reception of TuC ("pre-Lusatian Culture") traits followed three paths represented by TH 5, TH 6 and TH 7 in the Kujawy zone. The polylinear development can be easily observed in settlement materials which — as it seems — were subject to quicker and more intensive changes than in the case of sepulchral assemblages which were unequivocally tied to the ritual sphere of life.

The first of the mentioned transformation trends is best illustrated by TH 5 assemblages (Fig. 2:14-21) [Makarowicz 1998c; Makarowicz, Taxonomic..., in this volume]. It is characterized by a syncretization of "late Trzciniec" traits and those of southern cultures observable in pottery ornamentation. The southern cultures in this case are late Mad'arovce and early Tumulus. Some Tumulus elements recorded in these assemblages resemble closely ŁP materials [Gardawski 1971]. Sepulchral features show recessive "late Trzciniec" traits (inhumations, common burials, horizontal relief strips as important ornamentation patterns, preference for broken stone of uneven coarseness as a temper making body leaner) and more conspi-

cuous Tumulus ones (vessel macromorphology, e.g. presence of pitchers, peculiar metal goods). The complex is dated to the period from 1650/1600 to 1350/1300 BC (Fig. 3).

The second trend of reception of TuC patterns is represented by TH 6 settlement assemblages (Fig. 2:7-13) [Makarowicz, Taxonomic..., in this volume]. What is specific about this complex is a combination of "late Trzciniec" patterns (ornamentation and micromorphology traits) and Tumulus ones (vessel macromorphology, in particular the presence of vases and the so-called handleless amphorae as well as a characteristic duality of vessels: opposition of the neck to the belly). TH 6 as a rule does not exhibit any ŁP traits. The chronological bracket of the complex stretches from 1550/1500 to 1350/1300 BC [Makarowicz, Absolute..., in this volume].

The last Kujawy reception trend of TuC patterns is visible in TH 7 assemblages (Fig. 2:1-6) [Makarowicz 1998c; Makarowicz, Taxonomic..., in this volume]. This taxon represents materials typical of the ŁP and proto-Lusatian assemblages, especially ornamentation traits specific to the ŁP (domination of vertical grooves and relief buttons; vessel macromorphology — cylindrical neck vases and pitchers). This structure can be dated to the period from 1500/1450 to 1300/1250 BC (Fig. 3).

Summing up, the most important traits setting apart the Kujawy reception zone of Tumulus patterns were syncretism (appearance of TuC traits in the context of patterns of other cultural traditions), polylinearism of the Tumulus trait acquisition process (partial contemporaneity of individual complexes exhibiting ties to the TuC tradition) and a clear domination of bronze objects over the ceramics associated with the TuC. In Kujawy, the number of settlement points of "pre-Tumulus" TCC structures (TH 1-TH 4) is significantly greater than in the period when TCC complexes revealing TuC patterns (TH 5-TH 7) were developing.

1.2 MIDDLE WARTA ZONE

This zone is characterized by a different rhythm of changes in the times of "Trzciniec-Tumulus transformations" than that encountered in Kujawy. The present state of research shows that the development of TCC societies in this zone was less complex than that of Kujawy groups. At least two TH structures have been identified here whose societies may have come into direct contact with TuC communities [Ignaczak, Makarowicz 1998; Makarowicz 1998c; see also Kłosińska 1997].

The first structure imitates in great detail the TH 2 patterns in Kujawy (Fig. 2:29-38). Its origins are related to territorial differentiation of the decline Iwno Culture (IC). The pottery of this complex is characterized by specific ornamentation, in particular by zone and quasi-metopic patterns made with the use of the pricking-

-impressing and incision techniques as well as relief patterns, namely horizontally arranged buttons and strips [Makarowicz 1989; 1998b]. The style and ornamentation of the pottery reveals ties of this structure with the IC (presence of vases and beakers, incised quasi-metopic ornamentation, horizontal relief strips, buttons, tulip--like rims, fine-grain broken stone), the decline Globular Amphora Culture (GAC) — impressions of a "bird's feather", a possible admixture of coarse broken stone, Fig. 2:37), groups of the Mazowsze-Podlasie enclave of the TCC (pricked-impressed ornamentation, carpet incised-pricked patterns, Fig. 2:38) and the late UC (sharp and low placed bends of bellies, Fig. 2:37,38) [Makarowicz 1998b].

In TH 2 materials one does not find any TuC patterns as far as the style and morphology of pottery are concerned. A certain symptom of Tumulus trait acquisition may be the addition of pink and white broken stone to body. This taxon is dated approximately (there are no radiocarbon dates available for the Middle Warta region) to the period from 1800 to 1600 BC (Fig. 3).

The other of the distinguished complexes corresponds to TH 4/TH 5 structures in Kujawy (Fig. 2:25-28). Its peculiar trait is the syncretism of pottery traits. It manifests itself in the co-occurrence of proto-Tumulus traits (domination of white and pink broken stone as a temper added to body, roughening of ceramics) next to classical Trzciniec patterns (horizontally arranged relief strips, multiple incised lines, straight crest rims), Forest-East-European (Linin group of the Nemen Culture — vessel burnishing, corded ornamentation, corrugated rims, Fig. 2:26) and the Füzesabony Culture (FC — e.g. a pitcher with relief spiral ornamentation or another one with a band-like handle, Fig. 2:27,28). This complex can be roughly dated to the period from 1700/1650 to 1600/1550 BC (Fig. 3).

TuC societies appear in the Middle Warta zone about 1650/1600 BC [for a different opinion see Zich 1996]. At present, we have two radiocarbon datings for the excavated settlement assemblage of the TuC at Szczepidło, site 17 (Ki-5591–1502±63 BC; Ki-5592–1483±75). The traits of pottery show that it represents the classic development phase of Tumulus groups. The characteristics include pots with cylindrical necks and vases decorated with vertical grooves, vertical burnishing of vessels, Fig. 2:22-24). At the same time one can still observe traits specific to pottery assemblages of TH groups (e.g. pricked-incised ornamentation, horizontal relief strips, quasi-metopic patterns, vessels on legs, straight rims). Insufficient amount of settlement materials does not allow us to verify the standing systematization of TuC development as proposed by M. Gedl [1975] now.

As far as settlement is concerned, TH settlement points clearly dominate over settlement points unequivocally associated with the TuC in the area [Ignaczak, Makarowicz 1998:Fig. 1]. Nevertheless, in the Middle Warta zone one can find a number of settlements and cemeteries that undoubtedly represent the Tumulus complex [Gedl 1975; Suryś 1985; Sulczyński 1986; Kłosińska 1994; 1997; Ignaczak, Makarowicz 1998:Fig. 1]. There are quite a few sites in the zone that supply materials

whose taxonomic attribution (determined exclusively on the basis of ceramics technology traits) is not certain (TH or TuC). They make up the most numerous class of finds. Bronze goods of Tumulus provenience co-occur with pottery more frequently than in Kujawy. Often, materials traditionally identified with the TC co-occur with sources displaying TuC traits on one site [Kłosińska 1997; Ignaczak, Makarowicz 1998].

2. TRZCINIEC HORIZON SOCIETIES AND TUMULUS CULTURES SOCIETIES. AN ATTEMPT AT A COMPARATIVE ANALYSIS

In Kujawy, TH settlement points clearly dominate over settlement points associated with the TuC. This disproportion is less obvious in the Middle Warta zone, but even there Trzciniec assemblages are more numerous than Tumulus ones. TuC indicators in the form of bronze goods make a significant cluster in the area north of the Warta. In both zones, assemblages are recorded that reveal states of syncretization. Such assemblages combine traits of the cultural formations under discussion. In the first place they include cultural patterns concerning pottery manufacture (style and technology of pottery) and cases of co-occurrence of Tumulus metal goods with pottery specific to the Late Trzciniec Horizon. Less clear ties can be discerned with respect to settlement, economic, socio-organizational and ideological rules.

In the Middle Warta Valley, various forms of settlement of TH and TuC populations are recorded almost exclusively on the river's meadow terrace, on areas raised above the wet bottom and covered with wind-blown sand and dunes. In Kujawy TH 5-TH 7 settlement points and few TuC ones were placed in higher landscape zones: on edges and in upper parts of valleys of rivers and smaller watercourses. In both regions, Trzciniec and Tumulus settlements were founded in previously settled areas which had frequently undergone considerable anthropogenic transformations.

In the light of recent paleozoological and paleobotanical (palynological) studies carried out in Kujawy and — to a lesser extent — on the Middle Warta, it seems that societies of "pre-Tumulus" TCC structures had a rather mobile lifestyle related to animal raising (domination of cattle over sheep/goat and pig in livestock). However, ever greater importance was acquired by the growing of cereals with not a minor role being played by assimilation strategies, mainly hunting and intensive exploitation of the water environment [Makarowicz 1998b]. With respect to Tumulus communities we do not have accurate information concerning their economy. Nevertheless, animal raising and intensive cereal cultivation are confirmed [Tobolski 1966; Ignaczak, Makarowicz 1998].

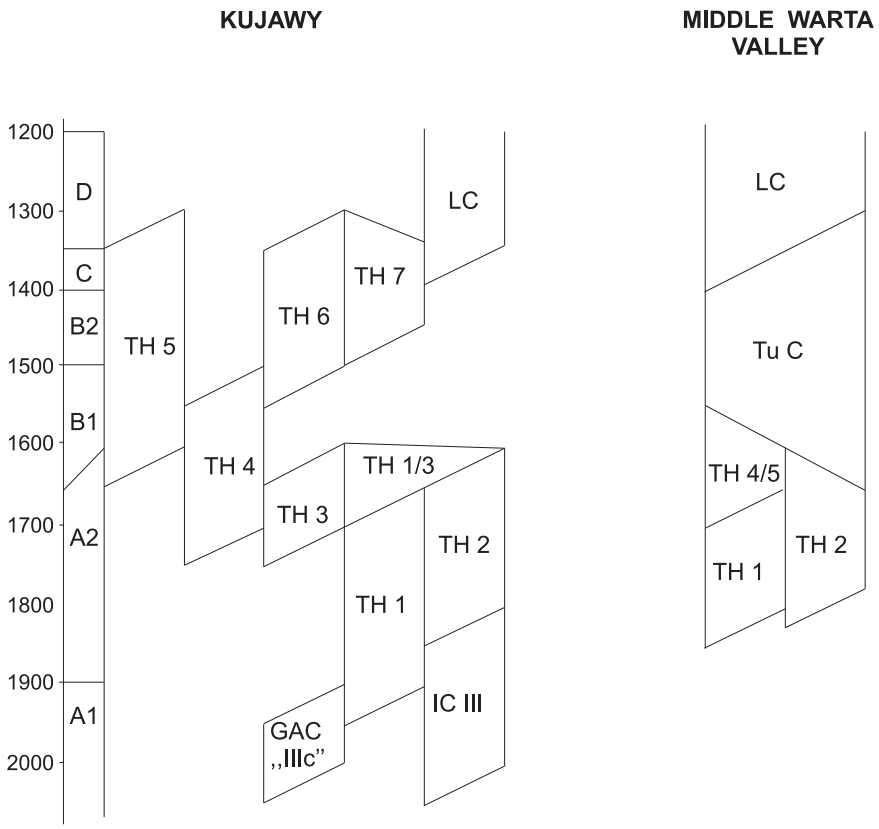

Fig. 3. Cultural and chronological systematization for Kujawy and the Middle Warta Valley.
GAC - Globular Amphora Culture; LC - Lusatian Culture; TH - Trzciniec Horizon; TuC - Tumulus Culture.

The differentiation of settlement rules between Trzciniec communities from Kujawy and the Middle Warta zone may have consisted in a greater stability of the settlements on the Warta which formed more agglomerated arrangements (grape--like clusters). Under lowland conditions, this may have meant lesser mobility of Trzciniec settlement in this zone than in the territories farther north. For the reasons one should look to economic differences, namely a greater role of cereal cultivation in the efforts to obtain subsistence in the Middle Warta enclave of the TCC. It is hard now to determine such preferences for Kujawy TH 5-TH 7 societies, on the one part, and the Middle Warta TH 4/TH 5 complex and TuC communities occupying the zone, on the other. Results of few excavations of Warta settlements

allow us to put forth a tentative hypothesis that Tumulus societies were characterized by a similar degree of mobility and comparable settlement and economic rules.

The least information is available on the social organization and ideological and ritual spheres of life of populations of both groups. Data from Kujawy suggest that Trzciniec TH 1-TH 3 societies must have been based on kinship. Village groups consisted at the maximum of 4-5 nuclear families (16-25 persons) while microlocal (or more properly localized, i.e. territorially oriented *kinship groups*) of one to three village communities [Szynkiewicz 1987; Bednarski 1987; Makarowicz 1998b]. Such communities were characterized by moderate forms of intergroup ranking with the privileged position of adult males typical of animal breeders [Makarowicz 1998b].

Individualist tendencies did not cause any permanent changes in basically communal ideology of *kinship groups*. Bronze goods played primarily a role of prestige objects consolidating the power of the group. Most metal goods is recorded in the so-called hoards which are often interpreted as collective property [Blajer 1992; Bradley 1998; Makarowicz 1998b]. With respect to the funerary ritual, the individualist rite was dominant typically of lowland communities genetically related to the Single Grave Culture (SGC) and the IC. One finds both barrow graves as well as burial features without mounds. Only the funerary ritual of TH 5 societies in Kujawy manifests the change related to the spreading of the collective rite [Makarowicz 1998b].

We do not have similar information for TH 5-TH 7 societies in Kujawy nor for the Middle Warta groups of the TuC. Relying, however, on the size and density of Tumulus settlements in the Middle Warta Valley, it can be assumed that village groups of late Trzciniec Horizon populations (TH 5-TH 7) and of TuC did not differ much in number from the discussed dearly and classic Trzciniec communities in Kujawy. However, in macroscale, the Tumulus population was drastically less numerous than that of TH structures. Most metal goods from that period came from non-burial deposits (hoards). A considerable amount of bronze finds in graves, from the beginnings of TH 5 in Kujawy and the TuC on the Middle Warta, may be a proof of the hypothesis about the spreading of the role of metal as a *prestige medium* and its gradually becoming a commodity. The late Trzciniec populations in Kujawy (TH 5-TH 7) often interred their dead uncremated in stone structure graves, as a rule without a mound. Mounds, however, may not have survived due to intensive farming in the region. Also sepulchral finds on the Middle Warta do not allow us to ascertain whether there were any barrows in the region which form a characteristic element in the cultural landscape of other territorial branches of the TuC.

3. AN ATTEMPT TO RECONSTRUCT THE SOCIO-CULTURAL PROCESS. AN OUTLINE OF A PROPOSITION

After this relatively long discussion of the taxonomic manifestations of the intermingling of Trzciniec and Tumulus traditions and a comparison of the cultural behavior of populations of both groups we shall make an attempt to explain the nature of interactions between TH and TuC societies. We shall also put forth a hypothesis explaining the mechanisms of cultural change in the regions discussed earlier.

The discussion of the question of cultural change calls for identifying major factors generating the change. Now, it seems that in both regions under discussion the causes of the "Trzciniec-Tumulus transformation" were radically different. An outline of the history of these changes shall begin with the presentation of the cultural situation in the period prior to the emergence of structures exhibiting TuC traits.

The origins of the post-Iwno TH societies in Kujawy and the Middle Warta region were related to the parallel axis of intercultural interactions between IC societies and the West, i.e. the SGC and BB (TH 1) and the East, i.e. Linin Group of the Nemen Culture (TH 2) which dominated in this area from at least the middle of the 3rd millennium BC until ca 1600/1650 BC. These ties were rooted in common origins. First, in the real or biological sense (kinship relationships that were expanded owing to a stable system of exchange of women, ethnic community?) [cf. Shennan 1989; 1991; Olsen, Kobyliński 1991; Kadrow 1995; Barford 1996; Czerniak 1996; Werbart 1996; Makarowicz 1998b] and second, in the sense of having common consciousness, i.e. sharing a myth of descent from a single ancestor. A radically different character was manifested by the contacts of IC societies and later post-Iwno TCC communities (TH 1-TH 3) with the South, especially with the UC. It was mainly an economic relationship based on far-reaching forms of exchange of prestige objects (e.g. bronze, amber; the "demand for prestige" was peculiar to cultural peripheries of the then Europe) [cf. Sherratt 1994; Kadrow 1995; Czebreszuk 1996; Makarowicz 1998] and processed raw materials (e.g. textiles) for unprocessed products. The relationship did not cause any radical change of the traditional lifestyle of the populations genetically deriving from the IC. After the decomposition of the UC, TH 3 and TH 4 societies revived the contacts with the South. The para-economic nature of these contacts, related to the obtaining of prestige objects, was modified because of a frequent practice of exogamy with groups originating with the Małopolska enclave of the TCC. Trzciniec societies from the South also transmitted the patterns of Mad'arovce (MaC), Věteřov (VC) and Füzesabony Cultures to the north.

In the beginnings of BB1, since about 1650 BC, inventories of TH 5-TH 7 in Kujawy and TH 4/TH 5 in the Middle Warta region begin to include TuC indicators.

They are recorded mostly in pottery. Their presence is also attested by Tumulus style bronze objects on the Polish Lowlands [Kośko 1979]. TuC societies must have reached the Middle Warta region from the Silesian agglomeration encountering there intensive and relatively stable settlement of Trzciniec communities (TH 2). The appearance of syncretic TH 4/TH 5 assemblages in that zone as well as TH 5--TH 7 farther north (Kujawy) may be evidence of relatively quick establishment of contacts between TuC populations and late Trzciniec Horizon societies.

It seems that the nature of such ties differed in the Middle Warta Valley from those in Kujawy. The Middle Warta region may be identified as the northern frontier of compact TuC settlement. The Trzciniec populations occupying that zone earlier had developed contacts with southern societies due to the proximity of the zone to Małopolska and Silesian cultural centers [Makarowicz 1995; 1998b]. Later, these interactions became more intensive because Tumulus and Trzciniec societies neighbored on each other. Exploitation of the same eco- and landscape zones (lower terraces of the Warta Valley) and similarities in settlement and economic strategies (e.g. the rise of permanent houses, longer sojourns in one place, domination of animal raising over plant cultivation) were among the factors facilitating the contacts. Furthermore, TuC societies had an attractive cultural offer for Trzciniec communities, i.e. metal goods of individualized character raising the status and prestige of an individual. Although there are proofs of local manufacturing of bronze objects (following Únětice patterns), both on the Middle Warta and in Kujawy [Makarowicz 1998b], the metallurgy of Tumulus populations was arguably technologically more advanced and diversified as far as its assortment is concerned both in terms of quantity and quality. Instructive in this respect are proposals by H. Case [1987] who identified amateur and professional blacksmiths in the European Copper Age (Bell Beakers) [see also Vandkilde 1996]. Most scholars relates Tumulus circle structures with chiefdom type organizations characterized by high social ranking [Kristiansen 1994:16; Vandkilde 1996]. A highly stratified model of society with a high degree of individualism was yet another cultural pattern worth imitating for members of Trzciniec communities.

The above named factors contributed to quick establishing of contacts between early Tumulus and late Trzciniec groups in the region. The contacts, in turn, brought about a syncretization of the cultures of both societies possibly resulting from the circulation of women, exchange of prestige objects of bronze and amber (cf. Ruszków, site 3 and Biechowy, site 3) as well as other objects, raw materials and food. Not all TH societies were rapidly transformed. Some of them must have continued the traditional lifestyle. A hypothesis may be put forth that between 1650 and 1550 BC, on the Warta, three different cultural formations developed next to each other. These were *Trzciniec* TH 2 structures, *Trzciniec-Tumulus* formations (including syncretic TH 4/TH 5 complex) and "purely" *Tumulus* ones.

The attraction of socio-cultural patterns of TuC populations caused finally the Trzciniec structures to disintegrate in the second half of the 16th century BC. In terms of the socio-historical process, the disintegration should be interpreted as an effect of the final demise of the Trzciniec identity indicators that had ensured until then cultural cohesion of the structures [Olsen, Kobyliński 1991; Shennan 1989; 1991; Kadrow 1995; Barford 1996; Czerniak 1996; Werbart 1996]. In the Warta region we deal then with a relatively homogeneous community that may have represented a type of social organization with far-reaching intergroup *stratification*.

The status of TuC patterns was, as it seems, different in Kujawy. In that zone we are faced almost exclusively with prestige objects of Tumulus origin. Their appearance there may be interpreted as an effect of para-trade contacts being a peculiar continuation of earlier ties of this type between IC and UC societies within a long distance exchange network [Kośko 1979; Czebreszuk 1996; Makarowicz 1998b].

The paucity of sites where ceramic indicators of the Tumulus complex have been recorded may be a sign that the interactions between TH societies and TuC groups were based on the exchange of prestige objects. Exogamy was practiced in a narrower extent, significantly lower than in the Middle Warta region. This phenomenon, corroborated by, for instance, a large disproportion of settlement points of TH 1-TH 4 ("pre-Tumulus") and of TH 5-TH 7 ("Tumulusized"), may be linked to the hypothesis about a gradual depopulation of Kujawy after 1600 BC [Czebreszuk 1996]. TuC societies infiltrating the southern and south-eastern area of Kujawy must have been demographically sparse. They may have been made up of groups oriented towards the exchange of metal goods (and other processed goods), amber and raw and unprocessed materials [Makarowicz 1998]. In such a case one may expect to encounter dispersed — in the diversified cultural environment of Trzciniec societies — Tumulus communities consisting of specialized metalworkers and their families and customers. The occupation of blacksmith was associated with a high social status. Such persons often performed leadership or religious functions [e.g. Kośko 1979; Harrison 1980, Eliade 1993; Vandkilde 1996; Makarowicz 1998b]. One of many possible scenarios of contacts takes into account the practice of obtaining Trzciniec women by migrating TuC communities. It seems that this practice may have been one of the causes of the cultural syncretism visible in the development of TH 5-TH 7 societies.

The reception of Tumulus traits did not lead to a radical transformation of late Trzciniec societies and the rise of a uniform TuC complex in the Kujawy zone, unlike in the Middle Warta region. We should think that the cause of this development was a considerable demographic domination of Trzciniec societies over Tumulus ones and the strength of their traditional quasipastoral lifestyle with its ideology, rituals and social, economic and settlement rules [Makarowicz 1998b].

In the light of the above comments, the so-called *Trzciniec-Tumulus mixing zone* may be interpreted as a highly diversified area, as far as the rhythm of cultural development is concerned, where Tumulus identity patterns were received by late Trzciniec Horizon communities. Within the area, the two discussed zones stand out, the populations of which adopted these patterns in different ways.

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THE SOSNYTSA CULTURE OF THE DESNA AREA AND ITS LINKS WITH EASTERN NEIGHBOURS

The Sosnytsa Culture, first as a type of relics, was defined by S.S. Berezanskaya [1957]. Later on, she included those relics in the Eastern Trzciniec Culture [1972:130-134]. I.I. Artemenko regarded the Sosnytsa relics as a separate archaeological culture, extrapolating it to the Sosnytsa and Kiev local versions of the Eastern Trzciniec Culture [1961; 1987:106-113]. J. Dąbrowski [1972] and V.I. Klochko [1993:63-65] shared similar views. All those researchers had no doubts concerning the association of the Sosnytsa or the Eastern Trzciniec Culture with the Trzciniec – Komarov cultural and historic community.

Monuments of the Sosnytsa Culture (according to I.I. Artemenko) occupied central and eastern areas of the Upper Dnieper basin, with the maximum concentration in the Ukrainian Polesie zone. Down the Dnieper, the Sosnytsa relics descend the forest-steppe zone to the Ros river in the south. To the east of the Dnieper, the Sosnytsa relics occupy a wide wedge along the Sozh, the Desna and the Seim rivers, forming the most eastern group of relics of the Trzciniec-Komarov community. The eastern frontier of the culture lies along the Oka-Desna watershed, while its southern edge stretches along the Trubizh, the Oster and the Seim rivers. Therefore, in the east, the Sosnytsa Culture relic never leaves the boundaries of the Dnieper basin, which was the geographical niche for its carriers.

In the chronology of the Bronze cultures of the Dnieper area, the Sosnytsa Culture occupies the place between the Mnogovalikovaya Culture (MC) and, possibly, the Maryanivka Culture below and the Lebedivka Culture above. The authors do not share I.I. Artemenko's view that the Lebedivka relics comprise the late stage of the Sosnytsa Culture and, following S.S. Berezanskaya, regard them as an individual culture. This relative position also determines the time of development of the Sosnytsa Culture to be within the third quarter of the second millennium BC. There have been attempts to determine the period of the Sosnytsa Culture internally, mainly on the basis of typology of its ceramics [Berezanskaya 1972; Artemenko 1987; Molodtsov 1994].

Special attention should be given to the large set of Sosnytsa relics in the middle part of the Desna, above the city of Chernihiv. There, on the right bank of the river, lies the eponymic site near the town of Sosnytsa. About 50 km to the north-east of Sosnytsa, along the Desna, there is the village of Mezin, known for its Upper Paleolithic site. Due to the efforts of V.Y. Kurylenko, director of the local natural history museum, the most significant of currently known clusters of Sosnytsa sites was discovered in the Mezin microdistrict (Fig. 1).

The exploration zone includes the high, right-bank of the Desna and the broad, left-bank creek in the northern end of the Koropy district of the Chernihiv region along the border of the Sumy region of Ukraine. The studied microdistrict is about 25 km long, stretching along the Desna bed, and about 8 km wide, from the village of Radychev to the village of Kurylivka. There, 30 years of systematic observations and reconnaissance have produced 36 household sites of the Sosnytsa Culture. These include 10 major settlements ranging in area from 2.5 to 10 hectares, 13 medium (1-2 hectares) and 13 small ones (up to 1 hectare). At most of the settlements, the layer of finds was 0.2 to 1 meter deep. The Mezin site and the Mezin island are remarkable for their deep layers of up to 1.8 meters and up to 1.5 meters, respectively (Table 1). Most of the relics are found in the flood-lands (22) of the left bank located up to 7 meters over the water level, and on the islands. The right--bank settlements are located high — 20 to 60 meters over the water level between gullies at the Desna's high right bank. The location of the relics is uneven: small and medium sites surround the large ones and form groups of 5 or 6 settlements (the Popove ravine near Kurylivka), with the Kudlayiv group of 8 Sosnytsa sites up the Desna, and the Konotop group of 10 sites down the Desna (explorations done by V.Y. Kurylenko, Table 3).

The Sosnytsa sites noticeably exceed the representation of other archaeological cultures in terms of settlements as well as in terms of the amount of collected material [Kurylenko, Otroshchenko 1996]. Specifically, the Sosnytsa sites of the Mezin microdistrict produced 3859 fragments of decorated ceramics, while only 743 finds belonged to the Maryanivka, 605 to the Middle Dnieper, and 152 to the Lebedivka Cultures (Table 2). The 6 to 1 ratio of the Sosnytsa ceramics to the Maryanivka finds is also observed in the Koropy microdistrict. Sites in the Kudlayiv microdistrict to the north of Mezin contain similar key types of pots, although less elaborately decorated. Therefore, the collected materials prove that the Sosnytsa sites of the Mezin microdistrict are particularly rich in finds. Six sites of the Mezin area (the Popova, the Kurylivka-2, the Zakhidna Dubyna, the Mezin Island, the Northern and Southern Berezova, the Tymonivsky Bir) and two sites of the Koropy (Kovalenchykha Island, Lysa Hora – the Southern way) feature a well-preserved cultural layer and good potential for major archaeological excavations (Table 3).

Traditional tulip-shaped Sosnytsa pots, are represented by cruder, thick-walled vessels with admixtures of granite and coarse-grained sand in the clay, with rough

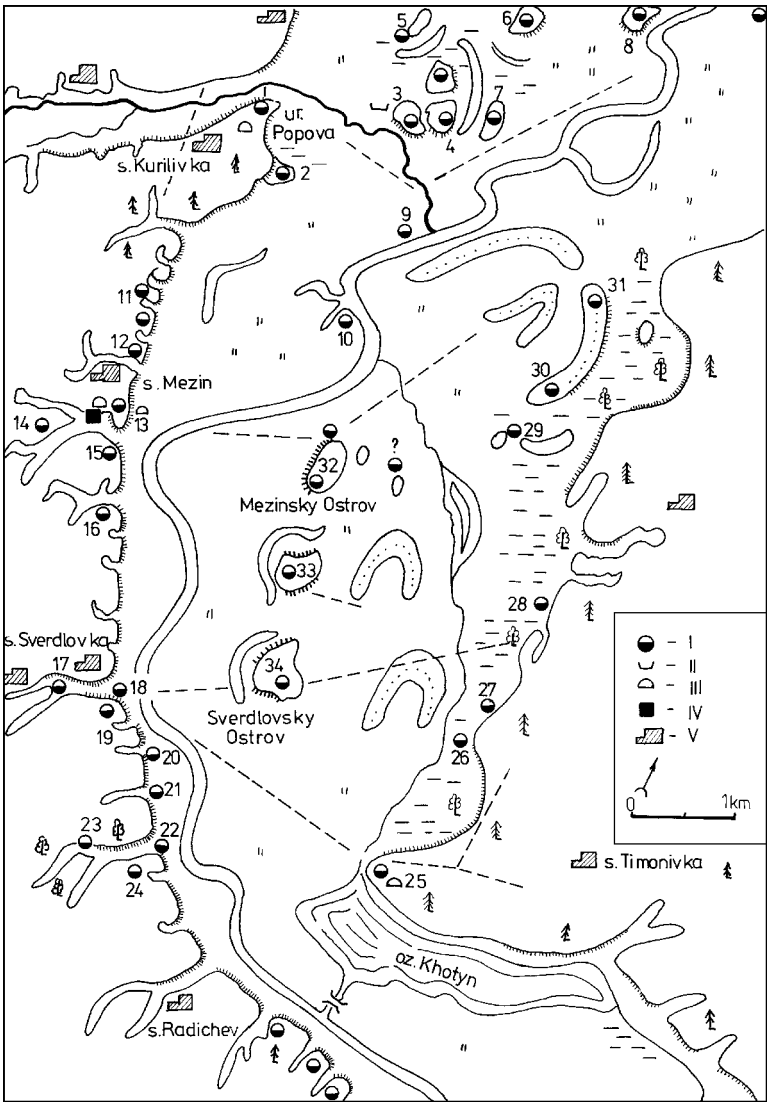

Fig. 1. Map of the Sosnytsa Cultur sites in the Mezin Microdistrict. Legend: I - settlements of the Sosnytsa Culture; II - graves of the Sosnytsa Culture; III - unstudied burial mounds; IV - the Mezin Archaeological Museum; V - contemporary villages. 1 - Popova (Kurylivka-1); 2 - Khutoryshche; 3 - Dubyna Western; 4 - Dubyna Eastern; 5 - Kaduniv Hrudok; 6 - Ihnativsky Island; 7 - Horochky; 8 - Tuhayiv Hrudok (Hyrin); 9 - Cherepytsya; 10 - Kozulya; 11 - Zabridky Northern and Zabridky Middle (Haidukova Hill); 12 - Zabridky Southern (Kulykova Hill); 13 - Mezin site; 14-Shumeikivka in site Mezin; 15 - Syrivska Hill in site Mezin; 16 - Khoromky Southern; 17 - Sverdliv School; 18 - Sverdliv Ferry; 19 - Sverdliv site-3; 20 - Zaton; 21 - Perelisky; 22 - Puzyreve Northern; 23 - Khvostynske; 24 - Puzyreve site, Southern; 25 - Dzvinkove; 26 - Tymonivsky Bir Southern (Zabilivka Meadow); 27 - Tymonivsky Bir Northern (Zabilivka Meadow); 28 - Nakot; 29 - Horobyni Islands; 30-31 - Berezova Northern and Southern; 32 - Mezin Island; 33 - Sverdliv Island "Northern"; 34 - Sverdliv Island "Southern".

Table 1

Quantitative Characteristics of Monuments of the Sosnytsa Culture of the Mezin Microdistrict

Site	Size (h)	Layer depth (m)	Height above water level (m)	Density of finds
1. Popova (Kurylivka-1)	0.6	0.5-1.5	0.2-2.0	good
2. Dubyna Western	1.5	up to 1.0	up to 4.0	good
3. Dubyna Eastern	2.0	up to 1.0	up to 4.0	varied
4. Kaduniv Hrudok	0.7	1.0	2.0	poor
5. Ihnativsky Island	2.7	0.5-1.0	1.0-2.0	poor
6. Horochky	1.5	0.5-1.5	up to 2.0	poor
7. Tuhayiv Hrudok (Hyrin)	2.0	0.9	3.0	rather poor
8. Cherepytsya (mouth of the Loska river)	0.5? 0.5?	0.2 0.2	below the flood-lands	poor poor
9. Kozulya	0.5?	0.55	below the flood-lands	ruined
10. Khutoryshche	3.0?	0.5-1.4	up to 4.0	dug
11. Mezinsky Island	10.0?	up to 1.5	7.0	average
12. Karashevets (Ivantseve)	1.3	0.8	0.6	average
13. Sverdlivsky Island (Northern)	9.0	1.0	2.0-7.0	dug
14. Sverdlivsky Island (Southern)	7.0	1.0	7.0	dug
15. Berezova Northern	10.0?	0.4-1.0	2.0	good
16. Berezova Southern	5.0	0.4-1.0	2.0	good
17. Horobyni Islands (2)	1.7, 0.4	1.0	3.0	average
18. Dzvonkove	2.0	1.0	1.0-5.0	ruined
19. Tymonivsky Bir (Southern)	0.4-1.0	0.8	2.0	good
20. Tymonivsky Bir (Northern)	0.4	0.4	2.0	poor
21. Nakot Northern Lis	0.6	0.6	0.4	poor
22. Zabridky Middle (Haidukova Hill)	0.5	1.0	40.0	poor
23. Zabridky Southern (Kulykova Hill)	0.5	1.0	45.0	good
24. Mezin settlement	0.6	1.8	50.0	good
25. Shumeikivka (Mezin)	?	?	?	?
26. Syrivska Hill	2.0?	1.0	20.0-60.0	?
27. Khoromky Southern	1.0?	0.79	40.0	Average
28. Khoromky Northern	?	?	50.0	field
29. Sverdliv Ferry	?	?	1.0	beach
30. Sverdliv School	?	?	7.0	dug
31. Sverdliv site (on Holovysv)	1.0	0.3-0.75	40.0	poor
32. Zaton	2.0?	0.5-1.2	1.0	average
33. Perelisky	1.0	0.5	7.0	average
34. Puzyreve	1.0?	0.7	1.0-9.0	poor
35. Khvostynske	0.9	0.7	10.0	poor
36. Puzyreve site	1.0	1.2	50.0	poor
37. Khotyn site, Northern	3.0	1.3	55.0	poor
38. Khotyn site, Southern	1.0	up to 1.0	60.0	poor
39. Radychivsky Gai	3.0?	1.0	45.0	poor

Table 2.

Finds of Ornamented Vessels of the Bronze Age in the Mezin Microdistrict

No.	Site	Middle Dnieper	Maryanivka	Sosnytsa	Lebedivka
1.	Popova	25	277	1375	4?
2.	Dubyna Western &				
3.	Dubyna Eastern	205	142	186	14
4.	Kaduniv Hrudok	—	—	6	—
5.	Ihnativsky Island	4	5	3	—
6.	Horochky	—	—	50	—
7.	Cherepytsya	2	—	3	—
8.	Kozulya	—	—	40?	—
9.	Tyhayiv Hrudok (Hyrin)	—	5	7	—
10.	Khutoryshche	19	25	307	?
11.	Mezinsky Island	89	21	271	
12.	Karashevets (Ivantseve)	—	—	3?	—
13.	Sverdliv Island (Northern)	9	9	29	—
14.	Sverdliv Island (Southern)	134	8	410	7
15.	Berezova Northern &				
16.	Berezova Southern	86	9	430	106
17.	Horobyni Islands (2)	—	4	14	—
18.	Dzvonkove	20	10	170	—
19.	Tymonivsky Bir (Southern)	6	—	60	22
20.	Tymonivsky Bir (Northern)	—	—	25	—
21.	Nakot Northern Lis	—	—	140	—
22.	Zabridky Middle (Haidukova Hill)	—	—	4	—
23.	Zabridky Southern (Kulykova Hill)	—	—	20	—
24.	Mezin settlement	—	30	5?	3
25.	Shumeikivka (z. Mezin)	?	—	8	?
26.	Syrivska Hill School	—	—	8	—
27.	Khoromky Southern	—	90	15	—
28.	Khoromky Northern	?	—	6?	—
29.	Sverdliv Ferry	1	—	11	—
30.	Sverdliv School	?	—	10	—
31.	Sverdliv site (Holovysv)	—	—	8	—
32.	Zaton	2	—	118	—
33.	Perelisky	—	64	50	—
34.	Puzyreve	—	15	7	—
35.	Khvostynske	3	15	20	—
36.	Puzyreve site	—	—	3	—
37.	Khotyn site, Northern	—	—	2	—
38.	Khotyn site, Southern	—	—	3	—
39.	Radychivsky Gai	—	14	19	—
	TOTAL:	605	743	3856	152

Table 3

Finds of Ornamented Vessels of the Bronze Age from the Korop Microdistrict

No.	Site	Middle Dnieper	Maryanivka	Sosnytsa
1.	Maslozavod	3	6	10
2.	Kruhlyk Island	—	4	8
3.	Kovalenchykha Island	6?	17	205
4.	Filonove-1	—	10	12
5.	Filonove-3	—	14	?
6.	Filonove-2	—	7	3?
7.	Lysa Hora. Southern road	4	37	284
8.	Lysa Hora	—	—	4
9.	Lysa Hora Northern (Maltseve)	2	3	6
10.	Korop. Kibalchycha	—	4	3
11.	Lysa Hora. Lake	—	—	5
12.	Kruhlyk Brook	—	—	7
13.	Lysa Hora	—	—	3
14.	Rybotyn. Piddubne	8	—	15
15.	Rybotyn. Baraniv Hrudok	—	—	20
16.	Obolonnie. Pier	—	—	3
17.	Obolonnie. Perelazna	—	10	28
18.	Obolonnie. Zubeikivshchyna	—	—	26?
	TOTAL:	27	112	642

surfaces, and thin finished vessels made of finely processed clay. The bright and rather diverse ornaments of the vessels feature motifs of "barbed wire", zig-zags, combinations of inclined and horizontal lines, suspended triangles, fringed vertical cuts, rhombuses, meanders, horizontal herring-bone patterns and vertical zig-zags. Shoulders of the tulip-shaped vessels are often finished with a single circular rim. Smoothly declined edge of the vessel's neck is slightly sharpened and finished in the shape of a "collar". Smoothly salient profile of the vessel's body is interrupted only by the pulled "rope's" edge. Additional, though not necessary elements of decoration were "pearls" along the neck, rarely along the body. Vessel bottoms were small and flat. In addition to the dominating sharpened stick, a notched punch, and in some cases, a fine cord were used as decoration tools (Fig. 2-6). A fragment of the edge of an angobed cup, decorated with the Andronovo-style "ducks" swimming towards each other (Fig. 3:4) was found on Mezin Island. Other finds include decorated conic and biconic plummets.

The involvement of eastern and southern components may be assumed at the very stage of formation of the Sosnytsa Culture. Here we mean the MCC, sites of

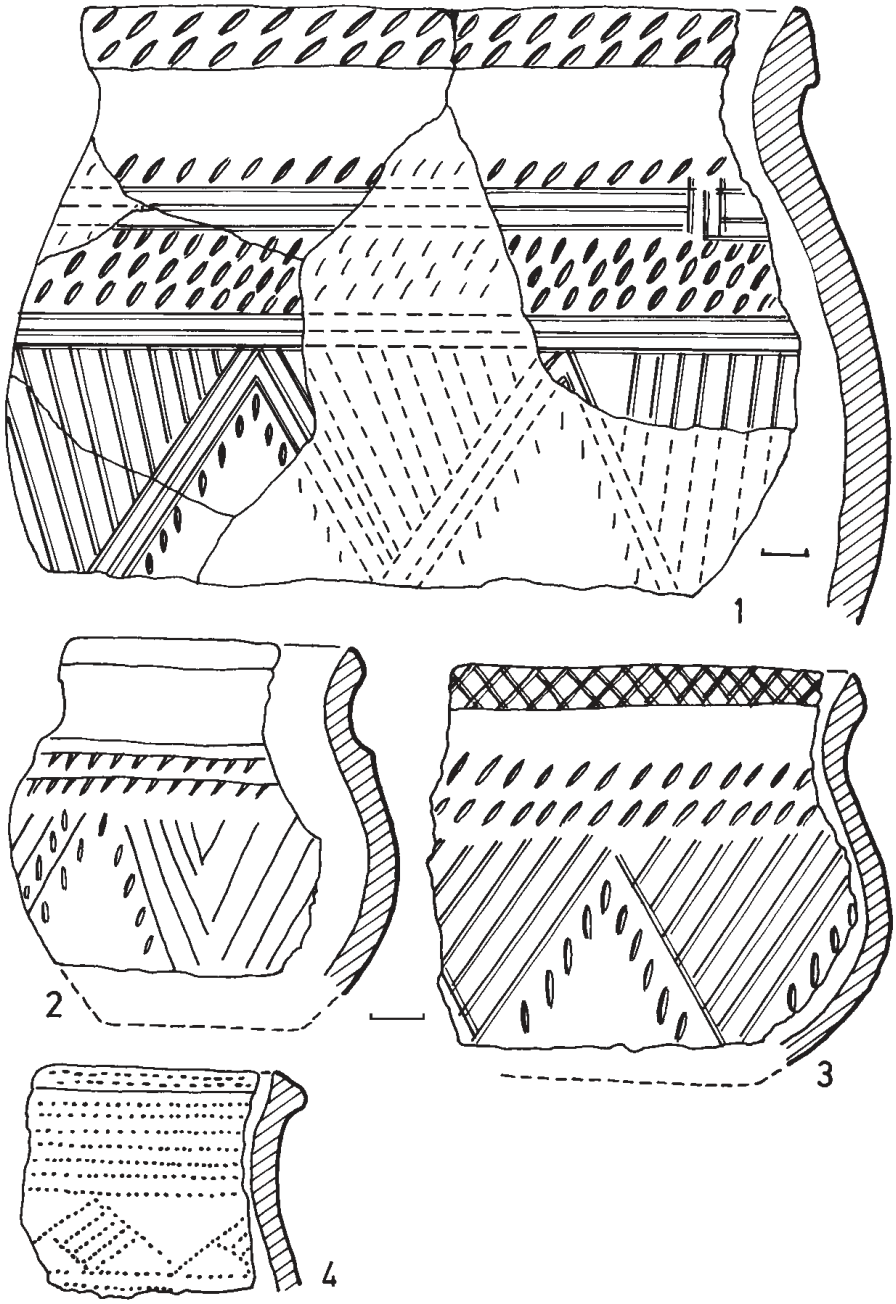

Fig. 2. Ceramics of the Sosnytsa Culture: 1, 2 - Berezova; 3 - Popova; 4 - Sverdliv Island.

