

**THE FOUNDATIONS OF RADIOCARBON
CHRONOLOGY OF CULTURES BETWEEN
THE VISTULA AND DNEIPER:
4000-1000 BC**

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Editor's Foreword

This volume of the *Baltic-Pontic Studies* is a record of investigations carried out under the research project begun earlier in vol. 7 ("The Foundations of radio-carbon chronology of cultures between the Vistula and Dnieper: 3150-1850 BC", Poznań 1999). Here, the approach is broader in terms of chronology and culture. Our purpose has been to fill taxonomic gaps hitherto present in the discussion (supplementing the dating of cultures, groups or phases) or reanalyze the grounds for findings considered particularly controversial. In the latter case, a very enlightening debate was provoked by the comparative chronology of the Yamnaya and Catacomb cultures presented by A.N. Nikolova. We hope that a large series of ^{14}C dates and a revision of the foundations of "archaeological knowledge" (stratigraphy, typochronology and groups of co-occurrence of traits), brought together in the paper by D.Y. Telegin, S.Z. Pustovalov, N. Kovalyukh, lay the ground for a stabilization of views on this important dividing line in the chronology of the Bronze Age in the Pontic zone.

A vast majority of the new ^{14}C dates have been obtained under an international research project financed by the Polish Committee for Scientific Research.

Editorial comment

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

Jan Machnik

AN INTERRUPTED PROCESS OF CULTURAL
INTEGRATION BETWEEN THE UPPER BUG, VISTULA AND
DNIESTER RIVERS IN THE EARLY SECOND HALF OF THE
THIRD MILLENNIUM BC
(IN LIGHT OF TAXONOMIC AND CHRONOLOGICAL
ANALYSES OF GRAVE ASSEMBLAGES ON GRZEŻA
SOKALSKA)

1. INTRODUCTION

In the last dozen or so year a tremendous progress has been made in the study of the Corded Ware culture (CWC) in south-eastern Poland (in particular in the Carpathian foothills), together with the adjacent areas of the Carpathians in Ukraine and Slovakia and in the southern portion of the Lublin Upland, i.e., on Grzeża Sokalska [Koman, Machnik 1997; Machnik 1998; 1999; 2001; Machnik *et al.* 2001; Machnik, Mačala 2001; Włodarczak 2001].

The progress involved not only discovering and excavating many new *kurgans* and flat graves (on loess uplands around Kraków) belonging to the populations of the said culture as well as the first traces of settlements or encampments and axe workshops [Valde-Nowak 2001; Valde-Nowak, Strakošova 2001; Machnik, Sosnowska, Cyhyłyk 1997], but also exploring (owing to paleobotanical and geomorphological investigations) the natural environment in the period when the culture thrived in the area described above and immediately earlier [Harčar 2001; Harmata 1995; Komornicki *et al.* 1990; Maruszczak 1988; Starkel 1997; 2001; Szczepanek 2001; Wacnik 1999; 2001].

The discoveries supplied, besides new data on cultural taxonomy and chronology, much information allowing us to broaden our knowledge of many aspects of the CWC as well. The new information concerned not only the spiritual life (relating to the funerary rites) of its populations, but also the social structure, forms of economy and various kinds of contacts, some of them stretching over long distances, among individual groups of the culture in question [Machnik 1998; 1999].

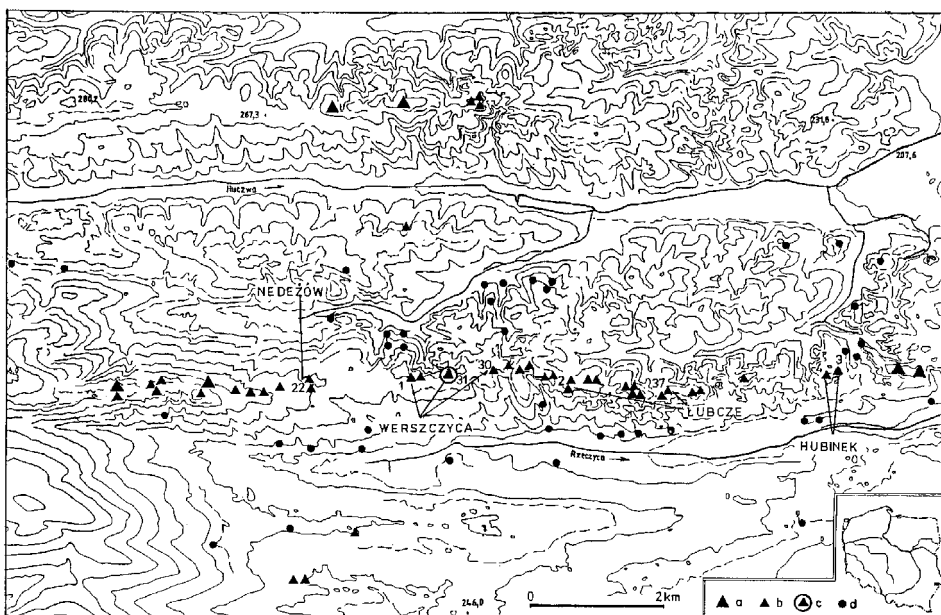


Fig. 1. Location of *kurgans* in the southern part of Grzęda Sokalska; a - large *kurgans* of unknown chronology, b - CWC *kurgans* (radiocarbon dated *kurgans* are indicated by a line and the number of site), c - *kurgan* on site 31 in Werszczyca investigated in 2000, d - Neolithic settlement sites (chiefly of the FBC)

The greatest number of sources especially concerning the last of the above-mentioned aspects has been yielded by rescue excavations [Bagińska 1988] of disappearing CWC *kurgans* on Grzęda Sokalska systematically carried out since 1988 [Koman, Machnik 1993]. It was there, in some graves, that artifacts were found, in particular clay vessels, exhibiting traits characteristic of distant Czech and German CWC groups [Bagińska 1996:62, Fig. 4a; 1997:49, Fig. 4f; 1998:73, Fig. 4]. What was even more surprising for certain reasons was the fact that there were also artifacts among them that showed affinities with the territorially isolated Middle Dnieper culture (MDC) [Koman, Machnik 1993:44, Fig. 3:3,4; Bagińska 1998:72, Fig. 3a, b].

Successive discoveries revealed that in the latter case we dealt not only with traits that could be a sign of local imitation of distant Middle Dnieper patterns, but also with authentic MDC vessels as far their shapes and ornamentation patterns were concerned [Koman 1998:65, Fig. 4:1-2, 8, 10]. Thereby, an interpretation of some MDC artifacts, being a typical set of grave goods, was corroborated as the remains of a burial of an MDC representative who had migrated to the CWC territory [Machnik, Pilch 1997]. The artifacts had been found by accident when

excavating sand in Młodów near Lubaczów, not far from Grzęda Sokalska (about 50 km to S). That it was not merely an isolated case, however, is testified to by excavations recently carried out on Grzęda Sokalska. They prove that a group of MDC people did, in fact, appear there.

Given the situation, the imitation of some MDC stylistic traits in pottery by CWC populations becomes more understandable not only on Grzęda Sokalska but also on a broader territory between the upper Bug, Vistula and upper Dniester rivers (which has already been pointed out) or even as it seems on the Małopolska Upland [Machnik 1999:240; Fig. 8].

The obtained radiocarbon dates for a number of human burials on Grzęda Sokalska (Fig. 1), containing either authentic MDC vessels or vessels only imitating them as far as their form and ornamentation are concerned, are, on the one hand, younger than the dated graves from the older phase of the CWC located underneath *kurgan* mounds [Machnik 1999:241-248], on the other hand, they coincide, in general terms, with the period when the Globular Amphora culture (GAC) disappeared (waned) from the neighboring areas of Volhynia and Podolia [Kadrow, Szmyt 1996]. Hence, a conclusion could be drawn that only when the GAC declined or disappeared altogether from the discussed area, it was possible for MDC populations to penetrate the sphere of compact CWC range.

What has been presented here, being to a large extent a recapitulation of a broader work concerning the presence of MDC representatives on Grzęda Sokalska [Machnik 1999], does not explain what attitude could have been taken by the new arrivals from the Dnieper drainage towards local populations; neither does it tell us what the newcomers later fate was, nor what the process of cultural changes, resulting from a contact between the two populations different to some extent, looked like. However, the results of the latest investigations in this area, presented below, seem to shed some light, too, on these important issues having a direct bearing on the prehistory of the period.

2. THE RESULTS OF THE LATEST INVESTIGATIONS ON GRZĘDA SOKALSKA

What we have in mind here is the results of investigations of yet another *kurgan* in the discussed area carried out in 2000, this time at site 31 in Werszczyca [Bagińska, Machnik 2003]. Its mound, almost completely flattened due to ploughing (its original diameter at the base was about 11m), covered two CWC graves, of which one was encircled by a symbolic groove (Fig. 2). On the rim of the *kurgan* mound, on the SE side, there were five more burials, of which three (graves

of two bone chisels, a bone awl, a flint axe, a retouched tool of the same material, a whetstone and two clay vessels [Bagińska, Machnik 2003:46, Fig. 6].

