

Natural, Anthropogenic and Cultural Landscapes in the 2nd Millennium BC on the Polish Plain

Przemysław Makarowicz, Poznań

Introduction

To say that in the early 2nd millennium BC, the natural environment across the vast areas of the Central European Plain was largely affected by anthropogenic pressure would not be very original. In the lowland parts of the Oder and Vistula drainages, the pressure had been brought to bear on the environment by the societies of long-lasting, stable farming and breeding cultural structures such as the Funnel Beaker culture or the Globular Amphora culture, more mobile groups of breeders of the Corded Ware culture, traditional forest Sub-Neolithic communi-

ties of foragers as well as Early Bronze groupings spreading bronze metallurgy on the Plain.

This paper presents the situation as it was in the period following immediately the last Late Neolithic and Early Bronze groups and synchronizing with the time when Trzciniec cultural circle societies thrived. This complex is believed to have been a macroterritorial communication community encompassing the drainages of the Vistula, Dnieper and Dniester rivers (Fig. 1). It was a structure of a clearly polythetic character that had integrated



Fig. 1. Spatial range of the Trzciniec cultural circle (source: GÓRSKI/MAKAROWICZ 2007, MAKAROWICZ 2010)

diverse cultural communities settling a substantial portion of the territories of today's Poland, Ukraine, Belarus, southern Lithuania, western Russia and northern Moldova and Rumunia for several centu-

ries in the 2nd millennium BC. This extended area offered highly varied natural conditions in the past (GÓRSKI/MAKAROWICZ 2007).

Settlement and economic patterns

The 'Trzciniec' settlements were situated in the forest (on the Polish Lowlands and East-European Plains) and forest-steppe zones (the highland belt south of the Lowlands), chiefly on 'sands' but also on the fertile soils that had developed on loess. In all enclaves sites are concentrated along river valleys. This is explained by the most favourable environmental conditions prevailing there, the role of rivers as communication routes, their central position with respect to different zones of the ecosystem and an easy access to water. These tendencies are visible in both areas that have only few 'Trzciniec' sites and those which are densely settled, in both lowland and highland areas, in areas of potentially high productivity and those offering less favourable sustenance conditions. The settlement network of this cultural phenomenon can be best described by giving two basic models. One of them relates to highlands covered mostly by loess found in the southern portion of the area in question, while the other refers to northern lowland areas to a great degree covered by wind-blown sand and dunes (GÓRSKI *et al.* 2004).

When analysing the settlement, one can see, in both highland and lowland parts of the area occupied by 'Trzciniec' populations, many microregional clusters of settlement points. Each such cluster consisted of a central settlement or settlements with permanent dwelling structures, and smaller settlements (i.e. campsites or bivouacs). The

loess zone of western Małopolska is characterized by large settlements used in some instances for several hundred years. The loess soil environment in combination with more stable settlement suggests the domination of economy centred on land cultivation (GÓRSKI *et al.* 2004). In the lowland portion of the Trzciniec complex oecumene — the 'genetic centre' and in non-loess highland areas — settlements, frequently founded on dunes and sand-covered areas within river valleys and along plateau edges, were rather not so stable and long-lasting. The settlements are usually remains of seasonal sojourns or traces of short-lived penetrations. Few settlements may be considered to have been occupied for many seasons and used for over a dozen years or several decades. It seems justified to conclude that larger settlements in the region in question were related to the animal breeding-farming or farming-animal breeding type of economy, and that smaller settlement points, having the character of campsites or bivouacs, were abodes (stopping places) of this portion of 'Trzciniec' populations which specialized in breeding livestock (GÓRSKI *et al.* 2004).

On a macro- and microregional scale, the intensity and quality of 'Trzciniec' settlement were so diverse that it is difficult to define a typical set of natural conditions favourable to the selection of a particular area as a dwelling place or a place of conducting economic activities.

Natural conditions, climatic fluctuations and human impacts

The Trzciniec cultural circle coincided with the Sub-Boreal period — the most unstable stage of the Holocene in terms of climate. It was then that several changes took place following from climate modifications and increased anthropopressure, e.g. in the Lowlands, podsolization began. It must have been then that some brown soils devel-

oped and the process of black soil formation on clay covers began (CHURSKA 1978; RALSKA-JASIEWICZOWA 1991). There was a rapid fall in the share of the elm tree, while the hornbeam, beech and spruce expanded. The basic tree species in forests were the pine and oak (TOBOLSKI 1991). The activity of 'Trzciniec' communities coincided with a

relatively warm and dry, younger phase of the period (CHOTIŃSKI/STARKEL 1982; STARKEL 1991).

In the Sub-Boreal, the changes resulting from the evolutionary process characteristic of the whole Holocene, affected other elements of the environment as well. When forests naturally prevail, the vegetation cover effectively stops denudation processes, with the rate of sedimentation be-

ing usually low. The growth in local settlement brought about deforestation followed by greater washing away of soil, erosion and sediment accumulation in low-lying areas. The intensification of slope processes related to forest thinning is recorded along valley edges and on the steep slopes of moraines on the Lowlands (MAKAROWICZ 1998).

Natural and anthropogenic landscape

The degree of an anthropogenic impact on the natural environment varied in the lowland part of the Oder and Vistula drainages in the period of the 2nd millennium BC under discussion, being largely dependent on the intensity, length and forms of settlement in a specific region and dominant subsistence strategies (GÓRSKI/MAKAROWICZ 2011).

