

F i g. 1. Tripolye culture, phases B I-II, B II, C I and other Copper Age cultures: I - Polgàr culture; II - Baden culture; III - Tripolye culture; IV-V - Sredni Stog Unity; VI - Nizhna Mikhailovka culture; VII - Copper Age of Crimea (after Arkheologiya 1985: Map 6).

ceramics from settlements of Koshylivtsy type have analogies in ornamentation patterns of the Baden culture (we shall return to this issue later).

1.1.2. THE SOUTHERN BUG REGION

The distribution of materials displaying traits of the Lengyel and Tiszapolgár cultures in complexes of the Zalishchyky, Soloncheny and Koshylivtsy types was mentioned above. In the area between the Southern Bug and the Dnieper of the 'eastern Tripolye' culture, we can observe a new phenomenon in ceramics production, present in a group of vessels featuring forms typical for the Lengyel and Polgár cultures. They have a glossy surface, are black or dark brown in colour, and are not ornamented. The researchers have classified this type of ceramics in a separate, third category.

A number of these vessels were made of clay, characteristic of the painted pottery. Less frequent was a ceramic mass with an admixture of sand, crushed shell or stone. The



F i g . 2. Tripolye culture, phases C I, C II and other Copper Age cultures: I - Funnel Beaker culture; II - early Yamnaya culture; III - Tripolye C I and C II; IV - Pit- and Comb-Pottery culture (after Arkheologiya 1985: Map 7). Tripolye culture: 1-5 - Koshylivtsy type (end C I); 6-17 - Zhvaniets type (C II); 18-35 - Tomashivka type (C I): 18 - Teplik, 19 - Popudnia, 20 - Mankivka, 21 - Dmitrushki, 22 - Uman (Pankivka), 23 - Tomashivka*, 24 - Stary Babany, 25 - Sushivka*, 26 - Dobrovody*, 27 - Talyanki*, 28 - Talne-1, 29 - Maydanetskoye*, 30 - Kolodiste*, 31 - Rozsokhuvatka*, 32 - Chichirkozivka*, 33 - Stara Buda, 34 - Vasilkove*, 35 - Kaytanivka; 36-39 - Kanev type (C I); 40-51 - Kolomiyshchyna type (C I); 52-57 - Lukashi type (end C I); 58-71 - Sofievka type; 72-76 - Troyaniv type; <u>77-92 - Gorodsk type;</u> 93-112 - Usatovo type; 113-120 - Tripolye materials in mound burials (C II: 113 - Yermolayevka, 114 - Olshanka, 115 - Serezlievka, 116 - Zhivotilivka, 117 -Bilozirka, 118 - Libimivka, 119 - Krivy Rig, 120 - Sokolivka). * - Tripolye protocities

surface of the ceramics is covered with a thin engobe layer, and traces of glossing. Six types of vessels have been distinguished: dishes, bowls, bi-conical and pear-shaped vessels, lids, 'binocular-shaped' vessels and pots [Zayets, Ryzhov 1992:115-117]. A number of these forms (Fig. 6) have analogies in ceramics of the Lengyel and Polgár cultures. In addition to these, I. Zayets and S. Ryzhov distinguished a vessel with a rounded top, from the Klishchiv settlement assemblage. On the surface of this vessel, loop handles are placed within a pattern of circles (Fig. 6-8). In the opinion of the authors, this vessel has analogies in the latest complexes of the Tiszapolgár culture [Zayets, Ryzhov 1992:161]. Similar vessels have also been found on settlements of the Tripolye periods A I-II and A II on the Dniester, namely those in Buchach, Viktoriv, Komariv and Odaiv [Zayets, Ryzhov 1992:161; Konopla, Kruts, Ryzhov 1989:104]. The researchers link the origins



Fig. 3. Types of pottery, from Tripolye culture phase B I-II on Dniester, type Zalishchyky: 1,4,6,8,10 - Zalishchyky; 2,11,13 - Polivaniv Yar; 3,5,9,7 - Buchach (after Vinogradova 1983).



F i g . 4. Tripolye culture phase B I-II. Zalishchyky. Figurines with features of Lengyel culture (after Pogozeva 1985).



Fig. 5. Types of pottery, figurines and painted ornaments from Tripolye culture phase B I-II on Dniester, type Soloncheny: 1,9,10,15 - Floreshty; 2 - 8, 12 - Stari Orkhei; 11, 13, 14 - Soloncheny II (after Vinogradova 1983).



Fig. 6. Tripolye culture phase B I-II. Types of non-ornamented pottery ('the third category') 1,9,10,14 - Floreshty (after Vinogradova 1983); 2-8, 11-13 - Klishchiv (after Zayets, Ryzhov 1992).



Fig. 7. Tripolye culture phase B I-II. Middle Dnieper region. Types of pottery, related to Central Europe region: 1,2 - Veremya (after Passek 1949).



F i g . 8. Tripolye culture phase C I. Middle Dnieper region. Types of pottery, related to Central Europe region: 1-5 - Khomine, 6-8 - Ignatenkova Gora.



F i g . 9. Tripolye culture phase B II. Middle Dnieper region. The clay model of house from Kolomiyshchina II (after Passek 1949).

The anthropomorphic figurines, representing a seated figure with arms extended forwards, also display traits which are reminiscent of the LC.

On the Veremya and Shcherbanivtsy settlements, plain copper axes were found, attributed by N.V. Ryndina to the Sakalkhat type. Such axes are widespread in complexes of the Bodrogkeresztúr culture in Hungary and Slovakia. However, N.V. Ryndina considers that the production technology of axes found on the Dnieper differs from Bodrogkeresztúr culture traditions, judging that these products were made by local artisans, and their designs based on imported specimens [Ryndina 1998].

Later, at the B II stage, ceramics of the third category (Fig. 8) were widespread on TC settlements on the Middle Dnieper. On settlements such as Grebeny, Chapaevka and Kolomiyshchina II ceramics of this category make up between 20-30% and 60-70% of the total ceramic assemblage.

There is a distinct similarity in the construction of houses of the LC to some of the settlements of the TC on the Dnieper, as can be judged from the clay model of a



Fig. 10. Tripolye culture phases B II and C I. Middle Dnieper region. Decoration of kitchen pottery by cord.

dwelling found on the Kolomiyshchina II TC settlement. The walls of this dwelling's model are 'ornamented' by deeply incised lines that suggest the vertically-positioned split tree trunks. Fragments of a similar model are also found on the Grebeny settlement [Bibikov, Shmagliy 1964].

Such wall constructions are not characteristic of TC constructions in other regions. On models of dwellings which were found in the TC settlements in Rozsokhuvatka and



F i g . 11. Tripolye culture phase C I. Middle Dnieper region. Types of decoration of the kitchen pottery, related to Northern region.



F i g . 12. Tripolye culture phase C I. Middle Dnieper region. Types of decoration of the kitchen pottery, related to Northern region.



F i g. 13. Tripolye culture phase C I. Middle Dnieper region. Pottery from Kolomiyshchina I with FBC features (after Passek 1940, 1949).



F i g . 14. Tripolye culture phase C I. Middle Dnieper region. Pottery from Kolomiyshchina I with FBC features (after Passek 1940, 1949).

the similarity of ornamentive motifs and their details deserves much closer attention, in the form of further research.

Also worth noting is the distribution on ceramics from the territory of the Middle Dnieper of the drawn inverted image of a tree (or plant). Such images are known from settlements of the Kolomiyshchina I and Lukashi types, for example on FBC pots found in the basin of the Vistula. This inverted tree motif is typical for the TC, and so probably appeared in the area of the Dnieper under the influence of FBC communities.

Thus, the first TC materials with features typical for the FBC can be fixed at the CI stage, found mostly on the Middle Dnieper.



Fig. 15. Tripolye culture phase C II. Volhynia, Troyaniv type. Pottery with the FBC motives of decoration. Troyaniv (excavated by M. Shmagliy).







F i g . 16. Tripolye culture phase C II. Volhynia, Troyaniv type. Handles of amphoraes from Troyaniv (excavated by M. Shmagliy).


Fig. 17. Tripolye culture phase C II. Volhynia, Troyaniv type. 1 - 6 Troyaniv; 1-4 - clay models of hammer-axes; 5-6 - stone hammer-axes (excavated by M. Shmagliy).



F i g . 18. Tripolye culture phase C II. Pottery with features of Baden culture: 1-2 - Koshylyvtsi , 3-6 - Troyaniv (excavated by N. Shmagliy).