The vessels deserve particular attention. The first of them [Bagińska, Machnik 2003:4, Fig. 6h] is an amphora with six elbow-like handles at the base of a narrow neck and a small bottom formed like a foot. The amphora is decorated on its neck with horizontal cord impressions below which there are festoons made of short vertical bands of such impressions. The vessel is an example of an intermediate variety between types IIb and IVa (according to Machnik's classification) known from late grave assemblages of the CWC Kraków-Sandomierz group on the Sandomierz Upland, e.g. in Mydłów, Sandomierz district [Bargieł 1990:Fig. 1], occurring also (undoubtedly under the influence of this group) between the Dniester and San rivers, e.g. in Berezec near Komarno [Cyhyłyk, Machnik 1996:155, Fig. 4:2]; finally, we know it also from an earlier discovery made on Grzęda Sokalska itself [Bagińska 1998:72, Fig. 3c].

The other vessel from the mentioned grave is a small beaker [Bagińska, Machnik 2003:46, Fig. 6a] clearly indicating connection to a type of MDC hourglass beakers. A very close analogy to it, as far as shape is concerned, is offered by an undecorated specimen from an MDC grave at Prorva, Belarus [Kryvaltsevich, Kovalyukh 1999:160, Fig. 6:1].

Several beakers similar in form are known from outside of the MDC range, in the area between the Bug, San and Vistula rivers, namely from Dratów, Puławy district, Mokrelipie, Zamość district, Zamość, Brusno and Brzezinki, Lubaczów district [Machnik 1966:Tab.XVIII:2, 5, XIX:1a, 2b; Machnik *et al.* 2001:395, Fig. 4]. To these specimens, being undoubtedly imitations in different degrees of the above-named type of MDC beakers, we shall return in the latter part of this paper.

In the second niche grave (no. 7) in Werszczyca (Fig. 2), containing a decapitated skeleton of a dog lying along the S-N axis [Bagińska, Machnik 2003:41, Fig. 3b], the only artifact found was a large clay beaker spread over the grave chamber by rodents [Bagińska, Machnik 2003:43, Fig. 5g]. The beaker represents one of the variants of type IV beakers (according to Machnik's classification) in the CWC in Małopolska. It finds certain analogies in younger CWC grave assemblages in both the area occupied by the Kraków-Sandomierz group of the CWC [Machnik 1966:Tab. XIV:5a; Kempisty, Włodarczak 2000:77, Fig. 50] and outside of it, e.g. in Roztocze [Machnik 1966:Tabl. XVIII 3a, XX 1a; XX 2a] and Grzęda Sokalska itself, in some graves explored there earlier [Koman 1999:53, Fig. 9:8].

Similarly located as the two niche graves, i.e. on the original rim of the *kurgan* mound (immediately next to grave no. 7), grave no. 3 (Fig. 2) was a burial place of a several-month-old child [Bagińska, Machnik 2003:40, Fig. 2c]. It contained a small clay beaker with its neck broken off [Bagińska, Machnik 2003:43, Fig. 5c] typical both in terms of form and ornamentation of MDC vessels [Artemenko 1967:53, 75,

Fig. 39:3, 44:1,3; Machnik, Pilch 1997:154, Fig. 8:12, 20]. A strikingly similar vessel was found during exploration of a CWC *kurgan* in Kołokolin near Rohatyn on the upper Dniester [Sulimirski 1968:Pl. 7:7]. It must have been among the goods of a grave located, similarly to the case of grave no. 3, on the rim of a pre-existing *kurgan* mound built over a grave from the older phase of the CWC [Sulimirski 1968:Pl. 7:7].

Another grave in Werszczyca, no. 6, situated only approx. 1.70 m away from grave no. 3 to NE and clearly outside of the original rim of the *kurgan* mound base (Fig. 2) contained a burial of a child slightly less than one year old and two small vessels [Bagińska, Machnik 2003:40, Fig. 2d]. One of them was a straight-walled beaker decorated on its upper part only with horizontal cord impressions [Bagińska, Machnik 2003:43, Fig. 5b], typical of the late phase of the CWC and frequently encountered in the youngest grave assemblages of its Kraków-Sandomierz group [Kempisty, Włodarczak 2000:21, 71, Fig. 21:1; 46:2; Włodarczak 2001:129, Fig. 20]. The other vessel was a beaker characteristic only of the MDC [Bagińska, Machnik 2003:43, Fig. 5a]. This is evidenced not only by its hourglass form and a broad, almost rounded bottom, but also by the motif of incised interlaced triangles separated by horizontal bands of double cord impressions, so peculiar to the pottery ornamentation of this culture, covering almost the whole vessel surface. As close analogies, one can quote here a beaker from *kurgan* 1 in Moshka, close to the village of Khodosevichi, Belarus [Artemenko 1964:34, Fig. 1:3] or a specimen from grave no. 3 in the *kurgan* in Palik in the same area [Artemenko 1964:56, Fig. 18:3].

The last of the graves (Fig. 2) located outside of the original perimeter of the *kurgan* mound on the discussed site (about 0.5 m to SE from the entrance pit to niche grave no. 7) is grave no. 8 containing a burial of a *Maturus* woman with its only grave good being a bone disk [Bagińska, Machnik 2003:40, 43, Fig. 2e, 5f]. This must be a grave of the Mierzanowice culture (MC) from the Early Bronze Age, which is indicated by the disk and the radiocarbon date obtained for the skeleton [Bagińska, Machnik 2003:50, Tab. 1].

3. THE SIGNIFICANCE OF DISCOVERIES ON SITE 31 IN WERSZCZYCA FOR THE QUESTION OF CO-OCCURRENCE OF THE CWC AND MDC ON GRZEŃDA SOKALSKA

As we have seen, the investigation of this site resulted in the discovery of another three graves (nos. 3, 4/5, 6) containing authentic MDC vessels. What is new about this discovery is the fact that in two cases (graves nos. 4/5 and 6) such vessels were parts of compact grave assemblages together with the vessels of the late

phase of the CWC indicating connections to the pottery of the Kraków-Sandomierz group of this culture. Also, in both cases, the dead (an adult male in grave no. 4/5 and a child in grave no. 6) lay almost exactly along the S-N axis, i.e. an orientation typical of this very group. In one case, however, (grave no. 4/5) a male was buried in a niche grave typical of the Kraków-Sandomierz group. If the orientation of the dead along the S-N axis is encountered in the MDC (next to other orientations) [Artemenko 1962:82], then no niche grave, as far as we can tell, has been found in it yet. On Grzęda Sokalska, this is already at least the sixth¹ explored niche grave including grave no. 7 on site 31 in Werszczyca described in the previous section. Four of them, i.e. graves nos. 3 and 4 in *kurgan* 2 on site 25 in Łubcze [Koman 1999:48-53], grave no. 2 on site 37 in the same locality [Bagińska 1997:47-48, Fig. 2A, 3B] and already-mentioned grave no. 7 on site 31 in Werszczyca (Fig. 2) contained only vessels typical of the late phase of the CWC showing affinities to the pottery of the Kraków-Sandomierz group. In the fifth, however, unearthed on site 4 in Hubinek [Bagińska 1998:70-71, Fig. 1-2], containing two human burials [Bagińska 1998:72-73, Fig. 3c, 4], vessels were found of both the late phase of the CWC as well as beakers with traits typical of the MDC [Bagińska 1998:72, Fig. 3a, b]. However, the analysis of the overall situation in this grave would rather suggest that the body, next to which the vessels were found (as well as non-ceramic artifacts) could have been placed in the grave chamber (niche) already containing human remains placed there earlier along with CWC vessels [Machnik 1999:227ff.]. Hence, CWC and MDC vessels would not make up a classic compact assemblage in this case as they do in graves nos. 4/5 or 6 on site 31 in Werszczyca, but would belong instead to two separate categories according to the classification presented below.

Thus, graves nos.4/5 and 6, uncovered on site 31 in Werszczyca, supplied a special category of source that had been missing so far and that provided evidence for absolute contemporaneity of occurrence (use) of vessels exhibiting authentic MDC traits and vessels of the late phase of the CWC indicating clear connections to the Kraków-Sandomierz group of the culture (and for the use of niche graves in the same time and place as well). Above all, however, the discovery shed new light on the character of contacts between the representatives of both taxonomic units.

Before we take a closer look on this question, it is necessary to examine taxonomic traits and chronologies of all the categories of grave assemblages that can be distinguished now. This applies to the grave assemblages found in *kurgans* or on their edges on Grzęda Sokalska with the exception of those which precede the building of the mounds, i.e. belong to the Lublin-Volhynia culture [Koman 1997:40-43] or the Funnel Beaker culture (FBC) [Bagińska 1999].

¹ It is possible that another niche grave discovered was grave no. 1 on site 3 in Hubinek [Koman 1998:61, 63, Fig. 1, 2], which is described in the latter part of this paper.

4. CATEGORIES OF COMPACT GRAVE ASSEMBLAGES

The basis for distinguishing different categories of compact grave assemblages is such a set of traits of constituent artifacts that can be defined in terms of the degree of their affinities with the following archaeological cultures: CWC, MDC and MC. In the first two cases, the basis for categorization is, above all, traits of clay vessels as it is only on them that characteristic indicators (form and ornamentation) of one or the other culture are manifested, whereas goods made of other materials (e.g. stone shaft-hole axes and flint axes or arrowheads) are, as a rule, of intercultural character in both taxonomic units.