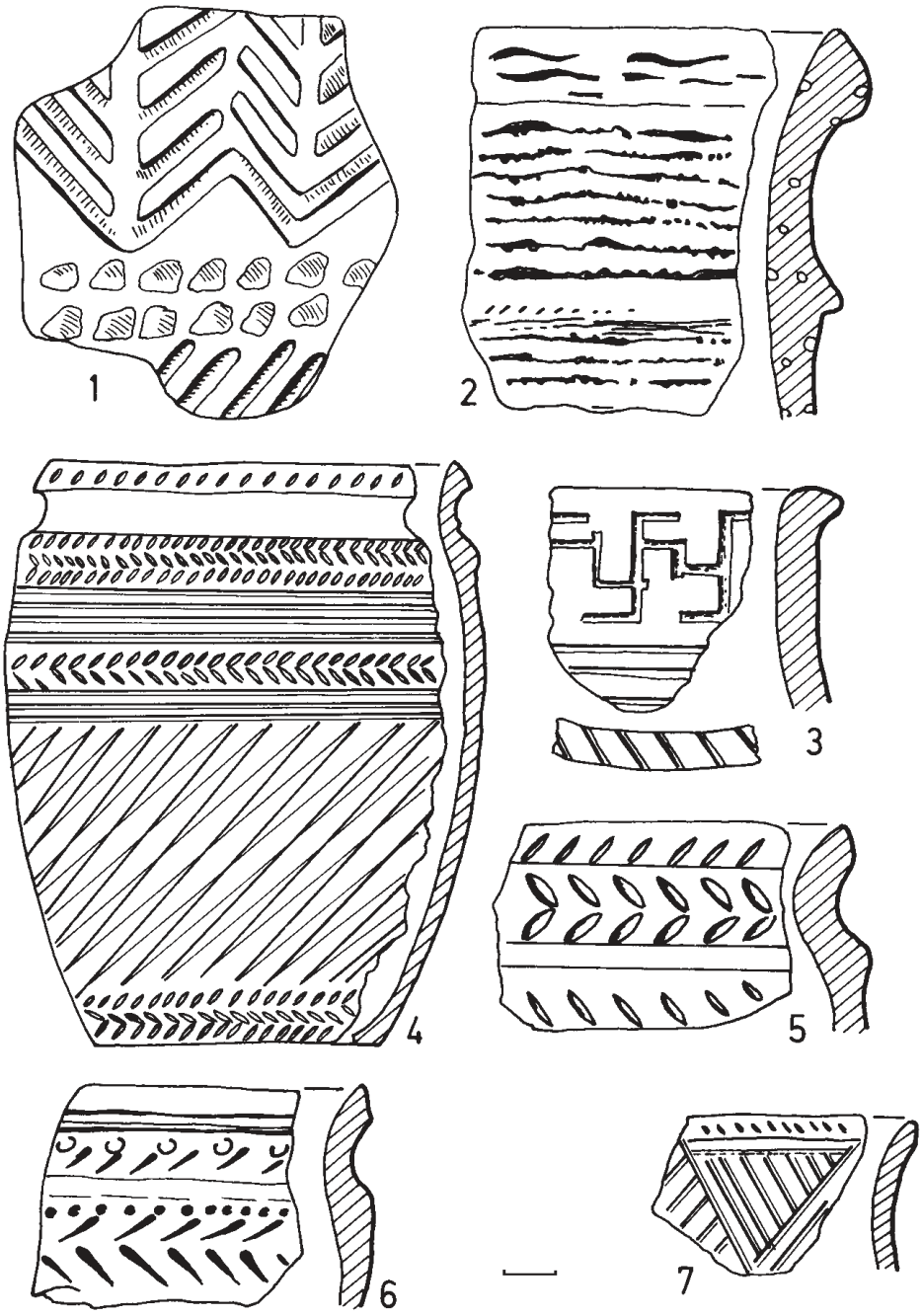

Fig. 3. Ceramics of the Sosnytsa Culture: 1, 3 - the Mezin Island; 2 - Popova-Forestry; 4-7 - Popova.

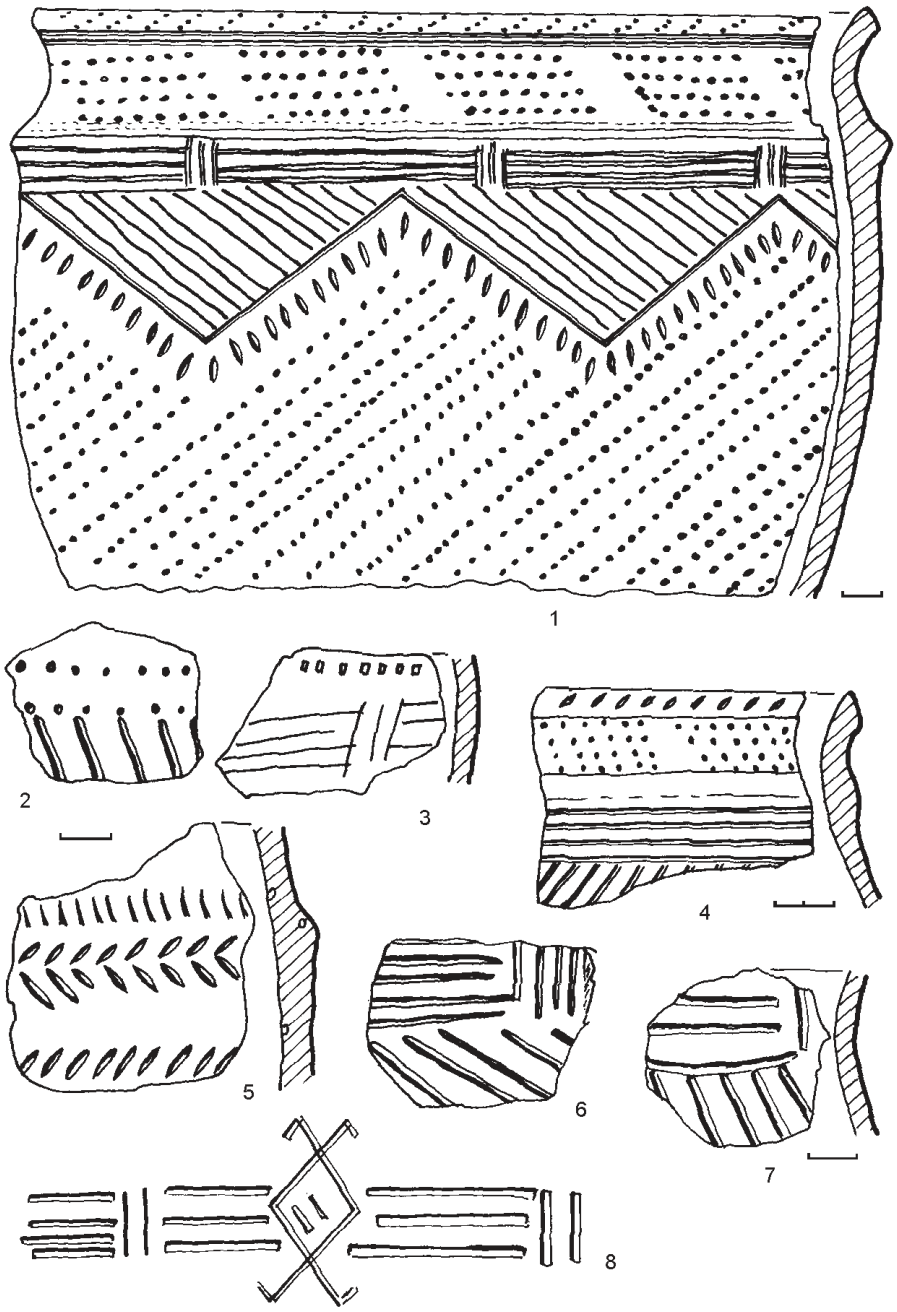

Fig. 4. Ceramics of the Sosnytsa Culture (1-7) and the ornamental composition on the bottom of the Pochepska pot (8): 1, 2, 4, 5, 7 - Popova; 3 - the Mezin Island; 6 - Kovalenchykha in Korop; 8 - Synkove at the Upper Desna.

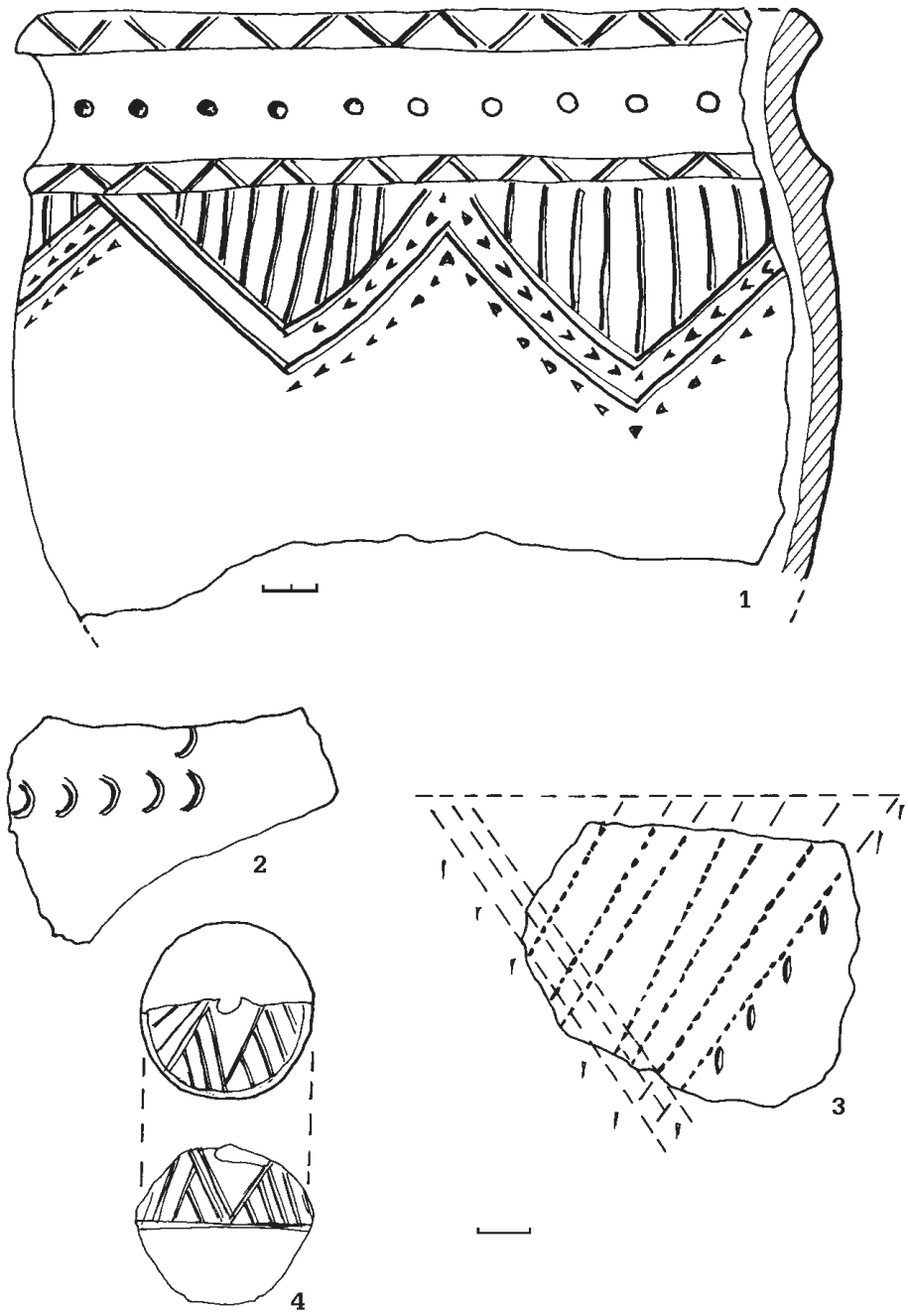

Fig. 5. Ceramics of the Sosnytsa Culture (1-3) and a ceramic spindle (4): 1 - Popova; 2 - Dubyna Eastern; 3 - Berezova; 4 - Khoromky.

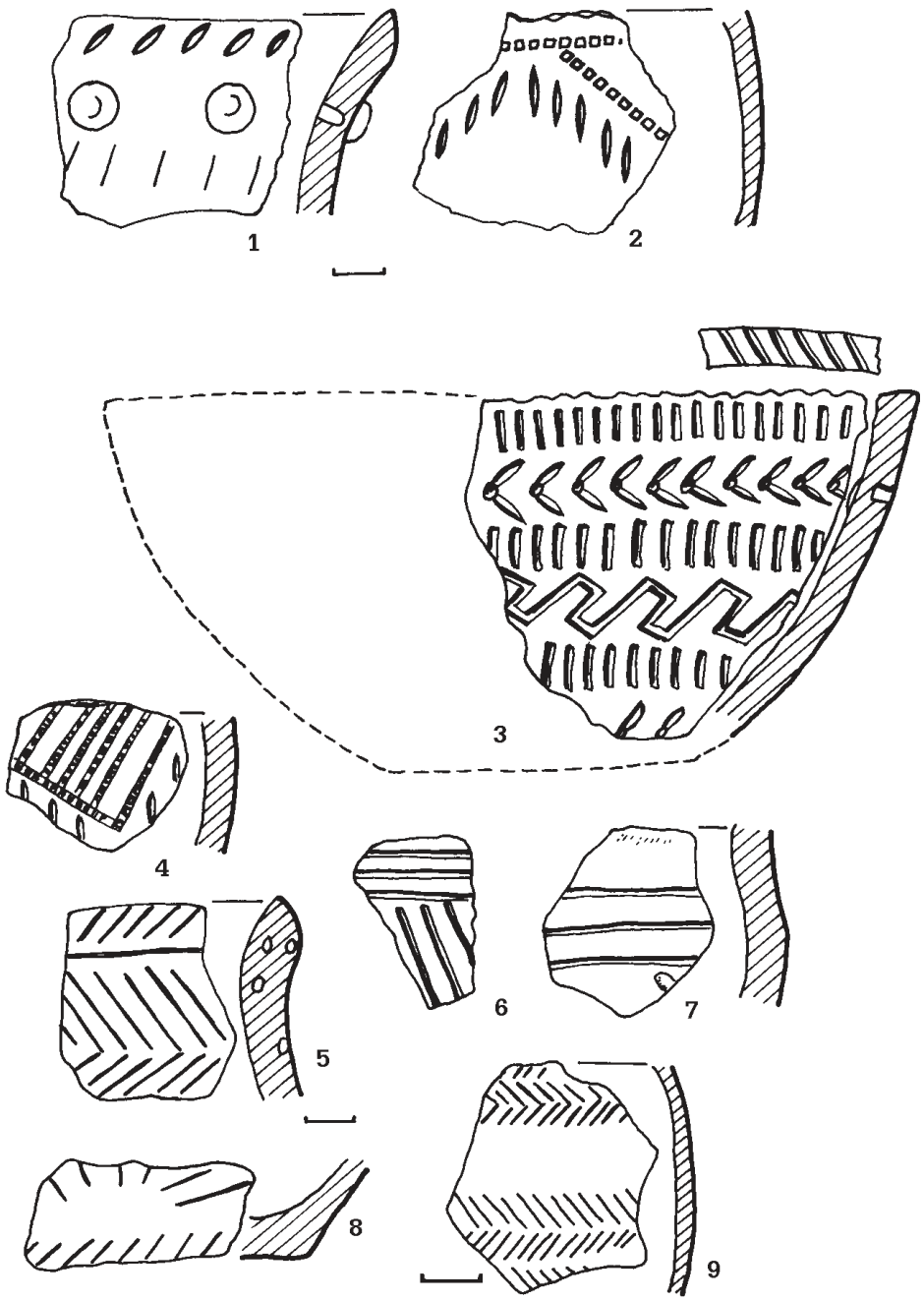

Fig. 6. Ceramics of the Sosnytsa Culture: 1-4 - Kudlayivka, the Ivantseve ravine; 5-9 - Kudlayivka, the Obshcheske ravine.

which occupied the southern forest-steppe area of the Sosnytsa Culture during the previous period. The MCC finds are not represented in the Mezin microdistrict, albeit its tradition may be observed in the motif of vertical herring-bone patterns on the fragment of a biconic vessel found on Mezin Island (Fig. 3:3). It should be noted that the Mnogovalikovaya ceramics spread not only in the Lower Seim, the Desna and the Middle Dnieper areas, but further westward as far as the Carpathian area [Sveshnikov 1990; Bandrivsky 1997]. This impulse — eastern by origin — could not but play a certain role in the process of formation of the Trzciniec-Komarov Culture and the historic community. Note the finds — though in different graves — of the Sosnytsa bowl and an oval bone buckle, typical for the late MCC sites, at the Bronze burial site in the village of Kazarovychi of the Kiev region (excavations by V.A. Kruts).

The circle of possible eastern neighbours of the Sosnytsa population included late Bronze cultures. The Desna-Oka watershed at the North-East, in the forest zone, separated the Sosnytsa from the area of the Poznyakovo Srubnaya-type culture in the Oka basin opening up to the Upper Volga region [Bader, Popova 1987]. We have no information about visits of carriers of the Sosnytsa Culture to the Oka basin. Meanwhile, O.N. Bader refers to the westbound movement of the Poznyakovo population to the Upper Desna region, quoting materials from the excavations at the Yudynovo soil grave at the right tributary of the Desna, the Sudost, in the Pogarsky district of the Bryansk region of Russia, carried out by K.M. Polikarpovych, and at the settlement near the village of Borovychi at the left bank of the Desna, 20 km north of Novhorod-Siversky of the Chernihiv region. This tremendously important observation identifies the western border of the sphere of influence of the Poznyakovo Culture along the Pochep-Pohar-Novhorod Siversky and the Sudost river line, i.e., along the current Ukrainian-Russian border. In this connection, there is a need to take a closer look and evaluate the cultural origin of the Upper Desna sites to the east of the drawn line, which I.I. Artemenko [1987] had no doubt about attributing to the Sosnytsa Culture and, therefore, to the Trzciniec-Komarov cultural-historic community.

First of all, let us consider the well-known complex from the mound near the village of Kvetun of the Bryansk region, containing a bronze spearhead and a dagger with a cast open-worked haft [Padyn 1963]. No similar burial ritual or items have ever been found either in graves or settlements of the Sosnytsa Culture. There are no ceramics in Kvetun, and there are no objective reasons for attributing that complex to the Sosnytsa Culture. Meanwhile, similar sets of items were found three times in graves of the Zasechnoye mound on the Middle Oka river, a classic mound site of the Poznyakovo Culture [Chelyapov 1992:Fig. 6:1-2; 19:2-3; 26:1-2]. Those graves did not display any signs of burial (the ritual of burying the corpse) either, and no ceramics were found in two of the cases. A bronze spearhead was also found at the Yudynovo mound, mentioned above in the context of the Poznyakovo

penetrations, situated to the west of Kvetun in the neighbouring district of the Bryansk region. The closest and direct analogue of the Kvetun dagger was found in the Seima mound [Bader 1970:Fig. 51:B].

We believe that the sites investigated by I.I. Artemenko in the Bryansk-Desna area should not be referred to the Sosnytsa Culture, but to the local Srubnaya-type culture, genetically linked to the Poznyakovo Culture. Naturally, this issue demands more thorough development, which is impossible without the publication of sites studied by I.I. Artemenko. In the context of the observations performed so far, the Sosnytsa sites of the Mezin and the Kudlayivka microdistricts represent that culture's outpost at the Northern East.

Moving eastwards along the Seim, carriers of the Sosnytsa Culture contacted the population of the Srubnaya cultural-historic community who lived on the Upper, and partially Middle Seim. The outpost of the Sosnytsa Culture in the east is the Putivl microdistrict in the district of the same name in the Sumy region on the Ukrainian-Russian border. Further to the east, I.I. Artemenko [1963] defines only one Sosnytsa site: Kuzina Gora in the Kursk region. Apparently, the expansion of the Sosnytsa area further to the Bryansk and Kursk regions was motivated by I.I. Artemenko's desire to include Russian territories in the mass of the Trzciniec--Komarov community sites and, hence, in the issue of the search for the ancient Baltic-Slavic language community. Using I.I. Artemenko's works, B.O. Rybakov positively includes the above regions in the area of "ancient fore-Slavs" of the second half of the second millennium BC* [1979:207; 1981:22].

The noticeable influence of the Srubnaya Culture on the Eastern Trzciniec Culture to the east of the Dnieper was mentioned only by S.S. Berezanskaya [1974:121] in her description of the ceramics collection of the Pustynka settlement. Another aspect of the influences is connected to the burial rite. The mounds look alien against the background of soil graves and the cremation ritual, typical of the Sosnytsa Culture. A mound containing a Srubnaya grave was excavated in the immediate proximity of the Sosnytsa borderline, near the village of Richky of the Bilopillya district of the Sumy region [Dyadenko:1956]. The association of the Kharyivka mound near Putyvl with the Sosnytsa Culture has been questioned [Molodtsov 1997]. There is a repeatedly used grave in the centre of the mound, and three other graves are positioned with their heads towards the central grave. Altars under the burial mounds or secondary graves in the centre are typical of the second period of the Pokrovsk Srubnaya Culure. Fragments of a Sosnytsa pot in one of the Kharyivka graves also link this site to the Sosnytsa Culture. V.A. Molodtsov's assumption about the Catacomb age of that mound is not convincing, since the flint axe from the Kharyivka site has analogues in the Poznyakovo Culture.

Another piece of evidence of the penetration of the Srubnaya Culture to the Desna area is the burial mound complex in Sedniv of the Chernihiv district upon

* Authors used an uncalibrated version of ^{14}C chronology (Editor).

the Snov river (Samokvasov 1908:18-19). No traces of the body were found in the spacious pit, but in the south-western corner of it there was a Srubnaya bronze knife in a wooden sheath, with deep grooves between the rhombic flat stop and the blade. This kind of knives in found in graves of the Berezhnivka-Mayivka Srubnaya Culture, and their production is connected with the Loboikivka metallurgical centre. The village of Sedniv was also the place where a Sosnytsa settlement and a ground burial site containing cremations of the Sosnytsa Culture were found [Multanen, Multanen 1997:92].

The most obvious evidence of the presence of the Srubnaya community in the area of the Sosnytsa sites are materials from the Malopolovetske burial site of the Fastiv district, the Kiev region, in the Ros area. Grave 12 alone (double, curled on the right side, corpses oriented towards the North-East) produced 11 vessels and definite fragments of Srubnaya ceramics [Lysenko 1996:Fig. 1:3-6; 8:11-16]. Another group of ceramics from this complex is associated by the author of the excavations with the Trzciniec-Komarov community. S.D. Lysenko referred the burial site to the period of the developed Srubnaya Culture. However, recent investigations prove that the right-side burial ritual and the presence of goblets on high conical bases are characteristic of the late period of the Berezhnivka-Mayivka Culture following our terminology [Otroshchenko, 1994; Lytvynenko 1994]. They prove the influence of the steppe population on the culture of the dwellers of the Kievan Dnieper area, up to direct proliferation of the Srubnaya individuals in the habitats of the Trzciniec-Komarov community.

Goblets on a conic base, similar to the one found in Malopolovetske and to the fragment from Mezin Island, spread when the forest-steppe Pokrovsk Srubnaya Culture is about to cease to exist, and carriers of the Suskan-type of relics or the Middle Volga Culture become eastern partners of the Sosnytsa population [Kolev 1991]. It should be noted that the ornament of alternating horizontal and oblique lines on a sharp-edged pot from Malopolovetske is made in the Suskan tradition [Lysenko 1996, Fig. 8]. The closest analogue to the ornament on the goblet from Mezin Island (Fig. 3:3) is found on the back side of the ceramic casting mould found in the Berezhnivka-Mayivka Srubnaya Culture of the Hrushova Balka settlement in the Luhansk region near the Ukrainian-Russian border [Tatarinov 1979:261: Fig. 3:6], while the ornamental motif originates from the Andronovo community (the Andronovo Culture) [Lysenko 1996:Table 3, 4, 5].

The analogy to the Luhansk region is not made here by chance: it was the Donets ore-metallurgical centre that supplied raw materials — bronze ingots — for the Loboikivka metalwork centre. The latter served the needs not only of the population of the Berezhnivka-Mayivka Srubnaya Culture, but also of neighbouring cultures of the forest-steppe zone from the Dnieper to the Volga [Tatarinov 1993]. The established system of contacts existed during that period across the vast territory from the Urals to the Carpathians. The most noticeable of its material manifesta-

Table 4.

Synchronical table of cultures of the Bronze Age in Ukraine

Conv BC		RIGHT DNIEPER BANK		LEFT DNIEPER BANK	Cal BC
L	900	Vysotske			1000
	1000	Gava-Goligrady	Chornolis	Lebedivka Bondarykha Bilohrudivka Bilozerka	
A	1100				
	1200			Mali Budky	
T	1300		Sabatinovka-2		1500
		Noua-2		Berezhnivka-Mayivka-2 (Srubnaya)	
	1400		Eastern Trzciniec Sabatinovka-1	Sosnytsa	
E	1500	Komarov		Berezhnivka-Mayivka-1 (Srubnaya)	
	1600		Mongovalikovaya-2	Pokrovka Srubnaya Maryanivka	1900
	1700	Strzyżow	Mongovalikovaya-1		
M					
	1800		Middle Dnieper Cord		
I	1900	Donets Catacomb	Ingul Catacomb		2350
D	2000	Subcarpathian Cord		Early Catacomb	
D	2100		Budzhak		
L	2200				
E	2300				2850
E	2400	Globular Amphora			
				Late Pit-Grave	3350
A	2500				
R	2600	Gorodsk-Sofievka Kasperovka	Usatovo		
L	2700			Early Pit, Repin	
Y	2800				3600

tions is the bronze riveted cauldron of the so-called "Cymmerian type". The link between those cauldrons set on conical bases, and cauldron-shaped goblets similar to the one found in the Malopolovetske, was first noted by O.O. Krivtsova-Grakova [1955:45: Fig. 9:9-10]. New materials obviously support that observation. Synchrony of late Srubnaya knives, the Loboikivka-type razors, and cauldron-shaped goblets and bronze hammered cauldrons on conical bases is confirmed by finds of such items in closed complexes near the village of Vysoke, the Mykhailivsky district of the Zaporizhya region [Otroshchenko, Rassamakin 1997] and near Komsomolske of the Krasnoyarsky disrict, the Astrakhan region [excavations performed by V.V. Plakhov 1998].

Three bronze cauldrons on conical bases, remarkable for their specific tulip-like shape, originate from the former Kiev, Vollhynia and Podolya provinces. Habitually, they are referred to the Cymmerian period [Bochkarev 1972:65: Fig. 2, 3, 4, 8]. However, finds of similar cauldrons in the steppe zone are connected to complexes of the Berezhnivka-Mayivka-Srubnaya Culture, and finds in the forest-steppe zone — to relics of the Suskan type. Synchronization of those formations with relics of the Trzciniec-Komarov community allows us, with substantial degree of certainty, to link it with the finds of bronze riveted cauldrons from the right-bank Ukrainian forest-steppe zone.

The material complex of the Sosnytsa Culture allows clear definition of its place in the system of Ukraine's archaeological cultures of the Bronze Age (Table 4). Among the Late Bronze Age cultures, the Sosnytsa is synchronic with the Eastern Trzciniec and the Noua Cultures in the West, and the Sabatinovka and the Berezhnivka-Mayivka Srubnaya Cultures in the South. However, the lack of dated artifacts in the closed complexes has not allowed so far to build an internal periodical sequence of the Sosnytsa relics. Rather, actual attempts to build the periodical classification reflect the tendencies of the culture's development which are still difficult to split into separate phases in a convincing way.

The found instances of connection between the Sosnytsa population and its eastern neighbours were caused, in our view, by the former's need of raw materials for their foundry industry and its products. Most probably, the steppe people exchanged raw materials and ready bronze items for products of agriculture offered by populations of the Sosnytsa and other cultures of the Trzciniec-Komarov community. This assumption, first made by N.N. Cherednichenko [1986:54], is still relevant. Notwithstanding a number of settlements in good condition found in the area, practically no excavations of the Sosnytsa sites in the Middle Desna basin have been done. Further investigations, likely to be rather promising, will allow us to test the above observations.

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THE PROBLEMS OF IDENTIFICATION AND ORIGINS OF "TRZCINIEC" IN THE PRYPETS BASIN

IDENTIFICATION

Relics of the Trzciniec-Sosnytsa type from southern Belarus are usually regarded as a part of the Trzciniec-Komarov-Sosnytsa community. But what is more complicated is the problem of archaeological and cultural attribution of sites in "the eastern Trzciniec" itself to which the most part of well-known Trzciniec-Sosnytsa materials of the Pripets basin are usually referred. The territorial subdivision of "the eastern Trzciniec" into the Sosnytsa Culture and the Eastern Trzciniec Culture into groups or variants is still an item under discussion. First of all, it concerns the Trzciniec-Sosnytsa sites in the Pripets basin [Berezanskaya 1972; 1982]. It is still difficult (if at all possible) to make a strict cultural and group identification of the Trzciniec materials in Belarus. The cause lies not only in the degree of archaeological exploration of the region but in the peculiarities of "Trzciniec" itself. According to J. Dąbrowski, "the similarity of the materials is so great that it is impossible to define sharp borders between separate cultures or groups; there are rather wide transitional territories between them" [Dąbrowski 1972:215]. At the same time, if we look at pottery, "Trzciniec" itself is a quite concrete phenomenon in the sense of general taxonomy in the Pripets basin. In most cases, it can be easily distinguished from other Bronze Age artifacts.

In the Pripets basin, as in the whole area of Trzciniec relics, pottery is characterized by the following characteristics:

- thickened and slanted out rims;
- peculiar smoothing and covering with slip of vessel surface;
- admixture of mineral breakage;
- spreading of identical or similar forms of vessels;
- a pattern of imprinted and fluted lines and strokes as a decoration;
- rollers on pot necks combined with imprinted lines and strokes;

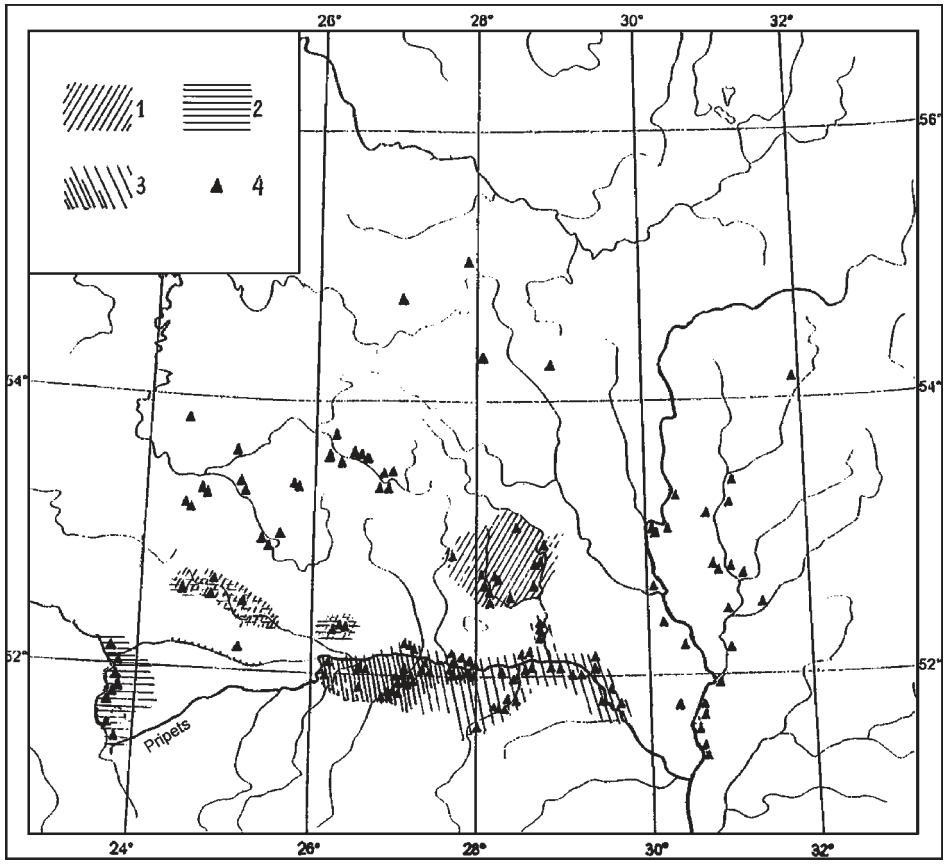

Fig. 1. Distribution of Trzciniec-Sosnytsa sites in the southern part of Belarus. Legend: 1 - the Northern Polesie group; 2 - sites with features of the West Trzciniec; 3 - the Turau-Mazyr group with sites of Buhlitski Hutar type; 4 - sites.

– decoration of the upper parts of vessels with imprinted lines, identations and pricks.

The traits mentioned above are to be supplemented with those which are characteristic of "the eastern Trzciniec" exclusively:

– rosary-like ornamentation;
– decoration of all the surface of pots including edges of rims;
– patterns of drooping "stroked triangles".

However the features pointed out above are not equally typical of the whole "eastern Trzciniec" region. Some of them seldom occur; others dominate. Some new indications could appear.

I tried to determine the main groups of the Trzciniec-Sosnytsa sites in southern

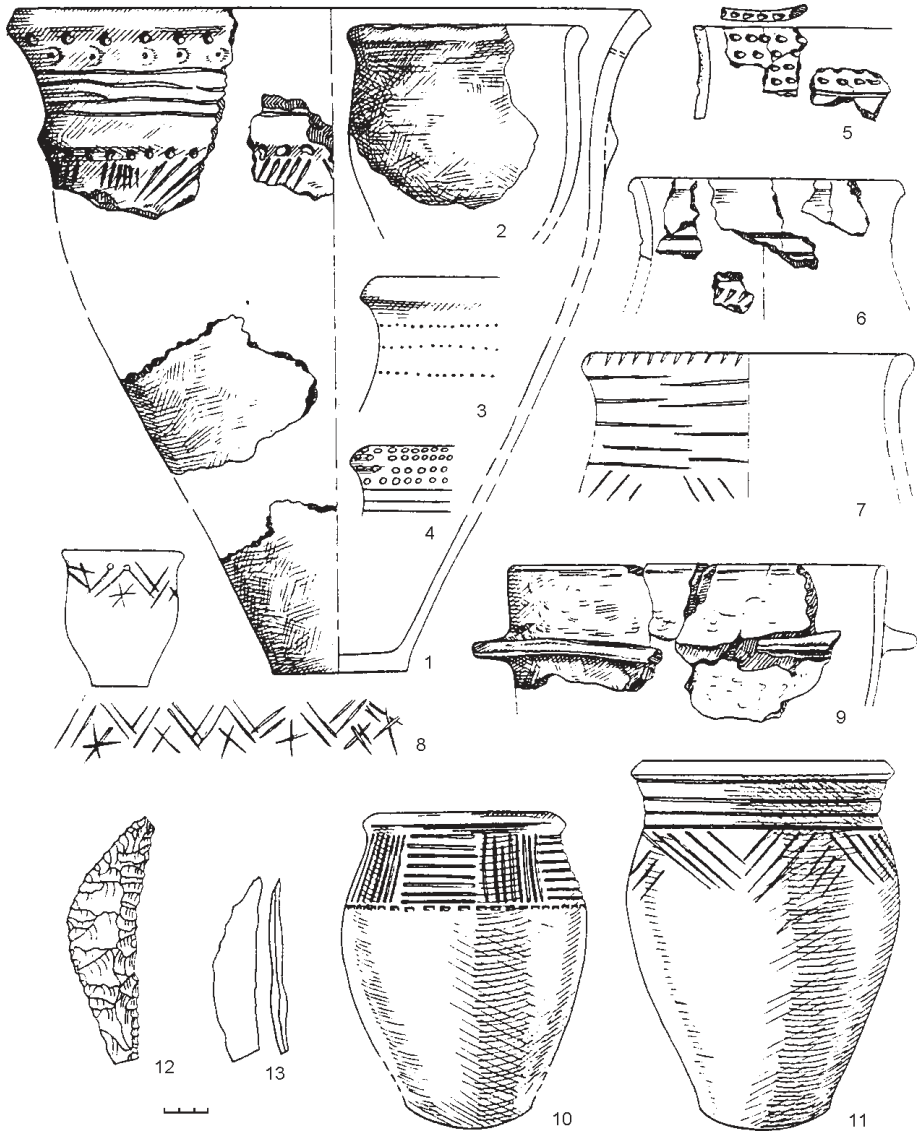

Fig. 2. Ceramic (1-11) and flint (12-13) materials from some sites of the Turau-Mazyr group: 1-4 - Buhlitski Hutar 1; 5-6 - Mayseevichy 1; 7 - Shastovichy 3; 8 - Vostrau; 9 - Lipliany 2; 10-11 - Turau district; 12 - Rychou; 13 - Alshany.

Belarus considering the territorial concentration of those indications of pottery and paying attention to a specific character of the genetic basis and some geographical peculiarities of separate Polesie regions together with their traditional directions of contacts [Kryvaltsevich1995:3-32] (Fig. 1). Most of Trzciniec-Sosnytsa sites are marked along the Pripets and the lower reaches of its right tributaries, between the Stviga and Haryn in particular. As a preliminary, the Turau-Mazyr (Pripets) group of sites may be distinguished. Almost all of the sites are situated on the middle and upper Pripets, mainly along Pripets itself and in the lower reaches of its tributaries (Fig. 1). These sites are similar to the Kiev and Rovno (Volhynian) groups. Contacts with Dnieper Sosnytsa sites traditional to the lower Pripets can also be observed.

Almost all the sites of the Turau-Mazyr group (TMG) are situated on sand heights among the wide water meadows of Polesie but, in some cases, on the edges of terraces of small rivers. Concentration of 5-6 and more sites in a part of a river valley is typical. Almost all the materials were picked up on the heights or found in the result of excavations of non-stratified sites. Usual finds on settlement were shards and flint tools. On some sites we managed to get fragments of several pots; others, at the same time, gave us remnants of 15-60 pots. In some cases we can prove the existence of long-lived settlements and those of short duration.

Distinguished varieties of pottery were the following:

- S-profile pots of middle size (Fig. 2:6-8, 10-11);
- big pots (Fig. 2:1);
- jars (Fig. 2:2);
- big jars with rollers (Fig. 2:9).

Besides, vessels with narrow bottoms, bowls and colanders might have been produced. Ornaments were composed of imprinted and fluted lines, pricks and "rosaries". Decoration of different kinds of pricks and pits is one of the distinct features of TMG ceramics. The population of those settlements used flint arrow--heads, knives, polished axes and sickles (Fig. 2:12-13). Cremation graves might have been present [Kryvaltsevich 1995].

Against the general background of TMG relics, the sites of Buhlitski Hutar type situated between the lower reaches of the Haryn and Stviga rivers are worth special attention [Kryvaltsevich 1994:113-135] (Fig. 1). The lower reaches of the Haryn and the Stviga rivers were opened to direct cultural influences from the south-west and the south. This region was comparatively densely saturated by Trzciniec sites. Active colonization of this territory can be explained by the fecundity of soil here.

The Bronze Age relics of the northern part of Polesie remained scarcely studied until recently. The exploration of the northern tributaries of the Pripets gave me the opportunity to distinguish the Northern Polesie group (NPG) of the Trzciniec--Sosnytsa sites [Kryvaltsevich 1995:16-26] (Fig. 1). The materials from settlement Aziarnoye, site 1 served as a basis for its description. Here the pottery of type 2

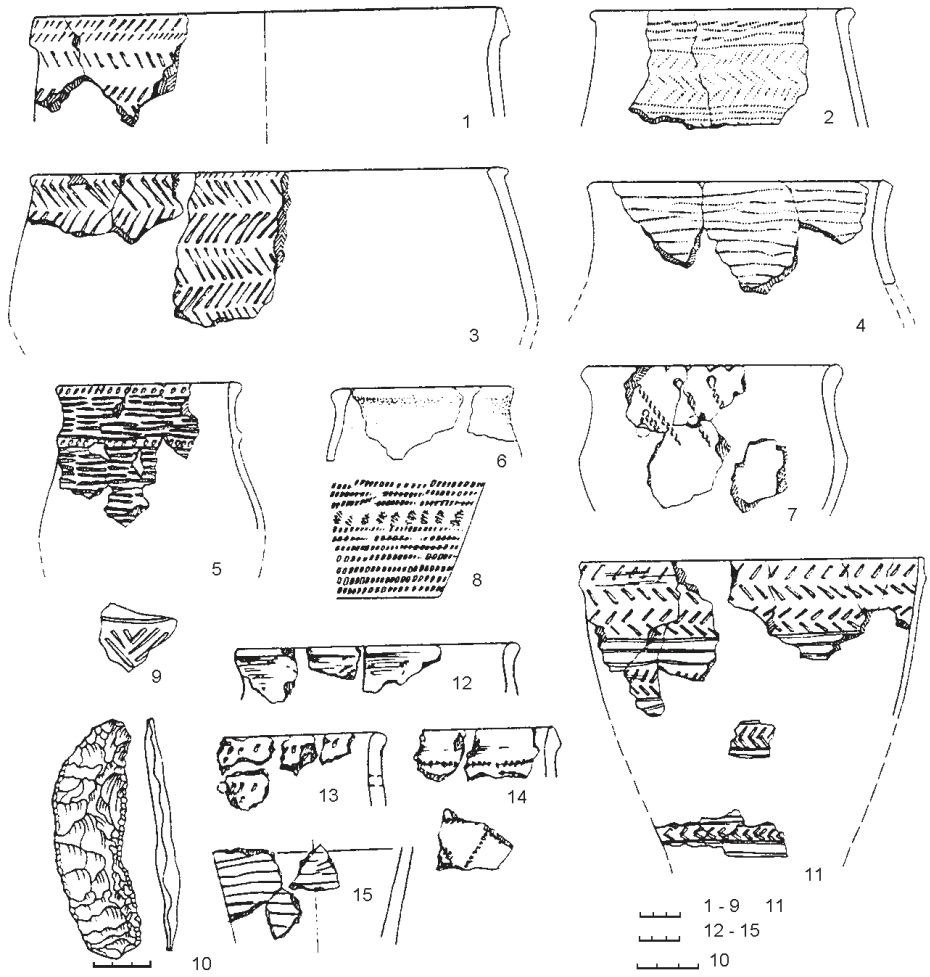

Fig. 3. Ceramic (1-9,11-15) and flint sickle (10) from some sites of the Northern Polesie group: 1-7,12-15 - Aziarnoye 1; 8 - Glusk; 9 - Slabada Chaliushchavitskaya; 10 - Luban; 11 - Novyie Jurkovichy 3.

(Fig. 3:1-7, 12-15) was found. It corresponds to the Trzciniec-Sosnytsa horizon. There were S-profile pots (Fig. 3:5) and bowls (Fig. 3:7); big jars were widely used as well (Fig. 3:1, 3). The "rosary" ornamentation (Fig. 3:2, 4, 14) predominates. As a rule, the whole outer surface including rims and bottoms was decorated.

As a preliminary, it can be claimed that there were two main phases in the development of type 2 pottery. The late phase ware corresponds to many features of the classical "eastern Trzciniec".

Probably, some types of stone and flint axes, stone hoes, flint sickles (Fig. 3:10) could have been used. Artifacts are usually located on sand heights among water-logged meadows or on the edges of river terraces. There were not many finds on separate settlements. In cases when a collection was represented by a comparatively big number of sherds a rich stylistic variety of ware is traced (e.g. Aziarnoye 1). This makes it possible to claim that human presence here was periodical. We can also suppose that such kind of settling is evidence of a stock-raising character of the local economy. This point of view may be confirmed by the palinological investigations in Aziarnoye 1 where pollen of *Silenaceal, Renunculus, Galium, Sedum* and *Polygonum aviculare* have been found. Pollen of cereals and attendant weeds appeared in the transitional period from SB2 to SA1 (unpublished studies of G. Simakova).

Probably, NPG sites were a certain variant of "the eastern Trzciniec". The development of NPG might have been occurring in circumstances different from TMG. In the north, preservation and development of the Neolithic traditions and of the late Middle Dnieper Culture was more significant than on the TMG sites. Besides, some peculiarities of NPG sites could appear in the result of their contacts not only with southern and south-eastern groups of population but with northern ones as well. Natural conditions contributed to such relations — northern Polesie region is separated from the Pripets by marshy lowlands.

The significance of "Trzciniec" must have been not so great in the central and northern parts of Belarus where we sporadically found artifacts only with some Trzciniec-Sosnytsa features. In this case, there is a sense to suppose that some other culture or cultures spread in central and northern Belarus. As far as western Polesie is concerned, the Trzciniec relics of the middle flow of the Bug might have belonged to the Podlasie-Mazovia group of the western "Trzciniec" [Dąbrowski 1972]. Some features which are characteristic of the Podlasie-Mazovia pottery are found farther to the east, along the Yaselda and the Bobryk rivers in particular. At the same time the pottery with typical "eastern Trzciniec" (and NPG first of all) indications is present in some places of western Polesie (Fig. 4:1-10).

Some scholars interpreted the upper Nemen "Trzciniec" as an area of coexistence of "Trzciniec" and "Sosnytsa" features [Dąbrowski 1972]. In my opinion we can find here some features which are typical both of the NPG and the Podlasie-Mazovia group (Fig. 4:11-16).

The earliest NPG relics may be dated to the post-Middle Dnieper Culture time. According to I.I Artemenko, the final phase of the Middle Dnieper Culture ended about the 15th century conv. BC*. However, this dating needs revising. I think that the most ancient Trzciniec relics can be dated to an earlier period.

The chronology of disappearing of thus far described groups is still unknown because it is very difficult to identify Late Bronze Age materials in all Belarussian Polesie. Sometimes, they were described as the sites of the Lebedovka type

* Author used an uncalibrated version of ^{14}C chronology (Editor).