F i g. 19. Tripolye culture phase C II. Volhynia, Gorodsk type. Pottery with features of Baden culture: Gorodsk (after Makarevich 1952; Petrov 1940; Krichevskiy 1940).



F i g . 20. Tripolye culture phase C II. Volhynia, Gorodsk type. Pottery with features of Baden culture: Gorodsk (after Makarevich 1952; Petrov 1940; Krichevskiy 1940)





Fig. 21. Tripolye culture phase C II. Volhynia, Gorodsk type. Pottery with features of Northern cultures. Gorodsk (after Makarevich 1952; Petrov 1940; Krichevskiy 1940)



Fig. 22. Tripolye culture phase C II. Volhynia, Gorodsk type. Pottery with cord ornament. Gorodsk (after Makarevich 1952; Petrov 1940; Krichevskiy 1940)



Fig. 23. Tripolye culture phase C II. Volhynia, Gorodsk type. Pottery with Baden and Northern features. Lozy (after Shmagliy).



Fig. 24. Tripolye culture phase C II. Volhynia, Gordineşti type. Pottery with Baden features. Sandraki (excavated by O. Lagodovska).



Fig. 25. Tripolye culture phase C II. Volhynia, Gordineşti type. Pottery with Northern features. Sandraki (excavated by O. Lagodovska).



F i g . 26. Tripolye culture phase C II. Volhynia, Gordineşti type. Pottery with cord ornament. Sandraki (excavated by O. Lagodovska).



Fig. 27. Tripolye culture phase C II. Volhynia, Gordineşti type. Pottery with cord ornament. Sandraki. (excavated by O. Lagodovska).



Fig. 28. Tripolye culture phase C II. Volhynia, Gordineşti type. Pottery with Baden and Northern features. Nova Chartorya (excavated by O. Lagodovska).



F i g. 29. Tripolye culture phase C II. Volhynia, Gordineşti type. Pottery with cord ornament. Nova Chartorya (excavated by O. Lagodovska).



Fig. 30. Tripolye culture phase C II. Dniester region. FBC pottery from Zhvaniets-Shchovb (after Movsha 1985).

appearance; and the second where the units of adjacent cultures are integrated into the cultural complex of the TC.

In the opinion of the authors, the period between the B I-II and C I phases of the TC witnessed an integration of populations from western territories (cultures of the Lengyel-Polgár circle) in Tripolye, with a similar process occurring in the C II period concerning populations from territories of the Bodrogkeresztúr, Baden, FBC and GAC



Fig. 31. Tripolye culture phase C II. Dniester region. GAC pottery from Tripolye culture settlements (after Movsha 1985).

cultures. These processes occurred initially between the Prut and Dniester rivers, later spreading into Volhynia and further up to the Middle Dnieper.

It concerns the traits of material culture (types of settlements and dwellings, the form and ornamentation of ceramics, weapon and tools) and traditions (cult practice and burial customs). In some territories, the newcomers significantly influenced the purely TC traditions. This is manifest mainly in the large proportion of ceramics made with clear Baden culture traits (up to 70%), as well as in the transformation of dwelling types. Between 4200-2750 BC, we can distinguish the following waves of migration, which are connected with particular cultures in the West:

1. Lengyel — Polgár; 2. Bodrogkeresztúr; 3. FBC; 4. Baden; 5. GAC.

The scale of these migratory movements, and thus their influence on types of the TC, was various. The last three waves almost coincided in time. As a result, there were



Fig. 32. Tripolye culture phase C I and C II. Simulation in painting and forms features of Northern (FBC, GAC) (1 - 2) and Baden cultures (4-7): 1- Sandraki, 2- Gorodsk, 3- Khomine, 4-7 - Koshylivtsy.



F i g . 33. Cultural situation and interactions between cultures in period 4200 - 3500 BC. Time of Tripolye culture, phases B I-II, B II, C I. Key: 1 - Lengyel and Polgár cultures, 2 - Tripolye culture, 3 - directions of interactions.

nology expressed in the macrolithisation of the flint industry does not raise doubts. The flint mining in Volhynia is claimed to have been undertaken by different cultures, with a key role being played by the Lublin-Volhynia culture [Jastrzębski 1985:101; Zakościelna 1985]. This reasoning appears to be quite justified.

There is a great deal of evidence concerning the distribution of flint raw material from the territory between the Prut and the Dniester to the east of the Carpathians.



F i g. 34. Cultural situation and interactions between cultures in period 3500 - 2750 BC. Time of Tripolye culture, phase C II (base on the map from Kośko 1981). Key: 1 - FBC; 2 - Late Tripolye culture; 3 - Tripolye influences; 4 - Tripolye cultural samples spreading; 5 - ways of Tripolye samples infiltration; 6 - supposed road of Tripolye samples infiltration; 7 - morings of Mątwy cultural complex; 8 - Baden culture; 9 - Cotofeni culture; 10 - Černavoda culture; 11 - centres of regions; 12 - Tripolye sites (with "western traditions"); 13 - supposed roades of central and south European cultures infiltration.

This is supported by the absence there of high-quality flint. For this reason, flint from Prut and Dniester deposits became a major component of the Neolithic flint industries of Carpathian Basin cultures. Later, in the period of the Baden culture, Dniester flint is represented by single tools or blades [Kaczanowska, Kozłowski, Šiška 1993:110]. Experts indicate the important role of the TC in the development of the flint production [Balcer 1983].


F i g. 1. Location of the Shypintsy and Koshylivtsy monuments of the B II - beginning of the C II stages. 1 - border of the Tripolye culture of the C I - γ I stages (by V. Kruts); 2 - border of the TC of the C II - γ II stages (V. Kruts); 3 - monuments of the B II stage (the early Shypintsy type); 4 - monuments of the C I stage (the middle and the late Shypintsy); 5 - the Koshylivtsy monuments (beginning of the C II stage); 6 - border of the Lengyel culture (the culture of Lublin-Volhynian Painted Ceramics) (by A. Zakościelna); 7 - border of the Polgár culture (by M.F. Potushnyak).

the Brynzeny-Zhvaniets complexes, which, presumably, were the heirs of the Shypintsy traditions.

All Koshylivtsy beakers, in common with Shypintsy specimens, possessed finelydeveloped edges. They were divided into metopes by vertical lines, but did not possess the characteristic 'protuberances' of the Shypintsy beakers (Fig. 2) [Hadaczek 1914:Vol. XII, pp. 101, 105, 106; Vol. XIII, pp. 109, 110, 111-113]. Beakers with handles could













Fig. 2. The Shypintsy traditions in the Koshylivtsy group.



Fig. 3. The Shypintsy traditions in the Koshylivtsy group.



F i g . 4. 1-5 - the Shypintsy traditions in the Koshylivtsy group; 6-10 - the Brynzeny-Zhvaniets influence on the Koshylivtsy group.





















Fig. 5. The Brynzeny-Zhvaniets influence on the Koshylivtsy group.



Fig. 6. 1-4 - The Brynzeny-Zhvaniets influence on the the Koshylivtsy group, 5-7 - Influence of traditions of the Lublin-Volhynian Painted Ceramics culture on the Koshylivtsy group.

The earliest representation of this kind of form has been recorded in the settlements in Valea Lupului II, Varvarivka XV and Shury I.

The presence of handles with moulded attachments (bosses) on some vessels from Bilche Zolote-Verteba I could be explained by the influence of Polgár cultural circle traditions [Kadrow, Kośko, Videiko 1995:204].

The idea of dividing the ornamentation fields of the Koshylivtsy turnip-shaped and pear-shaped vessels into metopes using wide bands (Fig. 6) [Hadaczek 1914:Vol. XIV, p. 124; Vol. XV, pp. 127, 128, 130-134; Vol. XVI, pp. 136, 139; Vol. XVII, p. 142] is



Fig. 7. Influence of traditions of the Lublin-Volhynian Painted Ceramics culture on the Koshylivtsy group.



Fig. 8. Vessels of the Lublin-Volhynian Painted Ceramics culture 1-3 Grodzisko I (aftet Podkowińska 1953); 4 - Ornatowice (foll Gurba, Jasinski 1963); 5 - Wąwolnica (after Zakościelna 1986); 6 - Husynne (after Zakościelna, Gurba 1996).