In the case of MC assemblages, however, their identification does not have to be based on pottery, which, by the way, is not always found in the graves of this culture [Kadrow, Machnik 1997]. These assemblages can be well identified also thanks to characteristic objects made of other materials (e.g. copper, bone or "faience").

On the basis of such criteria, it is possible to distinguish the following seven categories of compact assemblages, which are designated by consecutive capital letters of the alphabet (A-G).

Category A includes assemblages containing vessels exhibiting pottery traits characteristic, in general terms, of the older phase of the CWC in Małopolska and in some other regions, e.g. Silesia or Kujawy (Fig. 3). On Grzęda Sokalska, this category comprises an assemblage from the central grave in *kurgan* 1, on site 24, in Łubcze [Bagińska 1988], also from the same locality, an assemblage from grave no.1 (central?), in *kurgan* 1 and from grave no. 2 (central?), in *kurgan* 2, on site 26 [Koman 1989:8, 11, Fig. 1:1, 4], from the central grave in *kurgan* 2, on site 1 [Koman, Machnik 1993:45, Fig. 4], from grave no. 1 (central), in *kurgan* 2, on site 27 [Koman 1997:39, Fig. 3], from grave no. 1 (central), in *kurgan* 2, on site 2 [Koman, Machnik 1993:43, Fig. 2], from grave no. 2 (central), in *kurgan* 2, on site 25 [Koman 1999:46, Fig. 4] and finally from Werszczyca, from grave no. 1 (central), in *kurgan* 1, on site 29 [Bagińska 1989:13, Fig. B] and from grave no. 2 (central?), in *kurgan* 1 on site 1 [Bagińska 1997:49, Fig. 4 i-j].

Category B comprises assemblages including vessels exhibiting traits of the younger phase of the CWC only, at the same time clearly indicating connections to the pottery of the Kraków-Sandomierz group of this culture (Fig. 4). In the discussed area, this category includes an assemblage from grave no. 1, in *kurgan* 9, on site 16, in Łubcze [Bagińska 1991] and also in the same locality, from grave no. 2, on site 37 [Bagińska 1997:48, Fig. 3:f-g], from graves nos. 3 and 4, in *kurgan* 2, on site 25 [Koman 1999], from grave no. 1, in the *kurgan* on site 3, in Hubinek [Koman 1998:62, Fig. 2] and finally the assemblage already discussed in this paper coming from grave no. 7, on site 31 in Werszczyca [Bagińska, Machnik 2003].

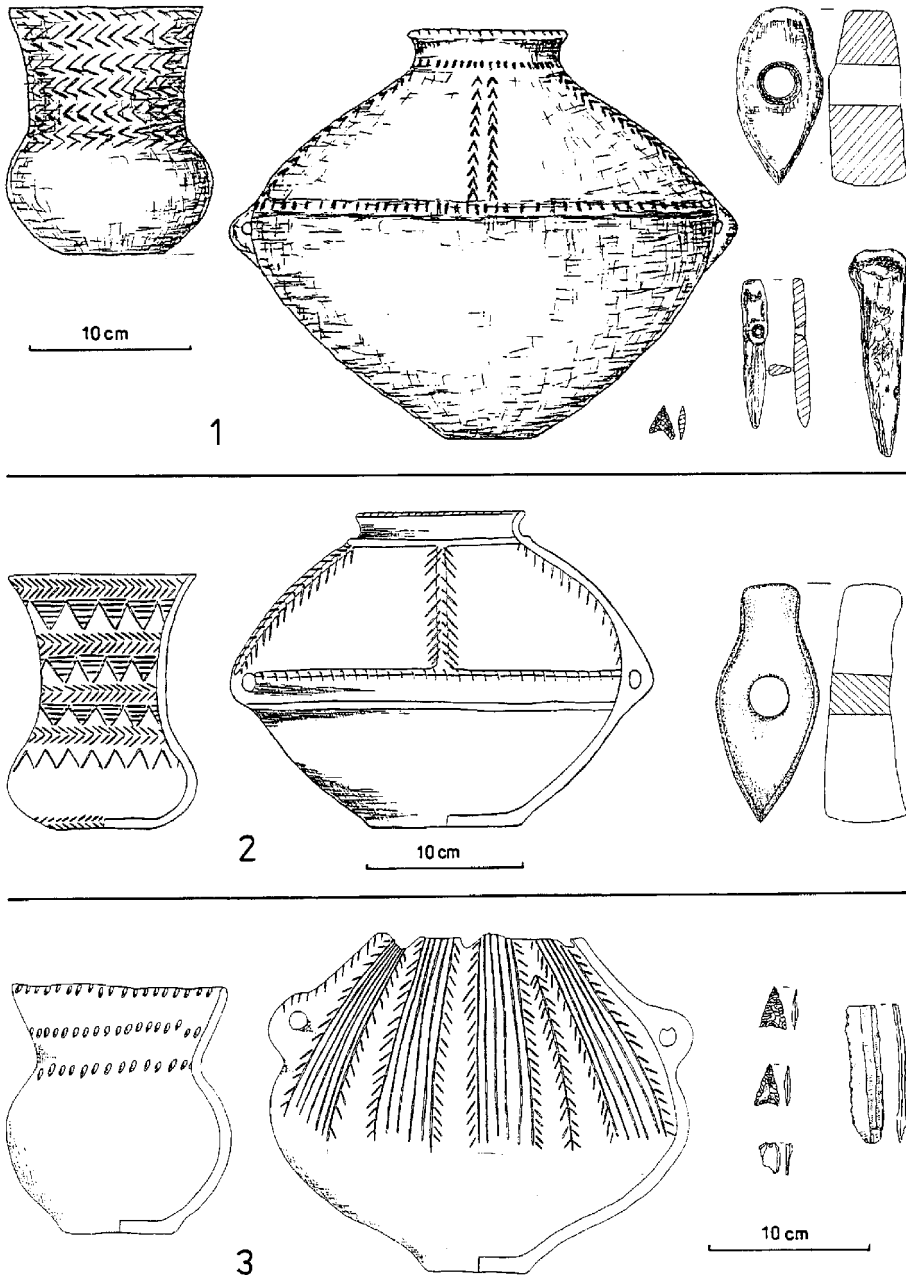


Fig. 3. Grave assemblages of category A from CWC kurgans on Grzęda Sokalska; 1 - Łubcze, kurgan 2, grave no. 2; 2 - Werszczyca, site ?, grave no. 2; 3 - Werszczyca, site 29, grave no. 1

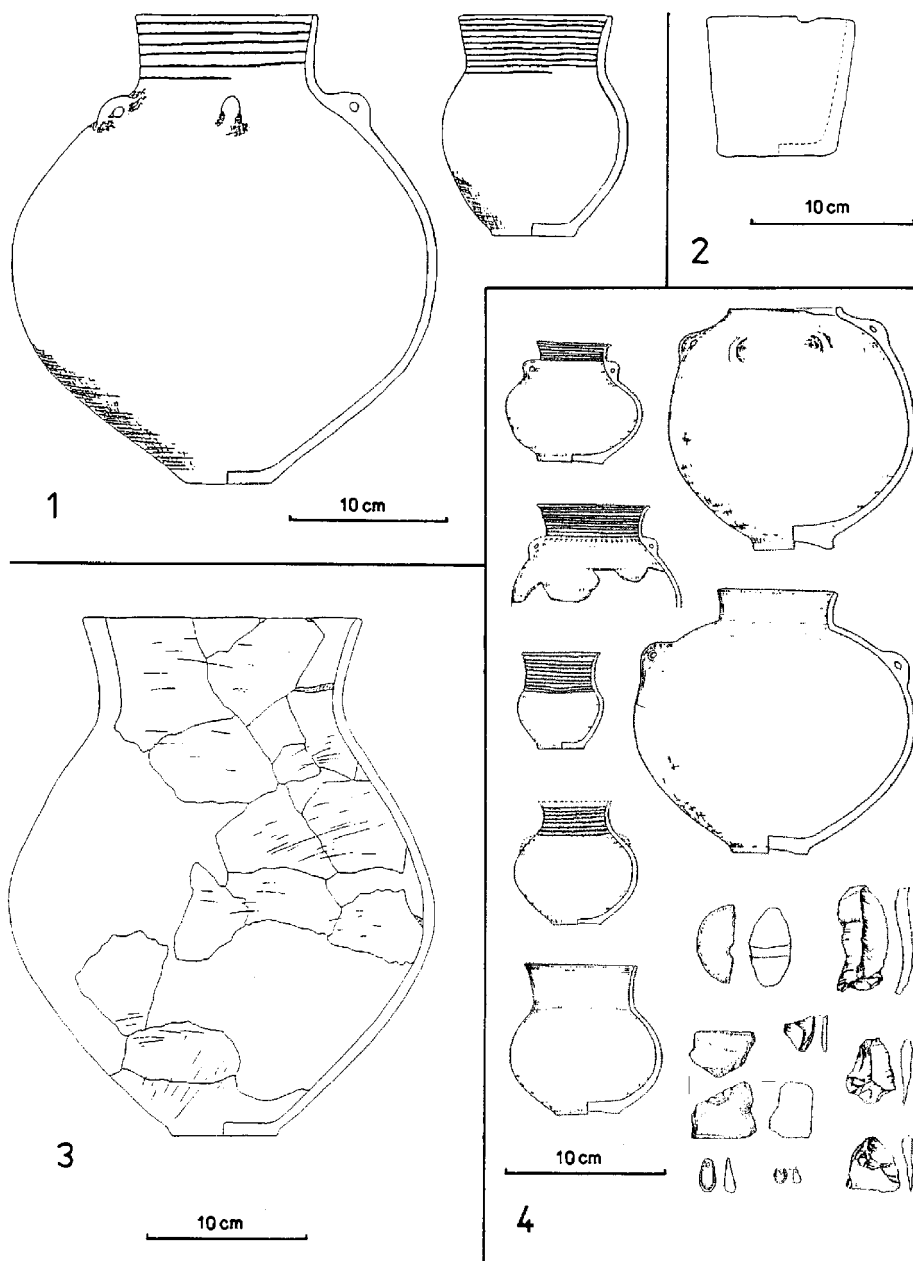


Fig. 4. Grave assemblages of category B from CWC *kurgans* on Grzęda Sokalska; 1 - Łubcze, site 37, niche grave no. 2; 2 - Łubcze, site 16, *kurgan* 2, grave no.1; 3 - Werszczyca, site 31, niche grave no. 7; 4 - Hubinek, *kurgan* A, niche grave (?) no. 1