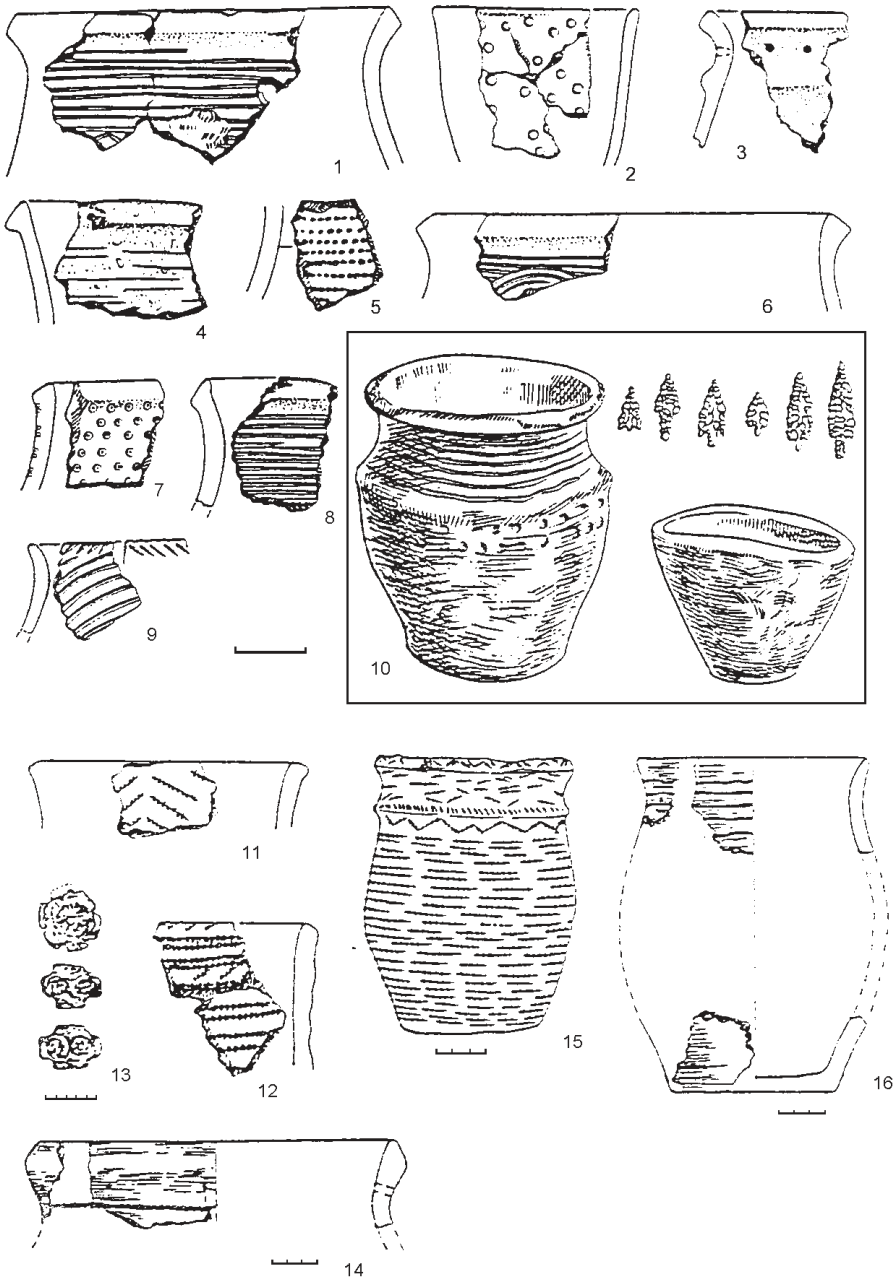

Fig. 4. Ceramic and flint materials from some Trzciniec sites of the West Polesie (1-10) and the Upper Nemen (11-16): 1-6,8,9 - Kamen 2; 7 - Gneuchytsy; 12 - Pryluki; 11,15 - Lysaya Gara; 12 - Rusakova 2; 13 - Charlionki; 14 - Jaremichy 3; 16 - Matseuchuki.

(S.S. Berezanskaya) or "the late Sosnytsa" type (I.I. Artemenko) and dated as early as the 11th – 9th centuries conv. BC. It is possible to ascribe the materials of the late Bronze Age to the final phase of NPG and TMG in the Pripets basin. In this case, we must call this kind of sites a predecessor of the Milahrad Culture of the Early Iron Age. Western Polesie and the upper Nemen basin may be the regions where the western and the eastern Trzciniec cultural traditions developed. In the northern part of Polesie, "the eastern Trzciniec" was revealed in the form of a distinctive peripheral NPG. TMG developed under the active influence of the South and the South-East (the Kiev and Rovno or Volhynia groups).

THE ORIGINS

Investigators used to consider that "the eastern Trzciniec" was rooted in the stratum of the local pre-Trzciniec cultures emphasizing the leading role in its genesis of the Corded Ware Cultures (the Middle Dnieper Culture, the Gorodok-Zdolbitsa Culture, the Strzyżow Culture, the Corded-Ware groups of Polesie and the Upper Nemen). Sometimes, scholars attach special importance to a considerable part of the local Neolithic (forest zone) cultures in this process.

In general, there's a sense in agreeing that the Neolithic (forest zone) cultures and the epi-Corded Ware Culture circle were the basic sources of Trzciniec in southern Belarus. However, this opinion requires a more precise definition and development. The latest material makes it possible to amplify our view of the genesis of "the eastern Trzciniec".

Aziarnoye, site 1 (NPG) has given a lot of material for the understanding of the transformation of the late Middle Dnieper Culture phase pottery into the Trzciniec-Sosnytsa horizon pottery. There are two types of the ceramic complex in Aziarnoye 1.

Type 1 ("fire-clay pottery") (Fig.5). Big S-profile pots with rounded or slanted rims and narrow bottoms dominate. It is also necessary to pay attention to some S-profile pots and jars with thicken, slanted or rounded rims. This kind of Trzciniec feature might have been preceded by the local Middle Dnieper Culture tradition of so called "collar pottery" [Kryvaltsevich 1988:75-88]. The shards of two pots of type 1 were dated, according to the results of soot analysis by ^{14}C method (Table 1).

Such kind of pottery I.I. Artemenko included into the types of the late phase of the Middle Dnieper Culture, which he dated as early as the 18th – 15th centuries conv. BC. I.I. Artemenko saw in it some indications of "arising Sosnytsa". Pottery of type 1 was characteristic of the Middle Dnieper Culture in its late phase [Kryvaltsevich 1994:122-132] and thus it precedes the pottery of type 2 (Fig. 3:1-7, 12-15). The second type belongs to the Trzciniec-Sosnytsa horizon of Aziarnoye 1.

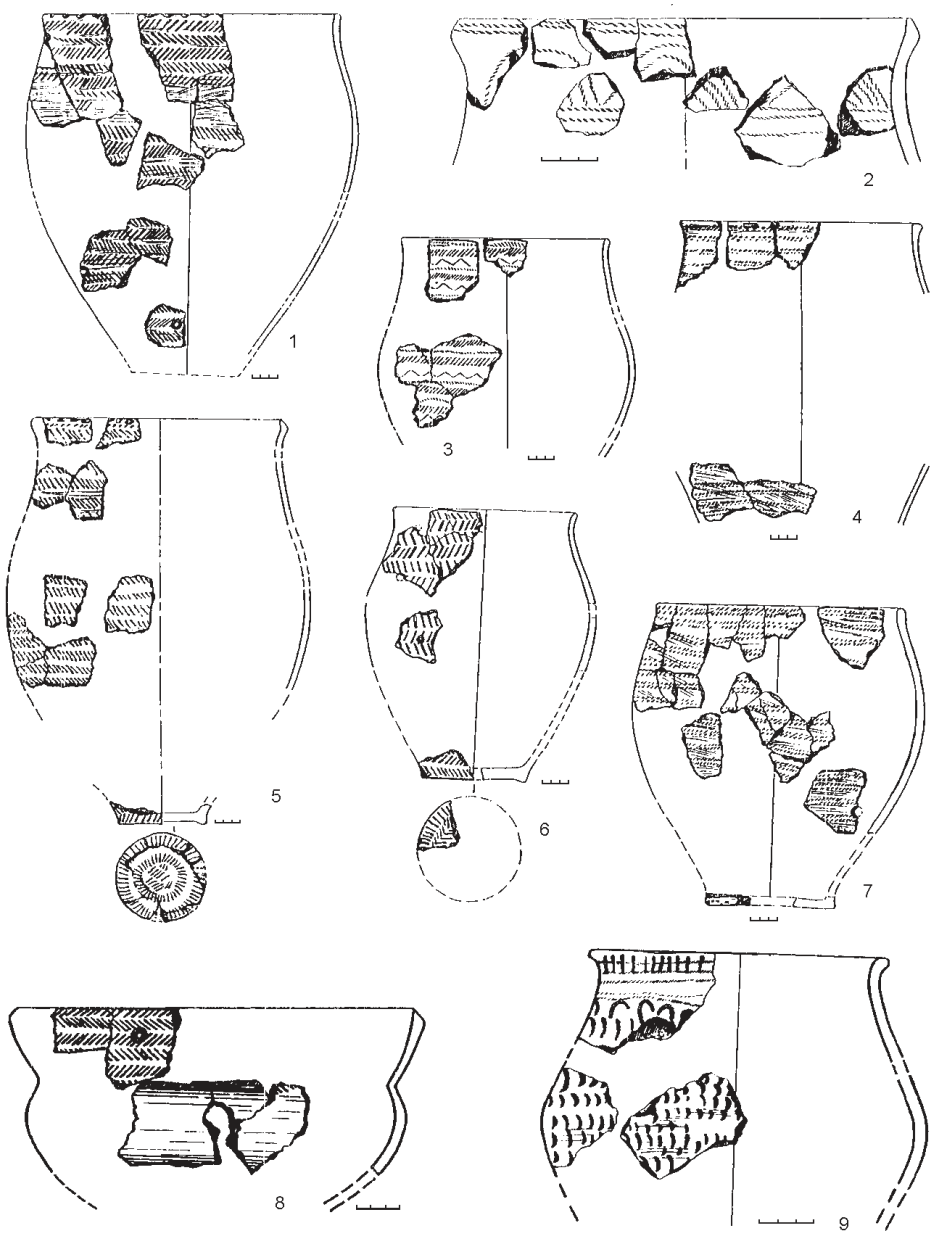

Fig. 5. Aziarnoye 1. The pottery of the first type.

Table 1

Radiocarbon data from Aziarnoye, site 1

1. Aziarnoye, site 1. Two sherds of a pot (fig.5:1)	Ki-6209	3580±50 BP	Cal BC 1 sigma 2014-2010; 1976-1876; 1878-1818; 1798-1784; 2 sigma 2100-2098; 2036-1858; 1854-1752
2. Aziarnoye, site 1. One sherd of a pot	Ki-6210	3520±40 BP	Cal BC 1 sigma 1886-1864; 1850-1766 2 sigma 1934-1740

The first type of pottery was found on other sites of the Pripets basin [Krykvaltsevich 1994:122-132], on the Upper Dnieper, along the left tributaries of the Upper Nemen (Fig. 6). This kind of "corded ware" indications bears a lot of local Neolithic features.

I.I. Artemenko was right when he asserted that the presence of many Neolithic elements was one of the special features of the late phase of the Middle Dnieper Culture. In his view, it means that arrived "corded ware" population assimilated the local Neolithic inhabitans. In pre-Trzciniec time or in the late phase of the Middle Dnieper Culture, an active interaction between the cultures of the survived Neolithic and the Middle Dnieper could take place.

As for Aziarnoye 1, the analysis of the pottery brings us to the conclusion that the Trzciniec-Sosnytsa period succeeded the Middle Dnieper Culture. Instead of fireclay pottery, technology of ceramics with mineral breakage appeared. Specific pottery with mineral breakage is defined as type 2. This kind of ware is typical of the Trzciniec-Sosnytsa horizon (NPG). The earliest part of the second type of pottery bears a lot of features of type 1. In search of all-embracing analogies we should pay attention to settlement Isakovka (Ukraine) where the Middle Dnieper Culture components have been preserved well [Berezanskaya, Okhrimenko, Piasetskyi 1987:52-53] (Fig. 6:17-26).

Concerning the proto-Trzciniec period, Belarusian archaeologists usually distinguish two specific groups of the Corded Ware circle: of Polesie and of the upper Nemen. In my opinion, however, these groups are not so much "Corded Ware horizon" itself but a phenomenon formed by three main components — the Corded Ware Culture, the Globular Amphora Culture and the Nemen Culture.

With regard to the "corded ware" component, I should like to note that there are some features genetically connected with the Middle Dnieper Culture in the Nemen basin (possibly only in its south-eastern part), western Polesie (for example, in the Yaselda basin). But in general, on the Upper Neman, sites with the Baltic Corded Ware circle signs predominate. Elements of such kind can be found in some

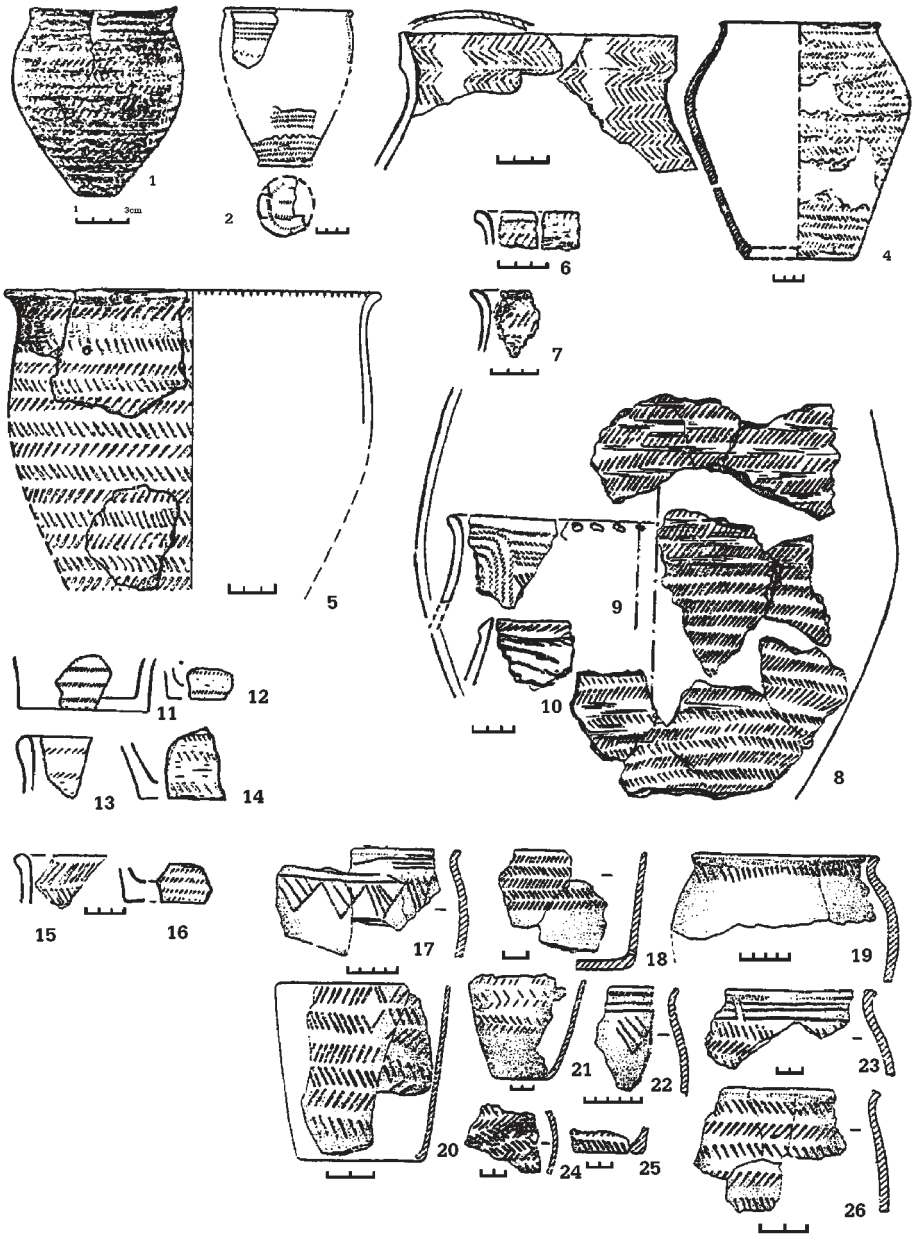

Fig. 6. Selection of proto-Trzciniec and the earliest Trzciniec pottery from southern (5,7,8-10,11-16) and south-eastern (1-3) Belarus, Northern Ukraine (4,17-26): 1 - Stralitsa, grave 9; 2,3 - Luchyn; 4 - Mostva; 5,7 - Uzlyazha 4; 8-10 - Gryukovichy 1; 11,12 - Lysaya Gara; 13,14 - Rusakovichy 2; 15,16 - Yaremichy 3; 17-26 - Isakovka.

parts of western Polesie. But at the same time, a lot of "southern" (Volhynian) features are observed here (for example, the Strzyżów Culture).

Thus "Trzciniec" could have been preceded by a stage of complicated relations between the three main cultural traditions — Corded Ware, Globular Amphora and Nemen. It is still difficult to reveal the nature and dynamics of those relations, or the significance of each of the their components. In the result of these interactions, the local "Trzciniec", with its distinctive nature, appeared.

In the neighboring part of Poland, simultaneously, such interactions between different cultural traditions resulted in so called Linin group and, finally, in appearing of Podlasie-Mazovia "Trzciniec" which continued in the western part of Belarus (area of the late Nemen Culture).

Here, one more condition is also worth paying attention. The flint mining complex of Krasnaye Sialo near Vaukavysk on the Ros river is widely known. According to M. Cherniavski, the first miners of Krasnaye Sialo were the representatives of the Globular Amphora Culture. However, the most intensive flint mining here was launched in the Bronze Age [Cherniavski, Kudrashou, Lipnickaya 1996:85-86). In her publication, N. Gurina gives radiocarbon dates of some mines. Almost all of them fall on the period from 1640 to 1240 conv. BC [Gurina 1976:127]. It is also known that at that time, flint was actively extracted and processed in Volhynia. This may be evidence of conservation of old "flint" traditions, which were so strong in those areas earlier.

So, the main conclusions are the following. "Trzciniec" of the Pripets basin arose mainly on the basis of local cultures and groups developed here before. Coexistence of a number of traditions here in the proto-Trzciniec period is quite possible. Local "Trzciniec" might be a process of integration of different cultural components.

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THE QUESTION OF THE DECLINE OF TRZCINIEC CULTURE IN WESTERN MAŁOPOLSKA. TRZCINIEC CULTURE VS. LUSATIAN CULTURE

Since the Trzciniec Culture (TC) was distinguished, attention has been drawn to its ties with the Lusatian Culture (LC). The Trzciniec-Lusatian ties have been best described by Aleksander Gardawski [Gardawski 1959:135-138; 1971] who has put forth the concept of the *Łódź phase* which was supposed to be a transitional stage between the two cultures. In the meaning imparted to it by the author, the term "phase" was reserved for a relatively short phenomenon covering a vast territory. The phase was intended to serve as a common development stage of sources. Soon after the concept was published, the term *Łódź phase*, signifying a transitional phase, began to be widely used. Evaluating this proposal in hindsight, it seems that in the case of some areas it was not sufficiently grounded in archaeological sources. It became, nevertheless, a very convenient research concept, a kind of a carryall for sources or phenomena either not welcome in the TC and LC or not yielding to appropriate classification [Matoga 1991:222]. A deficiency of many published works concerning this question is a lack of sources allowing a more accurate dating. On the one hand, there are not enough metal artifacts, on the other, in the case of many areas concerned, no local periodization systems based on mass materials have been devised. It appears, however, that plausible diagrams of local development lines based on pottery classification may be drawn not only for the areas from which large series of materials come [e.g. south-eastern, loess portion of Niecka Nidziańska (Nidzica Trough) [Górski 1992;1994a; 1997], but also for areas which as a rule do not yield impressive sources [e.g. Kujawy; Czebreszuk 1996]. What is more, such findings concerning the relative dating of the decline of the TC and the beginnings of the LC in both kinds of areas do not contradict the chronology of metal artifacts of both cultures [cf. Dąbrowski 1991].

The purpose of this work is not a criticism of the very theory of transition of the TC into LC; the contribution of the Trzciniec substratum into the rise of

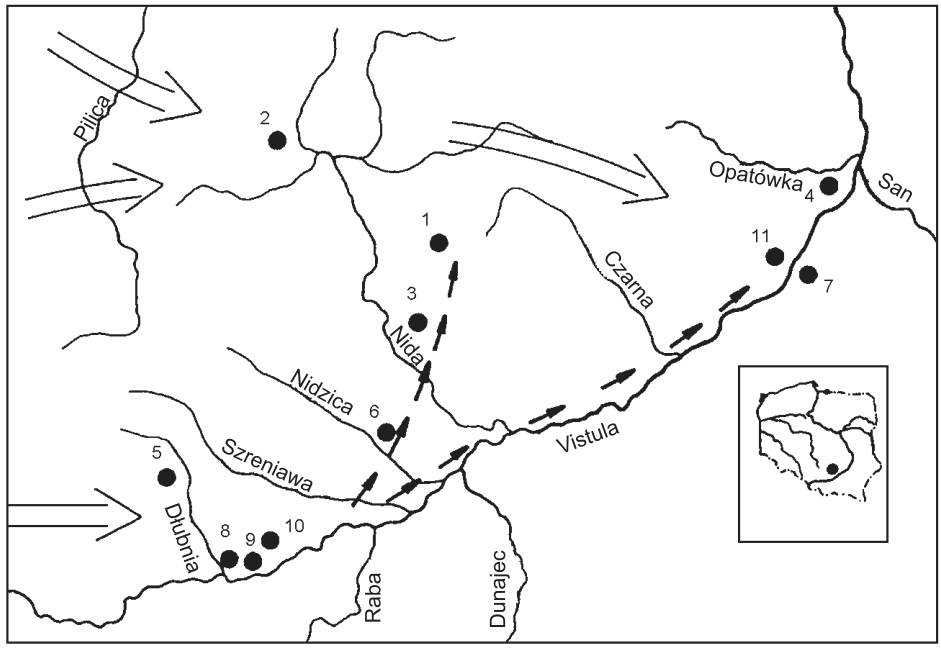

Fig. 1. Location of major sites of Trzciniec Culture (TC) and Lusatian Culture (LC) in western Małopolska and directions of significance (large arrows) and small (small arrows) impact on the rise of local varieties of an Urnfield-type Culture. 1 - Balice; 2 - Bocheniec; 3 - Bogucice; 4 - Dwikozy; 5 - Iwanowice-Wysyłek; 6 - Jakuszowice, site 2; 7 - Machów; 8 - Nowa Huta-Mogiła, site 55; 9 - Nowa Huta-Pleszów, site 17; 10 - Nowa Huta-Pleszów, site 49; 11 - Piaseczno. Drawn by A. Mosio.

the eastern branch of the LC is unquestionable. It has been observed many times that in both cultures there were similar or analogous vessel forms, pottery technology displayed certain similarities or that there were survival Trzciniec traits in LC assemblages. Prior to discussing the question on its merits, several issues concerning methodology should be presented since they will have an impact on the way the question will be treated. In the first place it is hard to deny the assertion that before an appropriate stage of research into the chronological division of TC sources is reached, we should not attempt to reconstruct the events at the time of the TC transition into the LC [Matoga 1991:224]. The transition itself [being at the same time a stage when a new culture was being born] was a continuous process. For this reason one cannot expect a sharp distinction into the earliest Lusatian assemblages and those preceding them [Dąbrowski 1991:195]. A fundamental question, and the most relevant one from the logical point of view however rarely asked, is whether the evolution of TC materials in a given area leads to the rise of the LC. The first attempt to define the relations between the two cultures may

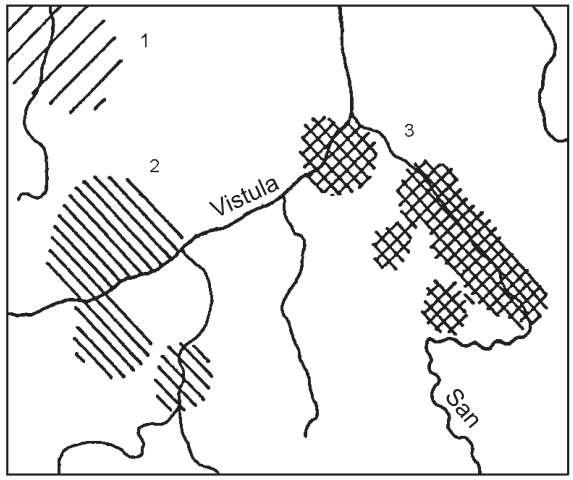

Fig. 2. Differentiation within groups of the early phase of the Lusation Culture: 1 - left-sided shading - Konstantynów (phase) group; 2 - right-sided shading - Kraków subgroup of the Silesian group; 3 - checkered areas - Tarnobrzeg group (according to M. Gedl). Drawn by A. Mosio.

have been a work by Jacek Rydzewski [1991] who began with tracing the changes taking place in TC pottery. The work dealt with the origins of the LC in the vicinity of Kraków. This is an area for which we have now the fullest selection of sources making it possible to reconstruct the process of cultural change from the TC to LC.

In this paper, research results for the area will serve as a background for discussing selected finds from the southern portion of the interfluvial area of the Pilica and Vistula (Fig. 1 — the northern limit will be the range of the Holy Cross Mountains). In the times preceding the emergence of the LC the mountains were occupied by societies representing the TC. At the decline of phase A2 and in the early phase B of the Bronze Age, the area was quite uniform with respect to the traits of material culture. Clear manifestations of a local differentiation of the TC can be seen in phase C of the Bronze Age when a specific set of vessels, without analogy in other areas occupied by the culture, makes the region in Kraków's vicinity conspicuously stand out [Górski 1997:37]. In phase D of the Bronze Age one can already speak of three different groups of the late phase of the TC (Fig. 2). However, materials from the loess areas in the vicinity of Kraków and Miechów, from the region where the San joins the Vistula and from the area of confluence of the Black and White Nida display a peculiar set of traits. Hence, local differences in soil types were a chief reason for a future differentiation within LC groups. Another important set of reasons of

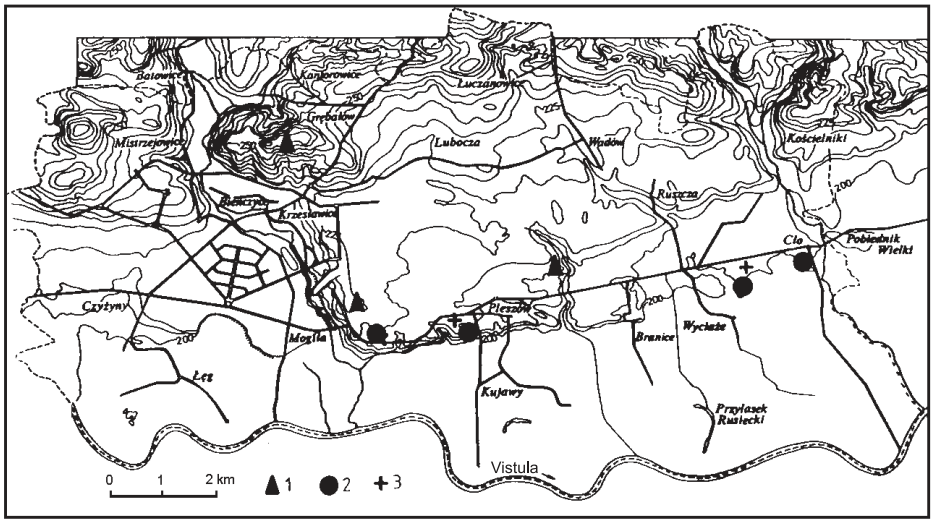

Fig. 3. Cultural situation in Nowa Huta at the turn of phase D of the Bronze Age and phase A1 of the Hallstatt period. 1 - Trzciniec Culture settlements; 2 - Lusatian Culture (LC) settlements; 3 - LC graves. Drawn by A. Mosio.

these differences included the direction from which cultural patterns were acquired, kind of contacts and the manner in which late Trzciniec societies came into contact with the new cultural trend. In the case of Kraków's vicinity the contacts were direct. The transmission of patterns from the LC to TC was relatively easy because of the existence of an enclave of population representing the Silesian version of the LC. To the vitality of this group testifies the fact that in a new environment not only it did not lose its separate character, but became a decisive factor in the shaping of the future cultural picture of the area. "Silesian patterns" in pottery did not take root, however, in areas where their impact was smaller. Despite stimuli coming from Kraków's vicinity, late Trzciniec societies inhabiting the territory on the Upper Nida joined the rhythm of changes relating the territory to the phenomena observable in the Konstantynów group of Central Poland. As a consequence, a Kielce subgroup separated from the Upper Silesia-Małopolska group of the LC. The fact that the early Lusatian impact came from Central Poland is stressed also in the case of the Sandomierz region and the area lying east of the Vistula. A careful scrutiny of the situation in that area leads us to the conclusion that "Lusatian" patterns were received "second-hand" (via the region on the Upper Nida), which led, with "eastern" influences being superimposed, to the emergence of a specific Tarnobrzeg group of the LC.

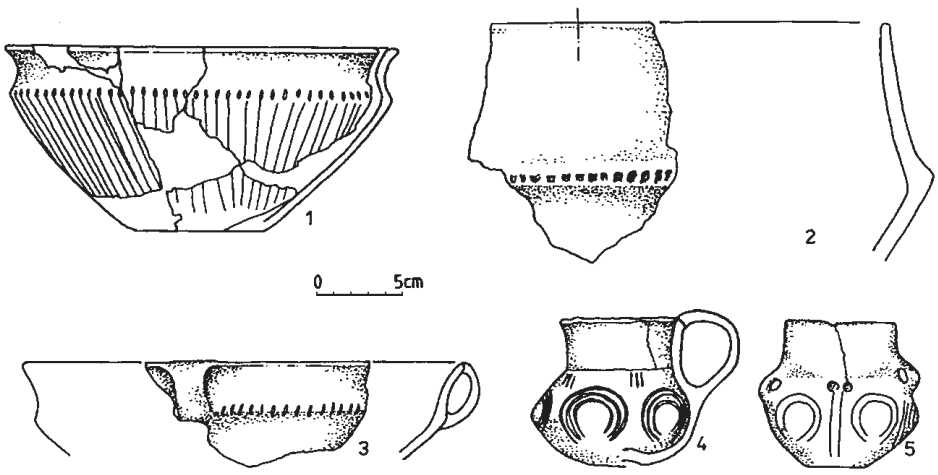

Fig. 4. Pottery characteristic of the early phase of the Lusatian Culture from site 55 in Nowa Huta-Mogiła (according to A. Rachwaniec). Drawn by A. Mosio.

1. THE TRZCINIEC AND LUSATIAN CULTURES IN THE VICINITY OF KRAKÓW

The relations between the two cultures were best investigated in the vicinity of Kraków. In the opinion of A. Gardawski, it was one of the regions in which spontaneous transformation of the TC into the LC was supposed to have taken place [Gardawski 1971:160ff, Fig. 8 and 9]. Of different opinion was Marek Gedl who believed that the said culture appeared in a final form in the vicinity of Kraków as a result of the arrival of Silesian populations in this area. This event took place around the turn of phase D of the Bronze Age and A1 of the Hallstatt period [Gedl 1982:21-23, Fig. 13], which is corroborated by the occurrence of bronze pins with butt-like and cross-fluted heads in Kraków's vicinity [Gedl 1982:22; Dąbrowski 1991:199]. The existence of an enclave with "Silesian-style" pottery near Kraków was reflected in the territorial division of the LC (Kraków subgroup of the Silesian group of this culture) [Gedl 1975:110]. An analogous point of departure is used in detailed studies of the cultural situation in Kraków-Nowa Huta [Rydzewski 1983; 1991; 1992; Górski 1992; 1994a;1997]. Suggestions concerning the existence of the "Łódź phase" in this area [Gardawski 1971:160ff, Fig. 8, 9; Rachwaniec 1982:69] have not been confirmed yet.

When defining the relations occurring where the TC met the LC, inspiration came from the assertion that the TC was supplanted or assimilated by the LC in the area under discussion [Gedl 1982:21-22]. Thus, an idea was indirectly put forward

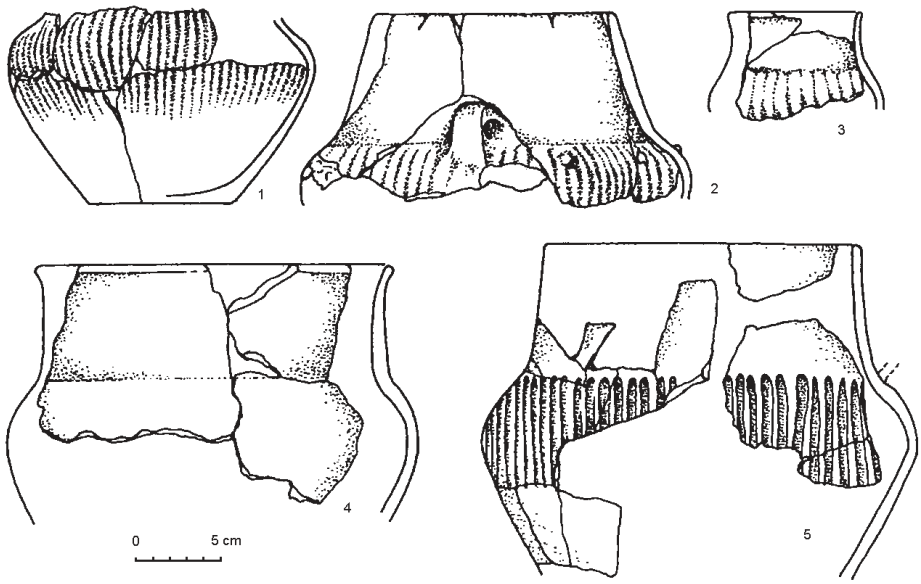

Fig. 5. Pottery characteristic of the late phase of the Lusatian Culture from site 55 in Nowa Huta-Mogiła. Drawn by A. Mosio.

claiming that the TC survived in this area until representatives of the finally-shaped LC arrived from the west. One indication of the temporary co-occurrence was the finding that sites of both cultures mutually excluded each other in Kraków-Nowa Huta [Rydzewski 1983:216-217; 1992:181, Fig. 3]. Around the middle of the III period of the Bronze Age, at a bend of a Vistula terrace, several settlements as well as a cremation cemetery were founded in a virgin place, where pottery characteristic of the early phase of the LC is represented. They were located close to TC settlements that had been permanently inhabited since phase A2 of the Bronze Age (Fig. 3). The finding that the sites of both cultures were spatially mutually exclusive served as a basis for detailed studies of Nowa Huta settlement materials [Rydzewski 1991; Górski 1992]. The first of the works stressed the changes in TC pottery taking place from the turn of the older and middle periods of the Bronze Age which, however, did not result in the emergence of a local variety of the LC. We can speak of the beginnings of the LC only when pottery made in the "Silesian style" appears (sharp-contoured bowls corrugated at the bend of belly and decorated underneath it with incised lines, vases corrugated at the bend of belly and characteristic "button" vessels — Fig. 4). Having co-existed with the representatives of the early phase of the LC for some time, an altered TC adopted characteristic traits of pottery manufactured by them. This is why vessels of this type appeared at TC settlements

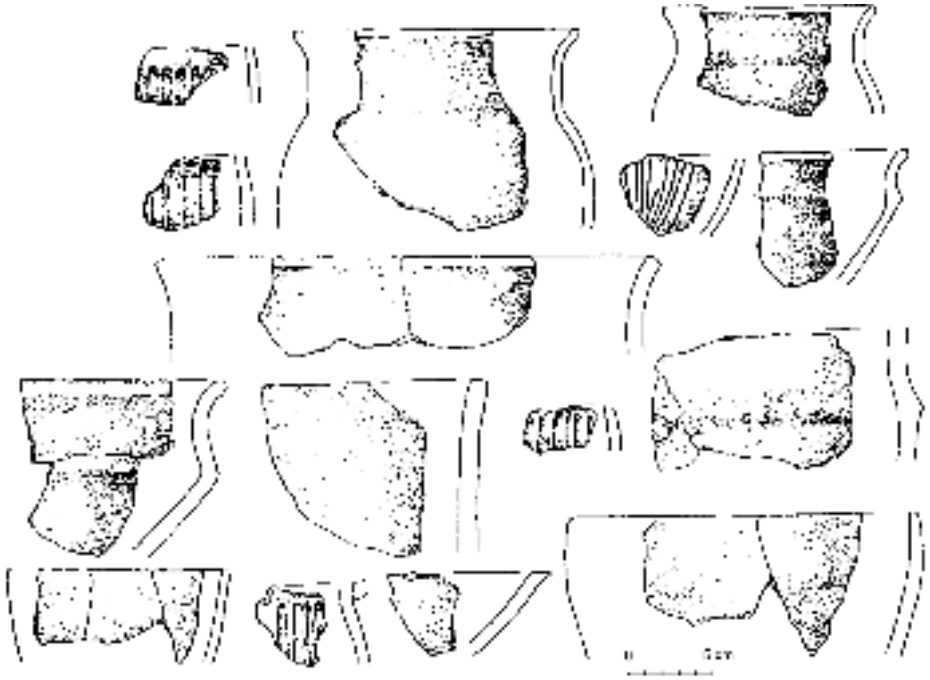

Fig. 6. Pottery characteristic of the decline phase of the Lusatian Culture from site 55 in Nowa Huta-Mogiła, feature 32. Drawn by A. Mosio.

in Kraków-Nowa Huta at Mogiła, site 55 and Pleszów, site 49. The mechanism of changes and the process of taking over early Lusatian traits by the populations of the late phase of the TC could be traced with the help of the sources from site 55 in Nowa-Huta-Mogiła (settlement close to the Mound of Wanda) [Górski 1992]. Owing to carefully selected analytical procedure, it was possible to identify relatively chronologically compact settlement assemblages. This, in turn, permitted to trace changes in TC pottery within relatively short time horizons [Górski 1994a:74--91; 1997:28-29]. Late TC assemblages (Fig. 5) are characterized by the presence of amphorae, cups and beakers decorated on the belly with compact zones of vertical grooves being an almost exclusive ornament pattern. There is also a group of dozen-odd features containing mixed, Trzciniec-Lusatian materials (Fig. 6). It must be stressed, however, that no intermediate traits are observed between these two, stylistically very different, groups of sources. There are no common or even similar ornament patterns. TC pottery does not undergo evolution leading to the emergence of early Lusatian forms. The latter, undoubtedly appear at the site in a ready-made form. The role of the population representing the late phase of the TC was reduced to accepting a new cultural trend. The changes in the TC induced by

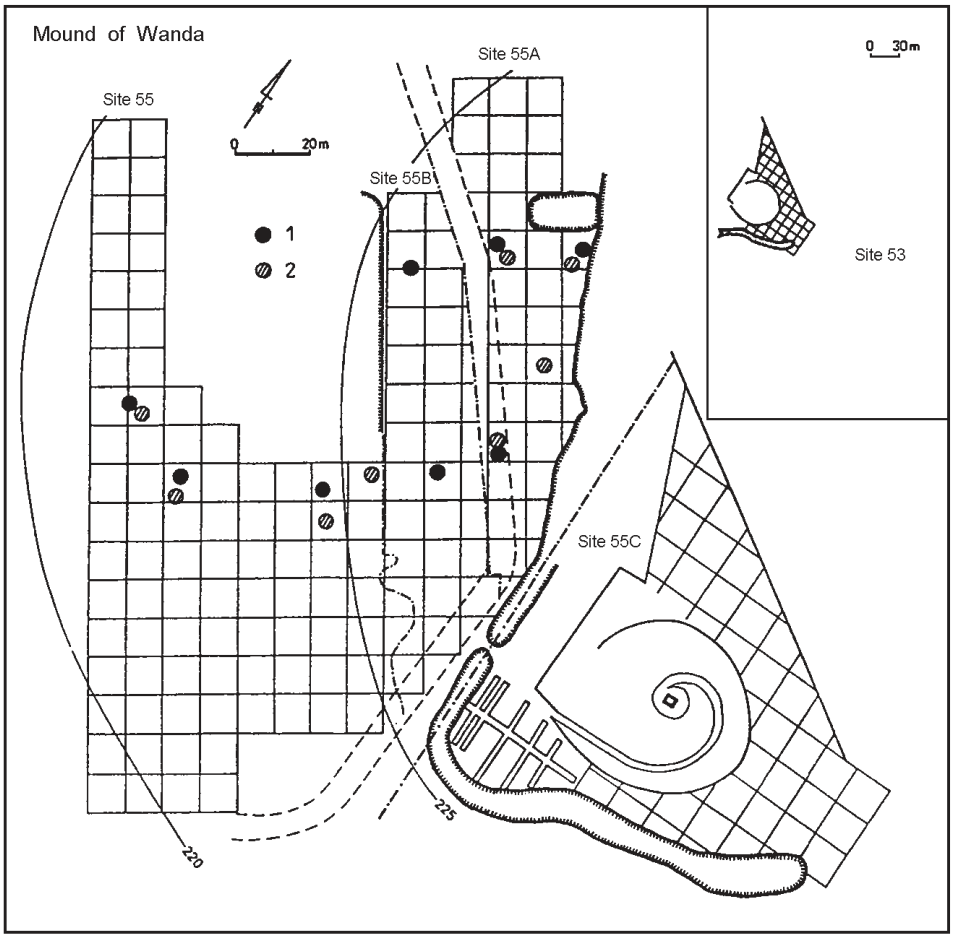

Fig. 7. Organization of a settlement from the late phase of the Trzciniec Culture (TC) at site 55 in Nowa Huta-Mogiła. 1 - features of the late phase of the TC (construction phase VII), 2 - features of the decline phase of the TC (construction phase VIIa). Drawn by A. Mosio.

the direct impact of the early phase of the LC led to the vanishing of the traits, on the basis of which the culture can be distinguished.

The changes were not superficial and did not consist only in a simple assimilation of new ornamentation patterns in ceramics. Together with the appearance of vessels made in the "Silesian style" evolution began to affect also the traditional model of functioning of the settlement. The model was formed already in phase A2 of the Bronze Age when a TC population took over settlement organization from a community of the classic phase of the Mierzanowice Culture [Górski, Kadrow

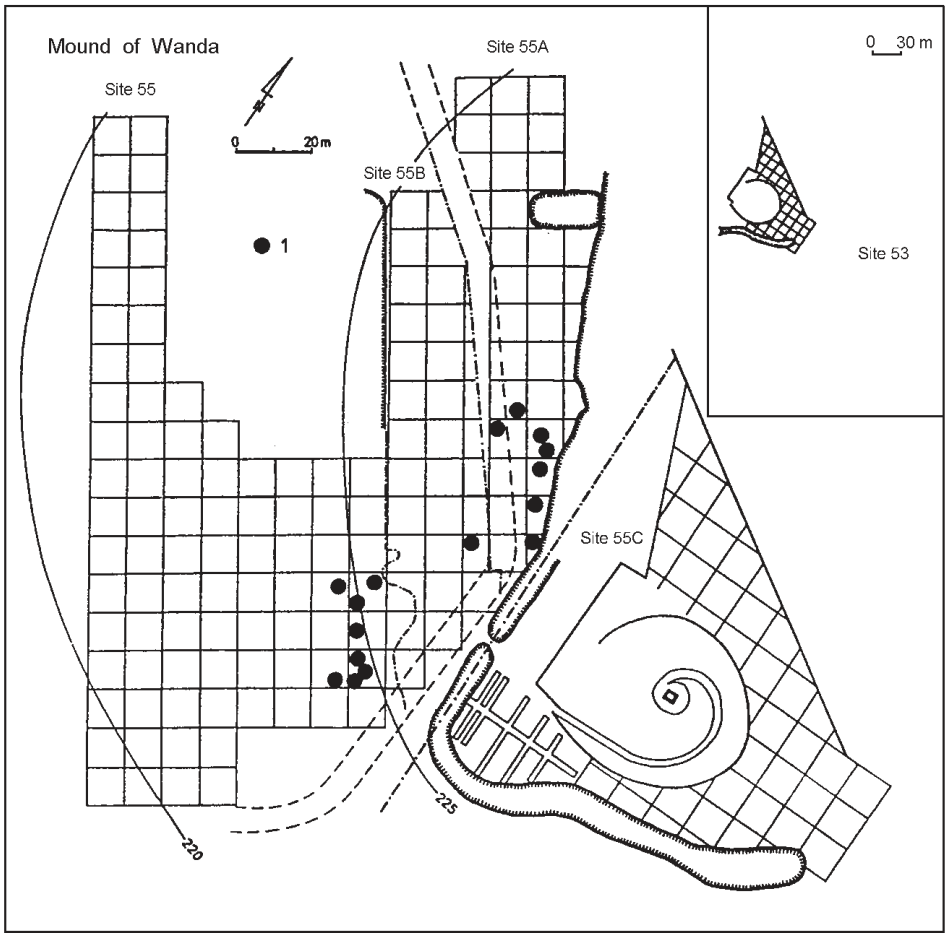

Fig. 8. Organization of a settlement from the early phase of the LC at site 55 in Nowa Huta-Mogiła. 1 - features. Drawn by A. Mosio.