Palaeobotanical, archaeological and — to a lesser degree — palaeozoological data suggest that the natural environment was considerably transformed in the period of the Trzciniec circle. A clear reduction was seen in the areas covered by forests in the best explored regions of the Polish Lowlands. Palynological cores from such regions (from western part of the Lowlands — Rybiny and Nasilowo in the Kujawy Lake

District, several cores from the vicinity of Biskupin in the Żnin Lake District, Pietrzyków in the middle Warta valley, Gościąg in the Gostynin Lake District, and Polesie in the Bzura drainage), of which some were dated using the radiocarbon method, show a considerable degree of deforestation (Fig. 2). The share of AP in the cores varies from 65 to 80 percent. A lower degree of deforestation (AP between 80-95%), in the period in question, can be seen in palynological diagrams from the eastern part of the Lowlands (Woryty and Lake Miłkowskie in the Mazury Lake District, Całowanie and Błędowo on the Mazowsze and Podlasie Plains as well as Moszne, Perespa, Łukcza and Krowie Bagno on Polesie Lubelskie). Forests were cleared by burning, which is evidenced by

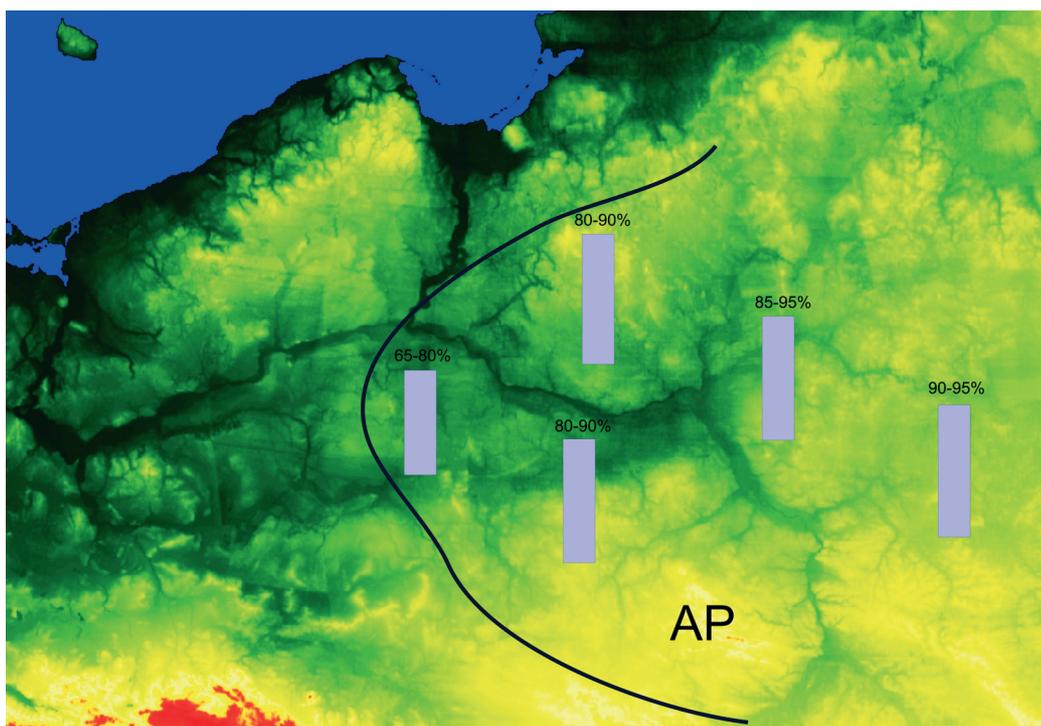


Fig. 2. Frequency of AP in the palynological diagrams' levels related to the 'Trzciniec' phase of settlement on the Polish Plain (source: MAKAROWICZ 2010)

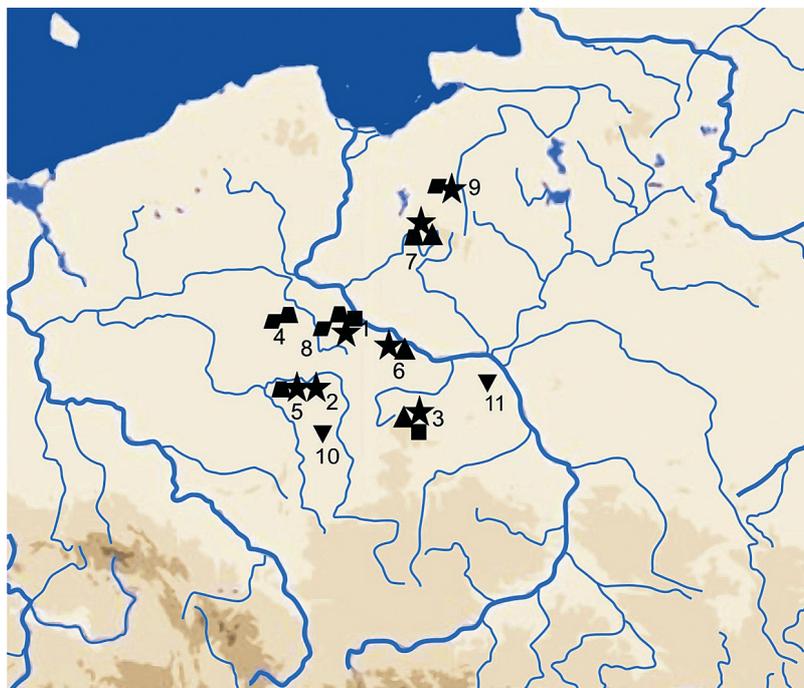
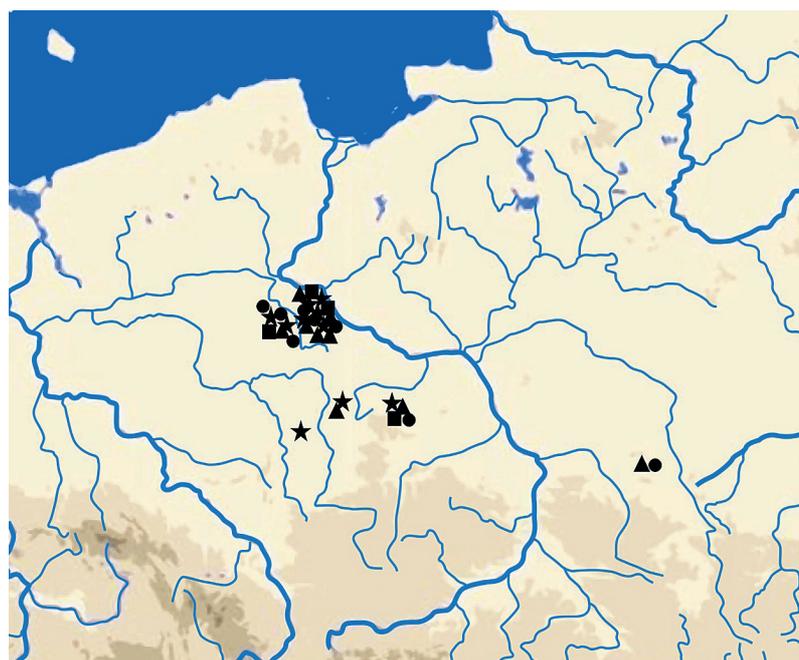