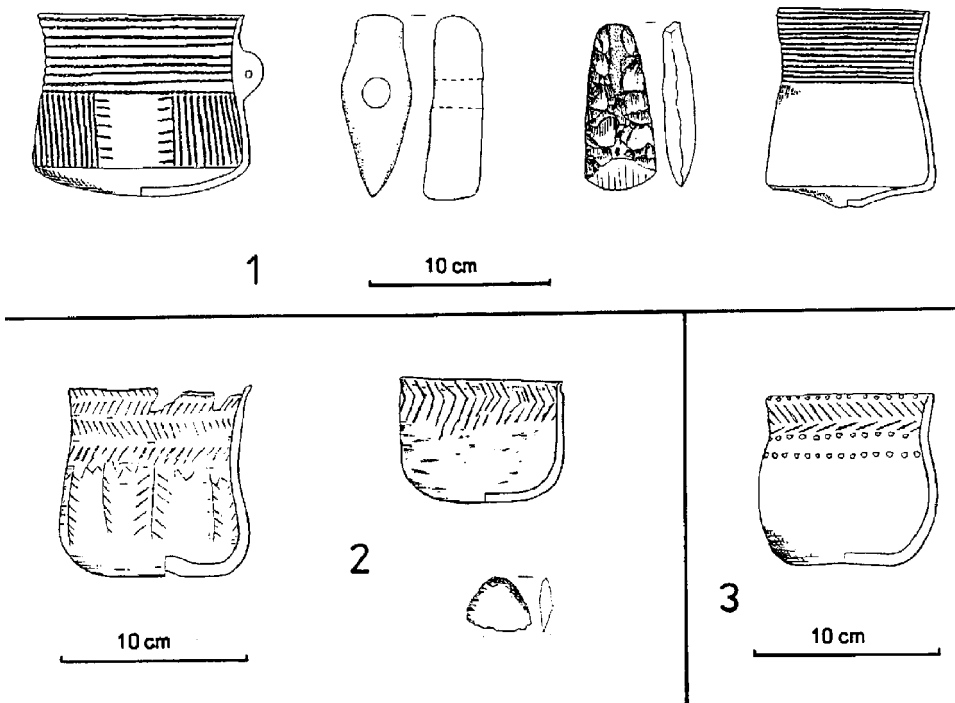


Fig. 5. Grave assemblages of category C from CWC *kurgans* on Grzęda Sokalska; 1 - Hubinek, site 4, niche grave; 2 - Hubinek, site 3, grave no. 3; 3 - Werszczyca, site 31, grave no. 3

Category C consists of assemblages including vessels showing traits typical only of MDC pottery (Fig. 5)². On Grzęda Sokalska, they were found in graves nos. 2 and 3, on site 3, in Hubinek [Koman 1998:65, Fig. 4], in a niche grave in the *kurgan*, on site 4, in Hubinek [Bagińska 1998:72, Fig. 3ab]³ and in already discussed grave no. 3, on site 31, in Werszczyca.

Category D is distinguished only on the basis of assemblages unearthed on the above-named site, in graves nos. 4/5 and 6 and contains beakers displaying authentic traits of MDC pottery as well as vessels having traits of the late phase of the CWC, specifically of its Kraków-Sandomierz group (Fig. 6).

In this category must be also included an assemblage from grave no. 2, in *kurgan* 2, on site 22, in Nedeżów [Bagińska 1996:62, Fig. 4], however, a large amphora

² These are assemblages which using other division criteria (taking into account only the range of MDC traits) have been subsumed under the first category [Machnik 1999:239, Machnik *et al.* 2001:391; Bagińska, Machnik 2003].

³ Provided, of course, that one takes two small beakers exhibiting MDC traits to form part of a separate grave assemblage in respect of the CWC amphorae found there. For a more detailed discussion of the question see the latter part of this paper.

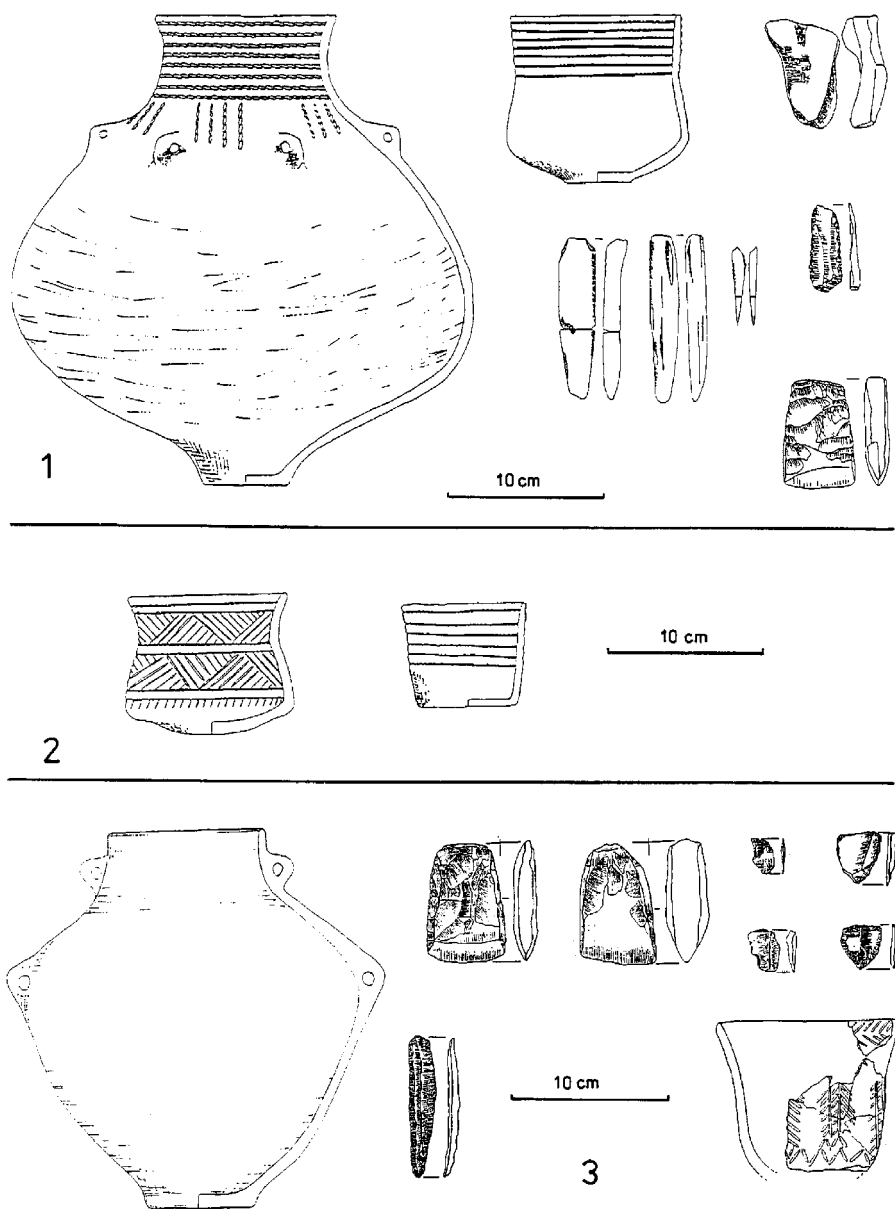


Fig. 6. Grave assemblages of category D from CWC *kurgans* on Grzęda Sokalska; 1 - Werszczyca, site 31, niche grave 4/5; 2 - Werszczyca, site 31, grave no. 6; 3 - Nedeżów, site 22, *kurgan* 2, grave no. 1