Fig. 1. Monuments of the Tripolye culture in Volhynia. 1 - Golyshiv; 2 - Yaroslavychi; 3 - Stavriv; 4 - Mali Dorogostai; 5 - Zhorniv; 6 - Gosch; 7 - Kostyanets; 8 - Varkovychi; 9 - Lystvyn; 10 - Steblivka; 11 - Khoriv; 12 - Mogylyany; 13 - Stara Moschanytsa; 14 - Buderazh; 15 - Ostrog; 16 - Obych; 17 - Vaskivtsy; 18 - Shumsk; 19 - Brykiv; 20 - Slovyta; 21 - Pidgirtsy; 22 - Popovtsy; 23 - Lozy; 24 - Bodaky; 25 - Lanovtsy; 26 - Kolodyazhyn; 27 - Nova Chartorya; 28 - Stara Chartorya; 29 - Mala Derevychka; 30 - Glezno; 31 - Velyki Derevychi; 32 - Korostky; 33 - Kazenna Hromada; 34 - Ozerne; 35 - Yurivka; 36 - Stryzhivka-Ivanove; 37 - Stryzhivka-Bukhta-Vyr; 38 - Lubar (slaughter-house); 39 - Lubar-Melnytske; 40 - Pe-dynky; 41 - Vygnanka-Zastavok; 42 - Vygnanka-Grabovtsy; 43 - Makharyntsy-Step; 44 - Korzhivka-Selysko; 45 - Korzhivka-Selysko-2; 46 - Korzhivka-Bashtan; 47 - Gubin 1; 48 - Samchyky; 49 - Gorodsk; 50 - Troyaniv; 51 - Slobodysche; 52 - Raiky; 53 - Bystryk; 54 - Zhezheliv; 55 - Belilivka; 56 - Ruzhyn; 57 - Yagnyatyn; 58 - Karabchivjvka; 59 - Pavoloch; 60 - Pyski.

minor excavations at six settlements (the village of Korzhivka, Bashtan site, Pasychysko site, Selysko-2 site; Makharyntsy village, Step site: Vygnanka village, Grabovtsy site; Kazenna Gromada village) [Kruts, Ryzhov 1988].

In the 1980s, the investigation of TC monuments were held only in western Volhynia. New settlements were discovered notably near the village of Popovtsy in the upper reaches of the Ikva, Pidgirtsy village in the upper reaches of the Western Bug and Slovyta village in Lviv Region. These short-term settlements determined the north-western borderline of the distribution of the TC population (Fig. 1).

Throughout the whole history of studies of TC monuments on the territory of Volhynia, the problems of origin, period division, chronological correlation and the relations



 $F\,i\,g$. 2. New monuments in the upper reaches of the Sluch.



Fig. 3. Pottery (1-16) and plastics (17) from the settlement in Kolodyazhyn



 $F\,i\,g$. 4. Pottery from the settlement in Korzhivka-Selysko 2.



Fig. 5. Kitchen pottery from the settlement in Korzhivka-Selysko 2.



Fig. 6. Table pottery (1-9), kitchen pottery (10-17) and tools (18-26) from the settlement in Korzhivka -Bashtan.



Fig. 7. Kitchen pottery (1-4), table pottery (5-9) and tools (10-13) from the settlement Makharyntsy-Step.



Fig. 8. Pottery from the settlements in Troyaniv (1-13) and Yagnyatyn (14-19).



Fig. 9. Pottery from the settlement in Gorodsk.



Fig. 10. Pottery from the settlement in Gorodsk.



Fig. 11. Table pottery (1-10), plastics (11) and tools (12-18) from the settlement in Gorodsk.


Fig. 12. Pottery from the settlement in Chartorya.



Fig. 13. Map of distribution of Eneolithic cultures on the territory of Volhynia (1 - Tripolye culture; 2 - Lengyel culture; 3 - Funnel Beaker culture).

(egnobe covering, painting, polishing) and the range of the main vessel shapes. Where they differ is in their ornamentation. The vessels of Lystvyn type settlements are distinguished by cord ornamentation on pots and amphorae, frequently in combination with lines of point prints, and triangular and circular incisions, sometimes arranged in staggered lines. Generally speaking, the cord ornamentation of western Volhynian pottery is noted for its diversity.

The formation of the monuments of Gorodsk and Lystvyn type was most probably carried out on a local basis (monuments of Troyaniv and Khoriv type), under the influence of the population known through Gordineşti [Dergachev 1980:130-133]. Nevertheless, vessels have been discovered with a similar painted ornamentation to the pottery of the monuments of Kyrylen type, occupying an intermediate position between the earlier vessels of the Brynzeny and Vykhvatyntsy types and the later vessels of Gordineşti type monuments [Bikbayev 1994].

Although the monuments of Lystvyn type can preliminary be subdivided chronologically into earlier (Lystvyn) and later (Golyshiv) monuments, such a subdivision is not observed in Gorodsk type monuments.



F i g. 1. Map of monuments of the Eastern Tripolye culture: 1 - monuments of the Dnieper local variant; 2 - monuments of the Bug-Dnieper local variant; 3 - monuments of the Middle Bug local variant; 4 - monuments of the Southern Bug local variant; 5 - monuments of the Vladymirovka type.

development progressed, and under the influence of contacts with related and foreign ethnic tribes. Four local variants have been distinguished within the framework of the ETC [Tsvek 1999; Fig. 1].

The majority of monuments of the Southern Bug and Dnieper variant were located in the basins of the Ros, the Gorny Tikich and the Gnily Tikich rivers. The major settle-



Fig. 2. 1 - Plan of the settlement in Vesely Kut; 2 - Shkarovka sanctuary. Reconstruction; 3 - Furnace complex of the Vesely Kut settlement. Reconstruction; 4 - Lay-out of dwellings in the settlement Vesely Kut. Key: a - stoves; b - eminences made of baked clay; c - altar; d - pit; e - open hearth; f - adobe wall on wooden framework; g - adobe wall.



Fig. 3. Main types of vessels of the Eastern Tripolye culture. 1-3, 5-14 - Vesely Kut; 4 - Shkarovka.



Fig. 4. Comparison of ceramic complexes of the Eastern Tripolye and the Cucuteni cultures. Key: A - pottery with inised ornamentation; B - painted pottery; C - kitchen pottery. 1 - Myropilla; 2 - Vesely Kut; 3 - Krasnostavka; 4 - Nezvysko, upper stratum; 5 - Polivaniv Yar; 6 - Nezvysko, lower stratum. 1-3 - settlements of Eastern region; 4-6 - settlements of Western region.



Fig. 5. Imports of ceramics of the Lengyel cultural circle. 1,7-10,11,13,15-17 - Vesely Kut; 2 - Orlyk; 4,14 - Krasnostavka; 5,6,8,9,10,12 - Shkarivka.



Fig. 6. Imports of ceramics of the Polgár cultural circle. 1,2,3 - Veremya; 8 - Klishchiv; 4-7,9-11 - Vesely Kut.



Fig. 7. Imports of ceramics of the Gumelniţsa cultural circle. 1-3, 5-7 - Berezivka; 4 -Sokoltsy.



Fig. 8. Imports of ceramics of the Cucuteni circle. 1-5 - Berezivka; 6,7,8 - Shkarivka; 9,10,19 - Vesely Kut; 11-17,20 - Garbuzyn.



Fig. 1. Ceramics with elements of the Tiszapolgár culture from the Tripolye-Cucuteni settlements: 1-4 Buchach; 5 - Nezvysko II; 6 - Soloncheny 2, middle layer; 7 - Glubochok.



Fig. 2. Ceramics with elements of the Tiszapolgár culture from the settlement in Soloncheny 2 (middle layer).



F i g . 3. Large vessels with elements of the Tiszapolgár and the Bodrogkeresztúr cultures from the settlements in: 1 - Nezvysko III; 2 - Holigrady; 3 - Kadyivtsy-Bavky; 4 - Petreny.



Fig. 4. Pottery with elements of the Tiszapolgár and the Bodrogkeresztúr cultures from the settlement in: 1,3 - Vesely Kut; 2 - Stara Buda; 4 - Klishchiv; 5-7 -Veremya; 8 - Krasnostavka.


Fig. 5. Copper axes from the Tripolye settlements in: 1,8,9 - Shcherbanivka; 2,4,5 - Veremya; 3 - Gorodnytsa II; 6,7 - Tripolye.



F i g. 6. Beakers from the Tripolye culture settlements: 1 - Stayky-Zhukivtsy; 2,3 - the Middle Dnieper basin territory with the Tiszapolgár and the Bodrogkeresztúr elements.