Fig. 3. The paleobotanical data supporting cereal cultivation by 'Trzciniec' societies on the Polish Plain: star – wheat; triangle – barley; square – oats, circle – millet, trapezium – rye, rhombus – cereals (generally)
 1 – Rybiny, site 17;
 2 – Janowice, site 7/8;
 3 – Polesie, site 1;
 4 – vicinity of Biskupin;
 5 – vicinity of Pietrzyków;
 6 – vicinity of Gościąg;
 7 – vicinity of Woryty;
 8 – vicinity of Nasilowo;
 9 – vicinity of Lake Miłkowskie.
 Traces of plough-mark (reversed triangle): 10 – Okalew, site 3; 11 – Grodzisk Mazowiecki (source: MAKAROWICZ 2010)

Fig. 4. Sites of the Trzciniec cultural circle on the Polish Plain with the post-consumption and ritual deposits of domestic animal bones. Triangle – cattle; star – sheep/goat; square – horse; circle – pig (source: MAKAROWICZ 2010)



the presence of coal dust. Its frequency in some cores rose several times (MAKAROWICZ/MILECKA 1999). More evidence is offered by the pollen grains of the cow-wheat and bracken found in the burnt areas. The pollen of these plants is also interpreted as an indicator of forest grazing. A gradual shrinking of forests may be observed in the expansion of open spaces of the type of dry and wet meadows indicated by the increased frequency of herbaceous plants: grass pollen, the large and medium plantain, rununculaceous, umbellifers, compound, cyperaceous, cornflowers, yarrow, heather, juniper, etc. The presence of open spaces is indirectly testified to by the bone remains of hares recorded in several 'Trzciniec' settlements on the Lowlands (for instance, at Rybiny in Kujawy, and in Polesie in the Bzura drainage) (MAKAROWICZ 2010).

For their subsistence, 'Trzciniec' communities relied on both agriculture and breeding. Pollen diagrams commonly contain cereal pollen: wheat, barley, oats as well as rye, which must have been then a cereal weed (URBAN 2008; MAKAROWICZ 2010). The cultivation of cereals is confirmed by palaeobotanical studies of grain impressions on pottery and pisé from several settlements (Fig. 3). Hence, close to settlements, there must have been crop fields. Their presence can be seen in the traces of ploughing discovered under a barrow in Okalew, located between the Prosna and Warta rivers (ABRAMEK 1971), or at a settlement in Grodzisk Mazowiecki, on the Mazowsze Plain (MICHALSKI 2001) (Fig. 3). Apart from being cultivated to grow crops, the areas served as pastures, which is evident from the presence of the indicator plants (variously interpreted — MAKOHONIENKO 2004) of grazed, ploughed and mowed meadows: grasses, the small plantain, umbellifers, sheeps sorrel, heather, and juniper. In turn, possible forest grazing is documented by the cow-wheat and bracken. Changes in the landscape were partly induced by the keeping of animal herds. In post-consumption and ritual bone deposits, at over a dozen 'Trzciniec' sites on the Lowlands, the remains of cattle, the sheep/goat, pig and horse were identified (Fig. 4; MAKAROWICZ 2010).