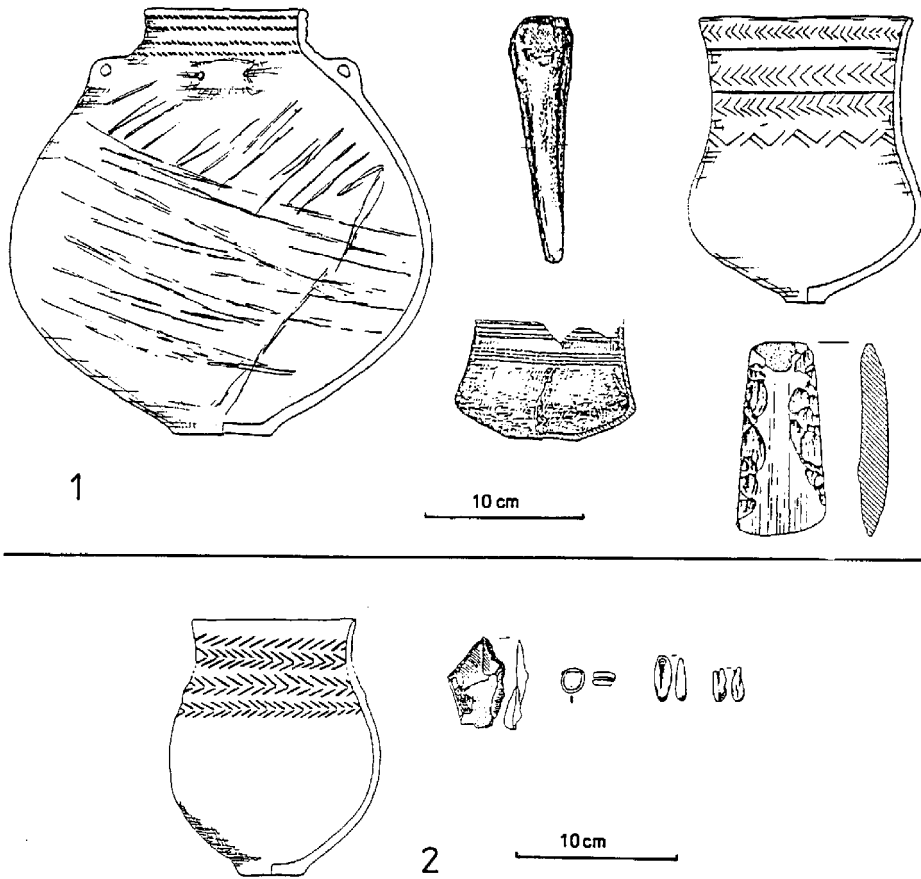


Fig. 7. Grave assemblages of category E from CWC *kurgans* on Grzęda Sokalska; 1 - Łubcze, site 2, *kurgan* 2, grave no. 2; 2 - Łubcze, site 37, grave no. 3

accompanying an MDC beaker in this assemblage clearly indicates connections not to the vessels of the CWC Kraków-Sandomierz group but to the amphorae of the late (III) phase of the CWC in Bohemia [Bagińska 1996:62, 65, Fig. 4a].

Category E comprises assemblages that, besides vessels typical of the late phase of the CWC, include specimens that in their ornamentation are reminiscent of MDC beakers, whereas their form reminds one of CWC pottery but exhibits also certain local traits, e.g. the way bottoms are shaped into a foot (Fig. 7)⁴.

⁴ These are assemblages which, when a smaller set of sources is considered (covering only assemblages exhibiting an appropriate degree of affinity with MDC pottery), have been included in the second category [Machnik 1999:239] or the third one [Machnik *et al.* 2001:392].

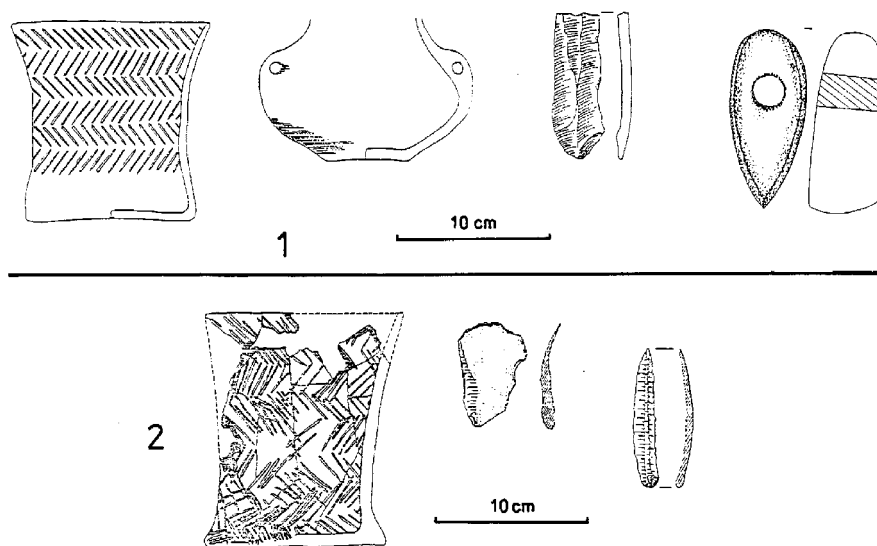


Fig. 8. Grave assemblages of category F from CWC *kurgans* on Grzędą Sokalską; 1 - Werszczyca, site 1, grave no. 1; 2 - Werszczyca, site 30, grave

In the area in question we encounter such an assemblage in grave no. 2, in the *kurgan*, on site 2, in Łubcze [Koman, Machnik 1993:44, Fig. 3]. In this category one may also include an assemblages with a vessel of “mixed” CWC and MDC traits in grave no. 3, on site 37, in the said locality [Bagińska 1997:48, Fig. 3e].

Category F consists of assemblages in which vessels, represented here by single straight-walled beakers (without any other accompanying specimens), are merely a pale imitation of MDC pottery (Fig. 8)⁵. What I have in mind here is the assemblages in grave no. 1, in the *kurgan* on site 1, in Werszczyca [Bagińska 1997:49-50, Fig. 4a-d] and in grave no. 1, in the *kurgan* on site 30, in the same locality [Bagińska 1990:22, Fig. B].

Outside of Grzędą Sokalską, in this category one may include a grave assemblage from Wola Węgierska [Machnik, Sosnowska 1998:11, Fig. 11], containing a beaker similar in shape and ornamentation to the specimens from Werszczyca named above as well as several other assemblages from the areas between the upper Vistula and upper Dniester rivers [Machnik *et al.* 2001:395-397, Fig. 4-5]. Sometimes, as in the case of the central grave in *kurgan* 1, in Brzezinki, we may encounter an assemblage in which, next to a beaker whose form seems to be reminiscent of

⁵ These are assemblages which, when a smaller set of sources is considered (covering only assemblages exhibiting an appropriate degree of affinity with MDC pottery), have been included in the third category [Machnik 1999:240] or the fourth one [Machnik *et al.* 2001:391].

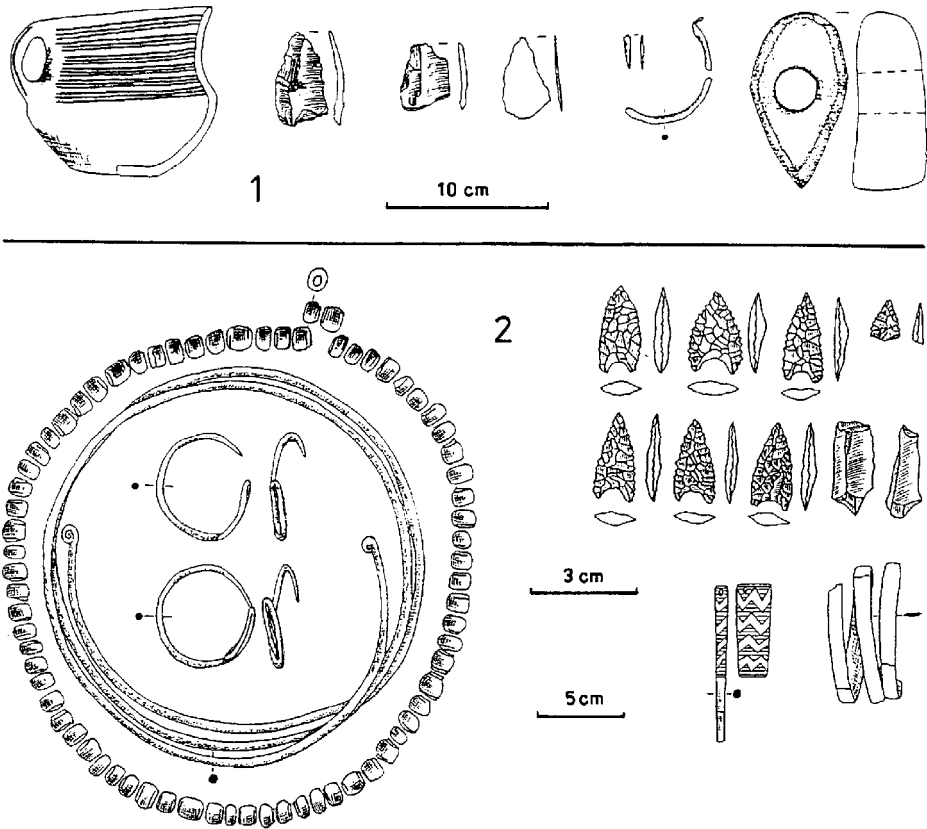


Fig. 9. Grave assemblages of category G (Mierzanowice culture) from CWC *kurgans* on Grzęda Sokalska; 1 - Łubcze, site 37, grave no. 1; 2 - Łubcze, site 38, grave no. 4

MDC influence, there is also a vessel showing traits of the late phase of the CWC [Machnik 1966:Tab. XIX:2:b.]⁶.