F i g. 7. Pottery with features of the Polgar influence from the settlements in the Dnieper and the Bug rivers basins: 1 - Melnytsa-Podilska; 2,3,5,7,8 - Schypentsi; 6 - Kunysivtsi; Odaiv; 9 - Viktoriv.



Fig. 8. Copper hammer-axes from the Tripolye settlements.



Fig. 9. The Tripolye pottery with elements of the Bodrogkeresztúr II culture: 1,2 -Kolomiyshchina I; 3 Zhukivtsy; 4-5 - the Middle Dnieper basin; 6 - Dovzhyk.



F i g. 10. Ceramics with features of the Polgár and the Malice influences from the Tripolye settlements: 1 - Shypintsi; 2 - Kazenna Gromada; 3 - Litky; 4 -Kolomiyshchina I; 5,6 - Khalepye; 7 - Bukivna; 8 - Chapaevka; 9 - Grebeny.

















Fig. 11. Ceramics with the Polgár and the Lengyel features from the late Tripolye settlements: 1 - Nova Chartorya; 2,6 - Gorodsk; 3 - Zvenyachyn; 4 - Sandraki; 5 - Tsviklivtsy; 7, 9 - Lozy; 8 - Mali Virmeny.





Fig. 12. Horn mattock from the suburbs of Kyiv in Krasny Khutor.

population is clearly traced in the ceramic materials from the excavations of the settlement in Bortnychi village on the left bank of the Dnieper [Amburger, Bilanovska 1956:Table 1:1-2]. In particular, the find of clay spinners for a spindle, decorated with deeply incised ornamentation outlined in the form of rays is noteworthy. Bortnychi reveals the process



Fig. 1. Copper artefacts of the Tripolye culture: 1 - hammer-axe (Bilche Zolote); 2 - bracelet; 3 - wide ring; 4 - thin ring; 5 - ear-ring; 6 - awl; 7 - plate (Glubochok).



F i g . 3. Territory of Volhynia copper mineralization development (1) and large basalt rocks outcroppings with virgin copper manifestation (2).



Fig. 4. Map of copper deposits locations on the territory of Ukraine (A) and archaeological sites - sources of the geological-chemical analyses (B).

aleurolites and argillites. The maximum content of copper in these strata comprises 2.5%. The presence of chalcopyrite, chalcocite and bornite, and occasionally pyrite, galena and silver (up to 50 mg/kg) is recorded in the mineral composition. The ore extends up to the daylight surface and could have been extracted by the open method.

On the territory of the Regions of Lvov and Ivano-Frankivsk, in the south-eastern and central areas of flexure before the Carpathian mountains, one can observe copper mineralising of the sedimentary strata of Neogene with exposures on the daylight surface (Nadvirne, Loivskiy, Yablonevske, Kaluzhskiy and Delyatynskyy sites). Ore grains are attributed to the sandstone strata and clays. The major copper minerals are malachite, chalcopyrite, covellite, azurite, chalcocite, bornite and occasionally virgin copper. Lead minerals (galena) and zinc minerals (sphalerite) are also frequently encountered. Copper content varies from decimal points to 16%. Lenses and layers of clays with a high quantity of herbal remains are the most copper-enriched.

The question of the possibility of producing bronze of an industrial genesis, using virgin copper and tin fused from Volhynian ore, demands special detailed studies, in which particular importance should be given to specialised examination. Tin ores of the Suschano-Perzhan zone have been recorded in Volhynia. These could certainly have been used particularly in metal, as well as in bronze fusion.


Fig. 1. Taxonomy and chronology of Danube cultural units in Poland (after Kulczycka-Leciejewiczowa 1979).



F i g . 2. The influence range of the core of the eastern province of LBPC in south-western Slovakia in different development stages of the culture (from the decline of the 'music note phase' [NIII] until the middle stage of the Želiezovce phase [ŻIIb] in Małopolska and western Ukraine. a - circle of eastern linear cultures; b - Linear Band Pottery culture in SW Slovakia and Moravia; c - Linear Band Pottery culture sites; d - borders between cultural areas; e, f - major directions of influences.

the centre in south western Slovakia shrank the stronger was the impact of Eastern Linear cultures in the form of the higher incidence of imported obsidian [Brzozowski 1986, map II; Ścibior 1992]. It accounted for as much as 30 percent of the raw material of stone inventories [e.g. Rzeszów-Piastów estate, feature complex no. 96 cf. Kadrow 1990:47; 1990b, Fig. 14]. Another proof of mounting influence from that direction is increased import of the pottery of the Bükk culture [about 15 percent in pit no. 40 at Rzeszów-Piastów estate, cf. Kadrow 1990b:55], Samosz group [complex of features no. 80, Rzeszów site, Piastów estate; - cf. Kadrow 1990:63, Fig. 14] and the Szarvas-Érpart type [Świerszczów Kolonia, site 28 - cf. Zakościelna 1988:9, Fig. 2] and numerous examples of imports of diverse cultural groups at Nowa Huta sites [Godłowska 1982]. At the same time, the share of Jurassic flint was decreasing systematically in successive development phases of LBPC populations (from about 70 at the beginning of the 'music note' phase to approx. 40 percent at the end of the Želiezovce phase at Rzeszów-Piastów estate; cf. Kadrow 1993:389) being a measure of the waning influence of the western centres of this culture on the areas lying farther east.



F i g . 3. Model of the influence range of the core of the eastern province of LBPC in south-western Slovakia in different development stages of the culture (from the decline of the 'music note phase' [NIII] until the middle stage of the Želiezovce phase [ŽIIb].

In the light of the above facts, different rates of the stylistic development of pottery in various areas, including long arrests in some of them, seem to be uncontroversial. Besides, the development occasionally progressed in many different directions, which is beyond argument as well. This is especially clear in the case of the population groups inhabiting the Dniester drainage and Volhynia who were attached to the principles of pottery production typical of the 'music note' phase until the end of the LBPC. The most important consequence of ascertaining the mechanism of delaying or arresting stylistic-typological transformations of pottery should be the rejection of a possibility of making any sensible pronouncements on the chronology of settlement of a territory, including the questions of settlement continuity and gaps, solely on the basis of ascertaining continuity or a so-called taxonomic gap (stylistic and typological). This conclusion agrees with a pithy assertion of Lech Czerniak that '... the existence of a *taxonomic gap* between the materials of the LBPC and LLPC [Late Linear Pottery culture in Kujawy] may be potentially disproved, but never confirmed' [Czerniak 1996:74].

A considerable contribution into a new understanding of the cultural situation in the area in question is made by the theory of the Malice culture (not group!) considered a unit having a separate taxonomic position. It is the third independent cultural unit in the post-linear landscape next to the Lengyel culture originating with the Želiezovce group and the Linear-Stroked Pottery culture that emerged from the western province of the LBPC [Kaczanowska, Kamieńska, Kozłowski 1986:117-118; Kozłowski 1986:304; Kozłowski 1988:48-49; Kozłowski 1996:154].



Fig. 4. The maximum range of LBPC (1) against the background of circle of eastern linear cultures (2), Körösz culture settlement (3) and the Bug-Dniester culture (4) (after Kozłowski, Kozłowski 1977).

39:1, 4, 8], whereas phase ZIII is observable only in Slovakia. Similarly to the 'music score' phase, the assemblages of the Želiezovce phase can be divided in several cases into subphases [e.g. Nowa Huta settlement assemblage, cf. Godłowska 1982:152-153, Fig. 4; and on Rzeszów-Piastów estate, cf. Kadrow 1990:63, Fig. 8-9] identified earlier in south-western Slovakia [ZI, ZIIa, ZIIb, cf. Pavúk 1969].

2. Post-linear cultural units

Whereas the questions of taxonomy and chronology of the LBPC in Małopolska and western Ukraine fit easily into classic schemata [Kozłowski 1974; Kulczycka-Leciejewiczowa 1979; Godłowska 1982; 1992; Kadrow 1990], in the case of the post-linear period in the development of Danubian cultures we suggest several new solutions. In the light of the current state of research, we take as proven the different rate of stylistic development of pottery in different regions of the LBPC [cf. also Kozłowski 1985] and a very low probability of total depopulation of vast expanses of land for long periods postulated for the sole reason of want stylistic and typological links between the LBPC and the Samborzec-Opatów group or the Malice culture [cf. Kaczanowska 1990:Fig. 10]. Please observe that in the case of territories located east of the Bug and San rivers, the so-called taxonomic gap is defined by the end of the 'music note' phase of the LBPC and the beginning of the classic phase of the MC. Thus, in terms of absolute dates the depopulation period might have lasted as long as 200 years! Moreover, a considerable demographic potential of the LBPC population makes us believe that LBPC people had



Fig. 5. LBPC pottery, phase I (Gniechowice) from Gwoździec (after Kukułka 1997).