1996:19]. Relying on the results of spatial development analysis of an Early Bronze Age settlement in Iwanowice [Kadrow 1991], it was accepted that, in the case of the settlement in Nowa Huta-Mogiła, one large feature, either trapezoid or bag-like, functioned usually on the area 10-20 m in diameter. It was further accepted that usually one pit corresponded to one household cluster inhabited by a basic family and that a complex of contemporaneous clusters made up a construction phase. Throughout the whole period of TC existence, construction phases distinguished at the site close to the Mound of Wanda formed quite regular, closed and ellipse-like structures. The features of the late phase of the TC formed two structures, succes-

sive and partially spatially exclusive, identified as construction phases VI and VII representing settlement organization typical of the TC. The further development of the settlement is very interesting. Now, almost each feature of construction phase VII was accompanied by a younger pit, the contents of which included, next to late Trzciniec materials, characteristic early Lusatian pottery (Fig. 7). The evolution of the settlement organization system leads to a situation where earlier tendencies to obtain a regular and closed arrangement of features (household clusters) disappear. The mapping of pits in which "pure" early Lusatian materials were discovered gives a different picture (Fig. 8). Features closely related in time make several standing out clusters while in a few of the largest of them the arrangement of pits resembles a bunch of grapes.

It seems, therefore, that processes of the TC's taking over traits characteristic of "Silesian ornamentation" were taking place after early Lusatian settlement had stabilized in the area in question, i.e. in phase A1 of the Hallstatt period. The change of the cultural image of this area must have taken a few generations. The situation discovered in the vicinity of Kraków "(...) may be imagined as the taking over of certain areas by advancing populations with already developed Lusatian culture and as the Lusatian Culture taking root in the preceding culture, which will be manifested not by an assemblage of separate forms but by the co-existence of new and old ones" [Dąbrowski 1991:198]. In the presented theory, the transitional phase in the vicinity of Kraków is a stage of adaptation of traits characteristic of the LC by local late Trzciniec societies.

2. REMARKS ON THE DECLINE OF THE TRZCINIEC CULTURE AND THE RISE OF THE LUSATIAN CULTURE IN THE REGION OF SANDOMIERZ

In the Sandomierz Uplands, the late phase of the TC may be reliably characterized on the basis of materials from Dwikozy where a common skeleton grave was discovered. In the opinion of the authors of the discovery it was a contemporaneous feature. On the basis of nine radiocarbon dates, its foundation can be dated at ca 1200 cal BC [Ścibior, Ścibior 1990:119, 121, Tab. 2] which corresponds to phase D of the Bronze Age. The find may be synchronized with the late phase of the culture in the south-western portion of Niecka Nidziańska [Nidzica Trough] [Górski 1997:28--29]. Vessels decorated with vertical grooves characteristic of this phase were found in the grave [Ścibior, Ścibior 1990:Fig. 9:4, 5] and at several other sites [Nosek 1948, Tabl. XXX, 1; XXX,2, 3; Krauss 1977:23]. A local peculiarity, however, is the presence of tulip-like pots with small bottoms [Ścibior, Ścibior 1990:Fig. 9:1, 2; 10:4] for which there is no analogy in the vicinity of Kraków (Fig. 9).

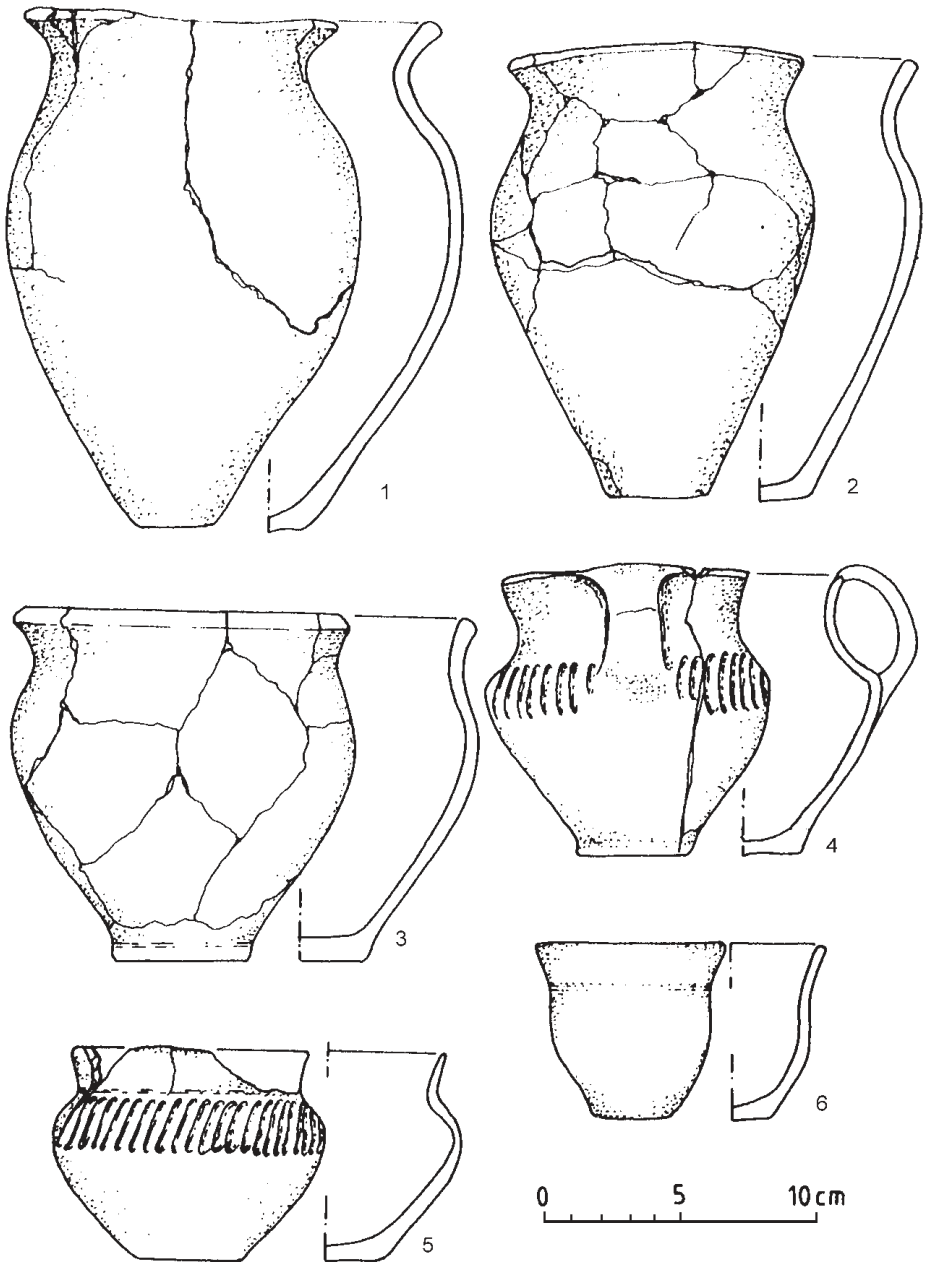

Fig. 9. Selected ceramic materials from the collective grave in Dwikozy (according to J. Ścibior, J. Ścibior). Drawn by A. Mosio.

Only in recent years, have considerable amounts of TC materials been identified in the areas later occupied by the Tarnobrzeg group of the LC [Blajer 1985], owing to which the theories taking into account the role of the Trzciniec substratum in its genesis acquired firm foundations [Blajer, Czopek, Kostek 1991; Czopek 1996; see there for the development of views on the rise of the Tarnobrzeg group of the LC]. One of such areas is the region where the Wisłok River flows into the San [Czopek 1996:110-116]. Admittedly this area is little further afield from the one delineated above, but certainly this is the closest area in the range of the Tarnobrzeg group of the LC, in the case of which the question of transition from the TC into LC has been exhaustively discussed. The existence of this cultural group is evidenced in the first place by long-used cremation cemeteries, the appearance of which may be dated at not earlier than phase A1 of the Hallstatt period [Czopek 1996:113-114]. Among larger flat cemeteries in the territory in question are, for instance, Machów and Piaseczno [Krauss 1977, Fig. 25]. Consequently, the present discussion may be narrowed down to the period from the digging of the Trzciniec grave in Dwikozy to the appearing of the first cremation burials. The attention of scholars has been drawn for a long time by the ensuing "horizon" of a few richly provided skeleton graves dated at the first or second half of the III period of the Bronze Age. Their grave-goods include a number of elements which are no longer "Trzciniec-like" nor "Tarnobrzeg-like" yet [Czopek 1996:113-114]. In this context of great interest are results of planigraphic analyses carried out at some sites [Czopek 1996:44ff, Fig. 48]. The skeleton graves are associated with the oldest phases of development of these cemeteries and co-occured with analogously dated cremation burials. It must be accepted that the inhumations are related rather to the Trzciniec tradition of disposal of the dead and that they occurred in the times when cremation was gaining ground [Czopek 1996:48]. The existence of long-used cemeteries is not a typical trait of the TC, whereas such cemeteries are a hallmark of the LC. If skeleton graves began the development of the mentioned cemeteries they must reflect the "onset of new times" in which a decisive role was taken over by cremation. The transitional character of skeleton graves would find expression in the fact that they are the oldest link in the development of the cemeteries. If, however, we were to accept that inhumations and cremations had been contemporaneous we would deal with a period of co-occurrence of older vanishing traits (inhumation) and newer ones being on the increase (cremation). Under this interpretation, the "transitional character" would entail a right of an individual to choose a type of burial within the same burial ground. In both cases, the transiency of this phase is manifested by the acceptance of the necessity to set up permanent cemeteries by local communities.

The situation in the area of interest to us may have developed accordingly to a recently proposed pattern [Czopek 1996:114]. In phase D of the Bronze Age, the region of Sandomierz and Tarnobrzeg was inhabited by TC societies. Typical materials from this period were identified in the grave discovered in Dwikozy. The

grave represents the waning stage in the development of the culture: both the grave form and the pottery found in it do not permit us to associate it with the LC. A marked change is brought about by phase A1 of the Hallstatt period which is a stage of "searching for new patterns" and occasionally of the rise of a new quality. In this case a new quality is manifested by the co-occurrence of inhumation and cremation burials. Some vessels discovered in burials that have not been burnt (for the discussed area, the grave discovered in Złota is representative) [Ścibior 1993] have no equivalents in known TC pottery, whereas they bear relations to specimens known from cremation burials [Ścibior 1993:150-152]. The universal use of cremation in phase A2 of the Hallstatt period testifies to the existence at that time of a culture in the type of urn fields. The change of the TC into the LC should be looked upon in terms of a revaluation of the fundamentals of a culture which, in this case, found its expression in the supplanting of inhumation burials with cremations.

3. THE CHANGE OF THE TRZCINIEC CULTURE INTO THE LUSATIAN CULTURE ON THE UPPER NIDA

In the area along the Upper Nida the final effect of the evolution of TC pottery may be observed in the assemblages from common graves discovered in Bogucice [Gardawski 1971:Fig. 7] and Bocheniec [Matoga 1985:Fig. 4-8; 1987:Fig. 2-5]. The genetic relationship of these burials with the TC raises no doubt [Matoga 1985:105; 1987:128].

For the question under discussion here, of the greatest importance are observations made in the older zone of the cemetery in Bocheniec [Matoga 1985; 1987]. Its development sequence is opened by the mentioned common skeleton graves dated to the first half of the III period of the Bronze Age [Matoga 1987: 128; Dąbrowski 1991:198]. In the older zone of this burial ground, dated to the second half of the III and the beginning of the IV period of the Bronze Age, other types of burials have been identified, too: cremations in urns or without them, "symbolic" and probably skeleton graves in which bones have not survived [Matoga 1985:97-99]. It is worth remembering that a similar variety can be encountered at the cemeteries of the early Tarnobrzeg group of the LC [Czopek 1996:44ff]. The dating of skeleton graves from Bocheniec permits them to be equated with the late development phase of the TC in the vicinity of Kraków. The inventories of these graves (similarly to the pottery from Bogucice) look, however, rather peculiar (Fig. 10). They do not contain vessels decorated with vertical grooves, a local trait is the presence of specifically decorated cups while similarities concern pots. One of the graves discovered there

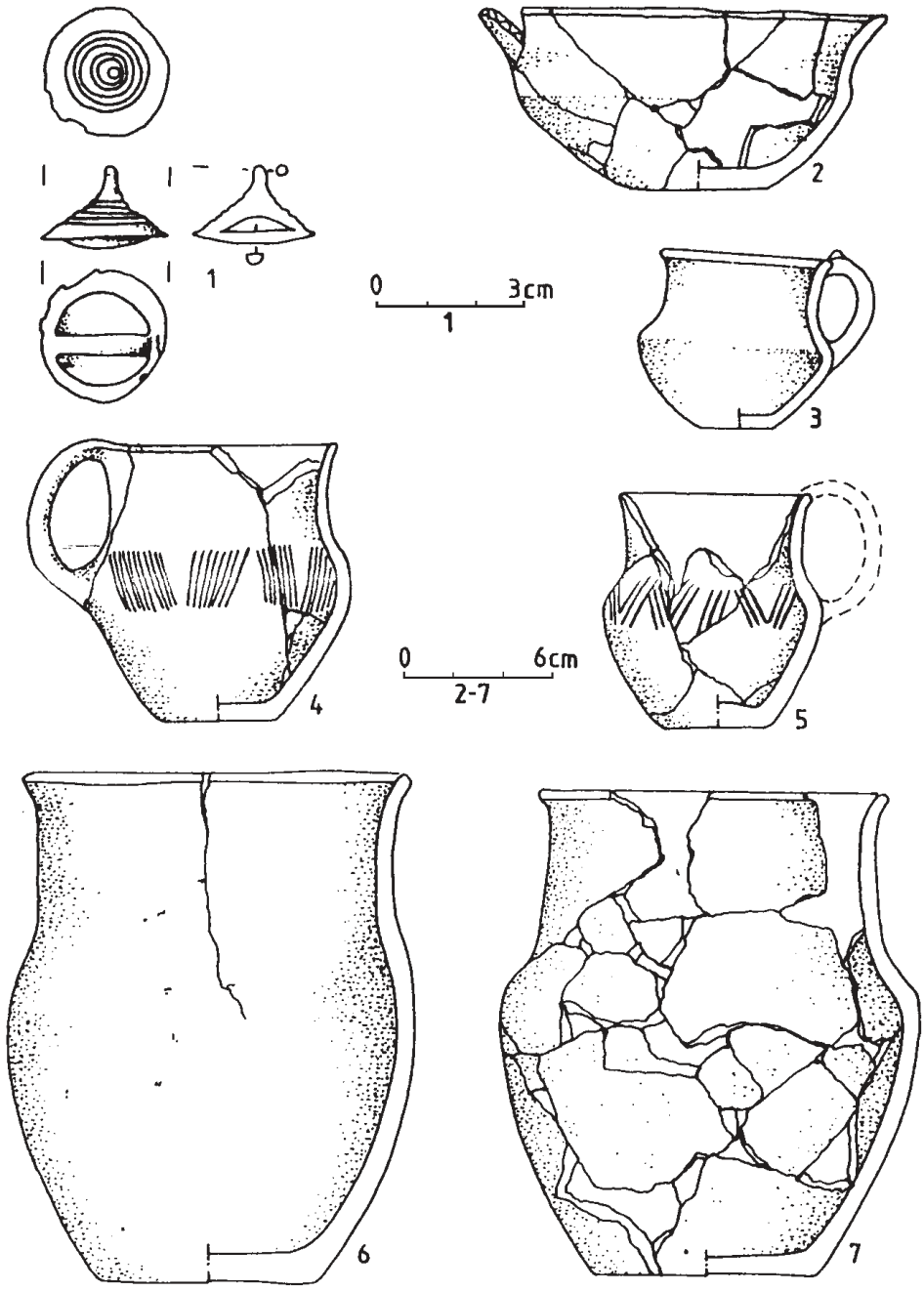

Fig. 10. Selected bronze (1) and ceramic (2) materials from the collective grave in Bocheniec (according to A. Matoga). Drawn by A. Mosio.

is a "direct connection" between the two cultures. A Trzciniec form of the grave is accompanied by a vessel exhibiting early Lusatian traits. The knowledge of the later development of the cemetery shows that the appearance of that vessel in the grave was not an effect of a casual contact, but the first archaeologically tangible trace of the LC impact. The region under discussion, in the time of interest to us here, was subject to influences from Central Poland [Matoga 1991]. These influences contributed most to the shaping of the cultural image of the area. The ties with the areas in Kraków's vicinity should be stressed as well and a record should be made of the presence of several vessels with clear references to "Silesian style" pottery. It does not seem, however, that these influences had an impact on the shape of the local branch of the LC.

4. CONCLUSION

Despite the fact that the question of transition of the TC into the LC has been an object of research for many years, it is far from being explained. It even seems that the degree of complexity of the question is far greater than it seemed earlier. In each of the three analyzed regions the cultural change took a different course. An attempt has been made to explain the two major causes of the discrepancies. The transitional phase is obviously easier to describe in the areas where mixed assemblages exhibiting traits of both cultures have been discovered. They are border phenomena closing the last stage of TC existence and marking the beginnings of the LC. In the vicinity of Kraków, the cultural change took place relatively quickly, which was an effect of the direct impact of a group of population of the finally shaped LC. The impact radically changed the course of development of the local community. The events took a different course in the area where the San joins the Vistula. The distance from culture-making centers made the changes unfurl there in a rather evolutionary manner with the effect of these changes, the Tarnobrzeg group of the LC, being rather a result of "independent searching" than an adaptation of a ready model as it was the case in Kraków's vicinity.

Finally, it must be observed that the Trzciniec-Lusatian transition phase was analyzed chiefly from the perspective of the changes in the burial rite. As it is shown by the sites at Kraków-Nowa Huta, these changes were more profound and concerned different spheres of life.

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ABSOLUTE (RADIOCARBON) CHRONOLOGY OF THE EASTERN TRZCINIEC CULTURE IN THE DNIEPER BASIN (THE MALOPOLOVETSKE BURIAL SITE)

The Malopolovetske-3 burial site, located in the Fastiv district of the Kiev region at the eastern border of the Trzciniec cultural-historic area, is significant for the new understanding of specific features of the cultural-historic process that occurred in the Middle Dnieper area in the second millennium BC.

This site represents the first Eastern Trzciniec feature for which a major series of radiocarbon dates has been taken. A large number of finds in the graves, materials of the Eastern Trzciniec as well as of the Srubnaya (Timber-Grave) Cultures, makes it one of the most significant features both as a source for characterizing the population that inhabited the area during that period, and also for the precision of the absolute chronology and synchronization of the Srubnaya and the Trzciniec cultural-historic regions including the territory from the Vistula to the Urals.

1. METHODS

The Kiev laboratory has developed a new method of obtaining lithium carbide from any carbon-containing specimens in one stage [Skripkin, Kovalyukh 1998].

This technique, developed by V. Skripkin, allows us to obtain lithium carbide from organic bone matter without preliminary extraction of the collagen. In order to achieve that, bones are divided into small parts and, after being washed thoroughly with trisodiumphosphate solution, they are treated with 3% hydrofluoric acid. The acid decomposes carbonates but fixes calcium. As a result, the specimen develops a solid structure which allows it to be washed and dried easily

and thoroughly. After being treated this way, the specimen is mixed with manganese dioxide and placed in a reactor for vacuum thermodestruction. The lithium carbide yield is *ca.* 95% [Kovaliukh, Skripkin 1997]. This method produces were good results, especially for small specimens [Skripkin, Kovalyukh 1998]. A significant reduction of the time and the amount of chemicals (lithium etc.) needed, as well as the substantial yield, protection from the "memory effect" and the possibility of obtaining carbide from minor samples make the vacuum thermodestruction technique a very promising one. The use of this technique in our laboratory allowed us to switch to commercially real, statistical and graphic subcalibration dating.

The radiocarbon method is fundamentally based on the assumption of invariability of the concentration of ^{14}C isotope in the atmosphere. However, as further research has proved, the concentration of ^{14}C isotope in the atmosphere of the Earth depends on the tensity and directionality of the Earth's magnetic field, space factors and the solar activity.

An international project — building of a calibration curve — was launched in order to clarify this connection and create preconditions for the absolute radiocarbon dating. The study used several unique natural fossils of tree trunks that allowed accurate calculation of the trees' age by their rings. After precise determination of ^{14}C concentration in each individual ring, a calibration curve (the Stuiver curve) ranging from 200 to 10,000 years was built. It was found that there were rather difficult sections, within which the concentration of radiocarbon either increased or fluctuated within a rather broad range. These sections coincided with periods of important and radical historical changes. The use of the calibration curve for these periods results in an abrupt increase in vagueness in the determination of the calendar age, as the same value of BP may correspond with a number of calibration dates with the disparity of up to 400 years (the typical example: BP=2450 years).

In order to find a solution to the emerging problems, a graphic subcalibration dating method was introduced. The method is applicable if there is a fragment of wood from the feature under investigation which has at least 20 year-rings. In such a case the fragment is split into rings and the subcalibration curve is built after the ^{14}C concentration is determined in each of them. The curve's form is compared then with assumed sections of the Stuiver curve (within the obtained BP value), and a conclusion about assumed absolute age is made.

Since essentially all complicated sections of the calibration curve have unique, definitely specific form, the obtained date is highly plausible (90% and more).

The graphic dating method can also be used in cases of vertical or horizontal stratification of the studied object, as well as for major bones and some mollusk shells.

According to specific features of burial rites and artifacts, graves of the Malopolovetske (MP) burial site, referred to the Late Bronze Age, may be divided into two groups: MP-II and MP-III (Fig. 1).

The MP-II group includes graves 11, 12, 15, 18, 19, 20, 21, 28 that were situated in the "dead house" (a ritual imitation of a hut containing 8 graves) and large burial foundation pits, in which the graves were accompanied by a large number (over 20) of heaps of vessel breakage, mainly kitchen pots, and piles of chopped animal bones. A significant number of skeletons were dismembered and arranged in anatomical (curled, with their heads towards north-east) (Fig. 4:10) or non-anatomical (Fig. 4:4, 5, 9) positions. Some of the intact inhumations are slightly curled, head to the north (Fig. 4:8); some are curled, head to the south-east and hands crossed on the chest (Fig. 4:6), and some are strongly curled, head to the north-west, face down and hands tied up in the back (Fig. 4:7). The typical kind of ceramics are large tulip-like vessels, until recently similar to no other in the ceramics complex of the Northern Ukraine. The vessels display typical, massive faceted or rounded rims, and admixture of gruss and mica in the dough. The vessel bodies are roughened with liquid clay which, in many cases, was used to form multiroller ornament (horizontal rollers under the rim and vertical ones on the body), rims and bottoms are smoothed or slightly burnished (Fig. 4:16). The rest of the ceramic complex of the burial site included vessels of the Trzciniec-Komarov Circle, with carefully smoothed and burnished surfaces, some of them decorated with semi-concentric ornament (Fig. 4:20, 21); small conical and round-sided jars (Fig. 4:15); large helmet-like bowls (Fig. 4:25), lids with comical handles (Fig. 4:24); vessels of the Srubnaya Culture (Fig. 4:11-15, 17-19, 22-23, 26-27), including vessels of the Mayivka type, for cooking and serving (Fig. 4:22, 23); "late Srubnaya" vessels with a single roller or a belt of impressions (Fig. 4:11, 19, 26). Among other finds, there were a small bronze hammered leaf-like dagger, three goblets with handles made of talc slate (Fig. 4:28--30), seven tools (tupiki) made of ox jaws (Fig. 4:31), four tools for finishing hides with large cross-cuts (Fig. 4:32).

Radiocarbon dates from those graves were divided as follows (Table 1:1-4).

The earliest grave in the group — No. 20 — 3350±40 BP (Ki-6211), while the latest — No. 28 — is 3300±40 BP (Ki-6320). Grave No. 28 has the average statistical dating, obtained from four samples of different parts of the skeleton. In the gauge form, the date falls into the time interval of 1616-1518 cal BC. Taking into account the minor difference of BP dates in the MP-II group, we believe it is possible to extrapolate this dating in its approximated value (1600-1500 cal BC) to the whole group of graves.

The MP-III group includes graves 1, 2, 3, 5, 6, 7, 8, 9, 10, 17 which are divi-

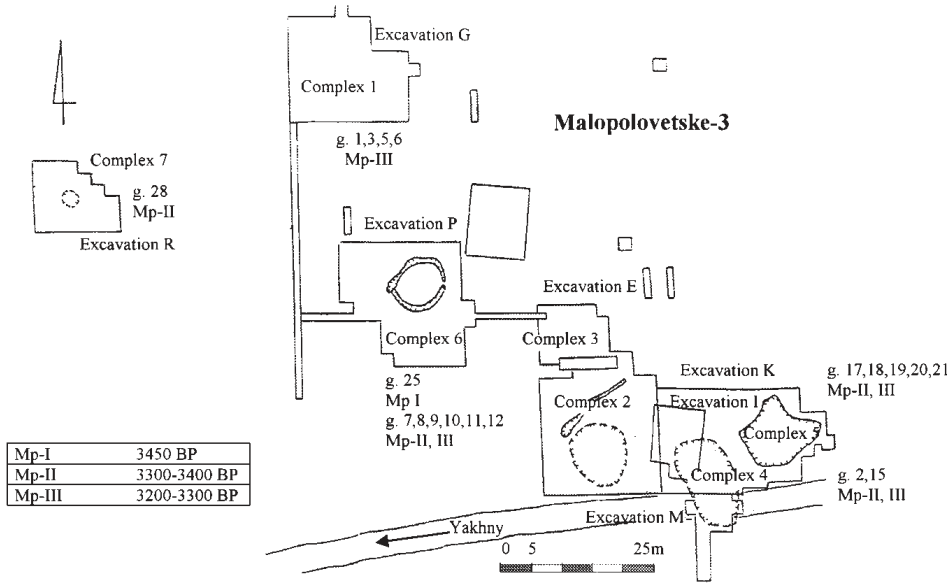

Fig. 1. Plan of the Malopolovetske site

ded into two clearly diverse subgroups. The first subgroup is represented by graves containing strongly curled skeletons of eastward (5 graves) (Fig. 4:35, 38) and southward (1 grave) (Fig. 4:37) orientation, located near the burial pits of the MP-II stage. The second subgroup contains predominantly dismembered remains, their bones placed in anatomical (curled, head towards the north-east) (Fig. 4:34) or non-anatomical order; three intact skeletons are positioned stretched on the back, heads towards the west and the south-west (Fig. 4:33). One of the graves contained a bronze nail-like pin with an eye under the head, two pairs of bracelets with spiral "shields" and one pair of multispiral bracelets (Fig. 4:34, 40-43). Bones of one more dismembered skeleton lay on the remainders of a stone stela (Fig. 4:36). Other graves contained no items. Remainders of funeral feasts in the complexes are also scarce. They include several flint knives and a grinder. Ceramics are represented by fragments of breakage of non-ornamented vessels. One of the vessels can be reconstructed into a small tulip-like pot with a feebly marked rim (Fig. 4:39).

Radiocarbon dating of samples of this group returned the following data: (see Table 1, 15-23). The earliest grave in the group, grave No. 10, belongs to 3290±40 BP (Ki-6348), while the latest, grave No. 6, belongs to 3210±30 BP (Ki-6348). Bones from grave No. 17 were dated layer by layer, and the average statistical date obtained from a series of samples is 3227±11 BP (Ki-6328) (Table 2, Fig. 2).

The calibrated dates fall into the interval from 1491 to 1447 cal BC. The interval was confirmed by subcalibration dating and reduced to <1470 cal BC. Enclosed

Table 1

Radiocarbon dating of archeological monuments of the Eastern Trzciniec Culture found on the territory of Ukraine

No.	Monument, burial-mound, burial	Laboratory number	Conv BP	Cal BC
1.	Malopolovetske-II, Grave 11	Ki - 6354	3310±50	1δ 1668-1662 1628-1520 2δ 1732-1724 1686-1504 1488-1450
2.	Malopolovetske-II, Grave 12a	Ki - 6355	3300±45	1δ 1620-1518 2δ 1680-1504 1486-1452
3.	Malopolovetske-II, Grave 12b	Ki - 6356	3345±35	1δ 1676-1606 1560-1532 2δ 1730-1728 1686-1524
4.	Malopolovetske-II, Grave 15	Ki - 6207	3330±40	1δ 1670-1658 1632-1590 1580-1528 2δ 1684-1518
5.	Malopolovetske-II, Grave 17	Ki - 6208	3280±40	1δ 1604-1562 1532-1510 2δ 1616-1500 1492-1446
6.	Malopolovetske-II, Grave 18	Ki - 6209	3340±40	1δ 1676-1646 1642-1602 1568-1530 2δ 1732-1724 1686-1520
7.	Malopolovetske-II, Grave 19	Ki - 6210	3310±35	1δ 1612-1544 1542-1524 2δ 1676-1646 1642-1566
8.	Malopolovetske-II, Grave 20	Ki - 6211	3350±40	1δ 1678-1608 1554-1536 2δ 1684-1586 1584-1526
9.	Malopolovetske-II, Grave 21	Ki - 6212	3300±35	1δ 1620-1518 2δ 1610-1504
10.	Malopolovetske-II, Grave 28 Sample #1	Ki - 6313	3290±40	1δ 1612-1544 1542-1516 2δ 1676-1646 1644-1504 1486-1452
11.	Malopolovetske-II, Grave 28 Sample #2	Ki - 6317	3300±40	1δ 1612-1520 2δ 1678-1508 1478-1458
12.	Malopolovetske-II, Grave 28 Sample #3	Ki - 6318	3270±45	1δ 1610-1552 1536-1506 1484-1454 2δ 1672-1658 1632-1430

No.	Monument, burial-mound, burial	Laboratory number	Conv BP	Cal BC
13.	Malopolovetske-II, Grave 28 Sample #4	Ki - 6319	3340±40	1δ 1676-1646 1642-1602 1568-1530 2δ 1732-1724 1686-1520
14.	Malopolovetske-II, Grave 28 Average statistical date	Ki - 6320	3300±22	1δ 1606-1560 1532-1522 2δ 1616-1518
15.	Malopolovetske-III, Grave 1	Ki - 6352	3225±45	1δ 1518-1438 2δ 1606-1558 1534-1406
16.	Malopolovetske-III, Grave 2	Ki - 6353	3260±40	1δ 1602-1566 1530-1502 1488-1448 2δ 1618-1428
17.	Malopolovetske-III, Grave 3	Ki - 6204	3270±30	1δ 1604-1562 1532-1510 2δ 1616-1500 1492-1446
18.	Malopolovetske-III, Grave 5	Ki - 6205	3250±40	1δ 1590-1580 1526-1442 2δ 1612-1546 1540-1424
19.	Malopolovetske-III, Grave 6	Ki - 6206	3210±30	1δ 1510-1474 1464-1438 2δ 1518-1422
20.	Malopolovetske-III, Grave 7	Ki - 6349	3240±50	1δ 1588-1582 1526-1428 2δ 1618-1410
21.	Malopolovetske-III, Grave 8	Ki - 6350	3270±40	1δ 1608-1556 1534-1506 1482-1456 2δ 1666-1664 1628-1432
22.	Malopolovetske-III, Grave 9	Ki - 6351	3220±45	1δ 1516-1438 2δ 1604-1564 1530-1402
23.	Malopolovetske-III, Grave 10	Ki - 6348	3290±40	1δ 1612-1544 1542-1516 2δ 1676-1646 1644-1504 1486-1452
24.	Malopolovetske-I, Grave 25	Ki - 6213	3430±35	1δ 1862-1850 1758-1678 2δ 1874-1838 1816-1802 1782-1620

Table 2

Layer-by-layer dating of fossil bones (Grave 17)

No.	Analysed material	Laboratory number	Average age (BP)	Cal BC
1.	Inner part of the bone, Sample 1	Ki - 6325	3270±12	1δ 1524-1517 2δ 1593-1578 1527-1513
2.	Middle part of the bone, Sample 2	Ki - 6326	3190±12	1δ 1499-1491 1446-1426 2δ 1506-1482 1454-1421
3.	Outer part of the bone, Sample 3	Ki - 6327	3220±12	1δ 1511-1505 1486-1451 2δ 1513-1444
4.	Average statistical date	Ki - 6528	3227±11	1δ 1513-1507 1481-1456 2δ 1516-1500 1491-1447

Table 3

Radiocarbon dating of fossil bones from the Malopolovetske site

Complex	Grave No.	Age ^{14}C BP		
		Malopolovetske I (MP-I)	Malopolovetske II (MP-II)	Malopolovetske III (MP-III)
1	1			3225±45
1	3			3270±30
1	5			3250±40
1	6			3210±30
2	12a		3300±45	
2	12b		3345±35	
2	11		3310±50	
2	10			3290±40
2	9			3220±45
2	8			3270±40
2	7			3240±50
4	15		3330±40	
4	2			3260±40
5	19		3310±35	
5	18		3340±40	
5	20		3350±40	
5	21		3300±35	
5	17.1			3250±40
5	17.2			3270±40
5	17.3			3190±40
5	17.4			3220±40
6	25	3430±35		
7	28.1		3290±40	
7	28.2		3300±40	
7	28.3		3270±45	
7	28.4		3340±40	

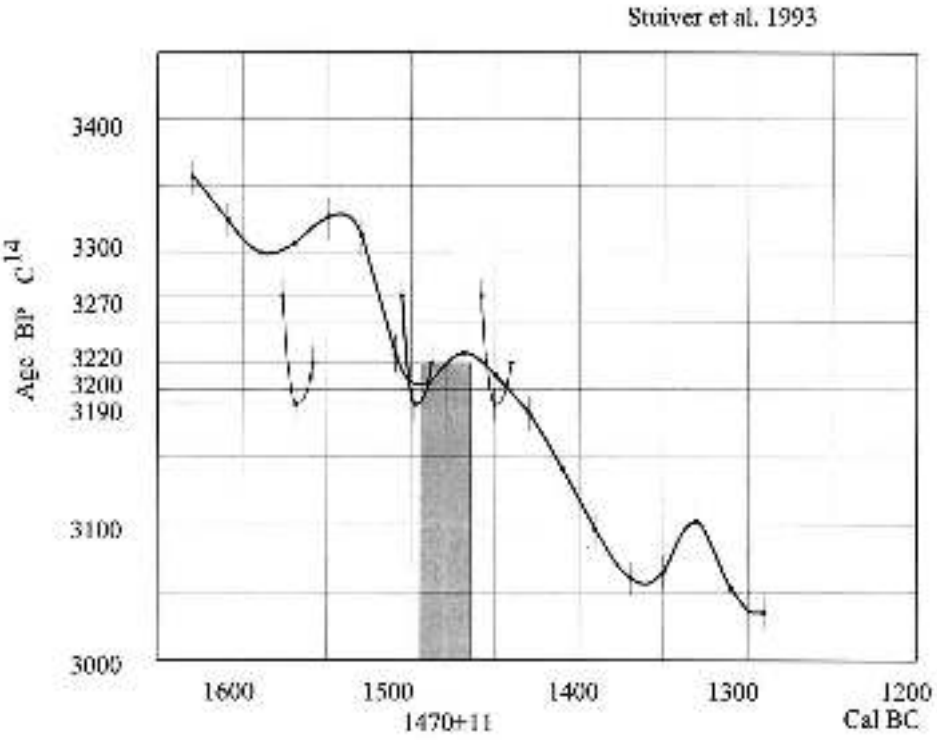

Fig. 2. Radiocarbon dating with the use of the technique of buildings subcalibration curve based on fossil bones found in the Malopolovetske feature (grave 17).

below is the description of the subcalibration date obtaining technique. We believe it is possible to extrapolate that date, approximated to 1500-1400 cal BC, on the whole group.

Grave No. 25 of the burial site belongs to the Middle Bronze Age; it stands apart from other graves and is referred to a separate group, MP-I. It contains a slightly curled skeleton with its head turned to the west, placed in a pit with a cavity (Fig. 4:1), and fragments of vessels of the Mnogovalikovaya Culture, with admixture of sand in the dough, decorated with belts of sliced rollers (Fig. 4:2, 3), riveted herring-bone patterns and drawn triangles. The grave dates back to 3430±35 BP (Ki-6213) (Table 1:24; Fig. 2:3). In the calibrated form a more credible age interval appears to be 1782-1620 cal BC.

In the course of performing radiocarbon dating of bone material from the Malopolovetske burial site, an attempt was made to use the graphic subcalibration method for obtaining a more accurate and reliable date. To do so, two of the best

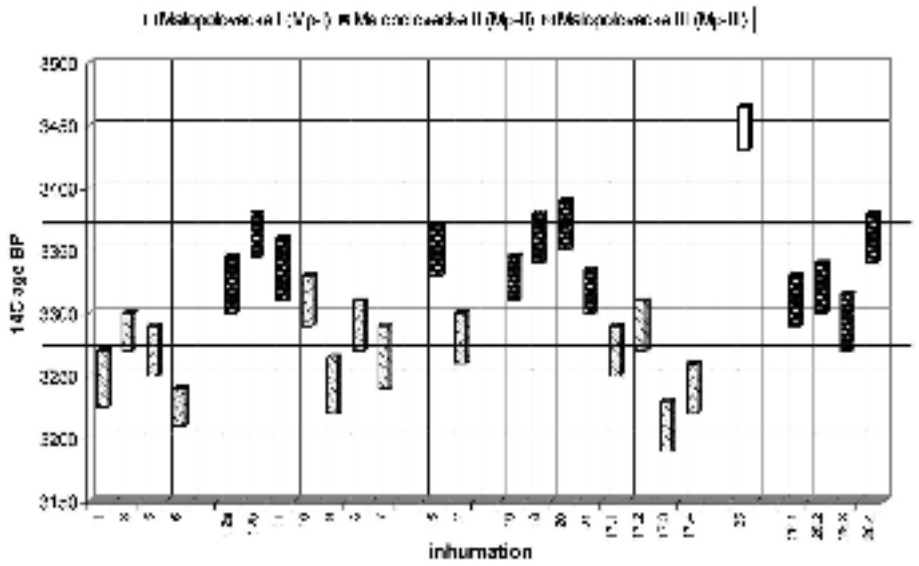

Fig. 3. Chronology of the burial mound's stages.

preserved major bones, presumably, of one adult individual, were split into three groups of fragments. The division was performed in accordance with the commonly accepted chronology of bone growth. Subsequently, all groups of fragments were treated according to the standard technique and lithium carbide was obtained by the vacuum thermodestruction method. Three separate dates were obtained in each of the groups and average values were found with the use of the mathematical statistics method. This approach allowed us to reduce the error of the BP age to ± 11 years. Hence, three maximum precision BP dates were obtained. These dates were spread onto the numerical field in the following sequence: early collagen, middle collagen, late collagen to form a subcalibration form. As shown in Fig. 2, the comparison of the obtained subcalibration curve with the Stuiver calibration curve allows one to choose the later of the two possible versions of cal BC: 1482-1458. The comparison was based on the absolute value of BP and the direction of change in the ^{14}C concentration in different parts of investigated bones (by form of the subcalibration curve).

In our view, the calendar age of the bone material under investigation, obtained through the subcalibration technique, falls into the interval of 1470±11 cal BC with the 95% probability (2δ).

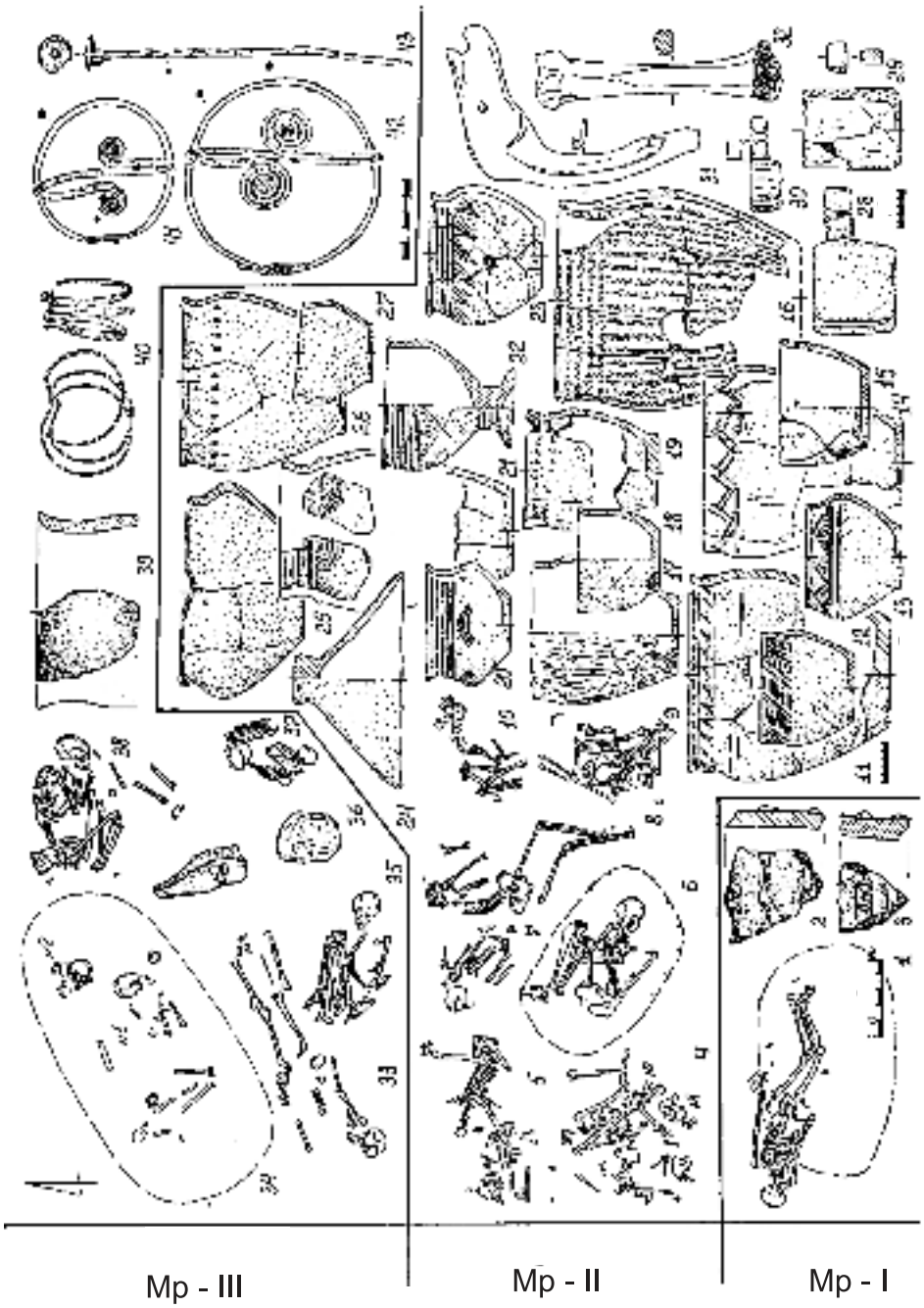

Fig. 4. Material complexes of stages of the burial mound.

3. CONCLUSION

The use of the subcalibration technique for radiocarbon dating of archaeological specimens from the burial site near the Malopolovetske site allowed us to obtain the maximally precise and credible results. With a high degree of probability, the radiocarbon dates, obtained through this method, may be regarded as the absolute calendar age of certain archaeological events.

Hence, the early horizon of the Malopolovetske burial site (MP-II) dates within 3300-3400 BP (1600-1500 cal BC), while the late horizon (MP-III) is dated within the confines of 3200-3300 BP (1600-1500 cal BC (Table 3, Fig. 3). The radiocarbon dates, obtained through the above method, prove that the burial site had existed for about 200 years.

For previously known features of the eastern version of the Trzciniec Culture, radiocarbon dates have been obtained for the Pustynka settlement (Ki-588 3140±100 BP (<1115 cal BC); Ki-6220 of the Pustynka, hut X 3060±40 BP (<1248--1206 cal BC) and Zdvyzhevka (excavations conducted by S.S. Berezanskaya) Ki-6221 3095±30 BP (<1288-1266 cal BC). These dates suggest that the Malopolovetske-3 burial site is the earliest among all dated features of the Eastern Trzciniec Culture complex. Date reference of the Belogrudovka hut, excavated at Sector A of the Malopolovetske-2 — 2910±30BP (Ki-6219, <1134-988 cal BC) also confirms this assumption and points out to the fact that the substitution of the Eastern Trzciniec Culture by the Belogrudovka in the Middle Dnieper region occurred about 1200 cal BC.