On Grzęda Sokalska, discoveries were made, as it has already been mentioned, of eleven graves of the MC of different chronologies in the mounds of CWC *kurgans* or in their areas [Bagińska 1997a]. Because of the significance of the occurrence of these burials in the area in question for our discussion of the reasons why the

⁶ Both vessels were found at the bottom of the grave pit, whereas fragments of others, showing traits of the older CWC [Machnik 1966:Tab. XIX:c] were found either in the roof part of the material filling the pit or in the central part of the *kurgan* mound. The latter may have found their way to the *kurgan* together with the earth used to build it. It is possible, however, that they come from an older grave which was destroyed during the digging of the grave pit of the younger burial, through the *kurgan* mound, containing the vessels mentioned above. This conception could be borne out by the analysis of soil consistency in the mound suggesting that there could have been made a funnel-like dig reaching the very bottom of the grave pit in the place where the two complete vessels were found [Machnik 1966:241].

process of integration of the CWC-MDC was interrupted, we have formed one more, final, **category G** to include artifact assemblages found in these graves (Fig. 9). Admittedly, in the majority of these graves there was no pottery, but there were other goods such as “faience” beads, characteristic bone pins or copper ornaments that not only justified their assignment to that culture, but also specified, in most cases, its chronological phase (see section on chronology).

In the discussed area, these are the following grave assemblages:

(a) with pottery: grave no. 1, on site 37, in Łubcze [Bagińska 1997:197, Fig. 4] and grave no. 2, on site 25, in Nedeżów [Bagińska 1997a:193, Fig. 1a, c-d], and

(b) without pottery: grave no. 1, on site 1, in Łubcze [Koman, Machnik 1991:11], grave no. 1, in *kurgan* 2, on site 25 [Koman 1999:45, 50, Fig. 7:1-5] and graves nos. 1, 2, 4, on site 38, in the same locality [Bagińska 1997a:192-196, Fig. 2-3], grave no. 3, on site 1, in Werszczyca [Bagińska 1997a:193, 198, Fig. 1b, e-f] and finally grave no. 8, on already well-known site 31, in the same locality [Bagińska, Machnik 2003:43-44, Fig. 5f].

Thus, the division of grave assemblages found on Grzęda Sokalska made here features a much larger number of categories than previous divisions [Machnik 1999; Machnik *et al.* 2001]. Now, there are as many as seven categories of which a majority, i.e. four (C, D, E and F), have any degree of affinity with the MDC-beginning with the occurrence of exclusively its authentic traits (category C) to the presence of its only vague reminiscences (category F).

Besides them, there have been two other categories distinguished (A and B) containing only CWC traits and the last one (G) representing already the MC. Among all the categories, specific temporal relationships hold as well, which shall be presented in the next section.

5. THE CHRONOLOGY OF THE DISTINGUISHED CATEGORIES OF GRAVE ASSEMBLAGES

The construction of relative and absolute chronologies of individual categories of assemblages is based on their stratigraphic position within *kurgans* or on their rims as well as on radiocarbon dates obtained for some of them. As we know, in most of the *kurgans* investigated on Grzęda Sokalska, there were more than one burial discovered. They were located, as we have seen, in different places.

And so, under *kurgan* mounds, could be found all the graves with category A assemblages, i.e. with vessels displaying traits of, generally speaking, the older phase of the CWC or with no pottery at all and containing only flint goods (which

is typical of this phase too) as it can be observed in grave no. 1 on site 31 in Werszyczca [Bagińska, Machnik 2003:39, 43, Fig. 1, 5d-e]. In *kurgans* that had been less damaged, where the original ground level was preserved under the mounds and thus could be easily observed, it was found out that burials with assemblages of this category (sunk into the original ground level) usually occupied a central position. Hence, a conclusion can be drawn that it was for them that the *kurgan* mounds were built.

In light of the typological and comparative analysis of vessels found in these burials, as well as other artifacts, e.g. stone shaft-hole axes or flint arrowheads, assemblages included in category A may differ among themselves in terms of chronology⁷, although, generally, they represent the older phase of the CWC.

So far, only for two grave assemblages of the said category we have ¹⁴C dates. These are grave no. 2, in the *kurgan* on site 1, in Werszyczca [Machnik 1999: 237, 247, Fig. 6b, 17] and grave no. 1, in *kurgan* 2 on site 2, in Łubcze [Machnik 1999:234, 244, Fig. 3b, 11]. In both cases the dates are early enough not to vary much from expectations. For they fall on the first centuries of the 3rd millennium BC. However, in the case of the first of these graves, it could be even the very beginning of this period⁸. They are, as we shall see, older enough than radiocarbon-dated assemblages of other categories distinguished by us on Grzęda Sokalska.

The assemblages of the next category, i.e. B, which includes vessels displaying traits of only the late phase of the CWC, chiefly of its Kraków-Sandomierz group, occupy, all of them as it seems now, a younger (secondary) stratigraphic position with respect to burials containing category A assemblages. This is certainly the case with graves nos. 3 and 4 at *kurgan* 2, on site 25, in Łubcze [Koman 1999:43, Fig. 2], grave no. 2 at the *kurgan*, on site 37, in the same locality [Bagińska 1997:47-48, Fig. 2A, 3], as well as grave no. 7, at the *kurgan* on the discussed earlier site 31, in Werszyczca [Bagińska, Machnik 2003:39, 43, Fig. 1, 5g], which were placed on (dug into) the original rim of the *kurgan* mound (Fig. 2).

Grave no. 1 in the *kurgan*, on site 3, in Hubinek, considered by its discoverer as central [Koman 1998:61-64, Fig. 1-3], must also have been sunk too into an already existing *kurgan*. This contention is borne out by its location closer to the original rim of the mound than the center of space covered by the mound [Koman 1998:61, Fig. 1]. The *kurgan* was seriously damaged, its mound completely ploughed out, hence, the pit of the proper central grave, usually rather shallow, may not have survived as is the case with several other explored *kurgans* on Grzęda Sokalska (e.g. in *kurgan* 2 on site 16, in Łubcze or on site 37, in Werszyczca [Bagińska 1991; 1997:47, 50, Fig. 2A]).

⁷ A time difference may be observed, for instance, between the assemblage from the central grave in *kurgan* 2 on site 1 in Łubcze [Koman, Machnik 1991] and the assemblage from grave no. 2 in *kurgan* 2 on site 26 in the same locality [Koman 1989]

⁸ This follows from the dating of the oldest CWC graves found under *kurgans* in the Carpathian zone [Machnik 2001].

It must be noted, too, that all burials placed on the original rim of the *kurgan* mound and containing category B assemblages were niche graves. Grave no. 1 in the *kurgan* on site 3, in Hubinek may have been originally a niche grave, too, which is suggested by its irregular shape and dimensions departing from, in particular shape, the standards of regular pit graves. As a rule, central graves were niche ones. The outline and dimensions of this grave feature must be a result of the collapse of the niche ceiling, which is a frequent occurrence in the case of such graves⁹.

Unfortunately, none of category B assemblages has been dated using the radiocarbon technique. To determine their absolute chronology, if only approximately, we can use, by way of comparison, the dates obtained for some category D assemblages on Grzęda Sokalska. In some of these assemblages there occur (next to vessels typical of the MDC), similarly to category B, vessel types exhibiting late CWC traits. Alternatively, we can use dates relating to some late assemblages of the Kraków-Sandomierz group offering a certain analogy to the discussed category. In the first case, this will be dates obtained for the assemblages from graves nos. 4/6 and 6 on site 31 in Werszczyca, the probability ranges of which coincide, as we shall see, ca. 2460 BC. A temporal proximity to grave no. 4/5 thus dated by at least one grave with a category B assemblage, namely, grave no. 7 on the same site, is, in our opinion indicated by an unusual location of both burials at the same *kurgan* (Fig. 2), which shall be discussed later on in this paper. In the other case, the situation is more complex as the ranges of probability distributions of a series of ¹⁴C dates are very broad for most of the late assemblages of the Kraków-Sandomierz group (e.g. for graves no. 43, 78, 133, 135 in Żerniki Górne) [Kempisty, Włodarczak 2000; Włodarczak 2001]. Nonetheless, in several cases, for instance, burials nos. 84, 125, 134 in Żerniki Górne [Włodarczak 2001:125-126, 128, Fig. 16-17, 19] containing beakers and amphorae to which affinity is shown by vessels of these types from B category assemblages (e.g. a beaker from grave no. 2 on site 37 in Łubcze) [Bagińska 1997:48, Fig. 3g] or an amphora from grave no. 4 in *kurgan* 2 on site 25 in the same locality [Koman 1990:53, Fig. 9:2, 7], the ranges of probability distributions coincide ca. 2470 BC¹⁰. As we can see, there is a surprising coincidence between the most probable dating of a category D assemblage and some assemblages from the late phase of the Kraków-Sandomierz group containing vessels offering analogies for specimens included in our category B assemblages. This would corroborate to some extent the legitimacy of referring to more or less this time, i.e. **2470-2460**, the act of deposi-

⁹ A result of such a collapse in a niche grave is usually a superimposition of the outlines of both parts of the grave, i.e. the grave chamber (niche) and entrance shaft, when projected horizontally. This can be observed in many collapsed graves of this type in the Kraków-Sandomierz group on the Małopolska Upland [Kempisty, Włodarczak 2000].