Fig. 6. Pottery of Kraków subgroup from Kraków-Nowa Huta-Pleszów (a-ł, n-o) and Zofipole (m).



Fig. 7. Malice culture pottery, phase Ia, from Rzeszów, site 20.



Fig. 8. Pottery of Sandomierz subgroup from Samborzec (a-g) and Ćmielów (h-o).



F i g . 9. Chronological relationships between Kraków and Sandomierz subgroups and the oldest phase of the Malice culture against the relative chronology of the LSPC and Lengyel culture.

tool [Kozłowski, Kozłowski 1977:280]. This manner of decoration was used chiefly on biconical beakers, which had sharper profiles and slightly flared rims. Belly shoulders were quite frequently accented with small bosses. Among stroked motifs, a meander is lacking. The pricks were made on a thin layer of slip, which was easily damaged. Besides there are also rectangular or tub-like vessels, very typical of the MC, as well as vessels known from other cultural units, e.g. bowl-like ones, small amphorae, vessels on a hollow foot or a pedestal and large bulbous vessels [Kamieńska 1973].

The flint industry of settlement clusters in the vicinities of Sandomierz and Rzeszów relied on chocolate flint [e.g. Kadrow 1990:Fig. 26a; 1990a], whereas in the vicinity of Kraków, Jurassic material continued to dominate [Kozłowski, Kozłowski 1977:280-282]. On the Nałęczów Plateau [Zakościelna, Gurba 1997:202], near Sandomierz [Michalak-Ścibior 1994:77-79] and Rzeszów [Kadrow 1990:Fig. 26a] a certain role was played by the import of obsidian.

In its classic phase (Ib), the MC expanded virtually in all directions (Fig. 10). From the Sandomierz-Kraków centre it spread to western Małopolska that had been occupied earlier by the Kraków subgroup and further to the south-west, to Upper Silesia and northern Moravia [Košturík 1996], to eastern Slovakia [Vizdal 1973] and to Transcarpathian Ukraine [Kaczanowska, Kamieńska, Kozłowski 1986], to the north to Kujawy [Czerniak 1980] and to the east to Volhynia and to the Upper Dniester region [Zakościelna, Gurba 1997:201-202]. Especially interesting are new reports on the classic Malice settlement in Volhynia, because of later rather intensive settlement of this culture representing the



Fig. 10. Malice culture pottery, phase Ib, from Las Stocki.



Fig. 11. Malice culture pottery, phase Ic, from Rzeszów, site 16.



Fig. 12. Malice culture pottery, phase IIa, from Werbkowice.



Fig. 13. Malice culture pottery, phase IIb, from Rzeszów, site 16.



Fig. 14. Sites with elements of the Rzeszów phase against the range of the Tiszapolgár culture (horizontal lines) in its phase B (vertical lines - Tiszaug group): 1 - Tiszaug-KisrŢtpart, 2 - Rzeszów, sites 16, 23, 24; 3 - Kraków-Nowa Huta-Pleszów, sites 17-20; 4 - Złota, site Grodzisko II; 5 - Las Stocki; 6 - Khoriv; 7 - Boguszewo; 8 - Przemyśl-Budy; 9 - Ocice, 10 - Wężerów (Tiszapolgár culture site).



Fig. 15. Lublin-Volhynia culture pottery, phase I, from Golyshiv.



Fig. 16. Lublin-Volhynia culture pottery, phase I, from Golyshiv.



Fig. 17. The range of Lublin-Volhynia culture. a - phase III; b - phase II; c - phase I.

single or double triangles located only under a ceratoid bead of the rim (which may be stroked from above, Fig. 19b) or running around the vessel. They are also found close to the bottom — a double row of pricks along the bottom edge or 'hanging chevrons' with their apexes pointing downwards with a double row of pricks beneath them, along the bottom edge (Fig. 18a). In addition, these ornaments are found on the outer bottom surface — two triangles with their apexes touching (Fig. 20a). Only very rarely are the protruding, ceratoid beads on rims decorated with impressions of a rectangular stamp (Fig. 18g).

A numerous and diversified group of bowls comprises forms both of bow-like and conical profiles (Fig. 21c, j), with the only ornament being ceratoid beads on rims (Fig. 18c). The latter, however, are much less frequent than in flowerpot vessels. Few are bowls with oval rims.

The majority of numerous S-shaped pots have their rims slightly turned outwards which smoothly pass into narrow necks and then into gently profiled bellies (Fig. 23e, 24f). In rare instances, a greater deflection of the rim is usually combined with a short neck (Fig. 22c). A substantial percentage of pots have a finger-nail ornament or corrugated rim edges (Fig. 22c; 24f) and frequently a corrugation immediately underneath the inner edge of the rim (Fig. 23b, e). Few S-shaped vessels have corrugated rims decorated with four symmetrical protuberances. We know of a single fragment of an S-shaped pot which was decorated where the neck meets the belly with a double band of minute pricks over which obliquely hangs a punctated rectangle (Fig. 18d).

A substantial share of the inventories is made up of amphorae of various types and other vessels fitted with handles: ceratoid, vertically perforated, usually placed on the


Fig. 18. Lublin-Volhynia culture pottery, phase II, from Las Stocki (pit 19).



Fig. 19. Lublin-Volhynia culture pottery, phase II, from Las Stocki (pit 36).



Fig. 20. Lublin-Volhynia culture pottery, phase II, from Las Stocki (pit 19).



Fig. 21. Inventory of grave 5 from Strzyżów, site 2A (a-d, i-j - pottery, e - flint, f-g -bone).



F i g . 22. Lublin-Volhynia culture pottery, phase II, from Las Stocki (pit 5).



F i g . 23. Lublin-Volhynia culture pottery, phase II, from Wąwolnica (pit 2).



Fig. 24 Lublin-Volhynia culture pottery, phase II, from Las Stocki (pit 54).



Fig. 25. Inventory of grave 7 from Strzyżów, site 26 (a - flint, b-e - pottery).



Fig. 26. Inventory of grave 2 from Strzyżów, site 26.



Fig. 27. Inventory of grave 4 from Strzyżów, site 26.

dagger found in a grave comes [analogous to a specimen from a grave of the Wyciąże--Złotniki group in Wyciąże — Kozłowski 1971]. By bending the base to form an eye, the dagger was made into a pendant (Fig. 33a). Its location in the grave — it lay on a man's cervical vertebra — suggests that it was used as a pendant. An identical dagger was found in a damaged grave in Lasków, next to which another grave was excavated where two vessels, with Baalberg connections, were discovered [Gurba 1982:Pl. 281-282]. The dagger finds from western Volhynia are supplemented by a specimen found on the surface



Fig. 28. Inventory of grave VI from Gródek Nadbużny, site 1C (a,c - pottery, b - flint).



Fig. 29. Inventory and plan of grave VI from Gródek Nadbużny, site 1C.



Fig. 30. Lublin-Volhynia culture pottery, phase III, from Łańcut.



Fig. 31. Inventory of grave 1 from Strzyżów, site 26 (a-e - flint).



Fig. 32. Inventory of grave 2 from Strzyżów, site 26 (a,f,h - bone; b,c - copper; d,e,g - flint).



Fig. 33. Copper daggers.

reflection of direct contacts between the two cultural environments [Kruk, Milisauskas 1985:64-65, Tab. VI:11-12; VII:1, 7-8]. This claim is borne out by the find of a point with shaft in a L-VC grave at this site (Tab. XIII:29) and by other elements of the flint industry of this culture (low trapeziums and microburin technique) which seem to be of 'Pit-Comb' provenance as well [Zakościelna 1996:106].