The 'Trzciniec' settlement network on the Polish Lowlands was dense. A study of

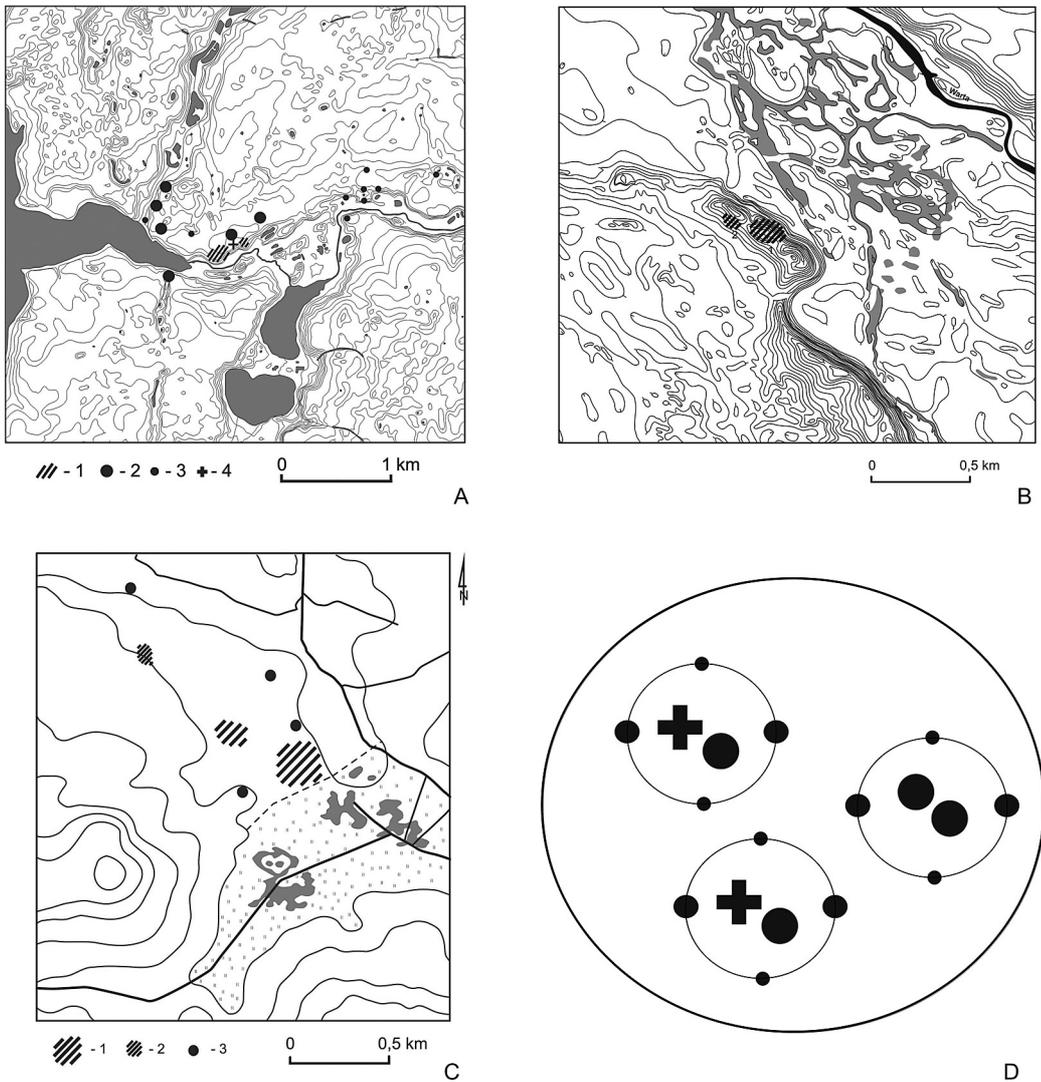


Fig. 5. Examples of 'Trzciniec' settlement microregions on the Polish Plain and a settlement model
 A – microregion in Rybiny (Zgłowiączka valley), Kujavian Lake District:
 1 – stable settlement;
 2 – campsite;
 3 – trace of penetration (bivouac);
 4 – cemetery.
 B – microregion in Rzuchów, middle Warta Basin:
 1, 2 – settlements.
 C – microregion in Rożniatów Kolonia, middle Warta Basin:
 1 – stable settlement;
 2 – campsite;
 3 – bivouac.
 D – a model of settlement pattern: cross – cemetery; circles – settlements (stable, camp, bivouac)
 (source: MAKAROWICZ 2010)

its geography and topography reveals compact settlement microregions — agglomerations — made up of contemporaneous stable settlements (one or two), several smaller settlements and campsites, and traces of penetration as well as a cemetery (Fig. 5). The populations exploited areas stretching along river valleys, with the area of intensive exploitation by a single settlement, delineated by the site catchment analysis, being from several to over a dozen (rarely few dozen) square kilometres (MAKAROWICZ 1998). In Kujawy and in the middle Warta Valley, an absolute domination of 'Trzciniec' settlement sites, founded in areas hitherto uninhabited, is observable. Only approximately 20 percent of settlements and campsites were built in areas without man-induced changes. Hence, a tendency is seen to search for, settle and develop, and consequently, to transform 'virgin' areas. 'Trzciniec' societies penetrated various ecological niches and flexibly

responded to the offer of the natural environment. On the Polish Lowlands, settlement generally was not as stable and permanent (lasting several hundred years in a given area) as in the upland area of the Trzciniec cultural circle. A single group of people stayed in one place from several to over a dozen or several dozen years (GÓRSKI et al. 2004). Recently, however, in the course of excavations along A2 motorway, between the Warta and Bzura rivers, a discovery was made of permanent, stable settlements making up microregions that had been used for 300–400 years. With time, settlements grew bigger. Next to single-dwelling settlements, there appeared larger settlements occupying from 1 to 1.5 ha of land (e.g. Janowice, site 7/8; Kragola, site 6; Rożniatów Kolonia, site 5 and Babia, site 6 in the Warta drainage basin — Fig. 6) up to several hectares (Polesie, site 1, in the Bzura drainage basin — GÓRSKI et al. 2011). They were developed according to a