¹⁰ A younger [?] than these ranges is shown by the distribution of probabilities obtained as a result of the radiocarbon dating of grave no. 15[76] from Złota on Grodzisko II (with three vessels reminiscent of specimens of category B [Włodarczak 2001:129, Fig. 20]). However, in this case too, the oldest of possible dates (i.e. 2460 BC) does not differ much from 2470 BC being the contact point between the ranges of probability distributions of radiocarbon dates relating to the named assemblages from Żerniki Górne.

ting of some of the already mentioned assemblages of this very category, i.e. B, on Grzęda Sokalska¹¹.

The stratigraphic position of assemblages of the next category, C (with vessels typical only of the MDC) is similar to that of the majority of category B assemblages just discussed. Graves containing them were placed on the rims of already existing *kurgans*, hence, they are younger than burials with category A assemblages placed beneath *kurgan* mounds. Taking into account the situation in the niche grave on site 4 in Hubinek, already discussed herein, (where it is highly likely that a secondary burial took place), it should be accepted that some C category assemblages might be slightly younger than some assemblages of B category (see footnote 11).

Two of the four category C assemblages (graves nos. 2 and 3 on site 3 in Hubinek) have been radiocarbon-dated. In both cases, the ranges of probability, albeit very broad, do overlap over certain segments [Machnik 1999:243, Fig. 10]. Taking into account that some beakers making up these assemblages are almost identical as far as their form and technology are concerned [Koman 1998:65, Fig. 4:1, 10], it must be assumed that they were made more or less at the same time. Therefore, we can speak here only of a very short segment in the range when the dates overlap. Of three such possibilities (2620–2610, 2580–2550 and 2540–2490 BC), the most probable is the range of **2540–2490 BC** (possibly, its younger segment, i.e. ca. 2490 BC) because, as we already know, basically only about the middle of the 3rd millennium BC (when GAC settlement in Volhynia and Podolia began to wane) it was possible for MDC populations to infiltrate the area discussed here [Machnik 1999:250]. The dating assumed for category C assemblages, clearly younger than that for category A assemblages, is also fully consistent with their mutual stratigraphic positions in *kurgans* on Grzęda Sokalska.

Three graves discovered in the microregion of interest to us here and containing category D assemblages (where vessels typical of the MDC are found together with those having traits of the late phase of the CWC) occupy, similarly to the assemblages of categories B and C, a younger stratigraphic position with respect to graves with category A assemblages. In two cases (graves nos. 4/5 and 6 on site 31 in Werszczyca) graves were located on the original rim of the *kurgan* mound (Fig. 2), while in one case (grave no. 1 on site 22 in Nedeżów) over an older central grave. It is worth noting here that one of the former burials (grave no. 4/5 in Werszczyca), having a niche form, was placed immediately next to analogous niche grave (no. 7) containing a category B assemblage (Fig. 2). This may be an indication that both graves were placed next to the *kurgan* in close succession.

¹¹ It is not impossible that some assemblages of category B are slightly older while others are somewhat younger than the dates quoted. This is suggested by the typological and comparative analysis of the vessels making up the assemblages. And so, for instance, younger than assemblages in graves nos. 3 and 4 on site 25 in Łubcze [Koman 1999:49-53, Fig. 7:6-1; 9:1-8] seems to be the assemblage from grave no. 1 on site 3 in Hubinek, in which two-handled amphorae are decorated in a manner reminding us of the patterns of pottery decoration from the Early Bronze Age [Koman 1998:62, Fig. 2:1-4].

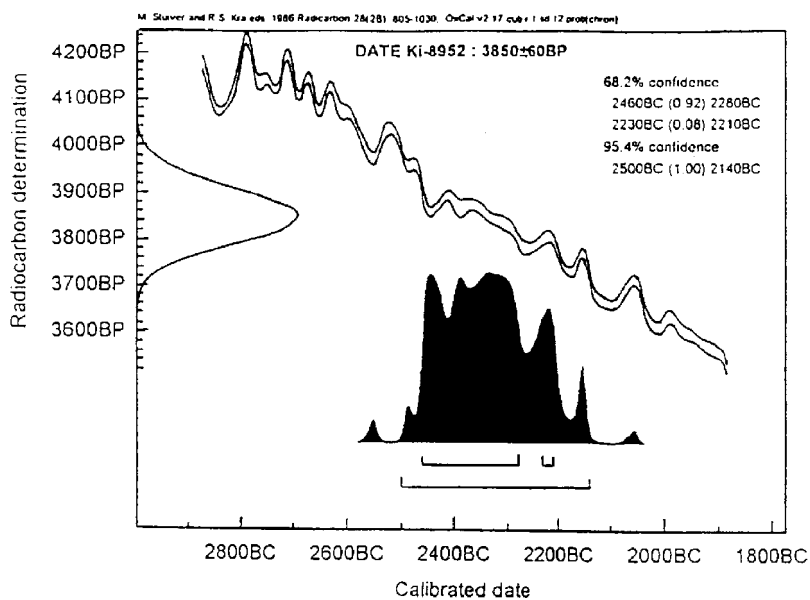


Fig. 10. Werszczyca, site 31, grave 4/5 (category D); diagram showing radiocarbon dating after calibration (foll. J. Bagińska, J. Machnik 2003)

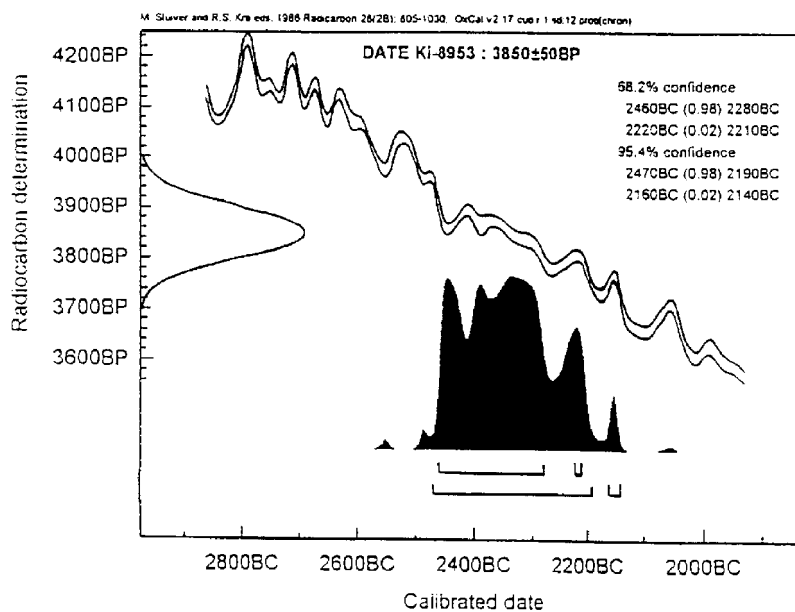


Fig. 11. Werszczyca, site 31, grave 6 (category D); diagram showing radiocarbon dating after calibration (foll. J. Bagińska, J. Machnik 2003)

All the three assemblages of category D have been dated using the radiocarbon technique. The ranges of probability distributions of dates obtained for two of these assemblages, i.e. for graves nos. 4/5 and 6 on site 31 in Werszczyca [Bagińska, Machnik 2003:52, Fig. 10], are almost identical (Figs. 10, 11), whereas the third assemblage, i.e. in grave no. 1, in *kurgan 2*, on site 22 in Nedeżów [Machnik 1999:145, Fig. 13], has a broader range of probability than the other two. Nonetheless, the ranges of probabilities of dates for all the three assemblages meet ca. **2460**. It is the most probable date taking into account the composition of assemblages of this category containing both MDC beakers and vessels having traits of the late CWC.

The above-quoted date referring to category D is corroborated by a radiocarbon chronology obtained for some graves of the late (III) third phase of the CWC on the well-known cemetery in Vikletice in Bohemia [Buchvaldek, Koutecký 1970]. To the pottery (specifically to amphorae) of this phase, affinity is shown, as we already know, by an amphora from the third assemblage of category D, namely from grave no. 1, in *kurgan 2*, on site 22 in Nedeżów. It just so happens that the ranges of probability distributions of the dates for three late Bohemian assemblages, i.e. from graves nos. 41, 58 and 119 [Buchvaldek, Koutecký 1970:74, 105, 168, Fig. 13, 44, 107] overlap with ranges of dates obtained for our assemblages of category D and coincide ca. 2460 as well¹².

Comparing the acceptable, discussed earlier, dating of category C assemblages with the dating of category D assemblages, we can see that the latter are younger than the former by several dozen years. In fact, the difference could have been smaller, if one takes into account unusual similarity manifested by the use of the same ornamentation canon on a beaker in a category D assemblage from grave no. 1, in *kurgan 2*, on site 22 in Nedeżów and on a classic MDC vessel in a category C assemblage from grave no. 3, on site 3 in Hubinek [Bagińska 1996:62, Fig. 4c]¹³. It will not be out of place here to quote an acceptable range of probability distribution of ¹⁴C dates, i.e. 2540–2490 BC, that was obtained for the already-mentioned grave no. 1 belonging to the MDC on site 2 in Prorva, Belarus [Kryvaltsevich, Kovalyukh 1999:154]. For the sake of reminding, the grave contained a beaker offering a rather close analogy to the specimen forming part of the category D assemblage from grave 4/5, on site 31, in Werszczyca (Fig. 6).