The flint goods from the settlement in Bronocice are for the most part made from Jurassic material, however, with a considerable share of Volhynian flint (especially in the tool group) and a small share of chocolate flint [Kruk, Milisauskas 1985:67]. The technological structure of the assemblage (low share of cores and *débitage* and high share of flakes and tools) testifies to the non-production character of the settlement, where mainly semi-finished products, brought from the outside, were used [Zakościelna 1996:28:Tab. 3]. In terms of the share of individual tool types, the settlement is characterised by a high percentage of retouched blades (including retouched flakes), retouched chips and scrapers, a medium one of truncated pieces and a very low percentage of burins [Zakościelna 1996:75:Tab. 29]. The low percentage of burins is the most distinctive trait that sets Bronocice apart from other L-VC sites whose flint assemblages served to characterise the flint industry of this culture [Zakościelna 1996]. Taking into account the late chronology of the settlement in Bronocice, it cannot be ruled out that the tool composition of the







Fig. 34. Copper two-piece spiral pendants from Hrebenne.



Fig. 35. Lublin-Volhynia culture pottery, phase III, from Bronocice (after Kruk, Milisauskas 1985).

assemblage is an indication of diachronic tendencies in the development of the L-VC flint industry. The major sign of these tendencies would be the declining role of burins [Zakościelna 1996:98].

Phase IIIa of the L-VC can be synchronised with phase A of the Bodrogkeresztúr culture, while phase IIIb with phase B of the same culture and Hunyadi-Halom horizon. *3a. Funeral rites of the Lublin-Volhynia culture (Fig. 25-29, 31-32)*

At present, we know of 31 sites on which over 60 grave features have been discovered. Half of them are small cemeteries comprising several graves, while the other half is made up of single graves that were accidentally discovered. The rescue character of excavations on such sites does not allow us to rule out the possibility that they are also part of cemeteries.

The burial grounds and settlements are variously related. We know of single graves spread over the whole settlement, small cemeteries situated in the immediate vicinity of settlements and features located several hundred meters away (Złota, Gródek, site 1C, a complex of sites in Strzyżów). This suggests that we deal here with the process of separating burial grounds from settlements, however, to substantiate this claim it would



F i g . 36. Cultural relationships ca 5000 BC. a - decline of phase III of LSPC in Bohemia and early LSPC in Silesia; b - Lengyel culture Ia; c - Kraków subgroup; d - Malice culture, phase Ia; e - Sandomierz subgroup; f-h - directions of influences.

only the Kraków subgroup forms a part of the Lengyel complex with the Sandomierz subgroup being of mixed Malice-Lengyel character. It was one of the major branches (next to the Rzeszów settlement microregion) of the successive evolution of the MC. Western Małopolska, on the other hand, became a springboard for the development of a sequence of local cultural units maintaining close ties with the Lengyel circle. The Lengyel sequence in the vicinity of Kraków looks as follows: (a) Kraków subgroup — (a gap related to the expansion of the classic MC) — Pleszów group — Modlnica group (with Polgár intrusions in the form of the Złotniki-Wyciąże group and Wężerów type complexes) and as such shall not be discussed here any further.

The third (next to the L-VC and LSPC) post-linear cultural unit, namely the MC, developed on the basis of the populations of the LBPC of the early Želiezovce phase as an effect of the intensifying process of their internal diversification and reorientation of traditional cultural ties. The cultural change was then — which must be stressed again — of purely superficial character. It concerned the sphere of pottery production. The most important segments of the material and social culture remained intact. *Ca. 4800 BC*

In the next stage, synchronous with LSPC IVb and with the Lengyel culture, phase Ib, the MC entered its classic phase (MC Ib) and spreading from its centres located on Sandomierz and Rzeszów loess soils, reached the greatest territorial range (except the eastern direction) in its whole lifetime (Fig. 38). In western Małopolska, it stymied



Fig. 37. Frequency of Jurassic (a) and chocolate (b) flint in Rzeszów, site 16, from the beginning of 'music note' phase of LBPC (NI) until the Rzeszów phase of MC (MCIIb).

moved east then, to the drainages of the Styr and Horyn rivers. Settlement became more intensive also in the western portion of the Volhynian Highlands and on Sandomierz and Rzeszów loess soils.

The above described changes coincided with an extremely important civilizational transition which took place in the Carpathian Basin or, more precisely, in the Tisza drainage and on the Lower Danube. What is meant here is the beginning of the Eneolithic when interrelated economic, social, settlement and cultural transformations generated a huge demand for copper and top quality flint. An area that offered these goods was the central part of Volhynia with easily accessible outcrops of native copper and Volhynian flint (Fig. 39). Therefore, already in the earliest phase of the Eneolithic, this area may have been penetrated by the representatives of the proto-Tiszapolgár phase of the new socio-cultural system on the Tisza. Impulses from the south took root in Volhynia. Among dynamically developing MC populations of the early Rzeszów phase in this region, certain groups of people reacted strongly to the impulses by modifying their cultural system and, as a result, producing the Lublin-Volhynia culture. The oldest, archaeologically perceivable, stage of this process may be represented by materials from Holeszów connected with the early phase of the culture under discussion (Fig. 15-16, 39). They combine certain traits of the L-VC and the early Rzeszów phase of the MC with certain elements still typical of the late classic stage of the MC and the postulated



F i g. 38. Cultural relationships ca 4800 BC. a - Malice culture phase Ib; b - Malice culture, phase Ia; c - Kraków subgroup; d - sites of the MC phase I a; e - sites of LC phase I; f - directions of influences.

(the idea of painting pottery with a white paint) legacy of the Tiszapolgár-Csőshálom--Oborín group on the Tisza. Obviously, there are also Tripolye traits in the form oblique covering parallel retouch.

Ca. 4000 BC

At that time, the new cultural system had already set in. In the beginning of the classic phase (L-VC II), all the basic traits of this culture were in place. It was then that the custom of decorating pottery with a white paint flourished. The L-VC flint industry was then decisively of macrolithic character. There is also evidence of local copper metallurgy. The process of gradual acculturation of late Malice societies by the Lublin-Volhynia culture began in areas traditionally occupied by the MC, i.e. on the western fringe of the Volhynia Upland, the Nałęczów Plateau and on Sandomierz loess soils (Fig. 17). It was also there that contacts, albeit isolated for the time being, could have taken place with the oldest FBC populations infiltrating south-east Poland from the Lowlands. A trace of these oldest penetrations is, for instance, a pottery assemblage from Turkowice [Gurba 1989, Tab. XXIX]. Because of too large a civilizational and cultural distance, these contacts did not bring forth any acculturation processes that would be noticeable today. The L-VC, without losing its own unique character, acquired then, albeit rather superficially and similarly to many other cultural units of this period, many elements typical of phase B of the Tiszapolgár culture. One of such elements is the distinctive manner of pottery ornamentation with deep pricks arranged in 'hanging chevrons' (Fig. 18-20). In addition, a majority of copper ornaments have their prototypes in the said culture.



F i g. 39. Cultural relationships ca 4200 BC. a - Malice culture in transition from phase Ic to phase IIa; b - outcrops of the highest quality Volhynia flint; c - local groups of the Lengyel culture in western Małopolska and Silesia and (e) the Late Linear Pottery culture in Wielkopolska and Kujawy; d - outcrops of native copper; f - Golyshiv Wołyński; g - direction of influence.

The penetrations of the northern piedmont of the Carpathian Mts. by Tiszapolgár culture people, which is evidenced, for instance, by Wężerów type complexes, led to yet another form of acculturation of late Malice communities. Namely, in the vicinity of Rzeszów, induced by a very shallow adaptation of Tiszapolgár influences, there developed the so-called Rzeszów type of late Malice pottery. This designation is synonymous with the late Rzeszów phase of the MC (IIb), which is restricted in occurrence in the late Malice context only to this small area. Let us remember that in the same temporal horizon, Tiszapolgár influences are superimposed also on the classic L-VC complexes and on a number of other cultural groups (Fig. 14).

As it has already been mentioned, during the classic phase of the L-VC, Małopolska was penetrated by FBC people of the Lowlands origin in all probability [e.g. Kraków-Nowa Huta, site 49 and Turkowice; cf. Burchard, Jastrzębski, Kruk 1991:97, Fig. 2, 3]. Before long their presence drew a response from the local late Malice population (early Rzeszów phase of the MC), which began to succumb to the acculturation impact of the newcomers from the north. An archaeologically perceptible trace of this process is an assemblage (5-B6) from Bronocice [Kruk, Milisauskas 1983:Fig. 9] in which artifacts displaying clear traits of the incipient south-eastern group of the FBC accompany still readily observable late Malice elements [Kadrow 1988:27]. Similar conclusions may be drawn from the analysis of some flint assemblages [e.g. from Majdan Nowy; cf. Bronicki, Kadrow 1988, Bronicki 1995].