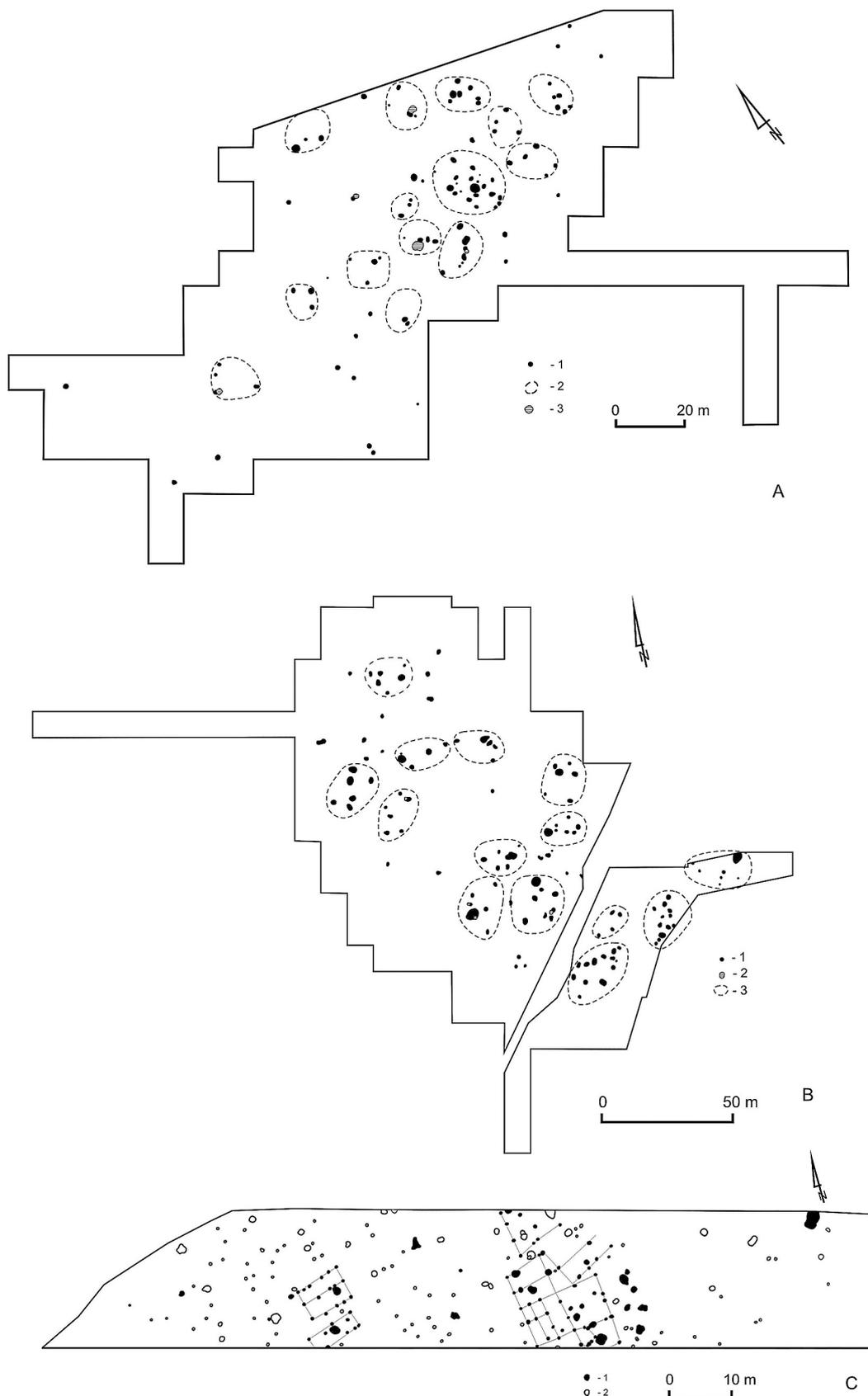


Fig. 6. Examples of stable 'Trzciniec' settlements on the Polish Plain (the middle Warta basin)
 A – Janowice, site 7/8:
 1 – 'Trzciniec' feature;
 2 – range of the household;
 3 – other features.
 B – Kragola, site 6:
 1 – 'Trzciniec' feature;
 2 – other features;
 3 – range of the household.
 C – Babia, site 6:
 1 – 'Trzciniec' feature;
 2 – other features
 (source: MAKAROWICZ 2010)

plan and were made up of several to over a dozen farmsteads, with residential quarters being separated from the space for animals or crops. There appeared trodden paths and roads well documented by the

presence of nitrophilous and ruderal vegetation (MAKAROWICZ/MILECKA 1999).

The stability of settlement accompanied by economic and demographic development must have brought too great a burden on

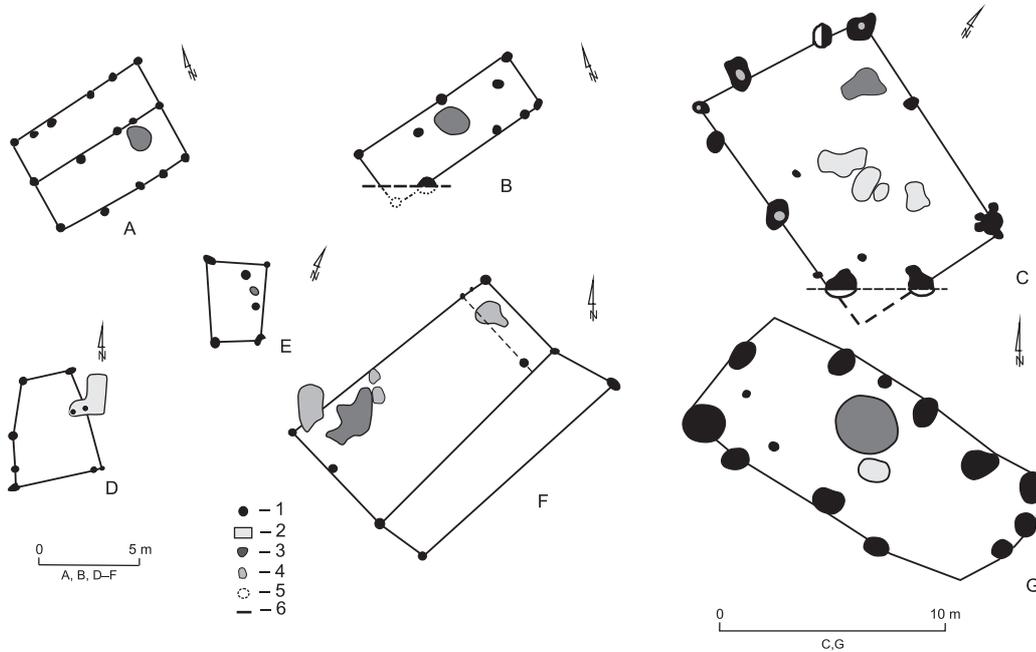


Fig. 7. Examples of 'Trzciniec' ground-post houses on the Polish Plain
 A, B – Babia, site 6;
 C – Rybiny, site 14;
 D, F – Roźniatów Kolonia, site 5;
 E – Wylazłów, site 4;
 G – Janowice, site 7/8.
 1 – stakeholes and postholes,
 2 – remains of a corridor,
 3 – hearths,
 4 – storage pits,
 5 – posthole?;
 6 – hypothetical basement outline
 (source: MAKAROWICZ 2010)

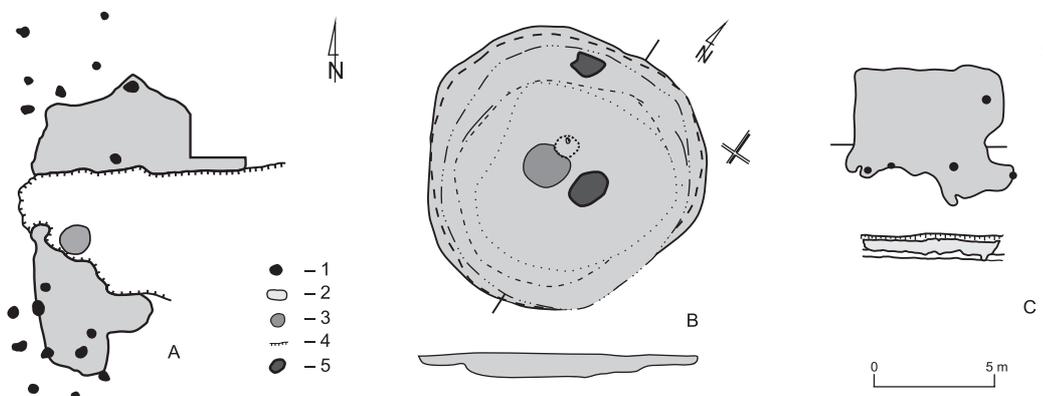


Fig. 8. Examples of 'Trzciniec' sunken-floor houses on the Polish Plain
 A – Borowo, site 12;
 B – Rybiny, site 17;
 C – Goszczewo, site 14.
 1 – postholes;
 2 – sunken floors;
 3 – pits;
 4 – contemporary pit;
 5 – hearts
 (source: MAKAROWICZ 2010)