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ABSOLUTE CHRONOLOGY OF THE TRZCINIEC COMPLEX IN THE VISTULA DRAINAGE IN THE LIGHT OF ^{14}C DATINGS

In the 1990's a number of radiocarbon dates have been obtained for settlement and sepulchral assemblages of the Trzciniec Cultural Circle (TCC) in the Vistula drainage [Czebreszuk 1996; Górski, Kadrow 1996; Kempisty, Włodarczak 1996; Grossman 1998; Makarowicz 1998b; 1998c]. They have had a considerable impact on the progress in the studies of the origins, development and chronology of "Trzciniec" groups in this area of Central Europe. Data on ^{14}C chronologies for particular regional versions of the TCC in the Vistula drainage differ with respect to number and quality. Series of radiocarbon dates have been obtained only for Kujawy and Małopolska while dates for other regions are few (District of Chełmno, Lublin area) — Fig. 1. There are no ^{14}C dates for Mazowsze (Mazovia), one of the key regions for the reconstruction of the origins of the Trzciniec phenomenon. In total 49 datings have been calibrated; 30 come from the drainage of the Lower Vistula (Table 1) while 19 come from the areas on the Upper Vistula (Table 2). In most measurements bone material was used, few measurements utilized charcoal and in only one case a molusk shells were used.

In the study two computer calibrating programs have been used: *Radiocarbon Calibration <calKN> April 1993, Dendro and Archaeological Wiggle Matching* by Bernhard Weninger and *OxCal Program v. 2.18, 1995* by Christopher Bronk Ramsey. Both programs have been used to adjust single dates and to calculate the sum of probabilities of a series of dates (Table 1 and 2). The range of standard deviation was 25 to 100 years with the majority of datings having a deviation of 40-45 years (see Table 2; Fig. 2). Thus it can be accepted that, despite the fact that these are not high precision datings, when their series are calibrated and distribution probability sums are calculated we receive a relatively narrow chronological bracket for a given cultural unit.

The radiocarbon chronology generally confirms the findings following from the adopted sequence of cultural changes — worked out with purely archaeological methods (mainly typology and stratigraphy) — related to the rise of the TCC [Górski

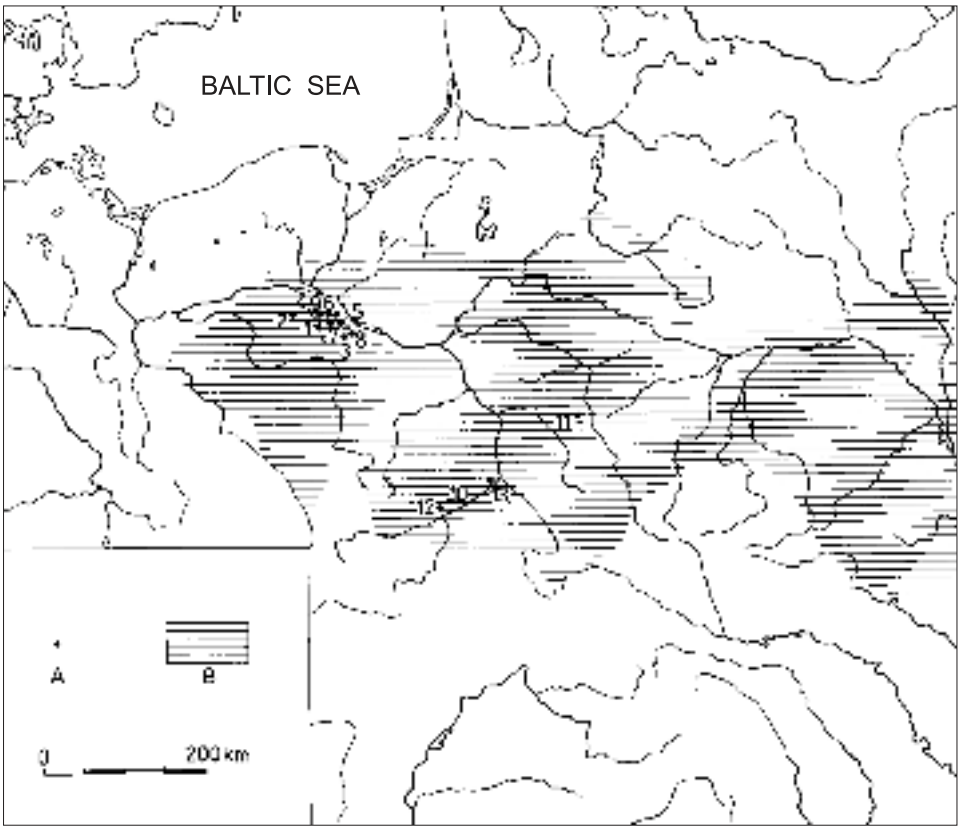

Fig. 1. Sites from which come radiocarbon dates for Trzciniec Cultural Circle assemblages (A): 1-Żegotki, site 3; 2-Biskupin, site 2a; 3-Rybiny, site 14 and Rybiny, site 17; 4-Borowo, site 12; 5-Siniarzewo, site 1; 6-Kuczkowo, site 5; 7-Piecki, site 1; 8-Zgłowiączka, site 3; 9-Krusza Podlotowa, site 8; 10-Żerniki Górne; 11-Dubeczno, site 1; 12-Miernów, site II; 13-Dwikozy. Spatial range of the Trzciniec Cultural Circle (B).

1994; 1998; Górski, The Foundations..., in this volume; Górski, Kadrow 1996; Czebreszuk 1996; Makarowicz 1998b; 1998c]. Now, it turns out that the earliest Trzciniec assemblages may be identified in the drainage of the Lower and Middle Vistula (Kujawy, Chełmno District).

Taking into account individual ^{14}C dates and comparing their calibration results obtained with the two programs, it can be accepted that the period of transformation of the Iwno Culture (IC) into the Trzciniec Horizon (TH) and the origins of the earliest TH structures in the area took place between ca 2000 and 1850 BC (Table 1; Fig. 3a; 3b and Fig. 4a; 4b). With the confidence reaching 68% one can determine the length of development of the north Polish, lowland TCC branch to be 370 years

Table 1

Radiocarbon datings of Trzciniec Cultural Circle assemblages in the drainage of the Lower and Middle Vistula (Northern Poland)

No.	Cultural unit (taxon)*	Site	Laboratory number	Material	Context	Conv BP	Cal BC	
							calKN	*OxCal* (68,2%)
1.	IC III-TH 1	Żegotki 1	Ki-6896	bones	settlement feature	3605±50	1946±73	2040-1890 (1.00)
2.	IC III-TH 1	Żegotki 1	Ki-6102	bones	settlement feature	3580±30	1900±55	1980-1890 (1.00)
3.	IC III-TH 1	Żegotki 1	Ki-6902	bones	grave	3545±40	1837±64	1960-1870 (0.75)
4.	IC III-TH 1	Żegotki 1	Ki-6103	bones	grave	3540±45	1835±67	1960-1870 (0.66)
5.	IC III-TH 1	Żegotki 1	Ki-6908	bones	grave	3540±40	1831±63	1950-1870 (0.68)
6.	IC III-TH 1	Żegotki 1	Ki-6904	bones	grave	3540±30	1829±55	1940-1870 (0.76)
7.	IC III-TH 1	Żegotki 1	Ki-6905	bones	grave	3525±30	1819±51	1840-1780 (0.53)
8.	IC III-TH 1	Żegotki 1	Ki-6903	bones	grave	3520±35	1816±54	1850-1770 (0.62)
9.	IC III-TH 1	Żegotki 1	Ki-6907	bones	grave	3515±30	1811±51	1850-1770 (0.73)
10.	IC III-TH 1	Żegotki 1	Ki-6906	bones	grave	3505±35	1805±55	1890-1770 (1.00)
11.	IC III-TH 1	Żegotki 1	Ki-6101	bones	grave	3490±45	1798±65	1890-1750 (1.00)
12.	TH 1	Biskupin 2a	Gd-6664	bones	ditch	3630±100	1980±146	2140-1980 (0.96)
13.	TH 1	Biskupin 2a	Ki-6308	bones	ditch	3620±45	1954±64	2040-1930 (0.87)
14.	TH 1	Biskupin 2a	Ki-6309	bones	ditch	3610±45	1948±64	2040-1910 (1.00)
15.	TH 1	Biskupin 2a	Ki-6307	bones	ditch	3600±40	1938±61	2030-1910 (1.00)
16.	TH 2	Rybiny 17	Ki-5589	bones	settlement feature	3560±50	1854±77	1980-1870 (0.76)
17.	TH 2	Rybiny 17	Ki-5125	charcoal	settlement feature	3520±40	1815±58	1850-1770 (0.60)
18.	TH 2	Rybiny 17	Ki-5590	charcoal	settlement feature	3480±60	1780±81	1890-1740 (1.00)
19.	TH 2	Rybiny 14	Gd-2297	charcoal	settlement feature	3470±80	1777±105	1900-1680 (1.00)
20.	TH 2	Rybiny 17	Ki-5128	bones	settlement feature	3450±60	1732±90	1880-1690 (1.00)
21.	TH 2	Rybiny 17	Ki-5127	bones	settlement feature	3420±55	1686±76	1780-1670 (0.73)
22.	TH 2	Rybiny 17	Ki-5126	shells	settlement feature	3390±45	1667±63	1750-1630 (1.00)
23.	TH 1/ TH 3	Borowo 12	Ki-5608	charcoal	settlement feature	3520±60	1814±78	1940-1760 (1.00)
24.	TH 1/ TH 3	Siniarzewo 1	Ki-5907	bones	settlement feature	3410±40	1681±54	1770-1670 (0.90)
25.	TH 1/ TH 3	Borowo 12	Ki-5605	charcoal	settlement feature	3380±55	1635±76	1760-1610 (0.98)

No.	Cultural unit (taxon)*	Site	Laboratory number	Material	Context	Conv BP	Cal BC	
							calKN	*OxCal* (68,2%)
26.	TH 1/ TH 3	Siniarzewo 1	Ki-6503	bones	settlement feature	3310±45	1561±59	1670-1520 (1.00)
27.	TH 3	Kuczkowo 5	Ki-6490	bones	settlement feature	3305±40	1559±54	1640-1520 (1.00)
28.	TH 6	Piecki 1	Ki-5682	bones	settlement feature	3240±25	1477±30	1530-1500 (0.42)
29.	TH 7	Zgłowiączka 3	Ki-6886	bones	settlement feature	3260±45	1499±58	1620-1510 (0.97)
30.	TH 7	Krusza Podlotowa 8	Gd-5118	bones	grave	3190±60	1446±58	1530-1410 (1.00)

Source: Makarowicz 1998b; 1998c
* IC - Iwno Culture; TH - Trzciniec Horizon; IC III-TH 1 - transition stage (phase III of IC-TH 1)

(from 1930 to 1560 BC — *calKN*, Fig. 4b) or 550 years (from 2050 to 1500 BC — *Oxcal*, Fig. 3b).

At a slightly later time one should place the origins of the Trzciniec Culture (TC) in the drainage of the Upper Vistula (Małopolska). Single calibrated dates permit us to place the origins of the (tamtejszych) TCC group between 1900 and 1800 BC (Table 2; Fig. 4f). According to the sum of probability distribution above mentioned dates calculated at the 68,2% confidence interval, the south Polish, old--highland TC developed between 1950 and 1700 BC (*OxCal*; Fig. 3e; 3f) or 1900--1690 BC (*calKN*; Fig. 4e). Taking into account, however, late datings of the so-called *Łódź Phase* feature from Dwikozy [Ścibior, Ścibior 1990], the upper time limit of the disintegration of Trzciniec groups on the Upper Vistula should be set at ca 1100/1050 BC (Table 2; Fig. 3f and Fig. 4f).

CONCLUSIONS

The results of radiocarbon dating permit us to set the length of development of the lowland (Lower Vistula) TCC enclave at maximum 500-550 years (Table 1; Fig. 3b and Fig. 4b). The beginning of those Trzciniec structures (2000-1850 BC) may be equated with the late phase (phase III) of the IC [Makarowicz, Taxonomic..., table 2, in this volume] with which the said cultural complex was genetically related [Czebreszuk 1996; 1998; Makarowicz 1998b; 1998c]. Whereas the end falls around 1500 BC, i.e. on the period of development of the classic phase of the Tumulus

Table 2

Radiocarbon datings of Trzciniec Cultural Circle assemblages in the drainage of the upper Vistula (Southern Poland)*

No.	Cultural unit (taxon)**	Site	Laboratory number	Material	Context	Conv BP	Cal BC	
							calKN	*OxCal* (68,2%)
1.	TC	Żerniki Górne	Ki-5112	bones	grave	3590±60	1914±93	2040-1890 (1.00)
2.	TC	Żerniki Górne	Ki-5113	bones	grave	3570±55	1861±85	2030-1880 (0.96)
3.	TC	Żerniki Górne	Ki-5117	bones	grave	3560±55	1851±82	1980-1870 (0.74)
4.	TC early phase	Dubeczno 1	Gd-5124	charcoal	grave	3520±50	1813±67	1940-1760 (1.00)
5	TC	Żerniki Górne	Ki-5832	bones	grave	3510±40	1806±58	1900-1760 (1.00)
6.	TC	Żerniki Górne	Ki-5829	bones	grave	3495±50	1800±68	1890-1750 (1.00)
7.	TC	Żerniki Górne	Ki-5831	bones	grave	3470±35	1753±65	1880-1740 (1.00)
8.	TC	Miernów II	K-????	charcoal	grave	3450±100	1744±129	1910-1640 (1.00)
9.	TC	Żerniki Górne	Ki-5830	bones	grave	3420±40	1687±54	1770-1680 (0.86)
10.	TC	Żerniki Górne	Ki-5832	bones	grave	3380±60	1636±80	1760-1610 (0.95)
11.	ŁP	Dwikozy	Gd-1940	charcoal	burial house	3040±50	1291±80	1400-1260 (1.00)
12.	ŁP	Dwikozy	Gd-3217	charcoal	burial house	3040±40	1285±70	1390-1260 (1.00)
13.	ŁP	Dwikozy	Gd-1941	charcoal	burial house	3020±40	1260±78	1320-1220 (0.66)
14.	ŁP	Dwikozy	Gd-3218	charcoal	burial house	2960±40	1143±74	1270-1100 (1.00)
15.	ŁP	Dwikozy	Gd-3220	charcoal	burial house	2940±35	1122±67	1220-1110 (0.88)
16.	ŁP	Dwikozy	Gd-1937	charcoal	burial house	2920±50	1092±83	1220-1040 (0.96)
17.	ŁP	Dwikozy	Gd-1939	charcoal	burial house	2920±50	1092±83	1220-1040 (0.96)
18.	ŁP	Dwikozy	Gd-3219	charcoal	burial house	2890±40	1038±72	1160-1000 (1.00)
19.	ŁP	Dwikozy	Gd-1938	charcoal	burial house	2890±50	1035±86	1160-1000 (0.95)

Sources: Ścibior, Ścibior 1990; Taras 1995; Kempisty, Włodarczak 1996; Górski, Kadrow 1996

* Excluding datings from Jasło, site 1 and Trzcinica, site 1 (syncretic TC and FC materials); according to Gancarski [1988; 1994]

** FC - Füzesabony Culture; ŁP - Łódź Phase; TC - Trzciniec Culture

Culture (TuC) ca 1600-1400 BC (Table 1; Fig. 3c and Fig. 4c) and shortly before developed assemblages of the Lusatian Culture (LC) appeared in that region (ca 1450-1400 BC; Table 2; Fig. 3d and Fig. 4d) [Czebreszuk, Ignaczak, Łoś 1997]. The question of parallel development (over a relatively short time) of late TH

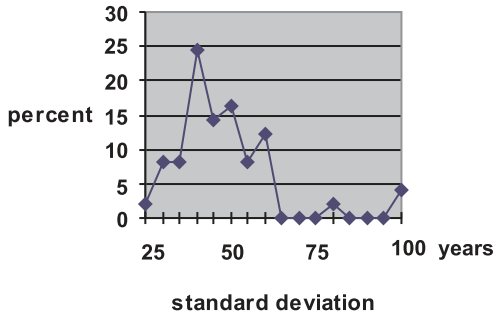

Fig. 2. The distribution of standard deviation of datings for Trzciniec Cultural Circle assemblages.

structures and the early LC calls for further explanation; however, the most probable hypothesis suggests such a possibility as highly plausible [Czebreszuk, Ignaczak, Makarowicz 1998].

The length of development of the old-highland enclave, determined on the basis of radiocarbon chronology, is 800-900 years at the maximum (Table 1; Fig. 3f and Fig. 4f). The initial stage of the TC in the area goes as far back as 1900/1850 BC, whereas the final stages of its development occur around 1100/1050 BC. Excluding the series of dates for the grave assemblage from Dwikozy, the period must be shortened to 250-300 years (Table 2; Fig. 3e and Fig. 4e). In the literature a hypothesis has become established claiming that early Trzciniec assemblages appeared in the drainage of the Upper Vistula at the time when the settlements of the Mierzanowice Culture (MiC) still were functioning there (late phase) [Górski, Kadrow 1996; Górski 1998; Kadrow 1998] — see Fig. 4. TC populations were considered there as an alien factor migrating to western Małopolska from north-western Poland. The final phases of development of Trzciniec groups were contemporaneous there with the early LC. The lack of radiocarbon datings for the LC in the drainage of the Upper Vistula prevents us from precisely determining the origins of this group in the area in question. On the basis of other data (typology, stratigraphy, settlement geography analysis etc.) it is assumed that it originated at the end of BD period [Górski, The Foundations..., in this volume]. In view of this, the "Trzciniec-Lusatian" transformation may have lasted here about 100-150 years [Górski 1994; 1997; 1998; Górski, The Questions..., in this volume].

Summing up, it should be stressed that radiocarbon dates from the Vistula drainage confirm the occurrence of the stages of co-existence (or synchronous existence) of TCC societies both with Early Bronze populations (IC in the north of Poland, MiC in the south) and LC populations (in the north of Poland) — Fig. 4.

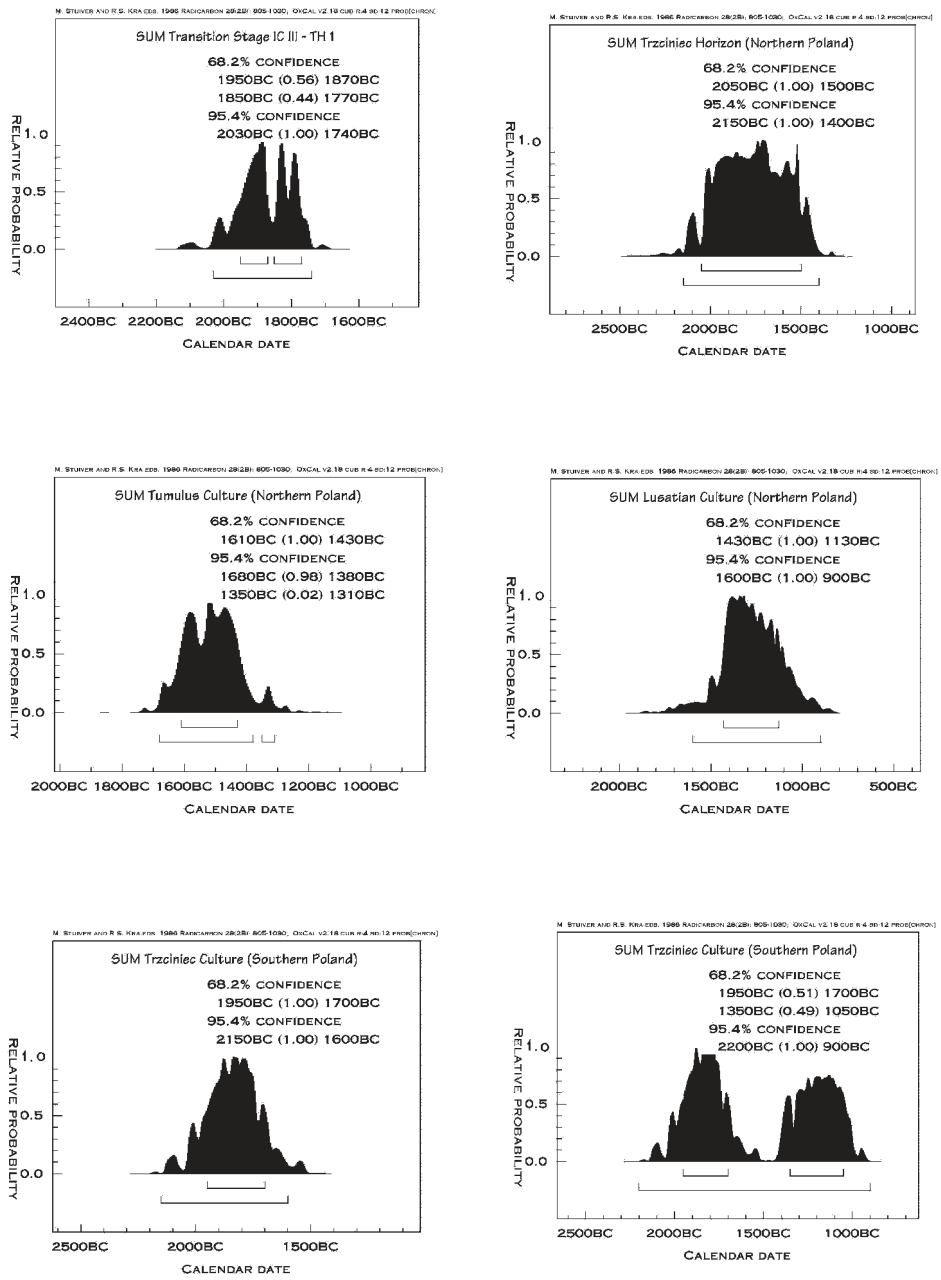

Fig. 3. The sum of probablity distribution for: 3a-transition stage from Iwno Culture to Trzciniec Horizon; 3b-Trzciniec Horizon (Northern Poland); 3c-Tumulus Culture (Northern Poland); 3d-Lusatian Culture (Northern Poland); 3e-Trzciniec Culture (Southern Poland; excluding Dwikozy); 3f-Trzciniec Culture (Southern Poland; including Dwikozy).

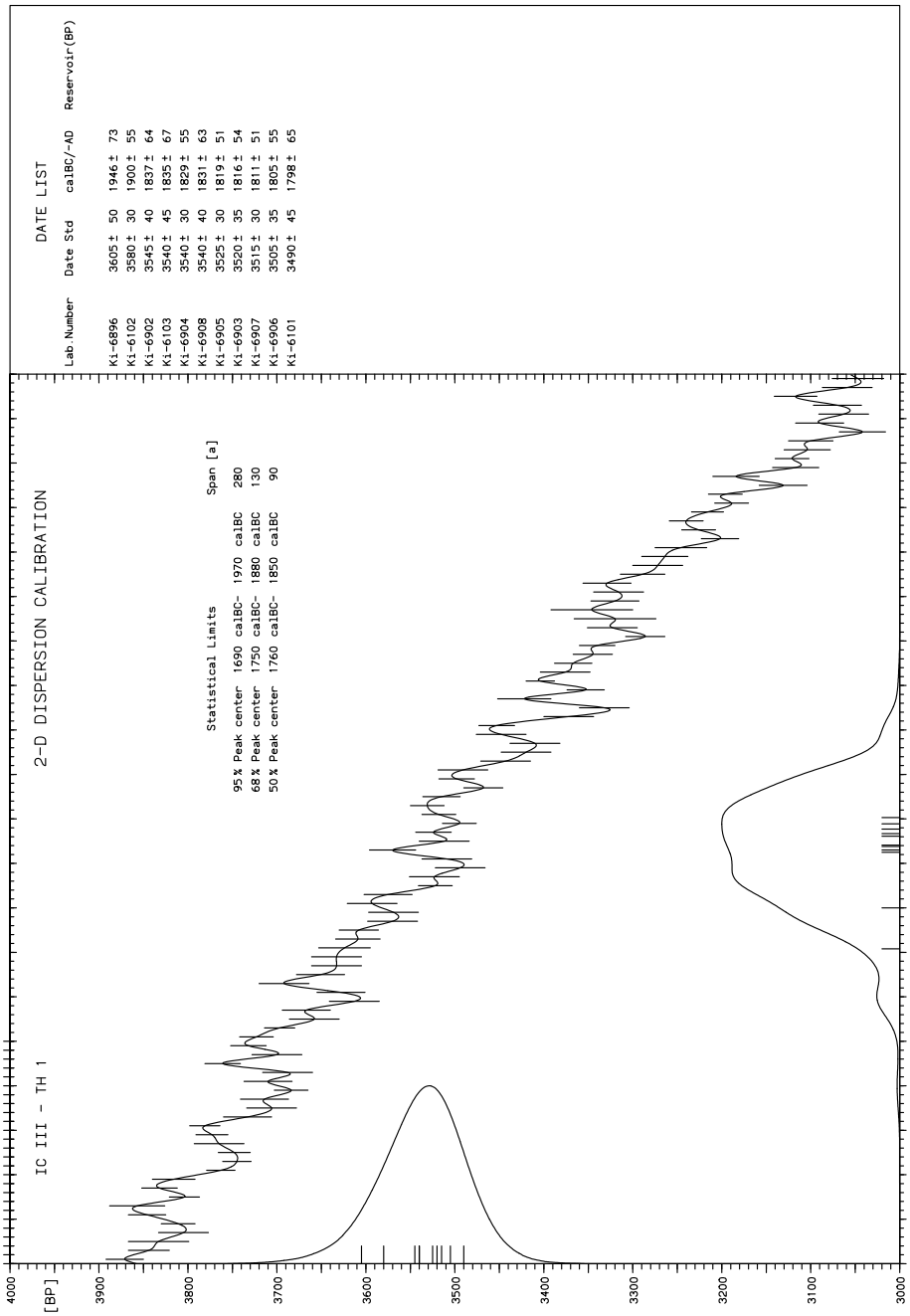

Fig. 4a. The sum of probability distribution for transition stage from Iwno Culture to Trzciniec Horizon.

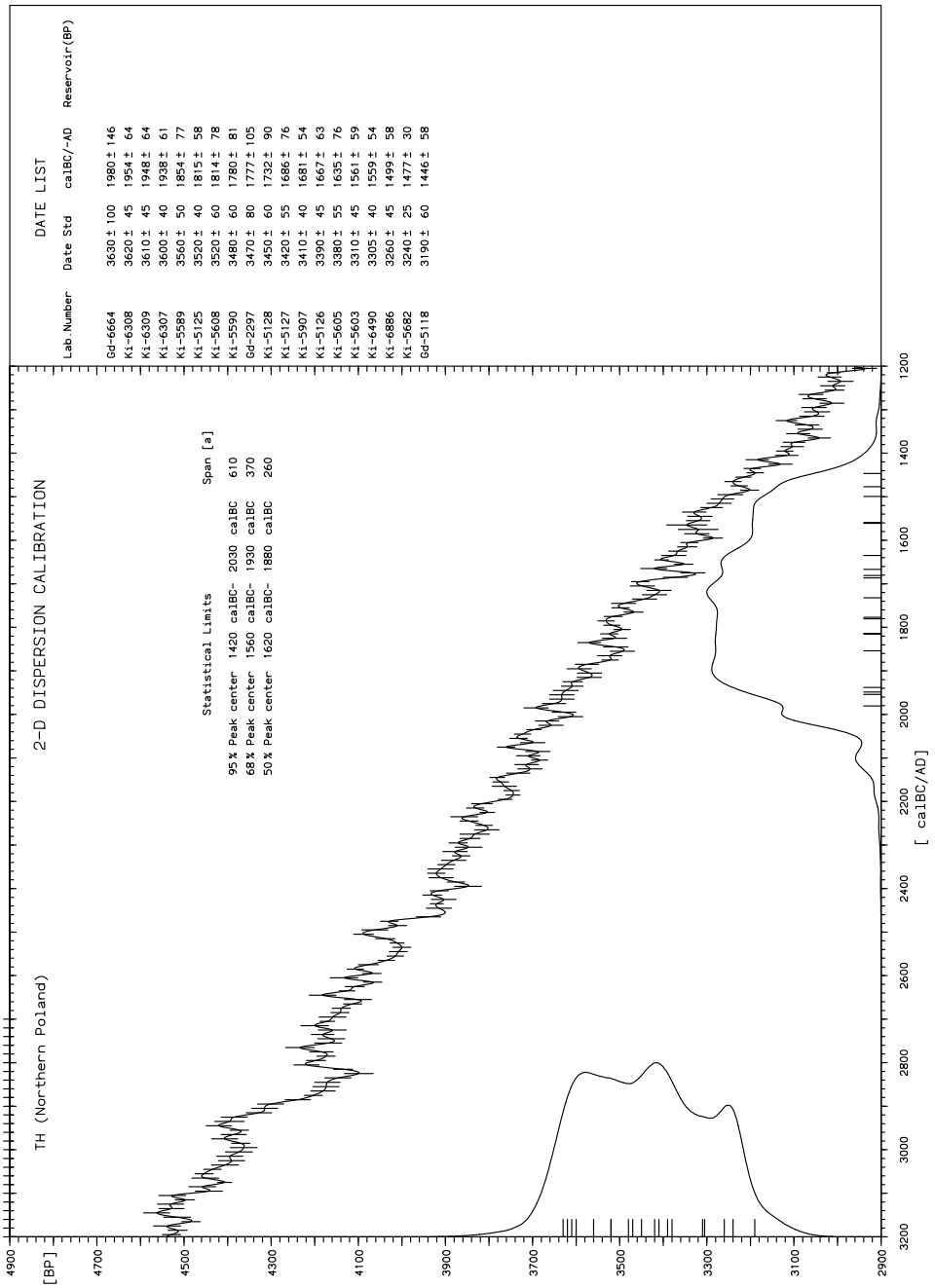

Fig. 4b. The sum of probability distribution for Trzciniec Horizon (Northern Poland).

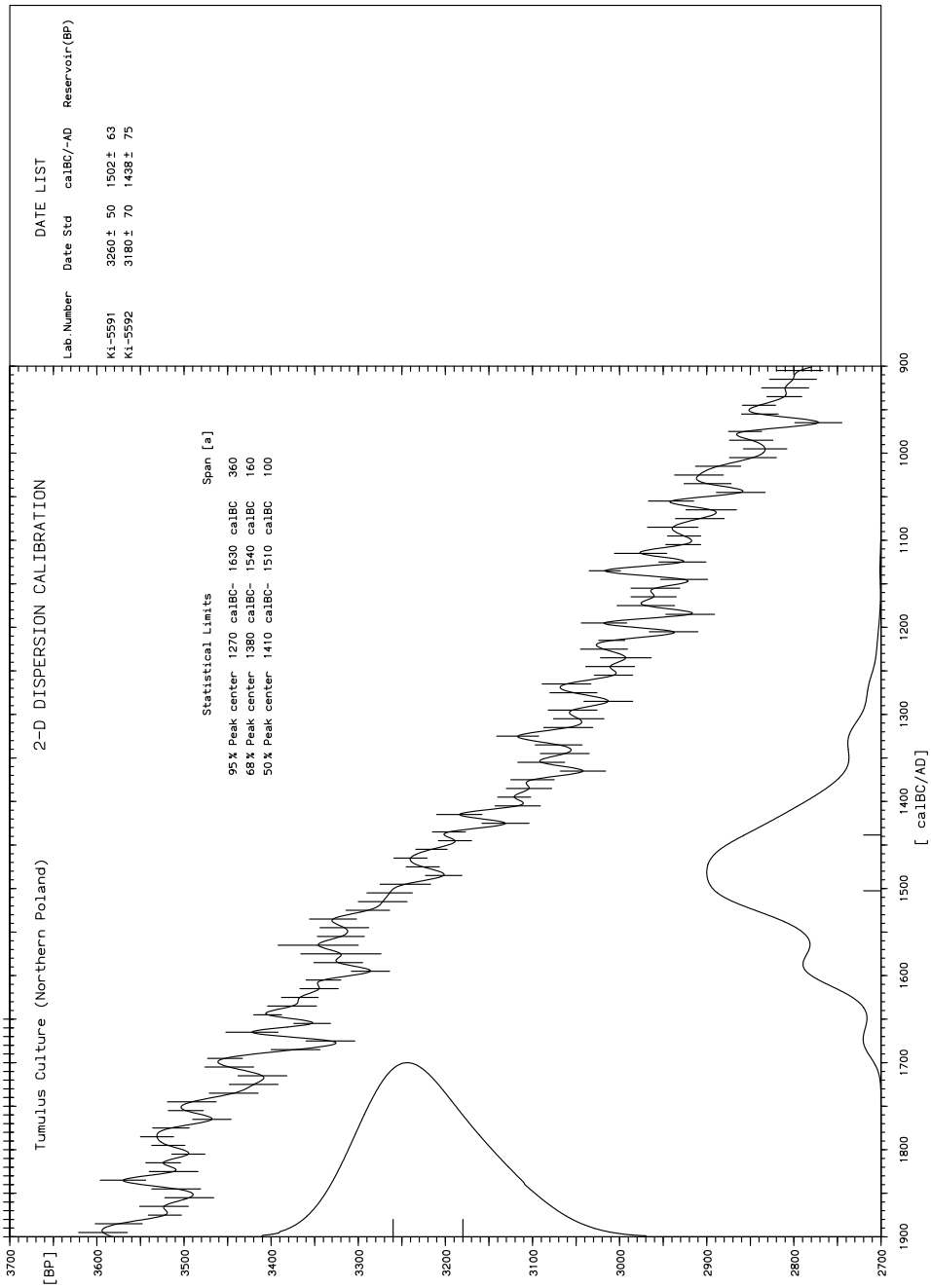

Fig. 4c. The sum of probability distribution for Tumulus Culture (Northern Poland).

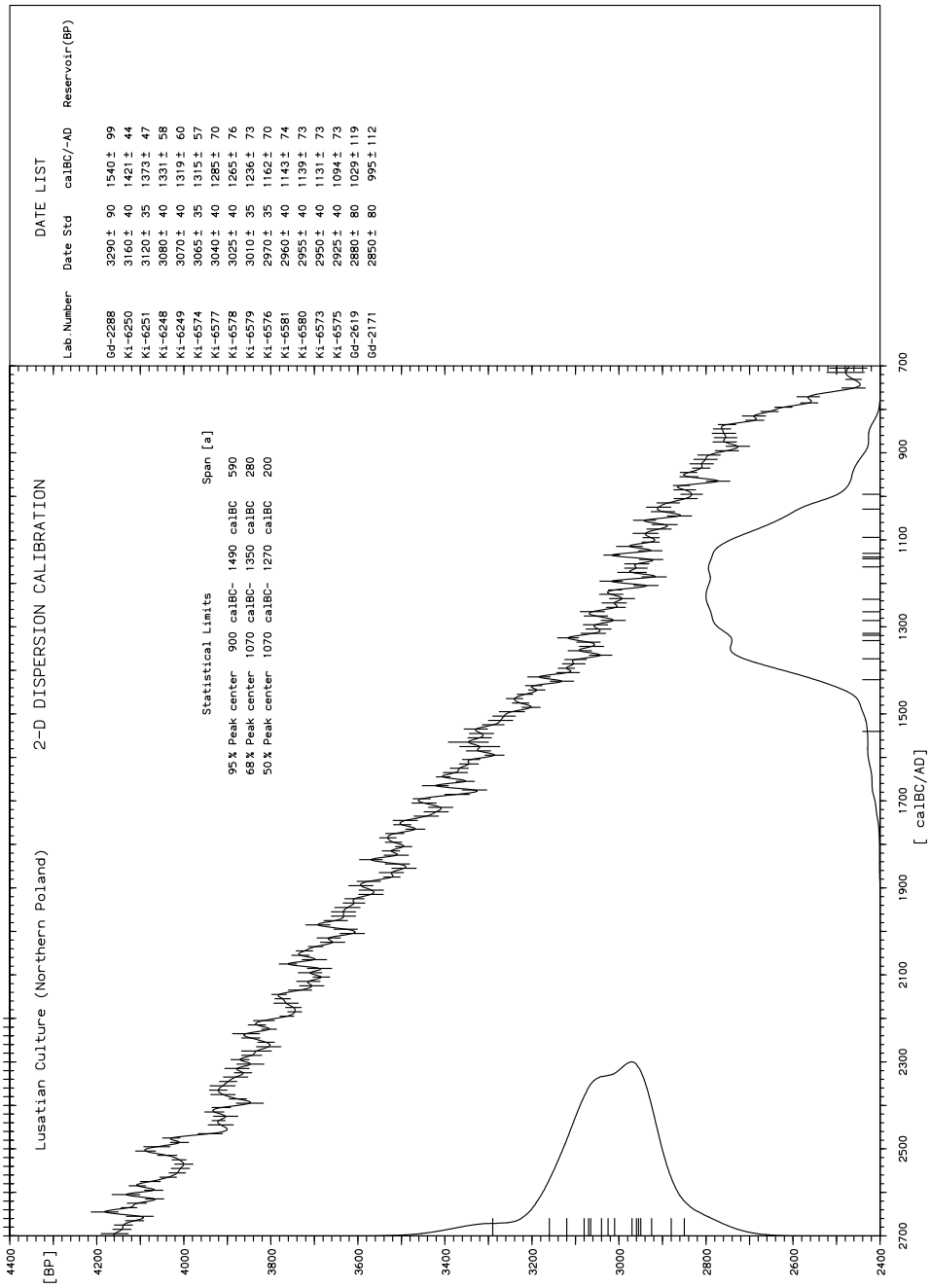

Fig. 4d. The sum of probability distribution for „the Bronze Age" Lusatian Culture (Northern Poland).

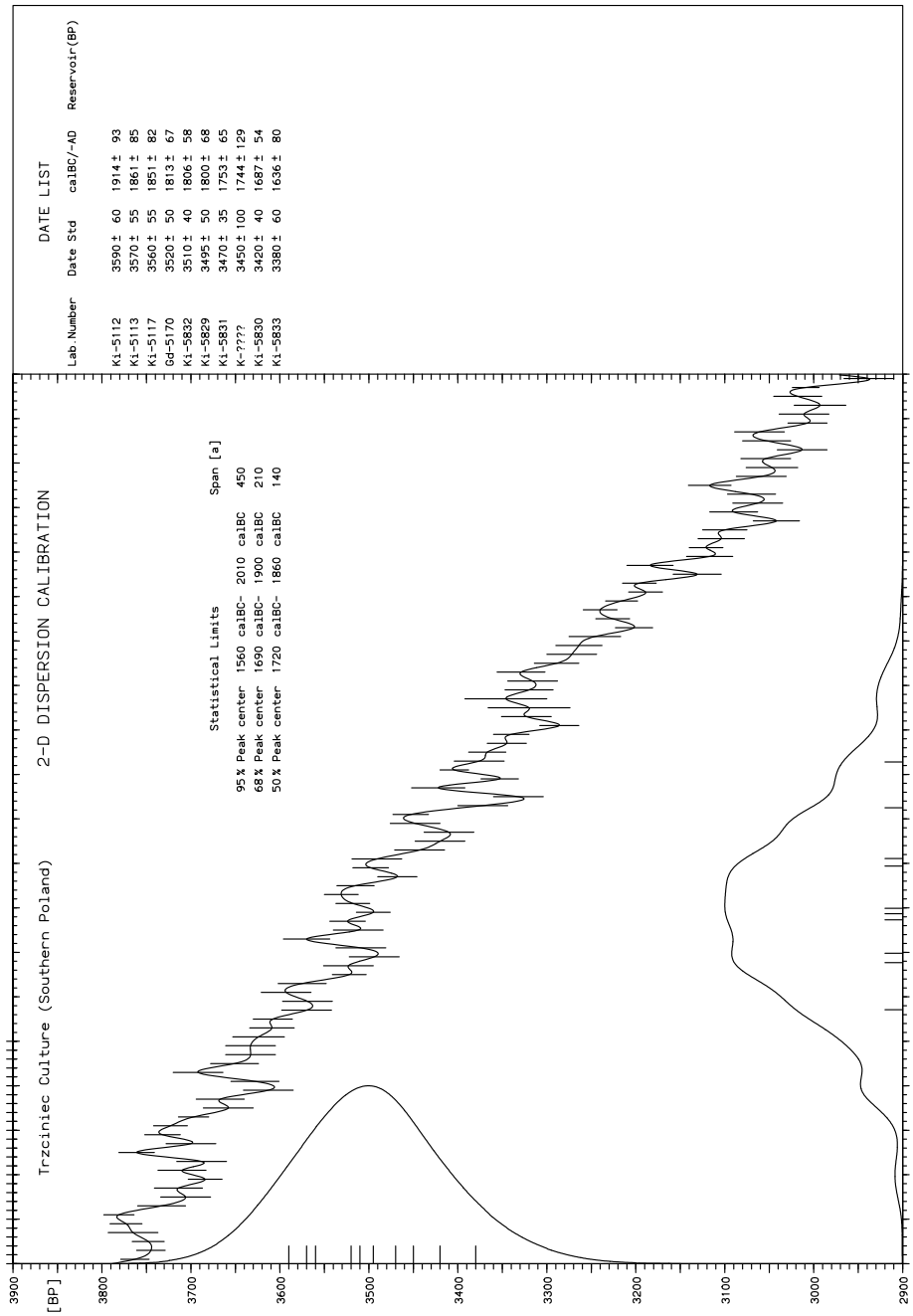

Fig. 4e. The sum of probability distribution for Trzciniec Culture (Southern Poland; excluding Dwikozy).

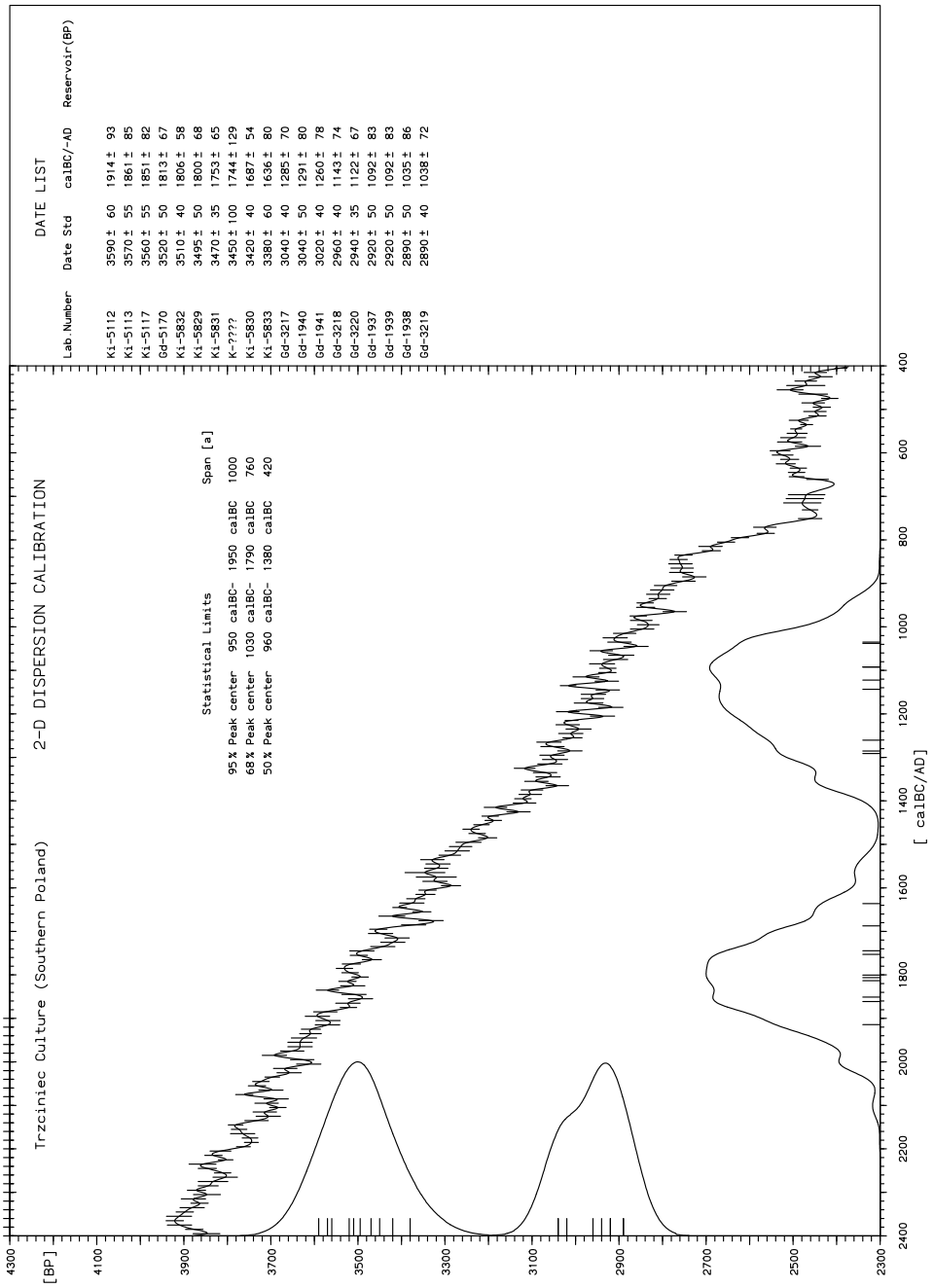

Fig. 4f. The sum of probability distribution for Trzciniec Culture (Southern Poland; including Dwikozy).