F i g . 40. Cultural relationships between 3800 and 3600 BC; L-VC - Lublin-Volhynia culture; FBC - Funnel Beaker culture; LC - Lengyel culture; BC - Bodrogkeresztúr culture; TC - Tripolye culture. a - Bodrogkeresztúr culture, b - Tripolye culture, c - Lublin-Volhynia culture, d - Lengyel culture, e - II phase of L-VC, f - I phase of L-VC, g - SE border of FBC.

Thus, in the early 4th millennium BC, we would be dealing with two different trends acculturating late Malice communities in Małopolska. One of them originated from the L-VC moving slowly west, while the other from the Lowlands FBC penetrating loess areas in the south. As a result of the first, the most active late Malice groups joined the processes of intensive eneolithization becoming part of the L-VC. The other trend of acculturation resulted in the rise of south-eastern group of the FBC in which the most active Beaker element took over the rest of late Malice populations creating thus a more extensive model of eneolithisation lacking many of its essential attributes, for instance, copper metallurgy, circulation of prestige objects and — which is most significant — greater sensitivity to the processes of spontaneous, internal differentiation of society. *Ca. 3800 BC*

This date heralds the onset of the decline of the L-VC, the last link of Danubian cultures in Małopolska, except for the contemporaneous Wyciąże-Złotniki group from western Małopolska. The L-VC preserved its individual character discernible mainly in pottery production and the system of settlement. The latter was based on several distinct settlement agglomerations with fortified settlements serving as central localities.



Fig. 41. Frequency of Volhynia, (a) chocolate (b) and Jurassic (c) kinds of flint in the assemblages of the Polgár cultures of the Carpathian Basin. (1 - Tiszapolgár, 2 - Bodrogkeresztúr, 3 - Lažňany).

In pottery ornamentation ('hanging chevrons' built of three shallow, circular dents) and some of its forms (milk pots), influences of the Bodrogkeresztúr culture are readily observable. Almost entirely dependent on these influences — in terms of designs — was copper metallurgy which especially well developed in this very period. Besides quite numerous ornaments (Fig. 33), daggers appeared then (Fig. 33). The first horizon of their occurrence is dated contemporaneously with the development of the Bodrogkeresztúr culture, which means that it is also contemporaneous with the late phase of the L-VC (III) synchronised with the second phase of copper metallurgy in southern Germany [Mutuschik 1997, 1998].

The strength of the Bodrogkeresztúr impact was reinforced by the penetrations of the areas located north of the Carpathians by small groups of people of this culture [e.g. Albigowa; cf. Kadrow 1992]. Closer contacts of L-VC populations with the societies of the classic phase of the FBC took place then as well [e.g. Gródek Nadbużny; cf. Jastrzębski 1991]. Such contacts, however, as a rule did not give rise to mixed character complexes. Both cultures, despite several centuries of living next to one another [cf. also the case of Bronocice; Kruk, Milisauskas 1983] kept their individual character uncontaminated by the neighbour's influence. The L-VC, *vis-à-vis* FBC, continued to monopolise (similarly to the relations holding between L-VC and MC) the prestigious and lucrative contacts with the civilizational centres of the Carpathian Basin and in a way also with the Tripolye culture. Slowly, the centre of gravity of the L-VC settlement was moving farther west until it reached Bronocice [Kruk, Milisauskas 1985] and Iwanowice (unpublished materials from Góra Klin site). An excellent illustration of the western expansion of the L-VC and the simultaneous functioning of its populations as the chief


Fig. 42. Settlement clusters of the Lublin-Volhynia culture (a) against the maximum range of this culture (b).

suppliers of top quality flint raw material to the Carpathian Basin are the changes in the structure of flint material found in the assemblages of Polgár cultures. The changes reflect the moving of the centre of gravity of the L-VC settlement from areas with Volhynian flint to the areas featuring chocolate and Jurassic flint outcrops (Fig. 41).

The Lublin-Volhynia culture disappeared at the same time as the cultures of the Polgár circle which justified its existence by taking from its people top quality kinds of flint. However, it is difficult to find out what happened to the substantial population of this culture. We do not have any archaeological evidence of its leaving Małopolska or being assimilated (acculturated) by the population of the south-eastern group of the FBC, who was already past its heyday at that time anyhow.

Thus, together with the emergence of the L-VC, a new socio-cultural system coalesced. On the one hand, the MC continued to develop, albeit in a simplified form known as the Rzeszów phase, but capable of settling also less productive territories. This was one of the extensive models of eneolithization continuing to large extent old Neolithic traditions. On the other hand, there appeared the L-VC representing the proper, intensive variety of the process in question. The L-VC attracted only the most active part of early Eneolithic society that was undergoing internal differentiation and participated in the inter-regional division of labour. It specialised in supplying the societies of the Carpathian Basin with high quality kinds of flint, originally Volhynian and later chocolate and Jurassic (Fig. 41). The population concentrated in several settlement agglomerations (Fig. 42), the background of which, in the early and classic phases, was the settlement



F i g . 43. Radiocarbon dates of selected assemblages of the late classic phase of the Malice culture and classic and late phases of the Lublin-Volhynia culture; Sw28 - Świerszczów, site 28, LS7 - Las Stocki, site 7, W6 - Wąwolnica, site 6, St26 - Strzyżów, site 26.

of the late phases of the MC, while towards the end of the classic phase and especially in the late phase, of the FBC. It must be stressed that L-VC settlement clusters always stayed at a certain distance from the Tripolye, Lengyel and Polgár cultures (Fig. 40).

With this attempt to outline the major socio-cultural processes in the period spanning approx. two millennia, we end our discussion leaving - as demanding too much space — the questions of absolute chronology (Fig. 43-44) and copper metallurgy (Fig. 33-34) to next publications. Comparing the point of departure of this paper (Fig. 1) with the outline of achieved results (Fig. 45), we wish to emphasise strongly that — except for the period of the LBPC — we had to modify in all other cases the existing schemata of

Cal BC



F i g. 44. Absolute chronology of the sequence of phases of the Malice (MC) and Lublin-Volhynia (L-VC) cultures against the chronology of the LSPC and LC in Austria and LSPC in Silesia and Šarka phase (Ssz) of the LBPC in Silesia; ST-26 - Strzyżów, site 26 (sum of 14C dates); LS-7 - Las Stocki, site 7 (sum of 14C dates for the Malice culture, phase Ic, and the Lublin -Volhynia culture, phase II). LC - Lengyel culture in Austria, LSPC 1 - Šarka type in Bohemia, LSPC 2 - Lower Silesia, LSPC 3 - Austria.



Fig. 45. Taxonomy and chronology of the Danubian cultural units in Małopolska and Volhynia.



Fig. 1. South-eastern group of FBC settlement. Sites mentioned in the text: Sandomierz region: 1. Ćmielów, Ostrowiec Świętokrzyski District, "Gawroniec" site; 2. Zawichost, Sandomierz District, "Pieczyska" site; 3. Kamień Łukawski, Sandomierz District, "Skała" site; 4. Lasocin, Opatów District, site 4; 5. Ruda Kościelna, Ostrowiec Świętokrzyski District, "Osiedlisko przy zrobach" site; Volhynian region: 6. Gródek Nadbużny, Hrubieszów District, site 1C; 7. Zimne, Vlodymyr Volhynskyi District (Ukraine), "Grodzisko" site; Cracow region: 8. Bronocice, Pińczów District; 9. Niedźwiedź, Kraków District; 10. Dzierążnia, Pińczów District; 11. Klucze, Olkusz District; Lublin region: 12. Klementowice, Puławy District, site B; 13. Lublin-Sławinek, Lublin District; 14. Chruszczów Kolonia, Puławy District; 15. Krężnica Jara, Lublin District; 16. Pawlin, Lublin District, site 1; 17. Weremowice, Chełm District, site 19. A. loess areas; B. Świeciechów flint deposits; C. striped flint deposits; D. Volhynian flint deposits; E. Jurassic flint (G variant) deposits.

flaking surface, extending over almost the entire circumference of the piece, are quite exceptional [Balcer 1975:Fig. 31d]. Knappers strove to produce blades exceeding 16 cm in length, with ca. 20 cm being the preferred dimension. The longest specimen known today is 30 cm long (Fig. 2D). The blades usually feature a pronounced arch in their middle (Fig. 2C) and their butts are gable roof-shaped. This suggests they were made using copper-tipped punches. Fully exploited cores were sometimes fashioned into large wedge-shaped tools (Fig. 3B, D), but in most cases they were used as hammerstones.