the environment, leading to the migration of some 'Trzciniec' populations from the Mazowsze Plain to the loess uplands on the upper Vistula (GÓRSKI/KADROW 1996). The burning of forests in large river valleys on the Lowlands (the Proсна, Warta, Bzura and Pilica rivers) triggered eolian processes visible especially on floodplain and flat areas along the edge of valleys. Forests were also cut down as timber was the major construction material on the Plain used for building ground post structures (Fig. 7) and houses with sunken floors (Fig. 8), structural ele-

ments of graves and other household features (e.g. cellars, fensters) as well as other utensils. Large amounts of timber coming from forests surrounding settlements were consumed by metallurgy (MAKAROWICZ 1998, 2010). This brief review justifies a conclusion that the degree of landscape anthropogenization, related to the settlement and economic activities, as well as symbolic behaviour, of 'Trzciniec' communities was significant and visible to contemporaneous and successive generations.

The emergence of cultural landscape

In some areas of the Polish Lowlands, human activity in the times of the Trzciniec circle brought about not only permanent changes in the environment, including vegetation, terrain, soil structure, and water

conditions, but also caused gradually rising 'culturalization' of some landscape fragments.

The stabilization of settlement resulted in building ever greater settlements con-

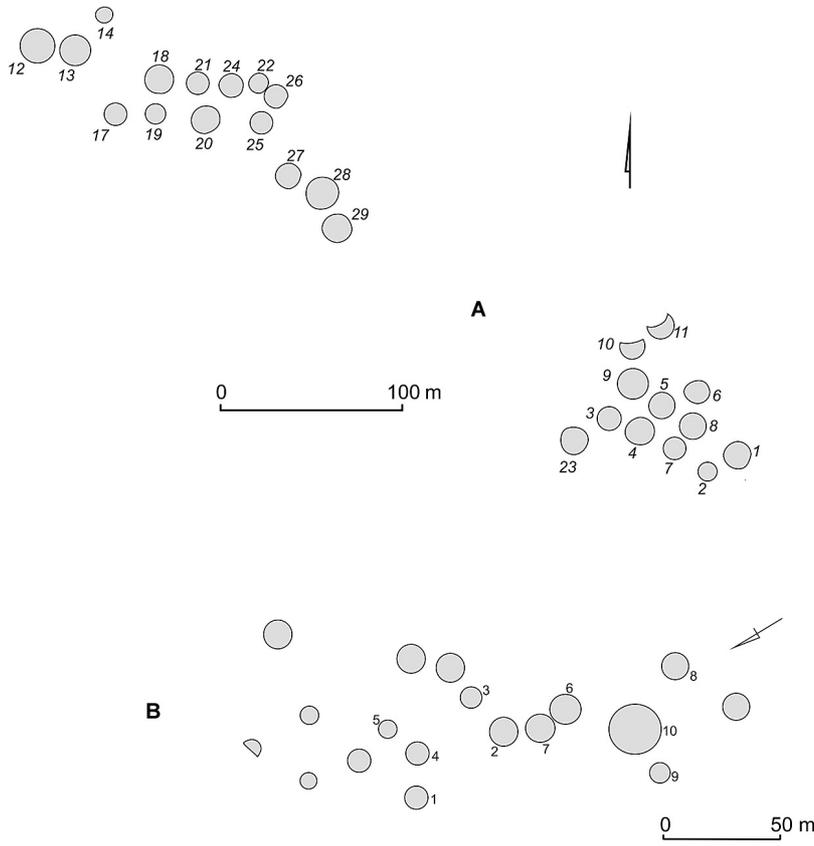


Fig. 9. Examples of 'Trzciniec' barrow cemeteries on the Polish Plain
 A – Lubna, site 1;
 B – Okalew, site 3
 (source: GARDAWSKI 1951, ABRAMEK 1971)

sisting of many houses and numerous household features and continuously used over several dozen years or even 300–400 hundred years and being part of compact and stable microregions. Next to a settlement, in higher places, a barrow or several barrows were built. They were not only graves but were also used by newcomers to stake out their claims to the land they settled. Hence, the features were physically visible identity symbols or perhaps a display of one's own 'ethnicity' and strangeness with respect to local populations. We know of large 'Trzciniec' cemeteries, where tumuli make up barrow fields stretching in lines and groups for over several hundred meters (e.g. Lubna and Okalew between the Warta and Prosna rivers — Fig. 9), and vast flat cemeteries, including cremation burials. 'Trzciniec' collective graves, being one of the distinctive features of this cultural formation, in terms of structure, resembled Globular Amphora Culture cist graves (MAKAROWICZ 2010). Built of stones, timber and clay (Fig. 10), they were