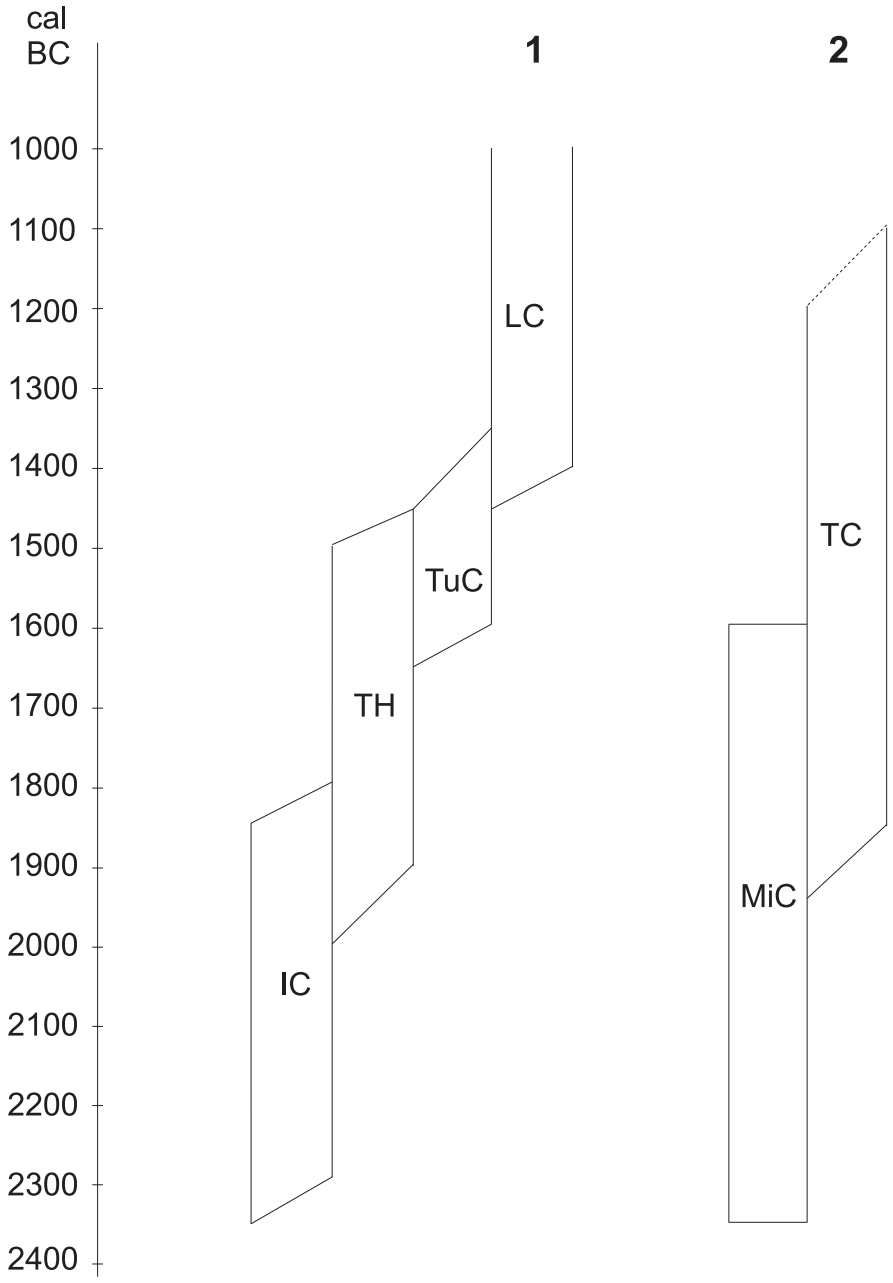

Fig. 5. Generalized version of the cultural and chronological systematization for the Vistula Drainage-Basin (on the basis of radiocarbon datings). 1-Lower Vistula Drainage: IC-Iwno Culture; TH-Trzciniec Horizon; Tu-Tumulus Culture; LC-Lusatian Culture. 2-Upper Vistula Drainage: MiC-Mierzanowice Culture; TC-Trzciniec Culture.

This seems to be yet another argument to reject the *cultural brick theory* (Clarke 1968), the specter of which has haunted the Central European literature until recently. The ^{14}C chronology confirms the fact that TCC groups appeared on the Lower and Middle Vistula earlier than in its Upper Drainage (Fig. 5). The origins of the Trzciniec phenomenon were connected with the north whence in relatively short time TCC societies migrated to the south, to the old-highland region [Czebreszuk 1996; 1998; Czebreszuk, "Trzciniec"..., in this volume; Kadrow, Górski 1996; Górski 1998; Górski, The Foundations..., in this volume; Makarowicz 1998b].

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THE CENTRAL EUROPEAN DIMENSION OF THE DECLINE OF THE EARLY BRONZE AGE CIVILIZATION. THE TRZCINIEC SOCIO-CULTURAL SYSTEM AT THE OUTSET OF ITS CAREER

I have raised the issue of the necessity to investigate the spreading of the Trzciniec Culture in the western zone of its range in the context of the decline of the Early Bronze Age civilization already in several publications [Kadrow 1995; Górski, Kadrow 1996]. In this paper I shall attempt to reconstruct the fall of the "Early Bronze world". The fall gave way to the development of cultures where the socio-cultural process unfolded along new principles. One of them was the Trzciniec Culture.

1. AN OUTLINE OF THE HISTORY OF DEVELOPMENT OF THE CULTURAL UNITS OF THE EARLY BRONZE AGE IN EUROPE

In his latest approach, Jan Machnik [Kozłowski, Machnik 1996] places the origins of the Bronze Age in Europe in the drainage of the Middle and Lower Danube in the time corresponding to the decline of the Vučedol Culture. Under the impact of Aegean-Anatolian influences — around 2500-2400 BC — several cultures came into being including Somogyvár-Vinkovci, Makó-Kosihy-Čaka, Schneckenberg-Glina III. They were all characterized by a significant degree of similarity of material culture traits. It should be stressed, however, that these populations knew only the technology of making copper (possibly gold) goods which were produced on a rather small scale.

A comparison of the ranges of such Decline Neolithic cultures as Corded Ware and Bell Beakers with the places where sources of copper and tin were available gives a rough estimate of the borders of the secondary cradle of the European Early Bronze Age civilization [Shennan 1986] or European Early Bronze Age civilization in the strict sense of the term and its immediate "parents". The cradle could have

been located in southern and central Germany, the Czech Republic and the adjacent portion of Austria. The entirely new cultural quality that was being born there took form, to some degree, under the impact of the said Middle Danube cultural center. At the turn of the 3rd millennium BC, there developed such cultures as Straubing, Adlerberg, Unterwölbling and Únětice (Fig. 1). Only the first two of the above listed cultures had a developed inventory of metal artifacts, mainly ornaments, already around 2200 BC. Somewhat later, about 2000 BC, metallurgy developed in the remaining two cultures, too. It is from that moment that bronze artifacts began to appear in mass quantities. Besides already known small wire and sheet metal products, casting of larger objects, e.g. raised-edge axes, began on a large scale (Fig. 2).

This latter stage of the Early Bronze Age is related to the classical phase of the Únětice Culture. Paradoxically enough, the oldest "classical" Únětice bronze objects appeared in northern (Melz) and central (Helmsdorf and Leubingen) Germany and in Wielkopolska (Łęki Małe). Admittedly, these assemblages do contain elements from the Carpathian Basin (gold *Lockenring* in Helmsdorf) [cf. Größler 1907] and Transylvania (Sanţ Dragomireşti-type ice-axe in Melz) [cf. Rassmann, Schoknecht 1997], but they no longer decide on the character of the assemblages. Having a peculiar trait of their own, they are representatives of a new and singular civilizational center that came into being in the northern periphery of the emerging Únětice Cultural Circle about 2000 BC (Fig. 1:2). For the next 200 years, the Circle was in its classical phase a dominant cultural factor in broadly understood Central Europe. It also exerted a strong influence on the development of cultural groups in southern England (Wessex), southern Scandinavia (beginnings of the Nordic Circle) and in Spain (El Argar Culture). Emulations or even imports of Únětice daggers are found in Greece and Anatolia, too.

In the period under discussion, areas of Central-Western Europe, despite a division into three fundamentally different provinces of burial rituals (*Blechkreiskulturen*, Únětice and Nordic), are strongly unified in that they are saturated with huge amounts of diverse metal goods. So numerous an appearance of such goods was a response to a great demand for prestige objects by local communities, which is an indirect indication of advanced processes of their spontaneous social differentiation or ranking [Larsson 1986; Vandkilde 1996]. In addition, these goods took part in ideology materialization processes of societies undergoing transformations [Larsson 1986]. Equally important was the fact that many of these goods (necklaces with eyes, raised-edge axes) served as object money? [Shennan 1993; Sommerfeld 1994]. It has to be made absolutely clear that this "money" did not function then as a measure of market value contrary to the cultures of the contemporaneous Middle East [cf. Klengel 1995]. It was rather a measure of "transactions" entered into with a deity [Hänsel 1997]. Analogies to the Mycenaean world suggest that the Early Bronze Age societies of Central-Western Europe were still completely immersed in various

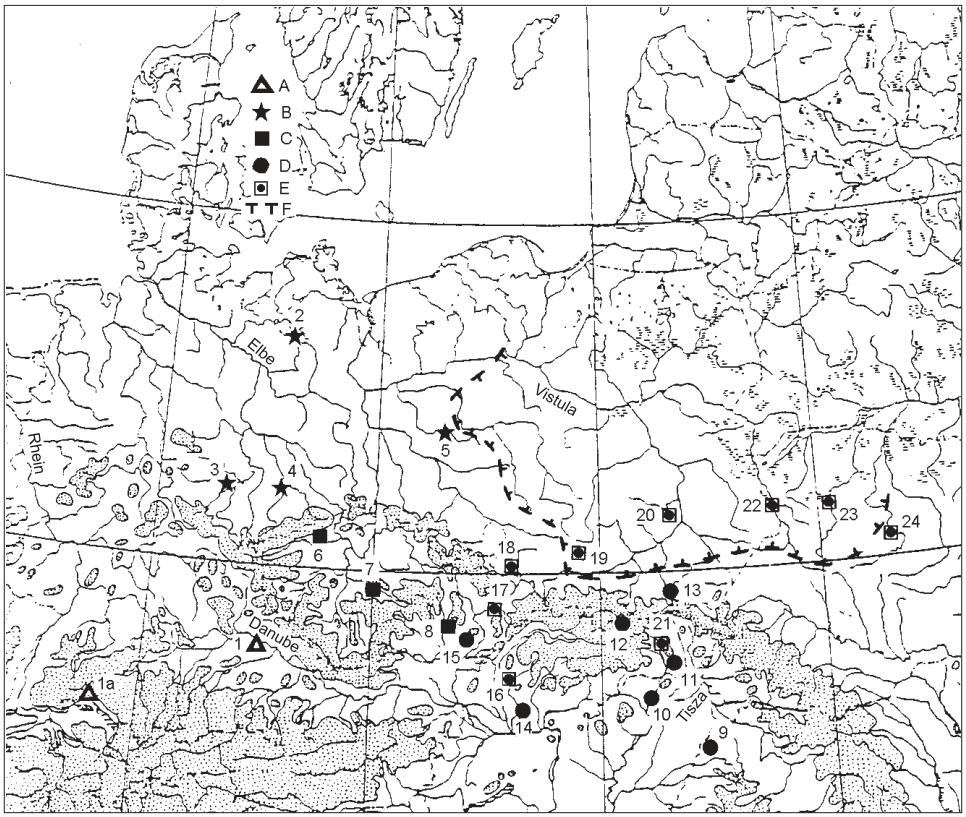

Fig. 1. Map of selected Early Bronze Age sites in Central Europe. A - *Blechkreiskulturen* sites, B - sites of classic phase of the Únětice Culture in the northern zone, C - sites of classic phase of the Únětice Culture in the southern zone, D - Füzesabony/Otomani-Mad'arovce-Věteřov Cultural Circle sites, E - Epi-Corded Carpathian Cultural Circle sites, F - western and southern limits of dense settlement of the Trzciniec Culture; 1 - Straubing, 1a - Singen, 2 - Melz, 3 - Leubingen, 4 - Helmsdorf, 5 - Łęki Małe, 6 - Březno, 7 - Polepy, 8 - Blučina, 9 - Otomani, 10 - Füzesabony, 11 - Nižná Myšl'a 12 - Spišsky Štvrtok, 13 - Trzcinica, 14 - Mad'arovce, 15 - Věteřov, 16 - Veselé, 17 - Holešov, 18 - Kietrz, 19 - Iwanowice, 20 - Mierzanowice, 21 - Košice, 22 - Strzyżów, 23 - Gródek, 24 - Zdołbica.

types of barter systems. An archaeologically perceivable manifestation of the high complexity of social life in the areas in question was the custom of hoarding.

The Central European civilization type of the Early Bronze Age was a local phenomenon without any counterparts in other parts of the continent and the adjacent portions of the Old World. Let me remind the reader that the magnificent culture of ancient Egypt which used a script, built monumental architecture, organized a vast territorial state, developed stable forms of power of a complex structure and — what is most important — owing to the strength and attractiveness of its

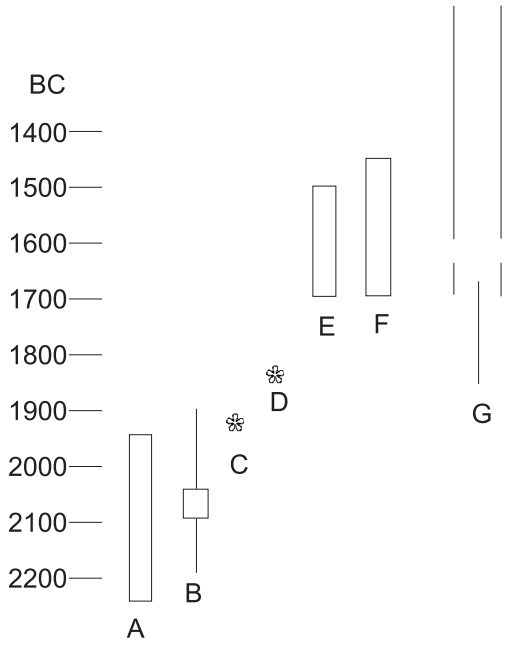

Fig. 2. Synchronization of selected cultural phenomena based on radiocarbon and dendrochronological dating (in part following Furmánek, Veliačik, Vladár 1991; Krause 1996; Rassmann 1996): A - Singen, B - Melz, C- Leubingen, D - Helmsdorf, E - Nižná Myšľa, F - Blučina, Budkovice, Böheimkirchen, Guttenbrunn, Waidendorf, G - beginnings of the Trzciniec Culture and the period when it became a dominant cultural phenomenon in eastern and central Poland.

civilization developed over the period of more than two thousand years practically made do without bronze metallurgy. Also highly developed territorial states in the Middle East, which, to be sure, knew the technology of smelting bronze already earlier, never developed production of goods made of this alloy on so large a scale as did the societies of the western part of Central Europe.

A specific characteristic of the Central-Western European civilization is then a great advance of processes of internal differentiation of societies in the environment of technologically advanced metallurgy and a developed long-range exchange. This is evidenced by an incredibly heavy demand for symbols of prestige in the form of metal objects. The basic type of social ties must have continued to be blood ties (e.g. clans) with underdeveloped or non-existent territorial or political structures [cf. Harding 1984; Rowlands 1984; Sherratt 1984]. Unlike the Middle Eastern Bronze Age, the social differentiation was not accompanied by elaborate structures of territorial states, urbanization or complex forms of authority. Apart from prestige metal objects, there were not any other means of regulating social life as, for instance, state institutions, coercion of authority, laid down laws of succession, legal

systems (case of Hammurabi), script used to preserve tradition, etc. Consequently, the socio-cultural structures in that area were not permanent while cultural changes did not take the form of a continuous accumulation of experience from the past.

During the first four centuries of the Bronze Age there emerged as many as three independent centers of cultural and technological innovations. The first covered the areas of the Upper Danube (2200-2050 BC), the second stretched over the territory of the northern ranges of the Únětice Culture (2050-1900 BC) while the third comprised Bohemia and Moravia (1900-1750 BC. The last mentioned center was characterized by an unusually high concentration of hoards including so-called "object" money [Gerloff 1993; Innerhofer 1997].

The fourth center, developing in the northeastern part of the Carpathian Basin in 1750-1400 BC as a complex of Füzesabony, Mad'arovce and Věteřov Cultures (Fig. 1), constitutes a new quality in the hitherto civilizational arrangement of the Early Bronze Age. It developed in close contact with the Aegean world. Beginnings of more permanent political and territorial structures, proto-cities (Barca, Otomani) [cf. Bintliff 1984], monumental stone architecture (Spišský Štvrtok), relatively numerous gold objects next to rich bronze production and numerous stylistic elements testify to close similarities to the Mycenaean Culture [Vladár 1973]. It can be suspected that, together with those material culture components, the world known from the oldest strata of Homer's works made its debut in the Carpathian Basin. Next to blood ties that continued to play an important role as a backbone of social life there appeared strong territorial ties as well as loyalty to the dynasty. It is exactly from Homer that we know of the latter characteristic and the cult of heroes whose feats are remembered in songs [Hauser 1974; Hammond 1977; Luce 1987].

The fifth civilizational center, the beginnings of which should be dated as contemporaneous with the Füzesabony, Mad'arovce and Věteřov complex, was the circle of Nordic cultures [Vandkilde 1996]. Despite noticeable influences from the Carpathian Basin it had a very singular character.

Next to the above mentioned cultural centers, the development of Epi-Corded, Carpathian Cultural Circle (ECCC) can be observed [cf. Machnik 1972]. Reaching back at least to 2300 BC, its beginnings precede the mature cultures of the Bronze Age. In its emergence a dominant role was played by the Corded Ware Culture and to some degree the Bell Beaker Culture with persistent southeastern inspirations. Unlike the Únětice circle and *Blechkreiskulturen*, which developed under a predominant influence of the Bell Beaker Culture (BBC), ECCC's image (as the name itself shows) was chiefly formed by the Corded Ware Culture [Kadrow 1995].

A strong territorial behavior of Mierzanowice Culture populations, ECCC's major component, was manifested by a stable network of large and long-lasting head settlements. Extreme consistency was also exhibited in observing strict rules of funerary rites. With the exception of the late phase, the dominating rule of social life organization was based on sex following "Late Neolithic, Corded" patterns. It

was only in local groups of the late phase (e.g. Sambor and Szarbia) that ranking, or spontaneous internal differentiation of societies, came to the fore which had already prevailed elsewhere since the domination of the BBC. A low number of metal objects, practically no bronze goods, with few other types of artifacts which could be taken for prestige objects testify to a very low intensity, as compared to other civilizational centers, of social differentiation processes within the Mierzanowice Culture [Kadrow 1995].

Worth noticing is the fact of independent cultural development of the discussed circle in a long time perspective. However, it is not clear whether it was an effect of not participating in the long-range, intercultural exchange of mainly metal objects. It may have been quite the opposite, namely, the isolationism of human groups of this culture was too difficult an obstacle to overcome for possible initiators of a long-range exchange. Examples of quite a few imitations of metal prestige objects (popular in civilizational centers) which were made by Mierzanowice Culture populations from other raw-materials, mainly stone (flint axes, sickles, spearheads or daggers, etc.), suggest yet another hypothesis. The Mierzanowice culture populations, by the very fact of imitating them, manifested their interest in prestige objects and a great demand for them. Consequently, the absence of metal objects made of those raw-materials that were exploited in Bohemia, Central Germany or on the Upper Danube from their territory can signify a deliberate elimination of these populations from the exchange system of metal goods by their producers and users [Kadrow 1997].

2. THE BEGINNINGS OF THE TRZCINIEC CULTURE

The vast expanses of land to the east and north of the above outlined cultural complexes were occupied by groups identified by a general name of sub-Neolithic, forest or East-European at the onset of the Bronze Age [Kośko 1996]. In the 3rd millennium BC, the dominant among them was the Comb-like and Stroked Pottery Culture represented by Linin-type pottery [Wiślański 1979]. The culture's settlement points concentrated in Mazowsze [Kośko 1996] while single, dispersed settlements reached as far as the mouth of the Oder in the west and the Middle Dnieper in the east. At the decline of the Neolithic, in this area and in the territories lying farther west, i.e. in Denmark, northern Germany, at the mouth of the Rhine or even in England certain elements appeared that connect together these vast territories. What is meant here are sinuous-profile pots decorated with the so-called "barbed wire" ornament otherwise known as the ornament of "a cord wound around a flint

flake" [Gardawski 1969]. This may be an archaeologically perceivable trace of the slow process of peer polity interaction [cf. Renfrew 1986] across the vast expanses of the European Plain. The early dating of elements bearing out integration processes, consequently leading to the appearance of the Trzciniec Culture in the form of sinuous pots (*Riesenbecher*) and corresponding to the beginnings of the Early Bronze Age [cf. Czebreszuk, "Trzciniec" ..., in this volume and 1998a; Makarowicz 1998], indicates the presence of populations which remained indifferent to the cultural offer of the nascent European Early Bronze civilization. The world of sub-Neolithic populations, slowly developing in the northern and north-eastern fringes of the Early Bronze oecumene, drew mainly on its own cultural traditions ignoring socio--organizational achievements and patterns of the Nordic, Únětice and Epi-Corded Cultural Circles.

While it can be accepted that certain stylistic inspirations (sinuous pot form), which later had a decisive impact on the Trzciniec Culture's ceramic production, came from Danish and North German communities at the decline of the Single Grave Culture and later also from Iwno centers (e.g. many significant ornamentation patterns), it seems wrong to restrict the area of origin of the Trzciniec Culture only to the north-western direction with respect to its location. The apparent coincidence of the ranges of the Comb-like and Stroked Pottery and Trzciniec Cultures [Kośko 1996, Fig. 2] suggests that the latter may have also crystallized in the environment of the former. The concentration of sub-Neolithic sites in Mazowsze and the characteristics of Trzciniec Culture pottery found there point to this region as yet another important center (next to Kujawy) of the origin of this culture [Czebreszuk 1996].

3. THE REASONS OF THE FALL OF THE CENTRAL EUROPEAN EARLY BRONZE CIVILIZATION

Kristian Kristiansen [1994] believed that the essence of civilizational and cultural changes in the Bronze Age and in the earlier periods of the Iron Age was the recurrent, rhythmical domination of two successive socio-cultural systems: (a) an agricultural one, settled (frequently with defensive settlements), with large and moderately egalitarian cemeteries and (b) animal-raising one, more mobile, with conspicuous graves of distinguished individuals. These socio-cultural systems were not only interrelated in time (which was mentioned above), but also in space. Type 'a' systems were typical of central areas while type 'b' ones of peripheries. A dynamic picture of relations between these systems — accounting for time and space relations — includes three basic stages. The periods of prosperity (stage I) were

characterized by stable relations between central areas and peripheries. In stage II the civilizational center vanished with its place being taken by the socio-cultural system typical of the periphery. In stage III a new cultural center was formed. In this process an important role was played by the impact from the civilizationally advanced regions of the Middle East and the eastern Mediterranean [Kristiansen 1994]. The outlined mechanism is very well illustrated by the process of superceding the cultures of the Early Bronze civilization by those of the Tumulus Circle.

In the case under discussion here, i.e. the question of mutual interactions of the central areas of the Central European Early Bronze civilization and the nascent Trzciniec Culture, another structural element should be introduced. What is meant here are socio-cultural systems that did not participate in the vigorous exchange of ideas, goods or population movements along the center-periphery line. From the point of view of the dynamics of change, the adjacent territories of sub-Neolithic cultures neighboring the area in the north-east remained completely dormant. For this reason they cannot be considered a periphery, but they should be defined rather as marginal zones in respect of the center. Only to a very low degree and superficially were the marginal zones affected by the influences from the ECCC, which may be evidenced by the assemblage C pottery of the Linin-type [Kempisty 1973; Wiślański 1979]. Material evidence of mutual permeation of ideas between the earliest stage of the Trzciniec Culture and the groups of the late phase of the Mierzanowice Culture are also extremely scarce [Górski, Kadrow 1996]. The opening of the Trzciniec Culture to extraneous influences, for instance pre-Lusatian metallurgical goods and pottery patterns characteristic of the Füzesabony and Mad'arovce Cultures, took place when the domination of the Early Bronze cultures was broken north of the Carpathians.

Where are the sources then of the crisis of Early Bronze cultures which made it possible for Trzciniec Culture societies to enter the stage of history? Fernand Braudel proved a thesis that all manifestations of human life are subject to change oscillating rhythmically between periods of prosperity and poverty which alternate without an end [Braudel 1992]. Even the longest periods of prosperity end. This also applies to the Central European Early Bronze civilization.

Seemingly we deal here with only one "Early Bronze" development cycle. In fact, as it has been already mentioned, we can follow several microcycles of development within cultures that are traditionally identified as Early Bronze. In each of such cycles, the significance of individual categories of prestige objects must have inflated, which, in turn, made it necessary to search for ever newer objects made of ever more precious materials and ever more elaborately decorated. Such developments followed a rule known from the societies in which competition and rivalry among individuals and clans give rise to a demand for prestige. Good illustrations of the rule are provided in monographs of the Bronze Age in Scandinavia [Larsson 1986; Vandkilde 1996]. In Sweden, the symbolic power of axes from the 1st period

of the Bronze Age is superseded in the 2nd period by the power of spearheads and swords only to yield in this respect to rock art in some areas in the 3rd period of this age. In Denmark, the sequence of the most important prestige objects was opened by flint daggers and flat copper axes and rare ornaments made of gold sheets in the beginnings of the late Neolithic (LN I). Towards the end of the Late Neolithic (LN II), the domination of axes with raised edges, tanged daggers, gold *noppenrings* and heavy bracelet- and armlet-like ornaments of cast bronze is clearly visible. At the dawn of the Danish Bronze Age (B IA), spearheads come to the fore, whereas in the next period (B IB), the role of a symbol of the highest prestige is taken over by swords. In that time spearheads are very elaborately decorated.

In the civilizational centers the process of devaluation of individual prestige objects was accompanied by significant changes in the social structure. Rivalry among clans, finding expression in hoarding, yielded to competition among individuals, which, in turn, was manifested by placing prestige objects in graves [Vandkilde 1996]. An important role in the functioning of the Central European Early Bronze civilization was played by the control of rich and easily accessible deposits of copper ore and the closely related control of the technology of obtaining pure metal from the ore [Shennan 1993]. The simultaneous occurrence of changes on these different planes with the decisive culture-making role being taken over in Central Europe by the Füzesabony Culture (of rather Aegean than Central European character) brought about the downfall of the structures of the Únětice Culture in its classical phase already prior to 1700 BC. The downfall of this center must have caused — in accordance with Braudel's and Wallerstein's theories — serious changes in the peripheries. Conditions conducive to the spreading of the cultures of the Tumulus Circle appeared. The "Aegeanized" Füzesabony-Mad'arovce center, because of too great a socio-organizational distance, could not stimulate the continued existence of Early Bronze structures north of the Carpathians.

The influence exerted on and inspiration provided for the origin and development of the Trzciniec Culture by the world of the European Early Bronze civilization should be deemed insignificant. The Trzciniec Culture was born independently of and in a certain way in spite of the then dominating civilizational trends and cultures. As long as they existed, the Trzciniec Culture survived in a rudimentary form on the margin of the civilized world. Only the downfall of the Early Bronze cultures provided space and favorable conditions for the Trzciniec Culture to fully develop and become an important stage in the socio-cultural process in the vast territories of the Vistula and Dnieper drainages.

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"TRZCINIEC". AN ALTERNATIVE VIEW

INTRODUCTORY REMARKS

A traditional definition of archaeological culture refers to taxonomic characteristics of material artifacts. Specifically, it is based on the recurrence of a set of traits in a given territory in a precisely defined period of time [cf. a review of definitions in Pałubicka, Tabaczyński 1986:58].

The definition of the "Trzciniec phenomenon", the widely accepted model of which came into being under a profound influence of Aleksander Gardawski [1959, cf. general discussion: Gardawski 1959:10], is close to the cultural brick theory of David L. Clarke [Clarke 1968:246ff.]. Browsing through literature, one may conclude that the "Trzciniec brick" is made up of the following traits: in technology — an admixture of coarse broken stone, in morphology — a large, sinuous-profile and slender pot with a relatively small bottom, in micromorphology — slanted, widened and flared rims and in ornamentation — usually single relief strips where the neck joins the belly. It is also commonly accepted that the traits listed above are the most "Trzciniec-like" if they occur simultaneously on the same vessel. A large, sinuous--profile pot with a relatively small bottom and a slanted, flared and widened rim, decorated with a single relief strip where the neck meets the belly and made of clay containing a high amount of coarse broken stone is then **an ideal "Trzciniec" type**. Actually, the only "Trzciniec" ideal type.

Published some time ago, the research done in this area by Wojciech Blajer [1987] was highly instructive. He had carried out considerable work reviewing "Trzciniec" source materials and presented his results in the form of cartograms illustrating the dispersion of funerary rite traits [Blajer 1987:map 3] and selected traits of pottery and metal goods [Blajer 1987:map 4]. In addition, he delineated the range of pottery decorated with relief strips. Wojciech Blajer, however, did not draw any conclusions from his own findings whether it was justified to establish a separate

unit called the Trzciniec Culture. It has to be stressed here that the "ammunition" that he collected in his work would be, indeed, of great caliber. The conclusions following from his work are as follows:
Firstly, the only taxonomic indicator of the "Trzciniec" territory is pottery decorated with a relief strip.
Secondly, other pottery traits, flint goods and extremely rare metal goods [cf. recently Blajer 1998], settlement organization and funerary rites make up a true mosaic in the "Trzciniec" oecumene. This mosaic is better suited to identify regional differences than to search for a uniform system of supraregional links.

A question thus arises which I asked already in 1996 [Czebreszuk 1996:155], namely, how it is possible that an idea not meeting basic requirements set by classic archaeological taxonomy with respect to the category of archaeological culture has been taken to be exactly that for so many years and has taken root in all synthetic works ? [e.g. Sherratt 1994:247].

Hence it is indisputable that abandoning the cultural brick theory in defining the Trzciniec Culture is absolutely necessary. However, it remains to be discussed how deep and extensive the suggested reform should be.

On may part, I suggest to look at the "Trzciniec phenomenon" from a broad time and space perspective. This view opposes Aleksander Gardawski's model, especially with respect to the broadly understood archaeological taxonomy closely related to an entirely new methodological framework [Czebreszuk 1996; 1998a; Makarowicz 1998b]. The Trzciniec issue may be divided into two fundamental levels: first of **interregional similarities** and the second of **regional peculiarities**.

A. INTERREGIONAL DIMENSION OF TRZCINIEC

The radical taxonomic assessment, expressed above, should not be taken to mean a rejection of the whole legacy relating to the "Trzciniec phenomenon". It cannot be denied that there exists a small set of traits that occurs in various mutual arrangements and in regionally different contexts in the whole area considered as "Trzciniec's". Among them are forms of a large sinuous-profile pot with a relatively small bottom, frequently (but not always) decorated only with a relief strip where the neck meets the belly. Less frequently among these traits are slanted and widened rims and a peculiar technology of vessel manufacture (based on adding coarse broken stone).

Worth giving a thought is the regional variety of contexts in which the said traits occur. Already Aleksander Gardawski himself stressed this fact which, in his

opinion, usually reflected the significance of chronologically older groups [Gardawski 1959:111-129]. Credit goes to Wojciech Blajer for the observation that such local peculiarities include so fundamental a cultural trait as funerary rites [Blajer 1987]. We must be dealing with a similar situation in the case of settlement systems and ways of finding subsistence; cf. two examples: loess of Małopolska [Górski, Kadrow 1996] and sand of Kujawy [Makarowicz 1998b].

A.1. TRZCINIEC PACKAGE — INTERPRETATION ALTERNATIVE

I would like to suggest now to call the set of interregionally "Trzciniec" traits a package (specifically Trzciniec package) by analogy to the concept of Beaker package known from the literature which was proposed by Colin Burgess in 1976 to explain the phenomenon of Bell Beakers (BB) [Burgess 1976]. I am convinced that the suggested term reflects better, than both "culture" and "horizon", the peculiarity of the phenomenon under investigation.

The definition of package (specifically Beaker package) suggested by the quoted author read as follows: "*This* (i.e. Beaker phenomenon — J. Cz.) *would see Beakers as something extra-cultural, connected with some sort of activity which was taken up by societies throughout Europe. Together with the artefacts with which they are regularly associated they could be said to form a 'Beaker package', which would be merely the outward manifestation of whatever international phenomenon is involved*" [Burgess 1976:309]. A (Beaker) package would thus be understood "*...as part of an artefact assemblage rather than a cultural assemblage...it represents no more than a fashion*" [Burgess 1976:310]. Being archaeologically inspiring, this definition is nevertheless quite general.

In order to facilitate further discussion, it is desirable to make the definition of cultural package more specific by listing its basic characteristics.

1. Identifying a phenomenon by calling it a package does not predetermine its cultural character (as is the case with many other archaeological categories, a package does not connote one and only one trait of a living culture); in this sense the concept of package refers to the form and not to the subject-matter of a given phenomenon.
2. A package has narrow cultural meaning, i.e. it concerns only one custom, institution or subpopulation in a given cultural group; the remaining elements of a given culture do not undergo any radical modification when a package appears.
3. The set of traits making up a given package must have been significantly culturally, which is evidenced by broad geographical ranges of individual packages.
4. It is possible to find the place (region) where a given package came into being.
5. A package is subject to dissemination, the mechanism of which is based primarily

on cultural contact; thus it spreads in societies that in one way or another are in contact, i.e. its ways of expansion reveal traditional channels of cultural contact; only secondarily can they be considered as creators of new spatial relations.
6. It is a taxonomically (formally) dynamic phenomenon and most probably culturally (content-wise) as well. It changes from region to region: a given cultural package in different regions is similar but never the same.
7. The final stage of investigation of a given package should be an interpretation of its cultural character, i.e. an answer to the question what cultural trait the package reveals.

Going back to the Trzciniec package, it should be observed at the outset that it was relatively meager in comparison to the preceding Beaker package, both in terms of constituting traits and in their formal richness.

A.2. TRZCINIEC PACKAGE. CONSTITUTING ELEMENTS

I shall briefly discuss now the three elements of the Trzciniec package mentioned above beginning with "Trzciniec technology" and slanted and widened rims and ending with the form of the "Trzciniec pot".

The concept of "Trzciniec technology" is known especially from the Polish literature [Gardawski 1959:90; Miśkiewicz 1978:176]. It stands for a manner of vessel manufacturing based on the addition of coarse broken stone in thick-wall vessels with their surface smoothed out with a hard slick. The coarse admixture protrudes from the surface causing numerous fractures around such places. There are a few potential sources where it may have come from. To one of such sources, namely the Globular Amphora Cultur (GAC), attention was drawn by Aleksander Kośko in the 1970's [Kośko 1979; Czerniak, Kośko 1980:259]. In the case of "Trzciniec" in Kujawy this source continues to be the most probable one [Czebreszuk 1996:158; Makarowicz 1998b].

Another source points out to a potential significance of the tradition of the Comb-like Pottery Culture which expanded to the south, as far as today's northern Belarus towards the end of the Neolithic. One trait characterizing the pottery of this culture is a technology based on the use of coarse broken granite and flint [Kryvaltsevich 1991; 1997; Czebreszuk 1996:158].

The last tradition that can be taken into account in the search for the origins of the "Trzciniec technology" is the Single Grave Culture (SGC). Only in the 1980's and 1990's could more information be gathered on the settlement pottery of this group. It turned out then that there were clear differences in the technology of making settlement and grave vessels. The former, specifically large vessels, were

most often made with the use of coarse broken stone technology [Stegen 1954; Liversage 1987; Mertens 1998].

To sum up, it can be claimed that regardless of the fact which of the above groups played a decisive role in the development of the "Trzciniec technology" one thing is now absolutely clear: the "Trzciniec" tradition of pottery technology has clearly its roots in the north, on the Lowland. It is worth mentioning here that the technological standard of the "Trzciniec" pottery in Małopolska, hence in the South, departs significantly from the formula recognized by Aleksander Gardawski to be characteristic of the said group, which has been made absolutely clear by the recent research by Jacek Górski [1981:24-25].

For the study of the origins of widened and slanted rims, the most complete set of data comes now from the Pripets drainage. Owing to the studies of Mykola Kryvaltsevich there has been registered a complete sequence of stylistic transformations of rims from the Middle Dnieper Culture to local varieties of the "Trzciniec" tradition. An initial appearance of widened rims has been recorded, too. In the end of the sequence classical, "Trzciniec", widened and slanted rims have been placed [Kryvaltsevich 1991, Fig. 57:10, 17; 58:1; Czebreszuk 1996:158].

The crucial issue in the study of the origins of individual traits of the Trzciniec package is the form of the "Trzciniec pot". Recently, its ties with the traditions of the Single Grave and Bell Beaker Cultures have been discussed [Czebreszuk 1996:157; 1998a; Makarowicz 1998b]. In the German literature this issue is closely related to the question of the so-called *Riesenbecher* which calls here for a more detailed discussion.

A.3. RIESENBECHER. DIAGNOSTIC VALUE

This concept was introduced into the literature by Karl H. Jacob-Friesen [1939]. However, it was only Kurt Stegen who defined this form and whose definition became a point of departure for studies of many German researchers [Struve 1955:132--133; Uenze 1961; Harck 1971/72; Lichardus 1979/80; Nelson 1988:161-173; Moser 1994; Mertens 1996; 1988]. According to Kurt Stegen Riesenbecher *"sind alle von einer groben Machart (wandstärke bis zu 2 cm), der Ton ist oft sehr stark mit kleinen Steinchen durchsetzt. Die Größe schwankt zwischen 30 und 50-55 cm (...). Ein Besonders charakteristisches gemeinsames Kennzeichen aller Riesenbecher ist der winzig kleine Boden. (...) Die Form des Riesenbechers wird durch das S-förmige Profil in seiner ganzen Variationsbreite bestimmt. (...) Der Hauptantil an der Variierung des S-Profiles, die bei den kleinen Bechern auf die mannigfachste Art. erreicht wird, kommt beim Riesenbecher der Gestaltung des Randes zu. In allen Fällen handelt es sich um*

einen kurzen, meist scharf abgesetzten Rand, der steil (...) bis trichterförmig (...) sein kann. Die Nahtstelle zwischen Rand und Körper wird oft durch einen Wurst oder Wellenleiste betont (...)" ...A detailed review of both the history of research and the current state of knowledge has been recently done by Andrea Moser [Moser 1994:3-5] and Kathrin Mertens [Mertens 1996; 1998]. Hence, I shall focus here on a summary of issues that are important for our discussion.

From the point of view of typology, forms included among *Riesenbecher* in the original definition are currently divided into two basic categories. The first comprises all-over decorated vessels called *potbeker* (a Dutch term adopted in the German literature) [cf. main source: Lehman 1965; Lanting 1973] which I shall ignore in further discussion, whereas the second consists of *Riesenbecher* proper, undecorated or with a relief element in the place where the neck meets the belly (one or two relief strips, or possibly a few handles placed symmetrically around the circumference).

Among the *Riesenbecher* five basic types are distinguished at present: (a) undecorated, (b) with several horizontal lines incised in the place where the neck meets the belly, (c) with a relief strip bearing undulating fingertip impressions, (d) with a single or double simple relief strip and (e) with a row of handles (buttons) [cf. the most comprehensive review: Moser 1994; Mertens 1996].

Relying on the comparative data and information on the contexts of occurrence of individual *Riesenbecher* types, each of the above types should be assigned a slightly different cultural and genetic position.

Owing to recent results of research into the settlement aspect of the Corded Ware Culture (CWC) in Central Europe, the variety with a relief strip bearing undulating fingertip impressions (type c) can be now dated to the early development phases of the CWC encompassing without doubt the pan-European horizon (A) and quite probably the whole old Corded Ware stage. This type of large (storage) vessels is now believed to be the most important indicator of the oldest CWC settlement materials [Buchvaldek 1986; Liversage 1987:120-121; Czebreszuk 1996:82; Wolf 1997].

Undecorated Riesenbecher (type a) do not have so unequivocal cultural and chronological connotations. Of crucial importance are in this case the contexts of their occurrence, for instance urns in a SGC cremation cemetery (e.g. Sande in Hamburg-Lohbrügge) [Schwantes 1936:79ff.], co-occurrence with type K axe in compact assemblages (Mannhagen, Kreis Lauenburg) [Kersten 1966:77ff.]. They also occur in megalithic monuments, usually in stratigraphically youngest positions (e.g. Oldendorf Kreis Lüneburg) [Körmer, Laux 1980:173]. Of great importance are ornamentation traits of many vessels from the already mentioned cemetery at Sande, namely zone patterns made with the use of the knurling technique [Schindler 1960:Taf. 87:4-6], showing affinity with the tradition of BB. The above observations justify the inclusion of the undecorated variety of the *Riesenbecher* in the developed

stages of the SGC and the beginnings of the so-called dagger period (in Danish nomenclature LN I), i.e. the period with BB.

The *Riesenbecher* with a row of handles (type e), called Hitzacker by Ole Harck [Harck 1971/72] was related by him to the Únětice tradition. Recently, exhaustive works by Bernd Zich have appeared discussing the north-western frontier of the Únětice Culture [Zich 1986] and the whole northern zone of that culture [Zich 1996]. However, there is no mention in these works about the *Riesenbecher*. Only in the case of type 20C storage vessels does the quoted author see any similarity of that form with the *Riesenbecher* of the Hitzhacker type [Zich 1996:187, footnote 665]. The issue of the origins of the pottery with handles is not a simple one at all, nevertheless there is no doubt that these forms occurred in the area in question at the same time as old-Únětice finds. Furthermore, grave finds from Frauenmark, Kreis Parchim [Jacobs 1991:53 and Taf. 26:26, 27] and from Lanz, Kreis Ludwigslust [Jacobs 1991:57 and Taf. 27:14-17] indicate that the type under discussion was contemporaneous with the stage when BB traits occurred.

The type decorated with several horizontal, incised lines (type b) was identified by Hildegarde Nelson as type 3 [Nelson 1988:162]. In Laave, Kreis Hagenow, site 1 [Jacobs 1991:56], two vessels decorated in this way together with a specimen of a variety close to potbeker were found, which testifies to the contemporaneity of the discussed type with BB. While the studies of Erwin Strahl prove that multiple incised line decorations are known from the interfluvial area between the Lower Elbe and Weser throughout the SGC development [Strahl 1990:204].

The type of the greatest interest to us, type d, with a single relief strip (or possibly two) will be discussed in greater detail, separately for each region of the western North European Plain.

North-west Germany (Lower Saxony and Schleswig-Holstein), Fig. 1.

The discussed form of vessels is certainly contemporaneous there with the *Riesenbecher* with handles (type e), which is evidenced by finds from Rebenstorf, Kreis Lüchow-Dannenberg and from Templingen, Kreis Lüchow-Dannenberg. On the basis of an amphora also found there, these finds are related by Andrea Moser to the older stages of the Únětice Culture (UC) development [Moser 1994:14-16]. In Jeersdorf, Kreis Rotenburg, site 18, a fragment of a large sinuous-profile vessel with a double relief strip was found together with a container decorated with a "barbed wire" ornament [Strahl 1990, Taf. 52:3-4] which is dated to the decline of BB in Jutland and on the Lower Rhine. In Central European categories this is equivalent to the very beginning of BA1 according to P. Reinecke. Thus, generally speaking, in the said area, the forms under discussion are dated to the period from the SGC [Struve 1955:133], through the period of BB influence [Struve 1955:133ff.; Schirnig 1972:66; Lichardus 1979/80:357] until the beginnings of the stage revealing Únětice impact [Voelkel 1963:104; Harck 1971/72:22ff.].