The wedge-shaped tools were made from both Świeciechów and striped flint. Deposits of the latter occur along the lower Kamienna River (Fig. 1) [Budziszewski, Michniak 1984]. Several kinds of these tools were produced, but all had a quadrilateral transverse section and a relatively thick, indistinct and rather carelessly executed head. Specimens belonging to two types were most frequent. One of these is represented by forms gra-



F i g. 2. Funnel Beaker culture flint industry in south-eastern Poland. A. core for blades; B. blade refitting illustrating core exploitation manner; C.-D. blades. All specimens made from Świeciechów flint. A.-B. Ćmielów; C. Gródek Nadbużny; D. Radziejów Kujawski, District loco. A-C after Balcer 1975; D after Balcer 1983.



F i g. 3. Funnel Beaker culture flint industry in south-eastern Poland. A.-B. type-A wedge-shaped tools; C.-D. type-B wedge-shaped tools; E. reutilized wedge-shaped tool; F. hammerstone/anvil made from a wedge-shaped tool; G. core for flakes made from a wedge-shaped tool; H. Type-C wedge-shaped tool; I. chisel. A. Klemen-towice; B. Zawichost; C., H.-I. Kamień Łukawski; D., F.-G. Gródek Nadbużny; E. Mydłów, Opatów District. All specimens made from Świeciechów flint, after Balcer 1975.



F i g. 4. FBC flint industry in south-eastern Poland. A.-D. type-A blade knives (sickle inserts); E.-F. type-B blade knives; G.-I. daggers; J.-K. asymmetric knives; L.-M. type-B pressers. A.-C., F., H.-I. Kamień Łukawski; D. Klucze; E. Klementowice; G. Zawichost; J.-K. Ćmielów; L.-M. Stryczowice, Ostrowiec Świętokrzyski District. All specimens made from Świeciechów flint. K. after Sałaciński 1983/1989; all other after Balcer 1975.



F i g. 5. FBC flint industry in south-eastern Poland. A.-C. end-scrapers; D.-F. borers; G.-I. type-A pressers (strikers?); J. micro-axe; K. micro-chisel; L.-N. splintered pieces; O. denticulated tool; P. bifacial tool. A., E. Kamień Łukawski; B. Gródek Nadbużny; C.-D., M., O. Ćmielów; F., H.-L., N., P. Zawichost; G. Ptkanów, Opatów District. C. striped flint; all other ? Świeciechów flint. C.-D. after Sałaciński 1983/1989; all other after Balcer 1975.





F i g . 7. Relative quantities of flint artefacts recovered from individual FBC sites or parts thereof. A. Ćmielów, "Gawroniec" site, northern part; B. Ćmielów, "Gawroniec" site, central part; C. Ćmielów, "Gawroniec" site, southern part; D. Zawichost, "Pieczyska" site, excavation IV; E. Zawichost, "Pieczyska" site, excavations I and II; F. Kamień Łukawski, "Skała" site; G. Gródek Nadbużny, site 1C, part of excavation I; H. Gródek Nadbużny, site 1C, excavation II; I. Zimne, "Grodzisko" site; J. Bronocice, phase II; K. Bronocice, phase III.



F i g. 8. Relationships between flint artefact numbers and percentage of production waste in inventories from individual FBC settlements or parts thereof. See Fig. 7 for letter code of sites.



F i g . 9. Relative quantities of the basic flint tools in FBC settlements in south-eastern Poland. See Fig. 7 for letter code of sites.



Fig. 10. Dependence between numbers of artefacts (made from the various flint varieties) recovered from FBC settlements and distances from raw material deposits. See Fig. 7 for letter code of sites.

were acquired already in finished form. The tool set in Volhynian sites also resembles that from the Sandomierz loess region (Fig. 11A-D). Needless to say, there are small differences of various nature. The Volhynian concentration appears to contain a smaller proportion of micro-axes and micro-chisels made from blades and flakes; they also yielded triangular arrowheads (Fig. 11G-I) resembling forms known from the Tripolye culture. A specifically Volhynian feature appears to be the more frequent combination of end-scraper with borer (Fig. 11E-F).

Unlike the Sandomierz loess sites, the settlements in Gródek Nadbużny and Zimne lie far from flint outcrops. The flint exploitation points in the Świętokrzyskie Mountains region are 150 to 195 kilometers away, and even the distance to the closest Volhynian flint deposits exceeds 50 kilometers (Fig. 1). Nonetheless, both sites yielded relatively abundant Volhynian flint waste (Figs. 6, 7, 10G-I), which is interesting considering that only part of the production cyrcle was being completed there. The lack of cortical flakes suggests that pre-cores or cores were being brought to the sites.

The large quantities of production waste in Gródek Nadbużny and Zimne (Fig. 10G-I) shows that flint production organization was affected by social organization factors much more than by distance from raw material deposits. Materials recovered from Gródek Nadbużny exhibit one other peculiarity: although raw materials from the Świętokrzyskie



F i g. 11. Flint materials from the Volhynian and Cracow settlement regions of the FBC. A., J. wedge-shaped tools; B.-C., N. type-A blade knives; D., K. daggers; E.-F. end-scrapers with borers; G.-I. triangular arrowheads; L. core for blades; M. type-B blade knife reutilized as borer. A.-I. Gródek Nadbużny: F. Świeciechów flint, H. striped flint, all other ? Volhynian flint. (after Gumiński 1989); J.-N. Bronocice: Jurassic flint, G variant (after Balcer 1983).



Fig. 12. Reconstruction of FBC sickles from Little Poland proposed in B. Balcer 1975 (C) compared with completely preserved Neolithic and Bronze Age sickles and sickle knives. A. Nahal Heimar cave (Israel), PPNB - 7th millennium BC (Bar - Yosef 1987); B. Karanovo (Bulgaria), Karanovo II - mid-6th millennium BC (Mikov 1939, Georgiev 1961); D. Egolzwil 3 (Switzerland), Egolzwil culture - end of 5th millennium BC (Wyss 1994); E. Egolzwil 5 (Switzerland), Cortaillod culture - first half of 4th millennium BC (Wyss 1976); F. Egolzwil 2 (Switzerland), Cortaillod culture - first half of 4th millennium BC (Wüller-Beck 1965); G. Niederwill (Switzerland), Pfyn culture - first half of 4th millennium BC (Müller-Beck 1965); G. Niederwill (Switzerland), Pfyn culture - first half of 4th millennium BC (Müller-Beck 1991); H. Twann (Switzerland), Horgen culture - end of 4th millennium BC (Furger 1981); I. Solferino (Italy), Early Bronze Age - first half of 2nd millennium BC (Perini 1987); J. Fiavé (Italy), Middle Bronze Age - mid-2nd millennium BC (Perini 1987); K. Auvernier (Switzerland), Final Bronze Age - bronze sickle from the early 1st millennium BC (Egloff 1984).



F i g. 1. The ranges of adaptation of Tripolye culture patterns in the drainages of the Vistula and Oder rivers. Key: 1 - Funnel Beaker culture (A - upper Bug drainage; B - upper Vistula drainage; C - zone of Kujawy, Chełmno Land and northern Wielkopolska); 2 - Tripolye culture; 3 - Funnel Beaker culture sites with painted pottery; 4 - Globular Amphora culture sites with painted pottery.

dye' [Ścibior 1994:34]. A complete catalogue of the 'Zawisznia type pottery' in the range of the mentioned FBC group is not available, nor is available an estimate of its chronological position within this taxon [Gumiński 1989:173ff; cf. Ścibior 1994]. Neither can we say anything about technological peculiarities of 'Bug' pigments.

A significant breakthrough in the assessment of the range of the use of ceramics dyes among the Vistula FBC (Fig. 1:1B) was made in the 1970s when the knowledge of them was recorded among communities settling Western Małopolska loess soils (in such locations as Bronocice-1 and Stryczowice) and in Kujawy black earth (sites: Opatowice-12, Inowrocław-Mątwy-1, Papros-6B, 6G) [Kośko 1981:116-117]. On the first of the mentioned sites a single fragment of pottery with red pigment was recorded and linked to phase BR II (3640-3480 BC) as well as 15 fragments with a black pigment dated to phases BR III and IV (ca. 3480-2880 BC); in both cases these were designs of 'vertical and slanting bands' [Kruk, Milisauskas 1981:16; 1981a:98; 1983:310; phase dating following Kruk, Milisauskas 1999]. Observations from Stryczowice are much more meagre. All we