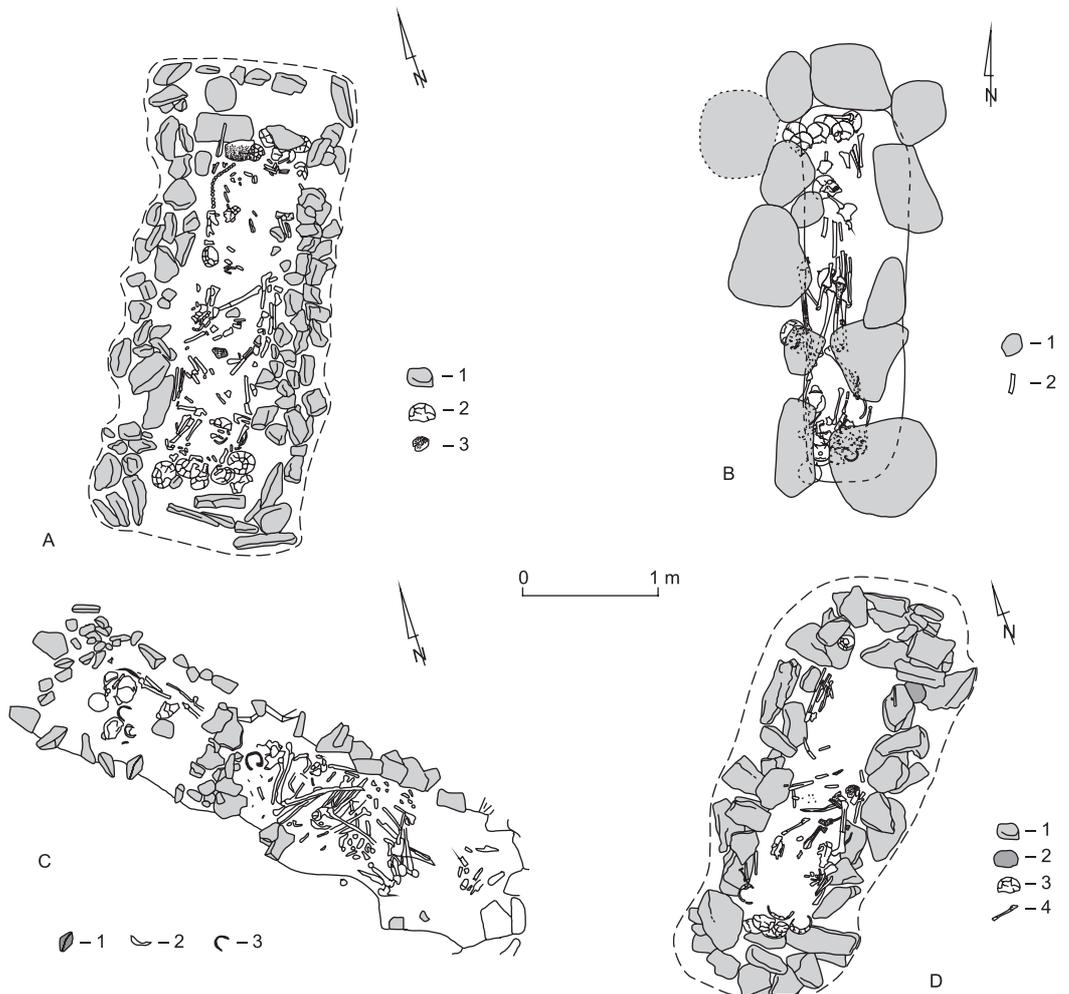
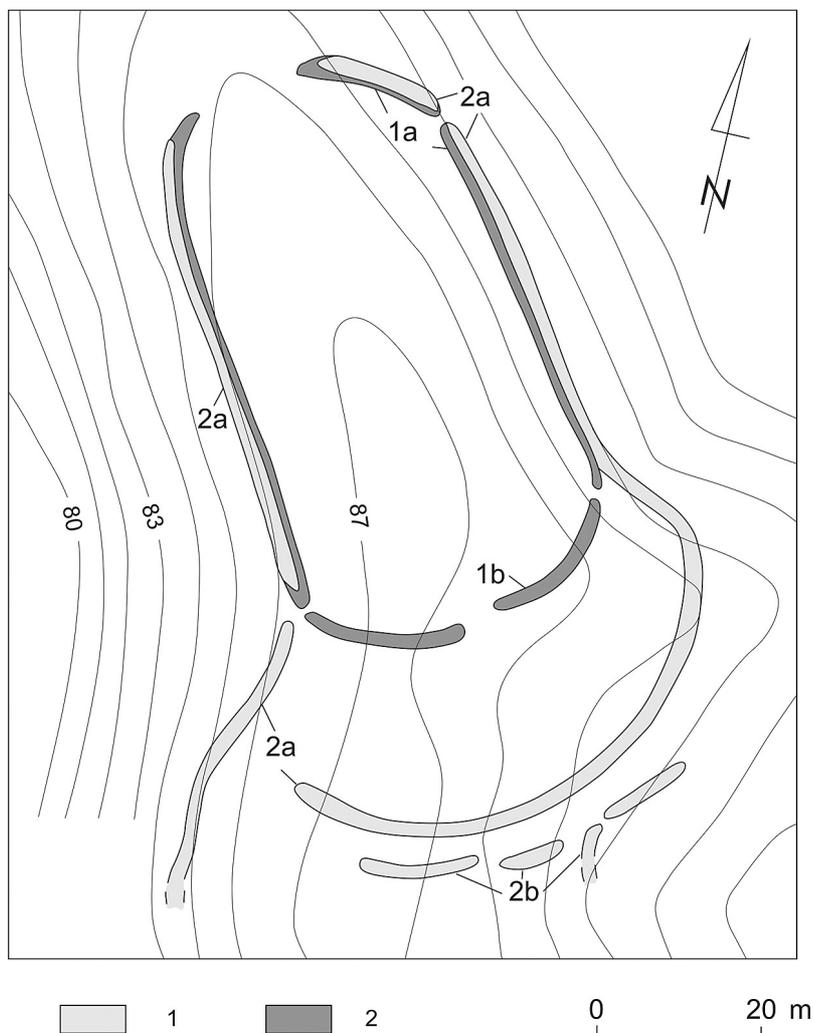


Fig. 10. Examples of 'Trzciniec' collective graves built of stone, timber and clay on the Polish Plain
 A – Bocheniec, site 2, grave 126:
 1 – stones;
 2 – bones;
 3 – pottery.
 B – Gustorzyn, site 4, grave 5:
 1 – stones;
 2 – bones.
 C – Kosin:
 1 – stones;
 2 – bones;
 3 – bronze goods;
 D – Bocheniec, site 2, grave 114:
 1 – stones;
 2 – quern;
 3, 4 – bones
 (source: MAKAROWICZ 2010)

huge features used for even several hundred years accommodating up to several dozen individuals representing a specific kinship (decent) group: a lineage or clan. They were opened many times and, hence, they had to be visible in the landscape: they were marked by a mound, or a stone or timber stele. Within microregions, these were also — next stable settlements — permanent reference points in the landscape, places used for a long time where ancestors lay and thus related to a group's mythology. Another type of a feature visible from a distance was a structure of an enclosure type recorded, for instance, at Biskupin, site 4 (Fig. 11). There was a system comprising two ditches with gangways located on a vast plateau of 2 ha, raised several meters above surrounding marshes and bogs. It was used for ca. 700 years, which rather excludes its purely mercantile character (GROSSMANN 1998).