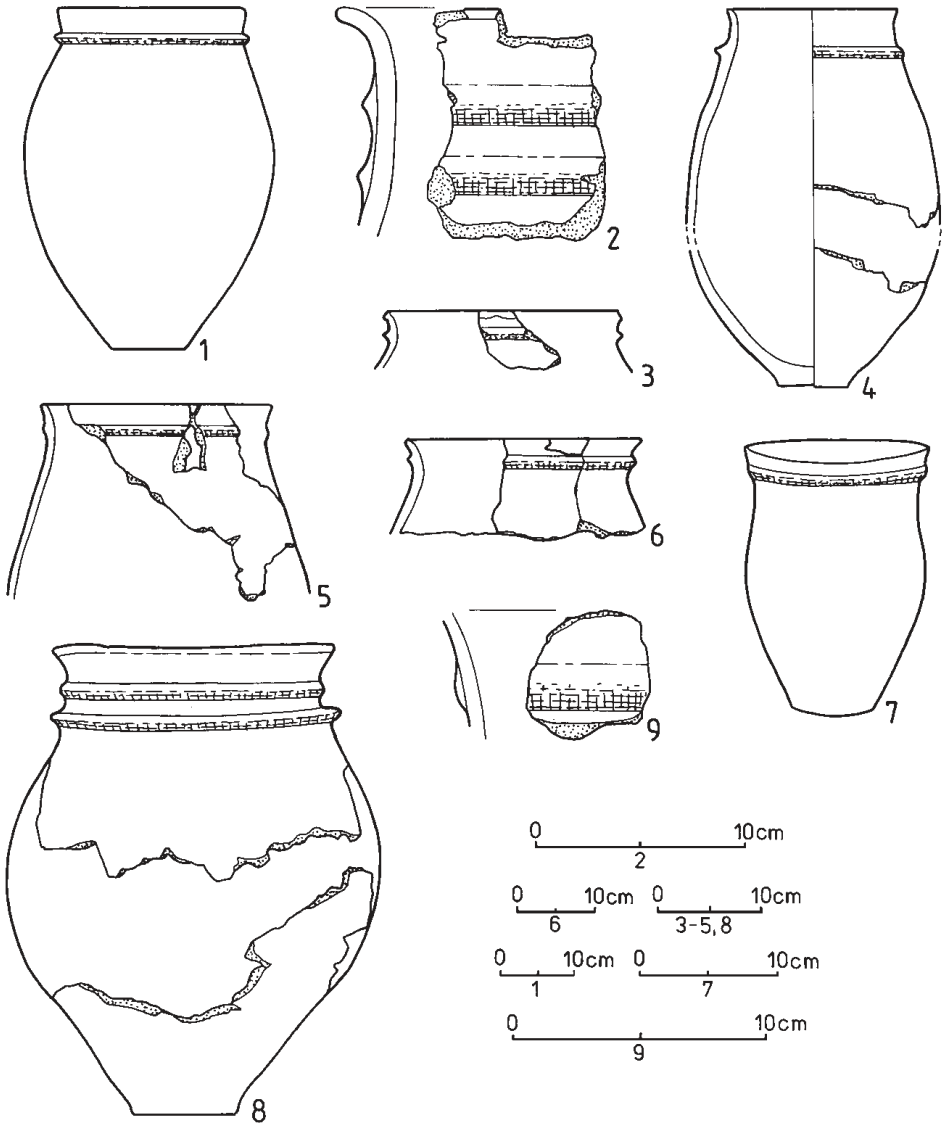

Fig. 1. Selected examples of type "d" *Riesenbecher* from Lower Saxony and Schleswig-Holstein. 1 - Rebenstorf, Kreis Lüchow-Dannenberg [Moser 1994:Abb. 2:5], 2 - Jeersdorf, Kr. Rotenburg, stan. 18 [Strahl 1990:Taf. 52:4], 3-5 - Hitzacker, Ldkr. Lüchow-Dannenberg [Moser 1984:Abb. 2:1-3], 6 - Borgdorf, Kr. Rendsburg [Struve 1955:Taf. 24:1], 7 - Hannover, Gr. Buchholz [Struve 1955:Taf. 24:5], 8 - Gross-Holzhausen, Kr. Osterburg [Moser 1994:Abb. 3:2], 9 - Elstorf, Kr. Harburg [Strahl 1990:Taf. 19:12].

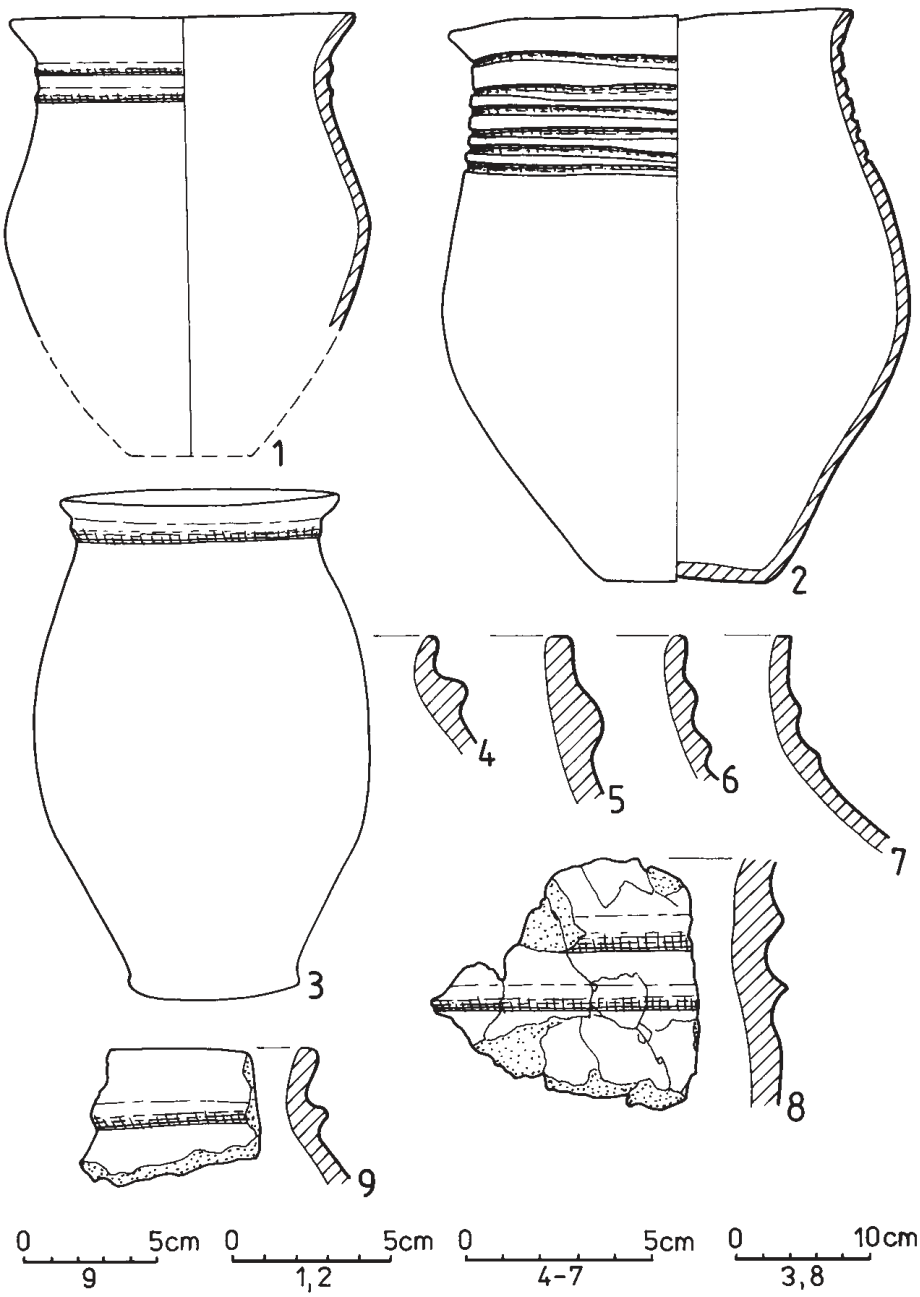

Fig. 2. Selected examples of type "b" and "d" *Riesenbecher* from Denmark. 1-2 - Myrhøj [Jensen 1973:Fig.27 and 40], 3 - Sebberup [Glob 1952:70], 4-7 Tastum [Simonsen 1983:Fig.6], 8 - St. Valbyvej [Schiellerup 1992: Fig.28], 9 - Vorbasse [Hvass 1986:Fig.11].

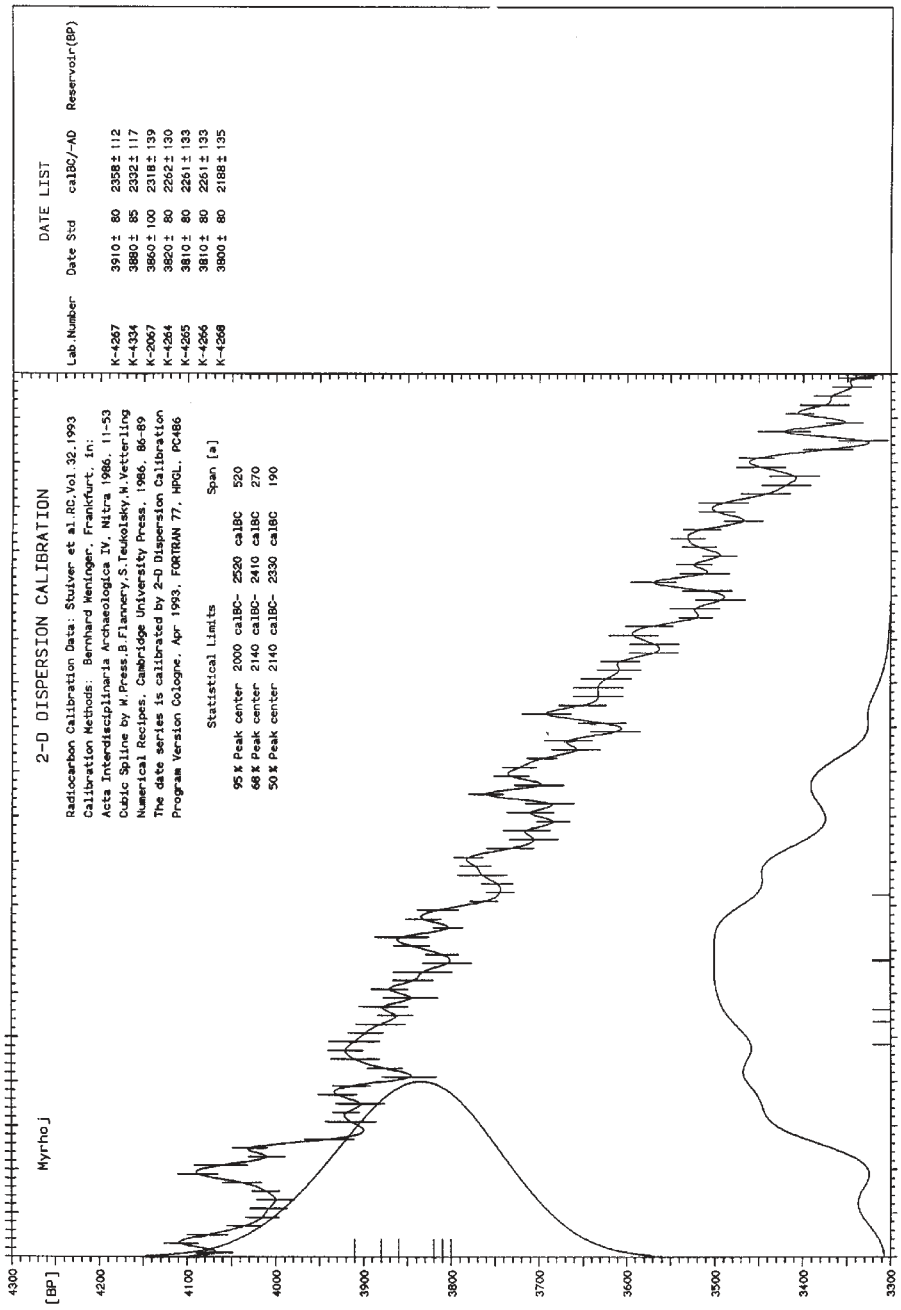

Fig. 3. Myrhøj, Northern Jutland, joint calibration of a series of seven ^{14}C dates from the settlement. Values of individual dates according to H. Vandkilde [1996].

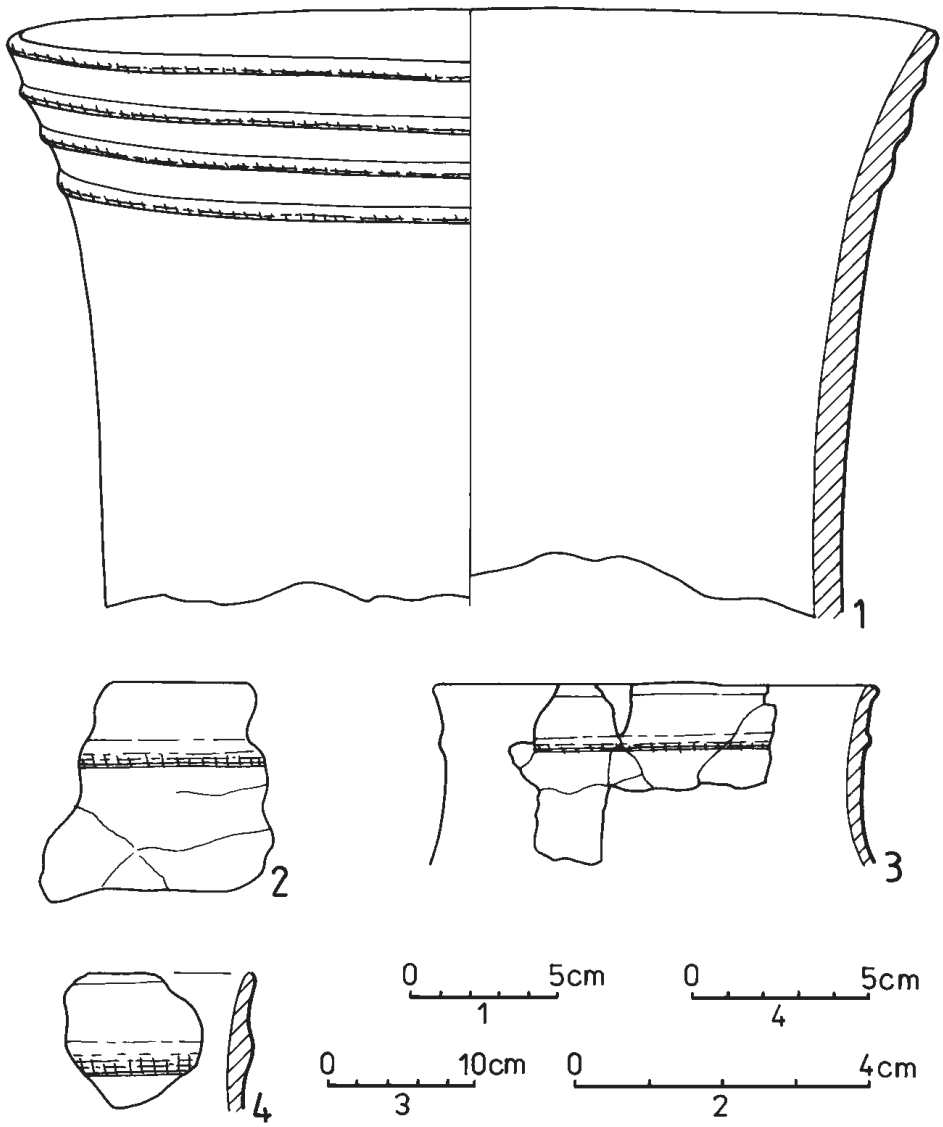

Fig. 4. Selected examples of type "b" and "d" *Riesenbecher* from north-eastern Germany. 1 - Lanz [Jacobs 1991:Taf. 27:17], 2 - Settin [Jacobs 1991:Taf.20:12], 3 - Rothenklempenow [Jacobs 1991:Taf.38:30], 4 - Grünhof [Jacobs 1991:Taf.30:11].

Jutland, Fig. 2.

From the chronological point of view, this is the most import of all the analyzed regions. The pot forms of interest to us here are known there from well-dated settlement assemblages. They appear already in the settlement at Myrhøj [Jensen 1973:92, Fig. 27] (cf. Fig. 2:1-2), eponymous for the group which represents a local variety of the BB in northern and central Jutland [Liversage 1987]. We have in respect of this site a series of seven ^{14}C dates [Vandkilde 1996:372], the joint calibration of which shows that the settlement existed before the end of the 3rd millennium BC (Fig. 3). Next, these forms are known from settlements throughout the LN period, e.g. St. Valbyvej [Schielllerup 1992:44, Fig. 28, 29], Vorbasse [Hvass 1986:333, Fig. 11], Tastum [Simonsen 1983:Fig. 6], only to disappear in the Early Bronze Age there, i.e. ca 1700 BC.

North-eastern Germany (Mecklenburg, Vorpommern and Brandenburg), Fig. 4.

This is an area which has not been studied much, which is reflected is the amount of sources published. Of fundamental importance in this respect is the work by Jörn Jacobs who has published a number of examples of relevant forms [Jacobs 1991:Taf. 20:8, 11, 12; Taf. 27:17; Taf. 28:30; Taf. 30:11] generally dating them to the whole period of development of the SGC.

The above review leads to several conclusions. The first and most important one concerns the validity and further use of the concept of Riesenbecher in the hitherto typological formula. In the light of the above comments there is no justification for it. Individual types of the *Riesenbecher* are related to different cultural traditions and are assigned different chronological positions (from horizon A of the CWC, through the SGC and BB until the stage of Únětice influences, hence from ca 2900/2800 BC until the beginnings of the 2nd millennium BC). This does not mean, however, that one should abandon altogether to define such a category of artifacts. Such an opinion has been recently voiced in the German literature by Erwin Strahl [1990]. He does not set up the *Riesenbecher* as a separate category [Strahl 1990:56-57] and claims that until recently settlement pottery of various SGC phases has been mistakenly assigned to it [Strahl 1990:204]. It would be advisable to use a more precise definition of the *Riesenbecher* which would include only such varieties of it that are primarily related to a single stage of prehistory (development of the SGC and LN) and a similar genetic relationship (SGC, BB, possibly Únětice influences). Taking this into account, I suggest to reserve the *Riesenbecher* appellation for types 'a', 'b', 'd' and 'e' only.

The second conclusion concerns the issue of the spreading of these varieties of the *Riesenbecher* that are of the greatest interest to us, namely type b with multiple, incised lines and type d with one or two relief strips. They occur in the vast, lowland area of Western Europe, from the mouth of the Rhine in the west, through Lower Saxony, Schleswig-Holstein and Jutland as far as Brandenburg and Mecklenburg in the east.

The third conclusion concerns the chronological and cultural position of these *Riesenbecher* types which formally most closely related to "Trzciniec" patterns types b and d). They are associated with the tradition of the developed SGC and local BB while the chronology of their occurrence covers in total the period from ca 2500 BC (beginnings of the developed phase of the SGC and the dawn of the "North European BB province" [Czebreszuk 1996:250] until about 2000 BC (i.e. contemporaneously with the old-Únětice stage of the UC).

A summary of the above discussion, encompassing criticism of the hitherto model of "Trzciniec" and the digression on the *Riesenbecher* as well, should include a few statements of a general nature. The first of them pertains to the basic element of the Trzciniec package, namely the slender, sinuous-profile pots with a characteristic ornament. They are genetically related with the SGC tradition and the North European BB province, hence with the orientation of cultural ties which has been completely ignored in the studies of the origins of "Trzciniec". The question of the "Trzciniec technology" does not exclude the north-western "trace" in the search for the origins of the Trzciniec package, either. Only the third element believed to be an interregionally "Trzciniec" trait, i.e. slanted and widened rims, in the light of our knowledge does not bear any relation to the SGC tradition. Owing to its genetic connections, it leans rather towards the Middle Dnieper Culture. This situation reflects the dynamics of a cultural package. A broader presentation of the dynamics shall follow below.

A.4. "TRADITIONAL TRZCINIEC". LINES OF REVISION

Let's confront now the above conclusions concerning the western portion of the European Plain with our knowledge on the areas traditionally believed to be the "Trzciniec" oecumene.

First, we should consider whether it is possible to date the moment of appearance of "Trzciniec pots" there with a greater accuracy or, more precisely, to establish that moment for individual regions within the "Trzciniec" territory. A precise placement in time of the beginnings of the said form is possible in the case of the Kujawy (broadly meant, including the Chełmno District, Krajna and Pałuki) and Małopolska centers.

In the first of the mentioned centers, the prototypes of "Trzciniec pots" (of both types: those decorated with relief strips and those with multiple, incised lines) appear in Biały Bór, commune of Grudziądz, site 17 [Bokiniec 1987:Fig. 2:11; 5:10), Narkowo, commune of Dobre, site 16 [Czebreszuk, Przybytek 1997:Fig. 8:8; Przybytek 1996] (Fig. 5:1, 5), Dęby, commune of Dobre, site 29A [Czebreszuk 1996:Fig.

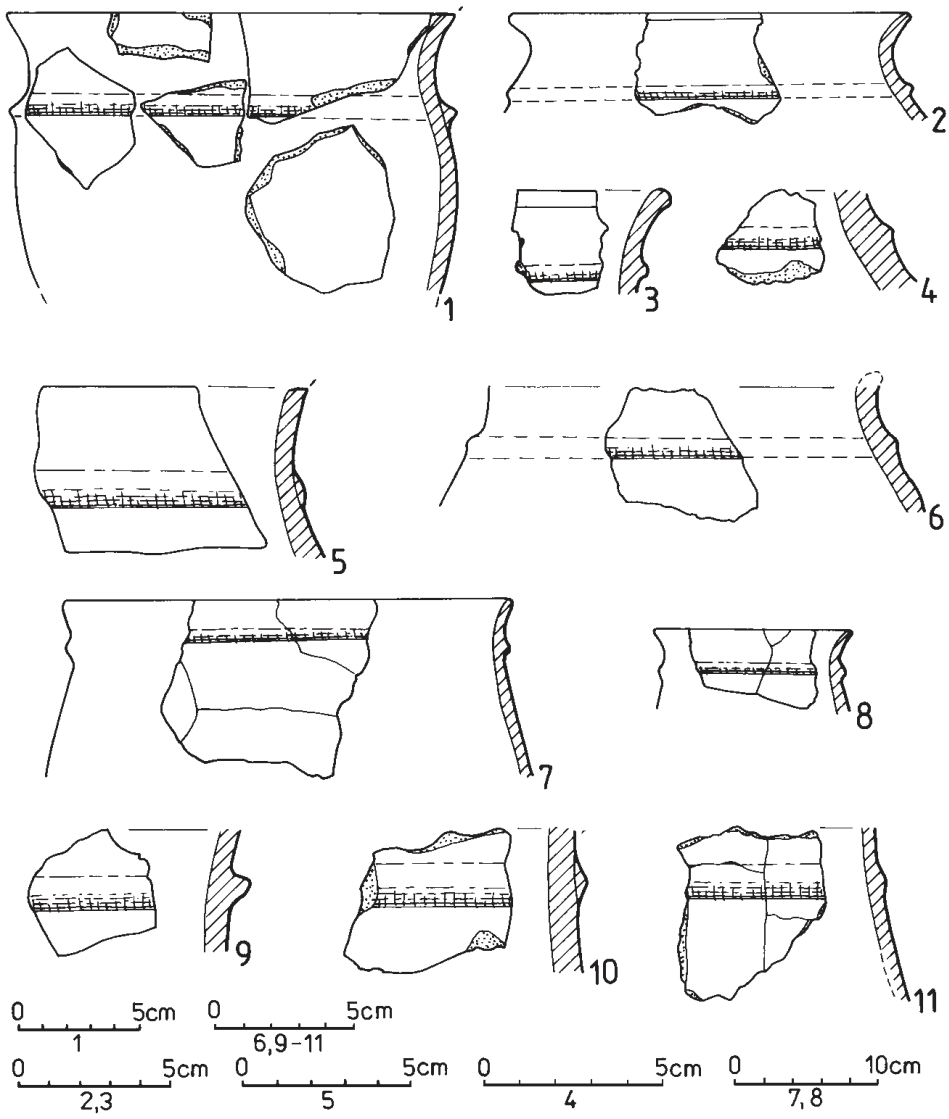

Fig. 5. Selected examples of *Riesenbecher* from Kujawy and the Chełmno District. 1,5 - Narkowo, gm. Dobre, stan. 16 [Przybytek 1996], 2,3 - Potok, gm. Włocławek, stan. 1 [Bokiniec 1989], 4 - Chlewiska, gm. Dąbrowa Biskupia, stan.56 [Czebreszuk 1996], 6 - Dęby, gm. Dobre, stan. 29A [Czebreszuk 1996], 7,8 - Grudziądz-Mniszek, stan. 3 [Bokiniec, Marciniak 1987], 9 - Smarglin, gm. Dobre, stan. 53 [Makarowicz 1993], 10 - Biały Bór, gm. Grudziądz, stan. 17 [Bokiniec 1987], 11 - Mszano, gm. Brodnica, stan. 7 [Bokiniec 1987].

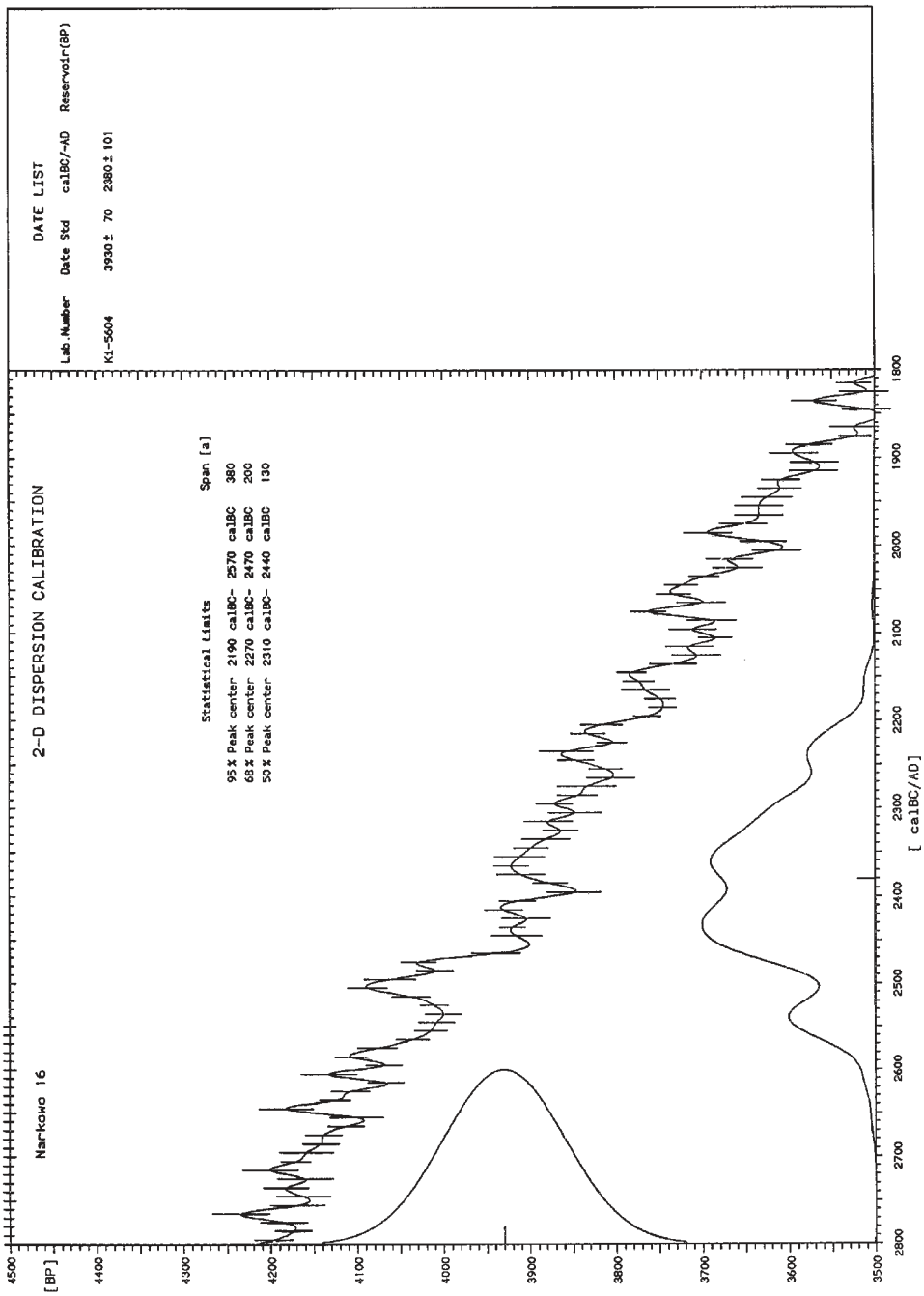

Fig. 6. Narkowo, commune of Dobre, site 16. Results of ^{14}C dating for a sample of charcoal from feature 23. According to J. Czebreszuk [1996].

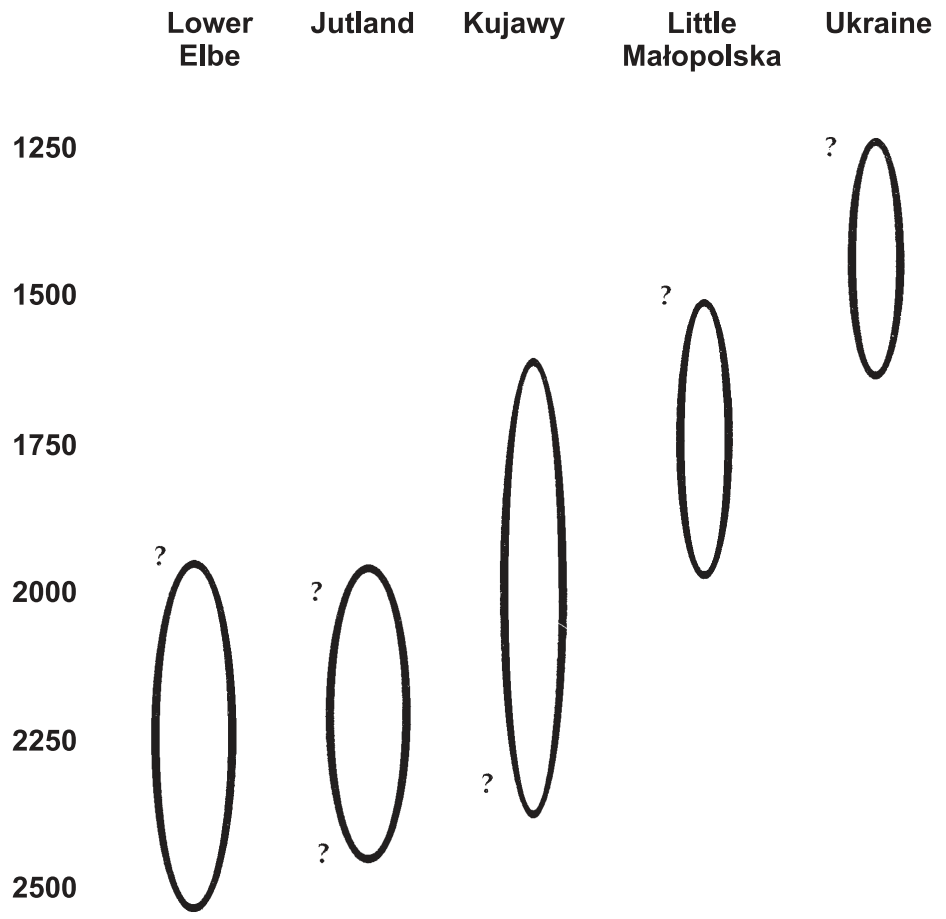

Fig. 7. Dating of the Trzciniec package in selected regions of Central Europe.

48:11] (Fig. 5:6), Toruń-Grębocin, site III [Bokiniec 1995:Table XVI], Grudziądz-Mniszek, commune of Grudziądz, site 3 [Bokiniec, Marciniak 1987, Fig. 9:3, 4] (Fig. 5:7, 8), Modliborzyce, commune of Inowrocław ("vase-like" form) [Knapowska-Mikołajczykowa 1957:64, Fig. 68b], Korzecznik, commune of Kłodawa, site 14 [Czebreszuk 1996:Fig. 53:30, 54:1, 17] and quite possibly in Brześć Kujawski, commune of Brześć Kujawski, site 4, pit 738 [Grygiel 1987:Fig. 2:2], Chlewiska, commune of Dąbrowa Biskupia, site 56 [Czebreszuk 1996:Fig. 45:15] (Fig. 5:4) as well as in Smarglin, commune of Dobre, site 22 [Czebreszuk 1996:Fig. 35:27, 31, 40] and Smarglin, site 53 [Makarowicz 1993:Fig. 8:22, 23; 9:19, 26; 10:2] (Fig. 5:9). The set-

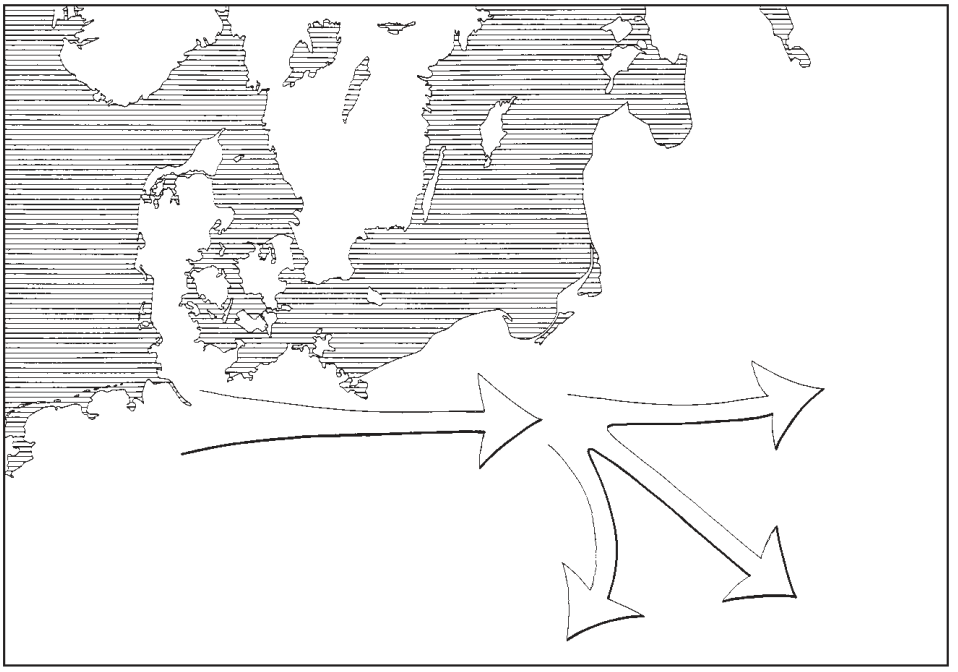

Fig. 8. Spreading routes of the Trzciniec package in Central Europe.

tlement in Narkowo has one dating reporting the age of 3930±70 BP (Ki-5604) that sets an approx. interval of 2440-2300 BC (Fig. 6) [cf. Czebreszuk 1996:119-121 and Tab. 26]. Recently, another ^{14}C dating has been obtained for the materials from the settlement in Smarglin, site 22, which reported the age of 3950±45 (Ki-6885) (kind information from prof. Aleksander Kośko for which I am very grateful). The dating sets a period of time which is generally concurrent with that from Narkowo, namely from 2550 to 2350 BC. The mentioned finds, in particular from Biały Bór, Dęby, Narkowo and Smarglin (site 22 and 53), show that the beginnings of the presence of "Trzciniec pot" prototypes in the Kujawy center are tied to the appearance of the pottery ornamented with zone patterns utilizing the knurling technique which is characteristic of the oldest stage of the BB tradition influences. This process has been recently tentatively dated to the beginning of the second half of the 3rd millennium BC [Czebreszuk 1996:191-192].

In Małopolska we are faced with a very clear situation. "Trzciniec pots" with widened and slanted rims appear there as an element of a greater cultural whole, believed to be a culture of migrants, ca 1900 BC [Kempisty, Włodarczak 1996:132; Górski, Kadrow 1996; Górski 1997; 1998; Włodarczak 1998].

When comparing the time of occurrence of "Trzciniec pots" in different regions

of Central Europe (Fig. 7), it can be observed that they appear first along the western limits of the area of distribution, i.e. on the Lower Elbe and in Jutland, then in Kujawy and only later in Małopolska. Assuming that we deal here with one cultural process, a later chronology can be adopted for the "Trzciniec pot" in regions located east of Kujawy (Fig. 8). This conclusion is borne out by the first series of ^{14}C dates obtained for the materials of the so-called East Trzciniec Culture from the cemetery in Malopolovecke in Ukraine [Kovalyukh et al., Absolute (Radiocarbon) Chronology..., in this volume]. The finds obtained there can be dated to ca 1600 BC at the earliest. In sum, it can be plausibly claimed that the origins of the form in question can be related to the local SGC and BB groups from the western part of the North European Plain. While looking at the cartogram (Fig. 8) it can be also observed that the "Trzciniec pot", or the most important element of the Trzciniec package, spread from the west to the east and from a certain moment (ca 1900 BC) also from the north to the south.

The "Trzciniec phenomenon" displays in this respect a trait that is characteristic of all packages. What is meant here is occurrence at different time in individual regions which can be linearly ordered. It is possible to indicate the region where a given phenomenon began and to show the lines, along which it spread. As an analogy may serve the dynamics of the BB which, for instance, ca 2300 BC withdraw from the areas on the Upper Danube (covered by *Blechkreiskulturen*) and from the Bohemian Basin and Moravia (occupied already by the UC) while at the same time develop on the south-western Baltic [Czebreszuk 1996; 1998; Czebreszuk, Szmyt 1998; Vandkilde 1996].

Another important issue is the end ("decline") of the Trzciniec package. In Jutland it takes place in LN II hence after 1950 BC [Vandkilde 1996]. Unfortunately we do not have such accurate dates for the regions of northern Germany. The chronology of the end of the Trzciniec culture is slightly better grounded in data in the case of Kujawy and Małopolska. The first and surprising observation in both cases is the fact that the end of the Trzciniec package cannot be identified with the end of the Trzciniec "culture" or "horizon". In Kujawy, out of seven groups [Makarowicz 1998b; 1998c] of the "Trzciniec horizon" only the first three rely taxonomically on the Trzciniec package traits. Almost the same is true for Małopolska. In the sequence of stylistic changes traced by Jacek Górski, only the assemblages of types A1, A2 and A3 can be considered to be based on Trzciniec package traits while all the remaining ones (assemblages of types B, C and CD) can be called "post-Trzciniec package" [Górski 1997]. Projecting the said state of affairs on the time scale, it can be claimed in conclusion that the Trzciniec package ended in Kujawy ca 1600 BC [Czebreszuk 1996:Tab. 29] and in Małopolska ca 1400 BC [Górski 1997:Fig. 4]. It follows that not only the dates of the beginning of the Trzciniec package but also those of the end of it keep the same regularity, namely that the package ends first in the west and last in the South (Fig. 7).

This is then the general outline of the taxonomy of the interregional aspect of "Trzciniec", i.e. what I suggest to call the Trzciniec package. The above proposals make for a radically different picture than that which can be found in the literature. In them, "Trzciniec" is generally a lowland phenomenon rooted in the areas on the south-western Baltic and developing between the Elbe and Dnieper and not — as it has been believed so far — between the Vistula and Dnieper.

B. THE ASPECT OF LOCAL VARIETIES OF "TRZCINIEC"

The other side of the "Trzciniec coin" is formed by its local varieties. In this respect, attention should be drawn to the special characteristics of "Trzciniec" in particular areas of the Lowlands as well as to the fundamental opposition of "lowland" and "highland" "Trzciniec", or rather northern and southern.

B.1. "LOWLAND TRZCINIEC"

The Trzciniec package, like all other packages, particularly a beaker one, is a dynamic phenomenon changing taxonomically from region to region, to put simply, drawing on local traditions. I shall use here the changes visible on "Trzciniec pots" as an example (Fig. 9). Reaching as far west as the mouth of the Rhine one should start with zone with potbeakers only [Lehmann 1965]. Next, in the area between the Lower Rhine and Elbe a clear decrease in the number of potbeakers can be observed while the main role is played by forms decorated with a relief strip and multiple, incised lines [Strahl 1990]. In Mecklenburg and Brandenburg there are no more *potbeaker* [exception: Wetzel 1976] while the varieties with relief strips and incised lines continue to be found [Jacobs 1991; Rassmann 1993]. In the interfluvial area between the Oder and Vistula, the gamut of ornaments expands to include zone patterns often separated by a vertical element (heritage of the Kujawy BB variety, known as the Iwno Culture) [Czebreszuk 1996; Makarowicz 1998b]. Farther east (Mazowsze), next to still numerous ornaments with vertical elements, there emerge patterns of even more complicated structure (heritage of the Linin group of the Nemen Culture) [cf. review of sources in Gardawski 1959] which cover not only the upper zone of the belly but also lower portions of a vessel. Finally in Polesie, the rich ornament frequently covering "Trzciniec pots" is related to Middle

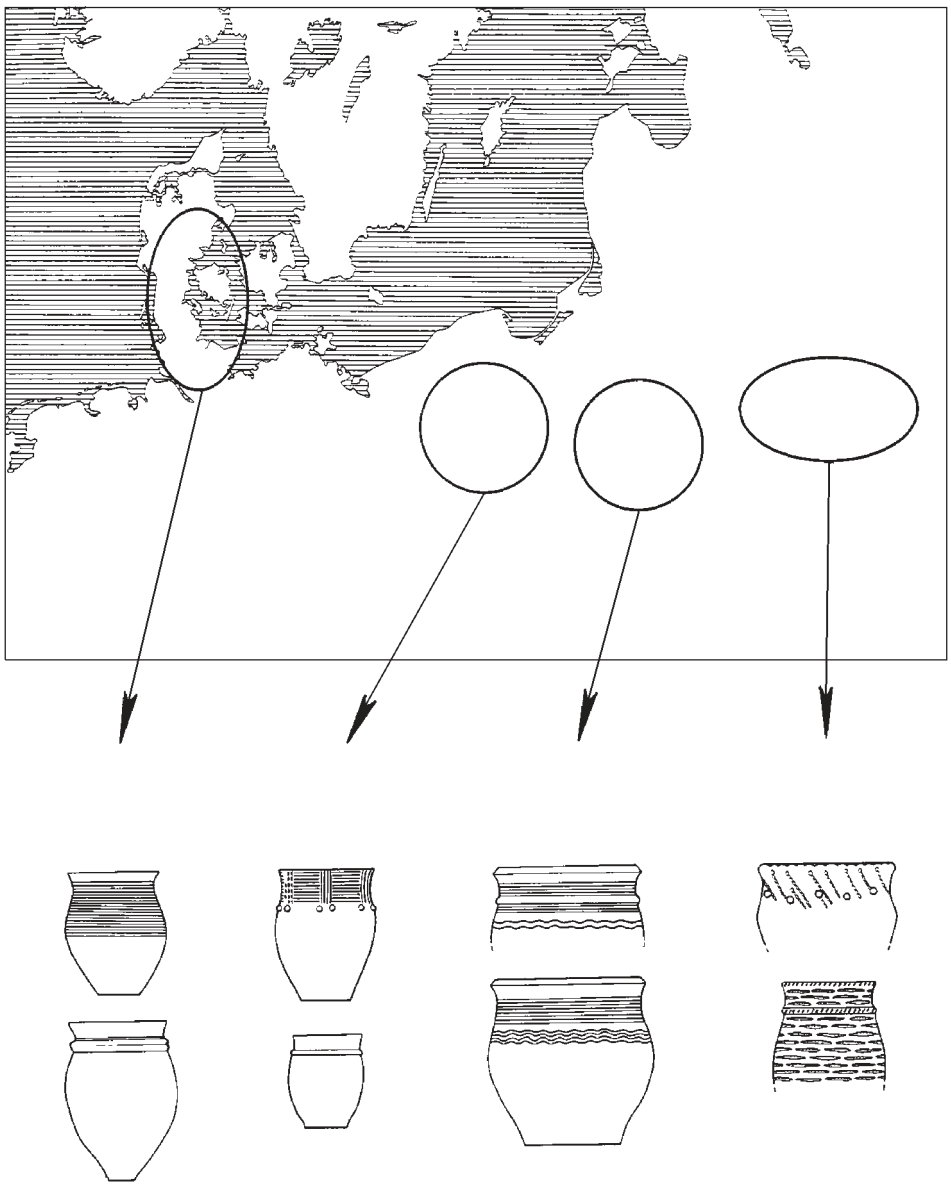

Fig. 9. The dynamics of stylistic changes of the form of the "Trzciniec pot" in the lowland regions of Central Europe.

Dnieper roots and the cultures of the Comb-like and Stroked Circle [Kryvaltsevich 1991; 1997:91-93].

The zones within the "Trzciniec oecumene", outlined here along the west-east axis, generally reflect the differences from the previous periods by continuing the zones of the BB, SGC, SGC-BB (covering the area between the Lower Oder and Vistula) and the Linin group (or type) of the Nemen and Middle Dnieper Cultures. In this respect, "Trzciniec" does not change any boundaries set by a long Neolithic tradition. On the contrary, it continues the Neolithic division of the Lowland into cultural regions.