Conclusion

Behind this brief description of ‘taming’ the natural environment — an alien space — and making it familiar and acceptable to ‘Trzciniec’ communities, there surely lay a far more complex and dynamic process. This constituting of a cultural and social

space was like building of a mental map of sorts in which the symbolic stratum, important for a generation relay and group identity, was harmoniously interlaced into a somewhat anthropogenized — but still dominating — natural environment.

References

- ABRAMEK B. 1971, Cmentarzysko kurhanowe kultury trzcinieckiej w Okalewie, pow. Wieluń. Sprawozdanie za lata 1966–1968 *Sprawozdania Archeologiczne* 23: 67–77.
- CHOTIŃSKI N./STARKEL L. 1982, Naturalne i antropogeniczne poziomy graniczne w osadach holocenijskich Polski i centralnej części Niziny Rosyjskiej, *Przegląd Geograficzny*: 201–218.
- CHURSKA Z. 1978, Środowisko geograficzne rejonu Inowrocławia. In: *Dzieje Inowrocławia*, t. 1, Warszawa–Poznań–Toruń: 15–55.
- GARDAWSKI A. 1951, Niektóre zagadnienia kultury trzcinieckiej w świetle wykopalisk w miejscowości Łubna, pow. SieRADZ, *Wiadomości Archeologiczne*: 1–84.
- GÓRSKI J./KADROW S. 1996, Kultura mierzanowicka i kultura trzciniecka w zachodniej Małopolsce. Problem zmiany kulturowej, *Sprawozdania Archeologiczne* 48: 9–27.
- GÓRSKI J./MAKAROWICZ P. 2007, Interakcje kulturowe między zachodnim i południowo-wschodnim (pontyjskim) odłamek trzcinieckiego kręgu kulturowego. In: BAKALARSKA L. (ed.), *Wspólnota*

Fig. 11. A ritual feature of the enclosure type from Biskupin, site 2a, Pałuki district.
1 – ditch I;
2 – ditch II
(source: GROSSMANN 1998)

- dziedzictwa archeologicznego ziem Ukrainy i Polski, Materiały z konferencji zorganizowanej przez Ośrodek Ochrony Dziedzictwa Archeologicznego, Łańcut (26–28 X 2005 r.), Warszawa: 148–170.
- GÓRSKI J./MAKAROWICZ P. 2011, Environmental Determinations and the Development of Trzciniec Cultural Circle Settlement in the Oder and Vistula Drainages, *Sprawozdania Archeologiczne* 63 (in print).
- GÓRSKI J./MAKAROWICZ P./TARAS H. 2004, Podstawy gospodarcze ludności trzcinieckiego kręgu kulturowego w dorzeczach Wisły i Odry. In: KOŚKO A./SZMYT M. (eds.), *Nomadyzm a pastoralizm w międzyrzeczu Wisły i Dniepru (neolit, eneolit, epoka brązu)*, Wydawnictwo Poznańskie, Poznań: 191–213.
- GÓRSKI J./MAKAROWICZ P./WAWRUSIEWICZ A. 2011, *Osady i cmentarzyska ludności trzcinieckiego kręgu kulturowego w Polesiu, gm. Łyszkowice, pow. łowicki, stan. 1, Łódź*.
- GROSSMANN A. 1998, Kto użytkował wczesnobrązowy Biskupin, czyli stanowisko 2a w Biskupinie, gm. Gąsawa, woj. bydgoskie w świetle najnowszych badań. In: KOŚKO A./CZEBRESZUK J. (eds.), *„Trzciniec” — system kulturowy czy interkulturowy proces?*, Poznań: 179–192.
- MAKAROWICZ P. 1998, *Rola społeczności kultury iwieńskiej w genezie trzcinieckiego kręgu kulturowego (2000–1600 BC)*, Poznań.
- MAKAROWICZ P. 2010, *Trzciniecki krąg kulturowy — wspólnota pogranicza Wschodu i Zachodu Europy*, Wydawnictwo Poznańskie, Poznań.
- MAKAROWICZ P./MILECKA K. 1999, Society and the Environment. A Case of Early Bronze Age Settlements Complex from Rybiny, Cuiavia, Poland, *Archaeologia Polona* 37: 49–70.
- MAKOHONIENKO M. 2004, Palinologiczne podstawy rekonstrukcji środowiska przyrodniczego a zagadnienia nomadyzmu i pastoralizmu w strefie euroazjatyckiej. In: KOŚKO A./SZMYT M. (eds.), *Nomadyzm a pastoralizm w międzyrzeczu Wisły i Dniepru (neolit, eneolit, epoka brązu)*, Wydawnictwo Poznańskie, Poznań: 235–249.
- MICHALSKI J. 2001, Oracze kultury trzcinieckiej, *Z otchłani wieków 1–2*: 44–47.
- RAJSKA-JASIEWICZOWA M. 1991, Ewolucja szaty roślinnej. In: STARKEL L. (ed.), *Geografia Polski. Środowisko przyrodnicze*, Warszawa: 106–126.
- STARKEL L. 1991, Rola holocenu w ewolucji środowiska i jego stratygrafia. In: STARKEL L. (ed.), *Geografia Polski. Środowisko przyrodnicze*, Warszawa: 105.
- TOBOLSKI K. 1991, Dotychczasowy stan badań paleobotanicznych i biostratygraficznych Lednickiego Parku Krajobrazowego. In: TOBOLSKI K. (ed.), *Wstęp do paleoekologii Lednickiego Parku Krajobrazowego*, Poznań: 11–34.
- URBAN J. 2008, Uprawa roli w kulturze trzcinieckiej — zarys problematyki. In: *Opera ex aere. Studia z epoki brązu i wczesnej epoki żelaza dedykowane profesorowi Janowi Dąbrowskiemu*, Warszawa: 101–109.