B.2. THE NORTH-SOUTH OPPOSITION WITHIN THE "TRZCINIEC" OECUMENE

To begin with I shall define more closely the opposition mentioned in the heading. It is based on ecology, precisely on the fact of existence of two opposite ecosystems. The first consisted of sandy, poorly diversified lowland areas whereas the second was characterized by lush vegetation growing on loess covered highlands. Curiously enough, this ecological opposition is not equally clear geographically. There are lowland enclaves of abundant ecosystems (e.g. Kujawy) but there are also sandy areas within the highland belt (e.g. Niecka Nidziańska). This fact is of great significance for the cultural plane. The fact that Kujawy often served as the "outpost of the South" in prehistory is rather universally accepted [lately: Kośko 1996]. Less prominence is given in the literature to a hypothesis which would stress the importance of places like Niecka Nidziańska as an "extension" of the Plain.

Let's go back, however, to the main subject. The opposition is clearly visible in settlement rules. "Trzciniec" on the Plain is in most cases made up of relics of small dune settlements, usually poorly preserved and with a small number of artifacts [Czebreszuk 1996; Makarowicz 1998b]. In features that survived in a better condition, for instance in Borowo 12 [Ignaczak 1996; Czebreszuk 1996:159-162; Czebreszuk, Ignaczak 1997], the settlement consisted practically of one house (household cluster). It is worth noticing that such a settlement model has a very long tradition on the Plain, going back to Mesolithic societies and continued by the Funnel Beaker Culture (TRB) or the CWC. In this respect, "Trzciniec" practically does not change anything ideally fitting into the hitherto rules of settlement organization.

In a specific moment of the cultural evolution of the system, i.e. ca 1900 BC, its traits become visible in the South, specifically in the immediate vicinity of Małopolska loess soils [Górski, Kadrow 1996]. After some time, on loess areas, a network of stable "Trzciniec" microregions develops with orderly central settlements comprising

a number of household clusters [Górski 1997], thus fitting ideally into settlement rules prevailing on Małopolska loess soils practically from the beginning of the Neolithic [Kadrow 1991; Kruk 1993]. This dynamic cultural success of "Trzciniec" in the south is commonly believed to be an effect of a migration of relatively large groups of humans from rather indefinite areas of the Plain to the south [see recent mature interpretation in Górski, Kadrow 1996]. A distinctive, worth mentioning characteristic of the process, peculiar not only to "Trzciniec" but also to other, earlier Lowland groups which emerged in the south in a specific moment of their development (I specifically have the TRB in mind here), is the fact that the movement to the south (interpreted as relatively large migrations) is closely connected with a radical change of the settlement system. The group that appears in the South takes on characteristics of stable microregional and village settlement, "peasant" all in all, which makes it fit well into the traditions of local societies. Thus it is also in this respect that "Trzciniec" did not differ from groups on previous stages. However, let us ask a question: What were the reasons of those putative migrations from the north to the south? Did among Lowland societies exist a certain "southern attraction" making them travel south in larger groups from time to time?

Jacek Górski and Sławomir Kadrow, who devised the most comprehensive model of Mierzanowice Culture (MC) – Trzciniec Culture (TC) relations, put forward a solution which does not pose any of the above questions. The model may be reconstructed in the following points:

1. A migration of a "Trzciniec" population from the Lowland takes place; this is a premise not subject to any discussion,
2. Initially the migrants occupy in the south only those ecological niches which they know from the Lowland,
3. The migrants come into contact with local settled farmers represented by the MC, which was then in a crisis; they adopt traits that will enable them to exploit loess niches,
4. The migrants take over the loess areas adapting to their purposes the model of stable farming settlements with a microregional settlement structure and assimilating the remnants of local populations (MC).

Jacek Górski and Sławomir Kadrow, in their model of MC-TC relations, assume the existence of a specific reason why late MC societies acquired "Trzciniec" characteristics. The reason was a structural crisis of the former [Górski, Kadrow 1996:26]. Hence, they look at the situation as a unique occurrence and not as an example of a more general rule (the "southern attraction"). This model, however, should be discussed further. The phenomenon of Małopolska traits being superseded by northern ones is not, as has already been observed, exclusively connected with that moment in prehistory when the MC and TC came into contact. This state of affairs should make us consider an entirely different hypothesis from the previously discussed one to be able to provide a culturally plausible explanation of all the

facts. Specifically, one should consider a hypothesis attaching much less importance to migrations (continuous or periodical) from the Lowland onto the Highlands at the same time, however, adopting periodical spreading of new cultural ideas (in the archaeological form of a package) as the main mechanism of the observable changes. The ideas that were disseminated were born from time to time on the "Lowland cultural hotbed" stretching from the Lower Rhine through Jutland and Mecklenburg to Kujawy. Under this hypothesis there would not be any "expansion of Trzciniec populations" from a rather indefinite "north" to Małopolska [cf. Górski, Kadrow 1996:22]. Emerging from the new hypothesis, the new model can be described in the following points:

1. A premise is adopted maintaining that in certain enclaves in the south there always existed populations following a Lowland cultural model; the enclaves roughly corresponded with ecological niches in which natural conditions were similar to those on the European Plain,
2. The said communities were characterized by the absence of cultural barriers that would separate them from Lowland societies, contrary to loess area communities,
3. In the period when the early and classic phases of the MC developed in loess areas, the said communities must have displayed, broadly speaking, "corded" tradition traits [Budziszewski 1998],
4. The "Trzciniec" traits appear in the south first among the post-Corded societies occupying sandy niches to transform certain aspects of their culture; the societies "become" "Trzciniec-like",
5. To overcome the barrier separating the societies of sandy and loess oecumenes, "Trzciniec" traits needed more time but it happened ca 1700 BC at the earliest [Górski, Kadrow 1996, Fig. 2],
6. Finally, the Trzciniec package is shared also by the communities of settled farmers of loess areas.

However, acceptance of this model entails adoption of an assumption about considerable differences in the chronologies of identical or very similar stylistic states in individual regions and in different ecological niches within the same region. I shall indicate a few analogies being in point here. The long co-occurrence of TRB and CWC societies and the contemporaneity of old and classic "corded" patterns have been rapidly gaining ground in the literature both in respect of the Plain [Czebreszuk 1996; Kośko 1997] and the highlands [Machnik 1997]. In the case of Małopolska, the ecological opposition: loess plateaus vs. sandy troughs had had a cultural dimension since the Early Neolithic [Kruk 1980]. In the above outlined context, the date of appearance of "Trzciniec" traits, i.e. 1900 BC, may be adopted as the wane of CWC societies in the sandy ecological niches of the region [Budziszewski 1998]. We would then deal with a situation in which a new cultural package (specifically the Trzciniec package) from the "Plain hotbed" spreads according to the fundamental principles of a culture: first among the societies cultivating the way of life which is the closest

to that of the Plain. The surmounting of the ecological barrier of loess areas takes time, which has been very well depicted in detail by Jacek Górski and Sławomir Kadrow [1996].

Adopting one of the outlined hypotheses is unequivocally related to the way the "Trzciniec" phenomenon is perceived. A cultural interpretation prefers the former while an interpretation in terms of a package prefers the latter.

CONCLUSION

What was "Trzciniec" then? It was a cultural package or a phenomenon of a limited scope on the scale of a culture; changes that it brought affected only certain segments of the culture. I would like to repeat here the observation relating to the relations between the Trzciniec package, Trzciniec culture and Trzciniec horizon. We have observed that the Trzciniec package is related to the older stages of both the culture and horizon. However, more profound processes of cultural integration originating with early Lusatian sources, especially visible in the spreading of cremation funerary rites [Czebreszuk 1997; Górski, Kadrow 1996:20] (so-called second cremation horizon), are related to the younger groups of the Trzciniec horizon in Kujawy and the younger assemblages of the Trzciniec Culture in Małopolska. As long as in both regions we deal with the Trzciniec package (TH1-3 in Kujawy and assemblages of types A1, A2 and A3 in Małopolska) one can only try to find local peculiarities in the funerary rites in the whole "Trzciniec" zone [e.g. Małopolska, Górski, Kadrow 1996:20-21]. "Trzciniec" as a whole remained then in this respect a mosaic [Blajer 1987].

The Trzciniec package must have been a single rite, a single institution or a ritual type which, while moving from community to community, from region to region, evolved and acquired new elements or lost others. Here again I shall cite the example of the Beaker package. It modified only a certain aspect of a culture, specifically it was an outward manifestation, most probably in the form of spontaneous ranking, of aspirations of the nascent higher stratum (forerunners of present-day aristocracy). At the same time, other areas of the culture remained unchanged either for all (e.g. rules of settlement and subsistence) or for some people (e.g. the phenomenon of the parallel use of single graves and megalithic tombs in Jutland and northern Germany throughout the "Beaker age."). The same must have happened to the Trzciniec package. It was a limited scope cultural proposition. The area of what was local in the "Trzciniec" times was rather vast, which I tried to stress earlier. In particular, in individual Lowland "provinces" of "Trzciniec", under

a thin layer of similarities one can observe abundance of regional characteristics reflecting a division into cultural regions from earlier periods.

I will repeat the question: What was "Trzciniec"? On the taxonomic scale it was a phenomenon which took a very different course from the model hitherto accepted in the literature. With its roots it reached to SGC and BB societies from the north--eastern end of the European Plain, namely from Jutland and northern Germany where since the middle of the 3rd millenium BC early forms of basic "Trzciniec" characteristics had been known. Hence, the main direction of expansion of the package runs from the west to the east. However, this is not a process of moving the same, constant set of traits in that direction. The Trzciniec package, while moving from region to region, changes drawing on local traditions. However, the amplitude of these changes does not oscillate in any significant manner throughout the whole expanse of the European Plain, from Holland as far east as Belarus and Russia. What we see is a continuum of cultural changes with two extremes: BB in the west and the Middle Dnieper Culture and forest communities in the east. The western limit of the Trzciniec Culture which has been recognized in the literature so far is rather evidence of the failure of German and Polish archaeologists to communicate on this issue rather than any form of boundary in prehistoric Europe*.

Translated by Piotr T. Żebrowski

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"TRZCINIEC" — BORDERLAND OF EARLY BRONZE CIVILIZATIONS OF EASTERN AND WESTERN EUROPE?

Among many controversial issues brought forth by the taxonomic image of "Trzciniec" outlined in the works of A. Gardawski and his methodological successors topogenetic arguments in favor of this hypothetical communication community (in the quoted works called a set of "tribes") [Gardawski 1959] are especially conspicuous. The community supposedly occupied an extensive territory from the drainage of the Oder in the west to the drainage of the Desna in the east, possibly extending to the Urals [Berezanskaya 1972:190 — a maximalist view; cf. an opposing point of view: Artemenko 1987]. In our opinion such arguments should include (1) a documentation of the genetic background of the development of a system of cultural pattern circulation within the said territory as well as (2) an indication of the generators of its hypothetical periodical stabilization ("ethnization"). We are going to devote some space to these issues by drawing a general framework for discussion. The adopted point of view makes us perceive some taxonomic units rather as a reflection of real changes, which, in turn, justifies a different use of such terms as "Trzciniec Culture" (cf. working term "Trzciniec") or "Early Bronze" (cf. "Early Bronze Age Civilizations").

1. THE SO-CALLED BORDERLAND COMMUNITY AS "TRZCINIEC'S" GENETIC BACKGROUND

In the traditional picture of the early agrarian Europe, specifically of its plain or taiga covered expanses between the Oder and Desna — prior to the emergence of "Trzciniec" — a clear cultural division was observed running along the so-called Bug and Dniester physiographic borderline [Kośko 1981]. Areas lying to the west of this line were exploited by Neolithic communities representing the Bal-

kan-Central-European cultural province, whereas territories east of the line were home for sub-Neolithic communities associated with the province of forest-East-European cultures. Hence, it can be concluded that an assumption was made about two different systems of cultural information circulation in existence in this zone. The two systems stemmed from different — also topogenetically — traditions of the reception of early agrarian civilizational experience. Consequently, the outlined cultural background did not justify a later development, at the outset of the 2nd millennium BC, of a macrospatial synthesis of "Trzciniec". It must be added that, facing inadequate accuracy of synchronization of the Bronze Age systematizations in the catchment areas of the Pontic and Baltic seas and a lack of relevant ^{14}C datings of early "Trzciniec" materials [cf. Kovalyukh et al., Absolute (Radiocarbon) Chronology..., in this volume], the question of the development of the synthesis could not be solved in a methodologically satisfying manner.

The seeds of revision of the picture of history commented above can be seen in the development of research into the Comb-like and Stroked range of the Forest East European Province. This is especially true for the western group of the range [Telegin 1968:223], specifically the Nemen Culture (NC) and in part the Kiev-Volhynia group of the Dnieper-Donets Culture (D-DC) [Cherniavskiy 1979; Isaenko 1976; Telegin 1968]. It was there that, beginning from the late 1970's, a horizon (phases II and especially III of NC) of a strong influence of "western" cultures was distinguished. By "western" cultures it is meant here mainly Balkan Central European cultures like Funnel Beaker (TRB) and later Globular Amphora (GAC) ones, Fig. 1:6. In the works of P.M. Dolukhanov, V.P. Tretyakov [1979], M.M. Cherniavskiy [1979] and V.F. Isaenko [1976] one can find opinions that the development of the communities of the western fringes of the indicated range underwent a considerable transformation due to the reception of external patterns which were genetically foreign. The watershed marking the beginnings of the said Occidentalization should be dated on the basis of the cited classifications by P.M. Dolukhanov, W. Tretyakov and V.F. Isayenko, who placed it in the middle of the 4th millennium BC (from phase IIB of the Neolithic in Polesie according to V.F. Isaenko). In both cases, however, we deal with indirect dating, i.e. through the Central European scale of TRB and GAC development. Our own observations [Kośko 1994; 1996] make us accept or even expand the interpretation.

The acceptance refers to the degree of infusion of the materials of the Sośnia phase of the NC with "Central European" patterns [Kempisty 1983:179]. In fact, the state of syncretization determined by E. Kempisty [1973] for the far-western (Vistula) branch of the NC — as the Linin type — can be found also in other materials of this taxon in the drainages of the Upper Nemen and Pripets Rivers (also our own observations of collections held in Minsk). However, there are no relevant analytical studies of the intensity of this phenomenon, in relation to time and space, which prevents us from drawing any specific conclusions.

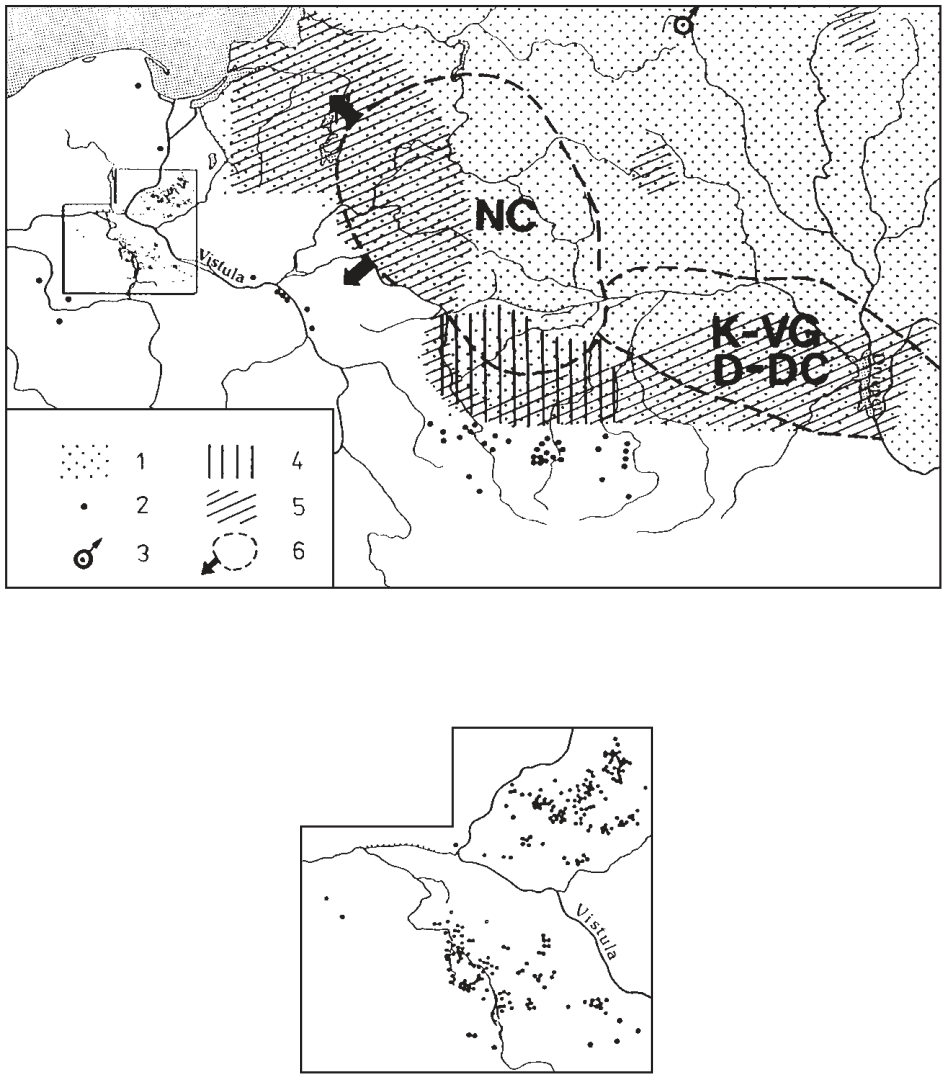

Fig. 1. Western frontier of the East European taiga. Reception ranges of Balkan-Central European cultural traditions. 1 - taiga limit (forest zone); 2 - settlement points of the Linear Pottery Culture in the borderland of the taiga; 3 - hypothetical zone of the settlement penetration of the taiga interior by the Linear Pottery Culture (Pskov region); 4 - regions of settlement penetration by the Funnel Beaker Culture; 5 - regions of settlement penetration by the Globular Amphora Culture; 6 - cultural units with a strong participation of Balkan-Central-European traditions (NC = Nemen Culture, K-VG D-DC = Kiev-Volhynia group of the Dnieper-Donets Culture).

The expansion of the interpretation relates to the more recent studies of the very origins of the western branch ("Vistula Dnieper Group") of the Comb-like and Stroked sub-Neolithic. In the "classic" interpretation its sources were traced to the synthesis of the cultural traditions of the local Mesolithic and the Southern Bug--Dniester Culture (BDC) [Telegin 1968:49; Danilenko 1969:189-190], in the result of which a cycle of early ceramic taxa was to come into being, including the Dubichay and Sienchyce-Sokołówek types in the drainages of the Pripets and Vistula. Taking into consideration more recent assessments of accessibility of the Linear Pottery Culture (LBK) to the taiga on the right bank of the Dnieper, it becomes justified to reduce the role of the BDC in the process [cf. Kośko 1996], i.e. including the territory in the framework of the Central European circulation of early agrarian cultural patterns. By no means does it mean an obliteration of the economic and social peculiarity of the development of local communities, namely their specific "East European" manner of neolithization (Fig. 1:2).

Keeping in mind what has been said above, it may be suggested that beginning already from 5000 BC, i.e. from the LBK colonization of the western fringes of the taiga or possibly occasional penetration of its interior, which must have happened some time later [data from the Pskov region: studies by A.M. Miklayev and his team, cf. Kośko 1994; 1996] (Fig. 1:3), the area between the Vistula and Dnieper reveals germs of a certain peculiar cultural community. By reason of its location at the Bug-Dniester frontier, the community may be called a "borderland community". Archaeologically more visible signs of this phenomenon come only from the period after ca 3600/3500 BC (cf. earlier comments on the opinions of Belorussian and Russian researchers on the occidentalization of development of the NC and D-DC).

2. "THE BORDERLAND COMMUNITY". AN OUTLINE OF THE INITIAL PHASE OF DEVELOPMENT (PRE-TRZCINIEC STAGE: 3600/3500 — 1900 BC)

In this stage two phases can be distinguished: **(a)** the occidentalization of the Vistula-Dnieper branch of the Comb-like and Stroked cultural range and **(b)** two--way transformations of the cultural environments of the Central European Plain and the East European taiga. The division into the said phases was marked by the beginning of a greater influx of NC societies into territories west of the Vistula (i.e. after 3200/3100 BC).

a. In the period 3600/3500 — 3200/3100 BC one can observe a process of colonization of the western fringe of the taiga by the TRB (Fig. 1:4). This is particularly clearly visible in the drainage of the Upper Pripets and to a lesser degree in the

Nemen drainage. Taking into account the fact that the TRB reached the Upper Bug about 3850/3700 BC, one can assume that soon afterwards (ca 3600/3500 BC) it appeared west of the "Bug-Dniester frontier" reaching the drainage of the Horyn River.

There are no absolute datings available of TRB materials from the interior of the taiga (e.g. from the region of the Upper Pripets). Certain clues are provided by stylistic datings of sources from Zedmar and Dutka [Gumiński, Fiedorczuk 1988] which can be generally called "Wiórek-type" (i.e. corresponding to the turn of phases IIIB/IIIC in Kujawy around 3600/3500 BC).

An assessment of the civilizational effects of the settlement activity has been presented in the quoted works by Russian and Belorussian scholars. This picture may be expanded by identifying the whole NC as culturally syncretic societies that related in many respects to the Balkan-Central European traditions.

In the same period, however, we do not observe any larger migrations in the opposite direction, i.e. from the taiga into the drainages of the Vistula and Oder. We leave out, naturally, the borderland zone which comprises the Warsaw Basin and Chełmno Land, where the impact of "Comb-like and Stroked" societies can be observed relatively early [Kukawka 1991].

b. The situation is changed after 3200/3100 BC. TRB colonizers in the taiga are substituted by GAC societies around that time [cf. Szmyt 1996]. The most recent studies of the chronology of the said process show that it took place primarily between 2950 and 2350 BC. The GAC reached as far as Smoleńsk (2476±126 BC) and its impact can be easily observed in settlements in the taiga on the Dnieper (Middle Dnieper Culture), Fig. 1:5. At the same time, however, certain "forest" typological factors from the circle of the Vistula GAC show that some participants of its "eastern exodus" returned to the areas of departure [Kośko 1990:316]. A deeper understanding of these processes may be of crucial importance for "community" interpretations of the societies of the Vistula-Dnieper range.

Another course of cultural information flow from the west into the taiga involved colonization by the circumbaltic Corded Ware Culture (CWC), closely related to the traditions of the Single Grave Culture (SGC) or more precisely to a widely chartered range where the impact of this group was felt [Kośko 1994; Czebreszuk 1996:93ff.]. After 2900/2750 BC, a number of cultural systems from the drainages of the Nemen, Dvina, Upper Dnieper or even the Volga show many "corded" traits, traces of the societies genetically related to the catchment area of the south-western Baltic. The SGC may be assigned an important role of a generator of neolithization (Fig. 2).

It is also from the "forest" zone of the drainages of the Dnieper, Nemen and Dvina that colonization movements originated around the same time and moved west covering the drainages of the Vistula and Oder. Primary examples of such movements are groups of the Comb-like and Stroked range (mainly NC) and, to a

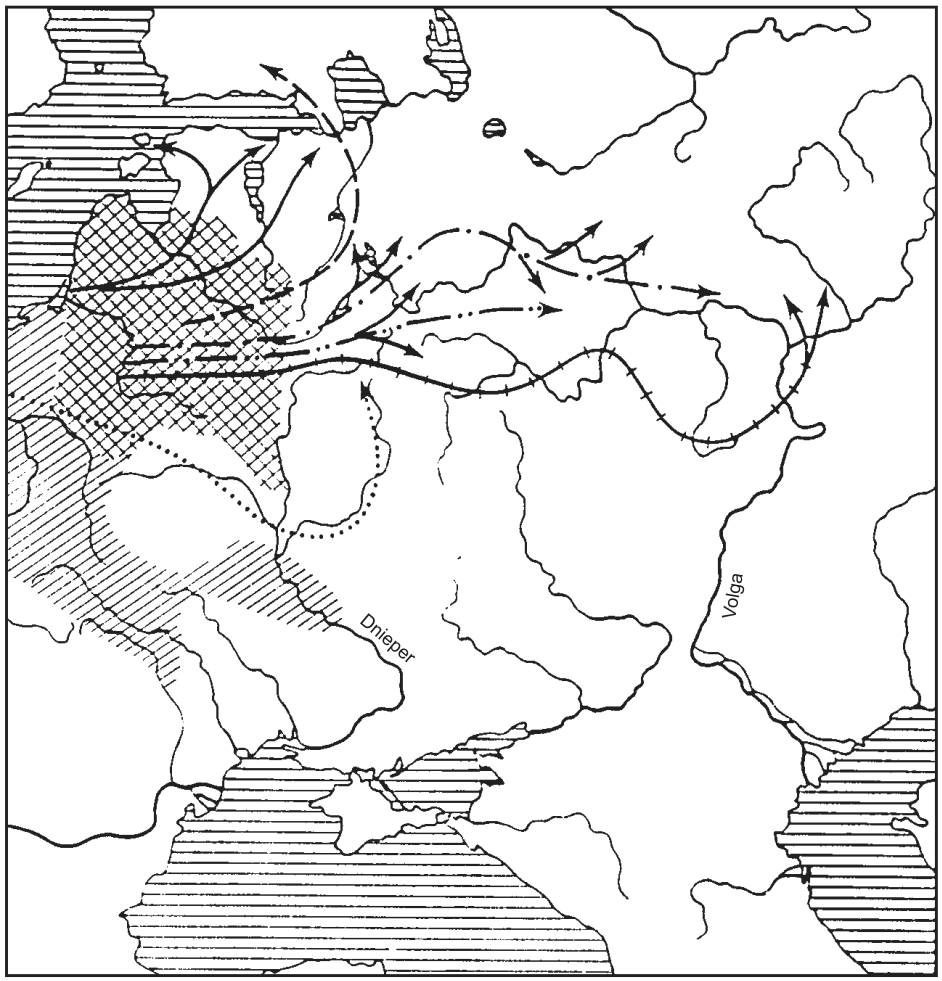

Fig. 2. East European movement directions (arrows) of the representatives of the Single Grave Culture (according to I.I. Artemenko).

lesser degree, the somewhat later influx of Comb Culture societies (Fig. 3). Their presence among Central European settlement environments bears far-reaching culture-making consequences. This applies mainly to the GAC but also to the CWC. Their impact would increase with the approach of the 2nd millennium BC. Features of migrants from the taiga have been recently recorded in compact complexes of Neolithic settlements (e.g. in the black-earth interior of the Kujawy Plateau: Dąbrowa Biskupia 21, prov. of Bydgoszcz, Opatowice 35, prov. of Włocławek: 2556±78

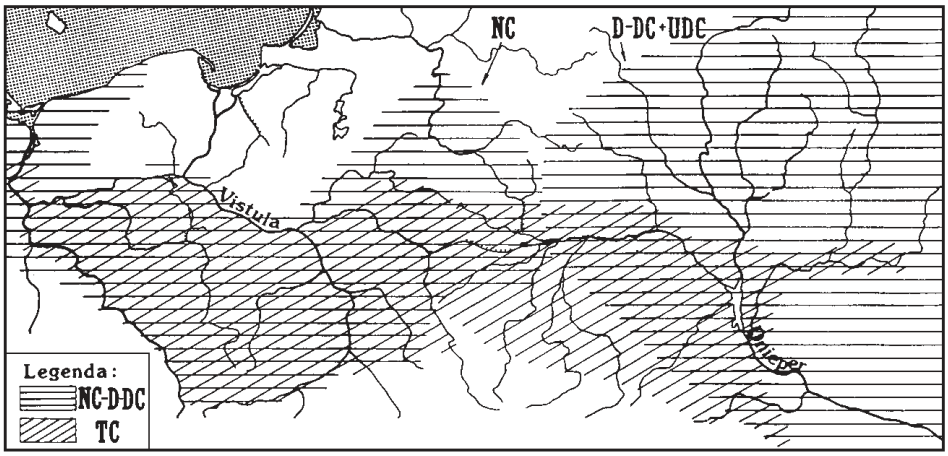

Fig. 3. Spatial relations of "Trzciniec" (according to S.S. Berezanskaya) and the range of cultures with Comb-like and Stroked Pottery (NC = Nemen Culture; D-D+UDC = Dnieper-Donets and Upper Dnieper Cultures).

BC), which shows that at least in the field of economy the migrants had close contacts with agrarian populations (presence of bones of domestic animals: Korzecznik 6/7, prov. of Konin, Opatowice 35, prov. of Włocławek) [Olszewski 1987:66; Jóźwiak 1997].

Less clear is the "western" impact of the societies living in the borderland between the taiga and forest-steppe, primarily of the Yamnaya Culture (YC) which is identifiable in the forest-steppe zone as far as the line of the Dnieper-Ingulets or more occidental, "Yamnaya-Corded" ones [Shaposhnikova 1985:map 8; Nikolova 1992]. From the Plain areas of the Vistula and Oder drainages, there come several source complexes revealing the latter of the mentioned cultural traditions (e.g. Kujawy sites: Bożejewice 8, prov. of Bydgoszcz, Krusza Zamkowa 3, prov. of Bydgoszcz) [Kośko, Klochko 1991; Kośko 1992].

A conclusion may be drawn that in the 3rd millennium BC, in the drainages of the Dnieper and Vistula (partially in the Oder's, too), a system of intensive circulation of cultural patterns came into being which also facilitated the exchange of technical and utility experiences as well as *Weltanschauung models*. The origins of this phenomenon must have been related to the increase in the rate of neolithization, which was typical of large expanses of the European Plain at that time. In the 3rd millennium BC, neolithization reached a broad dimension. Agrarian patterns appeared in hunting and gathering zones of settlements [cf. Kobusiewicz, Kabaciński 1993], distant from the old enclaves of their development that had been formed already in the 6th millennium BC [Prinke, Szmyt 1990]. This multidirec-

tional penetration is a symptom of an increase in polylinearity of the economic and settlement development and a greater activity in the search for new habitats. A typical phenomenon of this period of the early agrarian era on the Plain is a settlement network consisting of small microregions made up of little camps/bivouacs and being a consequence of the prevalence of diversified structures of the animal raising and assimilating (hunting-gathering) economy.

It is only against this background — one may call it the "essence" of the climate of the decline of the early agrarian era — that one can also notice secondary factors of cultural integration in the territory under investigation. Among them are other reasons for some migratory movements like climatic ones (e.g. "pressure" exerted by the YC on the agrarian communities of the Balkan and Central European Eneolithic) [Cherednichenko 1980:44], exchange ones (e.g. emergence of interregional trails) or even proto-trade ones (e.g. far-reaching initiatives giving rise to a wider interest in the Volhynia copper or amber, see below).

A problem remains whether it is sensible to refer to the "borderland" cultural reality under discussion here as a "community", specifically in the chronological dimension of the 3rd millennium BC when a space of intensive contacts came into being there. These contacts document a synthesis of genetically complex traditions. Ignoring obvious difficulties in identifying social consciousness with archaeological means (in this very case: awareness of separate origins, attitude to other people meaning "strangers" — as generators of "community feelings" of interest to us here), it has to be said that even with the use of diagnostic areas available to us, namely comparison of structures of pattern co-occurrence/circulation and their continuity, one cannot undertake any deeper conceptualization of the development mechanisms of the "borderland community". This problem shall be dealt with below.

3. "TRZCINIEC" — AS A HYPOTHETICAL STABILIZATION STATE OF THE "BORDERLAND COMMUNITY" AFTER 1900 BC

"Trzciniec's" borderland nature may be dealt with both from the perspective of a "continental (global) synthesis" and from that of a taxonomic analysis. Before we continue our discussion we should outline how the two perspectives correspond.

Among many attempts to place the assumed Trzciniec community in macrospace, the most spatially "expansive" suggestion has been made by S. Berezanskaya [1972:190], who indicated that "the Trzciniec-Komarov community formed part of a great historical province which comprised such cultures as pre-Lusatian in the west, Abashevo in the east and probably cultures of eastern Baltic in the north." Under this delimitation, "Trzciniec" is placed in the borderland between

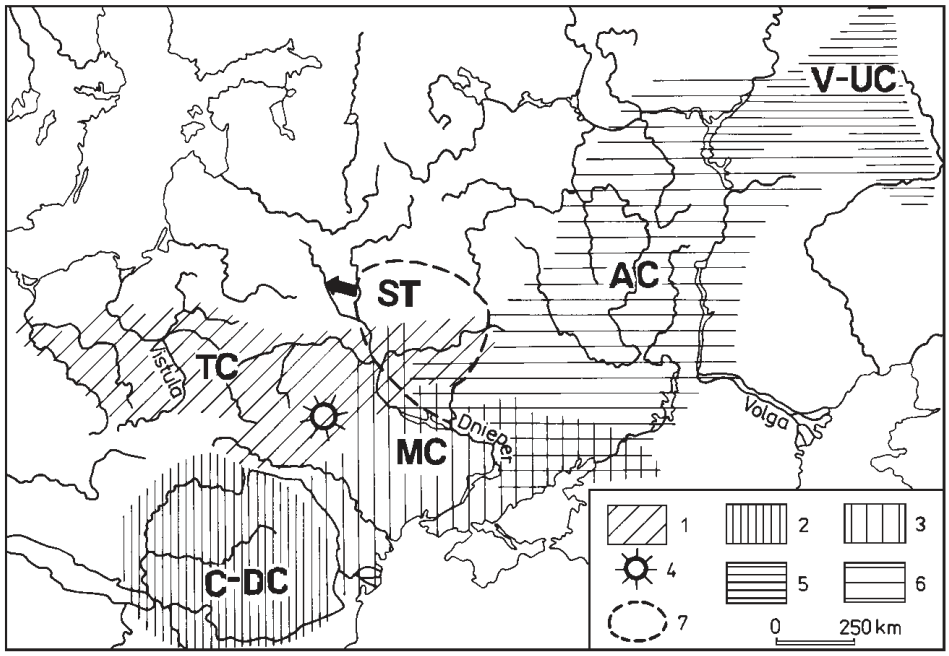

Fig. 4. Placement of "Trzciniec" (1) in the context of ranges and influence zones of the "Early Bronze Age Civilizations": Carpathian-Danube (2 - C-DC =center of Carpathian-Danube Civilization; 3 - MC = Mnogovalikovaya Culture) and Volga-Ural (5 - V-UC = center of Volga-Ural Civilization; 6 - AC = center of Abashevo Culture), 4 = center of Volhynia copper deposits; 7 ST = Sosnytsa type.

two large culture-making centers or "Early Bronze civilizations": Carpathian-Danube and Volga-Ural (Fig. 4:2, 5). Both centers came into being at the turn of the 3rd millennium BC practically contemporaneously. The issue of the degree of autonomy of their origins and development remains a problem. Next to hypotheses in favor of their full independence [cf. Bochkarev 1995:18] one can notice certain relationships which are difficult to classify solely as exchange symptoms, as an example of which may serve the hoard of Borodino [Gimbutas 1956]. Attention is drawn by alleged eastern borrowings in the sepulchral and military spheres (kurgans, a riding horse, a wagon) in the Carpathian-Danube center or hypothetically western ones in metallurgical designs (two-piece spiral fibulae, "Mycenaean patterns" in ornamentation) in the Volga-Ural center. The issue of the transfer of these patterns has not been sufficiently investigated yet while "Trzciniec" itself — which must be stressed — does not corroborate, in our opinion, so far ranging a picture of ties between these two civilizational centers of the Early Bronze Age in Europe.

Taking a more analytical (taxonomic) look at the problem, one has to observe that the two circles clearly differ in metallurgical production profiles both in respect of form and technology. This allows us to precisely delineate the areas of distribution of their artifacts with a relatively stable borderline — in the period when "Trzciniec" existed — on the Dnieper. In the early period, the Mnogovalikovaya Culture was the Carpathian-Danube outpost in the borderland, while the Abashevo and Early Srubnaya Cultures served as Volga-Ural outposts. In the later period this system was replaced by the following cultures (types): Noua-Sabatinovka and eastern "Trzciniec", as representatives of the West, as well as Late Srubnaya and Sosnytsa proper, i.e. left-bank [cf. a different viewpoint in Artemenko 1987] as representatives of the East. It has to be mentioned that the above conclusions do not contradict the results of a comparative analysis of the pottery of the cultures involved (Fig. 4:3, 6, 7).

While assessing "Trzciniec's" metallurgy, attention is being drawn to its embryonic character, "reproduction of foreign patterns" and a lack of "modifications by local artisans" [Dąbrowski 1972:96]. In the case of the western branch, the sources of the said "foreign patterns" are the Carpathian Tumulus and Piliny Cultures [cf. Miśkiewicz 1978:195]. A similarly strong dependence on the metallurgical experience of the Carpathian-Danube center is manifested by the eastern branch [Berezanskaya 1972:189; 1985:443]. To be more specific, in the said territory one can encounter ornaments of Carpathian types (characteristic of the Komarov Culture) made, however, in "Trzciniec" environments. This is evidenced by a different technology used to make them. Other artifacts of this origin include weapons characteristic of the Noua-Sabatinovka Culture. There are, however, arguments in favor of their local origin [Klochko 1993:20-24; 1994:119]. Artifacts of the Kardashinka type, i.e. originating in the local, Middle-Dnieper metallurgical center [Klochko 1994:117-118] and artifacts of the Loboikivka type, related to the Srubnaya Culture and the Sosnytsa type [Klochko 1994:119], also belong to the same group of finds.

While assessing the genetic peculiarity of bronze artifacts, as outlined above, recorded in the territory of eastern "Trzciniec", considerable importance should be attached to the verification of the hypothesis about the existence of large deposits of copper in Volhynia available for prehistoric exploitation [Małkowski 1931]. A confirmation of the hypothesis — as it has already been observed — should "change our view of the role of this area in the Bronze Age" [Dąbrowski 1972:87-88]. This task was undertaken by N.V. Ryndina [1980] who established by physicochemical methods that copper was exploited in Volhynia as early as in the CWC stage. Further research, carried out currently by an interdisciplinary team of Ukraine's NAS, justifies the broadening of the chronological scale and the size of excavating and processing activities in Volhynia. As a result of the research large deposits of virgin copper were geologically identified and metallurgically studied. The deposits are closely stratigraphically related with the level of exploitation of the local first-class

flint whose deposits attracted Eneolithic settlements of the Tripolye Culture (Fig. 1:4). On a similar level deposits of amber were also found. Preliminary results of comparative analyses of early local forms of Tripolye copper artifacts with samples of Volhynia raw-material turned out to be positive. It is, therefore, highly probable that in the area along the right bank of the Middle Dnieper local deposits of copper were used for making bronze artifacts. This, in turn, could have given rise to the so-called Skvira metallurgical region within the boundaries of the Ukrainian Crystal Shield.

From the above discussion, three conclusions should be drawn: **(a)** looking at the system of circulation of cultural patterns from the perspective of the watershed of "Early Bronze Civilizations", one cannot recognize "Trzciniec" as a borderland phenomenon; **(b)** its range is located at the north-eastern frontier of the influence of the Carpathian-Danube center; **(c)** however, it maintains certain autonomy that can be hypothetically related to the culturally creative role of the Volhynia deposits of copper and quite possibly amber.

a. The borderland character of "Trzciniec" depends on certain genetic issues of the "borderland community" discussed earlier (chiefly from the standpoint of the 3rd millennium BC). This specifically delineated area of circulation of cultural patterns kept its boundaries after 1900 BC, however, we do not know the rate and direction of its "Early Bronze Age transformation" or acculturation, which is related to the absence of radiocarbon dating of the beginnings of the eastern branch. In the development of "Trzciniec" one can find, to be sure, a number of significant references to the said community. They are particularly clear in the sphere of settlement and economy or, to put it broadly, in technical or utility aspects. These societies adopted certain standards of more stable forms of existence only during the migration outside the "northern den", when they encountered the traditions of Early Bronze populations inhabiting Old Plateaus in the Circumcarpathian zone [Górski, Kadrow 1996:24]. It seems, too, that yet another heritage of the "borderland community" is the spreading of certain ideological and ritual standards in the "Trzciniec's" range. Among them are cremation active traditions of the Sofievka-Middle-Dnieper cremation center can be observed here [Kośko, Videiko 1995] or even kurgan building [for a similar point of departure of reception see Artemenko 1967].

Thus, it is a complex of patterns which formed — originally — on the Plain in the Vistula drainage and in the taiga in the western part of the Dnieper's drainage. It is only from there that the complex expanded primarily to the west and south. The expansion to the south seems to have generated an entirely new cultural quality, namely "Trzciniec's" loess groups and the Komarov Culture. This phenomenon has been recently systematically studied by J. Górski and S. Kadrow [1996]. The effects of these studies may serve as a reference point for a spatially wider interpretation.

b. The Early Bronze impulse that reached the "borderland community" was clearly of Carpathian-Danube origin. An analysis of distribution of bronze objects

does not justify enlargement of the community in the eastern direction, beyond the Dnieper, i.e. into the area where Volga-Ural bronze objects dominated. Consequently, any ties with the system of pattern circulation of the "left-bank" Sosnytsa type, of primary interest to us here, traditionally, albeit with certain hesitation, included in "Trzciniec" seem highly disputable. Early Bronze patterns reached the "borderland community" travelling along the Vistula, Dniester and Southern Bug. In the light of the most recent research (this applies to the cemetery in Gordiyevka), the trail along the Southern Bug River — treated as an amber trail from 1500 BC [Klochko 1996] — takes on particular importance. It connects the territories of interest to us here, through the Volhynia deposits, not only with the Balkans but also with Anatolia and with the eastern Mediterranean in general. The multiplicity of trails is borne out by the genetic structure of bronze objects in the area of east "Trzciniec". For this reason, it can hardly be assumed that within its range there existed any uniform circulation system of patterns and artifacts of the Early Bronze Age Carpathian-Danube Civilization. "Trzciniec" was made up of different branches of this center whose development was relatively highly autonomous.

c. Is it true thus that after 1900 BC the "borderland community" reached a state of stabilization whose generating force must have been the tradition of the Early Bronze Age Carpathian-Danube Civilization? We believe that the essence of the changes taking place then is better described by the hypothesis assuming autonomy of development of vast expanses of the Central European Plain or the Eastern European taiga as far as the background is concerned. The Carpathian-Danube center hypothetically taking over the exploitation of Volhynia deposits of copper and quite possibly amber came into contact with the societies of the "borderland community". This may have resulted in a selective adaptation by the latter of entirely different technical, utility and ideological patterns generated by elitist societies of the South. It seems that the Old Plateau exodus of "Trzciniec" was a response to this civilizational leaven.

Around 1300-1200 BC the "borderland community" gradually disappeared whereas the "Bug-Dniester borderline" progressively recovered its legibility.

CONCLUSIONS

To conclude let us go back to the question forming the title of this symposium: What was "Trzciniec"? Was it a stable cultural community, which is implied by the term "Trzciniec Culture" (following the widest taxonomic delineation)? Was it rather a marginal zone of Early Bronze Age acculturation within the circle of

the societies of the so-called borderland community, i.e. an entity of a relative compactness formed on the basis of active, multidirectional contacts of population groups of different genetic traditions?

It seems that this dilemma may be illustrated with an opposition known from historical and comparative linguistics, namely language family (group) and language league (or genetic kinship vs. typological kinship). A league is a form of a looser association of languages than a family, it is made up of languages of different origin "which as a result of their centuries-long and mutual contacts and influences have become very much alike" [Milewski 1965:153]. This type of acquired kinship occurs at many levels of language structure and does not have necessarily to lead to a deeper identification, i.e. changing into the state of linguistic, cultural and ethnic community. As an illustration can serve the history of one of the more telling examples of such language leagues, i.e. the Balkan League [Milewski 1965:135]. It was formed by such diverse languages as Greek [cf. Malmberg 1969], Albanian, Bulgarian or Romanian. Consequently, it bound together ethnic identities from the so-called Balkan Crucible where syntheses and disintegrations of cultural and political areas are particularly frequent.

It should be considered whether the deepening of the reception of that linguistic opposition creates an interesting explicatory perspective for prehistory. All the data presented in this paper lead to such a conclusion, i.e. to the recognition of the "borderland community" and consequently "Trzciniec" as a case of the development of a "cultural league" that came into being in a peculiar civilizational climate of the north-eastern frontier of the Balkan-Central European province.

Translated by Piotr T. Żebrowski

ABBREVIATIONS

AP	– Archeologia Polski, Warszawa
APL	– Archaeologia Polona, Warszawa
AR	– Arkheologia, Kiev
BPS	– Baltic-Pontic Studies, Poznań
ESA	– Eurasia Septentrionalis Antiqua, Helsinki
KSIA AN USSR	– Kratkiye Soobshcheniya Instituta Arkheologii AN USRR, Kiev
MANH	– Materiały Archeologiczne Nowej Huty, Kraków
MIA	– Materialy i Issledovaniya po Arkheologii SSSR, Moskva
PBF	– Praehistorische Bronzefunde, München
SA	– Sovetskaya Arkheologia, Moskva.
SPA	– Sprawozdania Archeologiczne, Kraków.

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