The stratigraphic position of two graves discovered so far on Grzęda Sokalska and containing category E assemblages (in which vessels displaying traits of the late CWC co-occur with beakers showing clear MDC influences) is similar to that of burials with assemblages of categories B, C and D. The first of them, i.e. grave no.

¹² I have received the information on radiocarbon dates for the above-named CWC graves in Vikletice directly from Dr. Piotr Włodarczak, for which I am grateful to him.

¹³ It is worth mentioning that the full range of probability of ¹⁴C dates for this category D assemblage from Nedeżów is closer to such a range for the mentioned category C assemblage from Hubinek than to the full ranges for two other category D assemblages, i.e. from graves nos. 4/5 and 6 on site 31 in Werszczyca [Machnik 1999:245, Fig. 13; Bagińska, Machnik 2003:52, Fig. 10].

2, in *kurgan* 2, on site 2 in Łubcze cut, as we know, the outer groove encircling (together with an inner one) the pit of the central grave, containing a category A assemblage; hence it must have been sunk into the rim of a pre-existing *kurgan* mound covering the pit [Koman, Machnik 1993:43, Fig. 2A]. The other burial, i.e. grave no. 3, on site 37, in Łubcze (containing remains of three individuals) was similarly located on the original rim of the *kurgan* opposite niche grave no. 2 located on the rim too and containing, as we know, a category B assemblage [Bagińska 1997:47, Fig. 2A]. In this case, no grave for which the *kurgan* had been built could be found, possibly due to serious damage caused by ploughing. For obvious reasons, this cannot be grave no. 1 situated closer to the center [Bagińska 1997:46-47, Fig. 18, 1A] coming from the Early Bronze Age and containing an assemblage of category G (Fig. 9).

Both assemblages of category E have been dated using the radiocarbon technique [Machnik 1999:144, 146, Fig. 11, 15]. The date obtained for the first of them, i.e. grave no. 2, *kurgan* 2, on site 2, in Łubcze, must be considered much too early if one takes into account the fact that the assemblage comprised next to a beaker indicating connections to the MDC also CWC vessels. One of such vessels [Koman, Machnik 1999:44, Fig. 3:3], in form and ornamentation in particular, reminds one of the pottery traits of the decline phase of the CWC or even more strongly of the vessels of the oldest MC phase [Kadrow, Machnik 1997:22, Fig. 6]. Furthermore, the date has to be rejected because it was impossible for MDC populations to appear in the upper Bug drainage long before the middle of the 3rd millennium BC; neither was it possible for any influence of the culture to come to bear on the area in question that early [Machnik 1999; Machnik *et al.* 2001].

Closer to expectations is the date referring to the other assemblage of category E contained in grave 3, on site 37, in Łubcze, provided one takes into account the youngest probability range of dates from 2470 to 2430 BC [Machnik 1999:246, Fig. 15]. Somewhere in between would fit the date of placing the grave at the *kurgan* built, as we know, over grave no. 1 containing an assemblage of category A. Thus, it would be somewhat younger than the date assumed above for assemblages of category D. An argument in favor of this chronological position of category E assemblages is supplied, too, by the radiocarbon dating [Włodarczak 2001:120, Fig. 11] of an assemblage of this category in grave sunk into *kurgan* K in Łukawica, Lubaczów district, i.e., outside of Grzęda Sokalska¹⁴. The most likely range of probability distributions of the dates for this assemblage is 2430–2410 BC; although a slightly older date is not out of the question, i.e. **ca. 2450**.

Two assemblages of category F distinguished so far on Grzęda Sokalska (containing vessels only remotely similar to MDC pottery) come from, as we already

¹⁴ In this assemblage one should include only two vessels, namely, a large unornamented beaker exhibiting traits of the late phase of the CWC and another one, smaller and straight-walled, richly ornamented and indicating connections to MDC vessels. Other artifacts, i.e. a stone shaft-hole axe and a flint axe as well as a flint flake tool, come from, as far as it can be told, from an older destroyed grave, for which the *kurgan* was built [Machnik 1966:249, Tab. XXIV:2].

know, an unnumbered grave in the *kurgan* on site 30 in Werszczyca [Bagińska 1990] and grave no. 1, in the *kurgan* on site 1 in the same locality [Bagińska 1997]. Admittedly, at the time of their discovery, they both were situated within the space covered by the *kurgan* mound but their stratigraphic position is not entirely clear. In the first case, the grave cut into the groove encircling a space approx. 7 m in diameter, in the center of which there could have been a grave(s) which was/were later destroyed; in the other case, the burial was located exactly in the middle of a space (also about 7 m in diameter) surrounded by a similar groove as above. In the latter case, it was, however, a younger grave feature (so-called burial surrounded by a groove) than grave no. 2 unearthed in the same *kurgan* [Machnik 1999:235-236] and centrally situated in the original *kurgan* perimeter that could be reconstructed. The grave contained, as we already know, a category A grave assemblage dated at the early 3rd millennium BC. Hence, in both situations, we would deal not with the oldest graves within these *kurgans*. However, in the case of site 1 in Werszczyca, grave no. 1 could have been dug before the mound was finally formed and encompassed another older burial that had possibly been covered by some other smaller mound; whereas in the case of the *kurgan* on site 30 in Werszczyca, the grave in question must have been sunk into its mound.

So far, none of the two grave assemblages of category F on Grzęda Sokalska has been dated using the radiocarbon technique. For the purpose of determining their chronology, albeit approximately, one can use a ^{14}C date for a grave discovered in *kurgan* 1 in Wola Węgierska in Dynów Foothills containing a straight-walled beaker [Machnik, Sosnowska 1998:11, Fig. 11a] whose shape and ornamentation are analogous to those of both beakers from the category F assemblages. The analogies concern, in this case, the so-called secondary traits that may indicate temporal proximity of the compared specimens. Within the broad range of the probability distribution of the calibrated date from Wola Węgierska, covering the period of 2600–2050 BC [Machnik 2002:129, Fig. 10], the most probable seems to be the interval of 2470–2270 BC. To narrow down the range, one could use a radiocarbon date for another assemblage, this time from a grave (most likely a secondary one) in *kurgan* I in Brzezinki, Lubaczów district [Machnik 1966:240-241]. Owing to the fact that it comprised, next to an amphora showing traits of the late phase of the CWC, a beaker being, as it seems, a pale imitation of a specific type of MDC vessels (e.g. a specimen from the already mentioned grave 6, on site 31 in Werszczyca or from grave no. 1, on site 2 in Prorva, Belarus), it can be also included, similarly to the assemblage from Wola Węgierska, in category F. Curiously enough, after calibration, the range of probability distributions of dates for this grave [Włodarczak 2001:120, Fig. 11] overlaps with such a range obtained for the assemblage from Wola Węgierska over the period of **2460–2450 BC**¹⁵.

¹⁵ I rely here, as in other cases, on the analysis of calibration results of the obtained radiocarbon dates made, at my request, by Prof. Sławomir Kadrow, Ph.D., for which I would like to cordially thank him here.

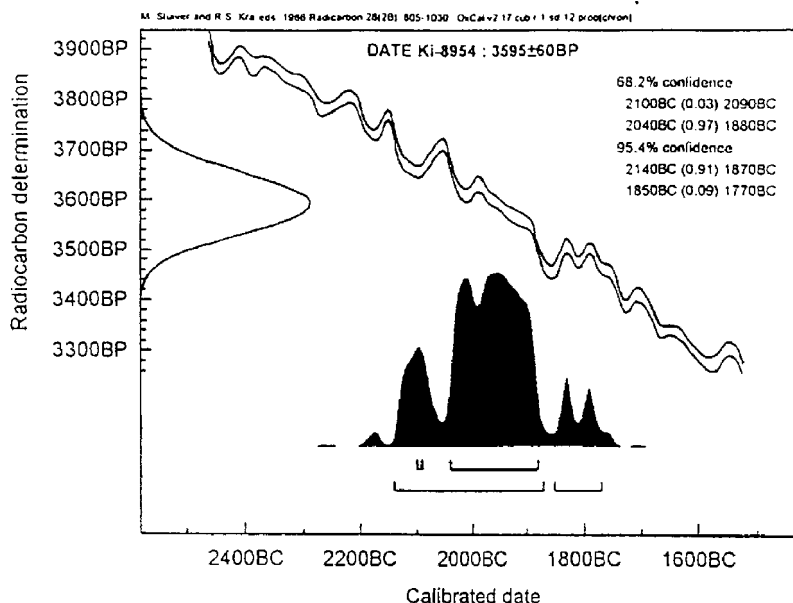


Fig. 12. Werszczyca, site 31, grave 8 (category G); diagram showing radiocarbon dating after calibration (foll. J. Bagińska, J. Machnik 2003)

If we adopted these dates for category F assemblages on Grzęda Sokalska, of special interest to us here, the time of their depositing in this area would be close to the chronology adopted by us for category E assemblages discussed earlier. By no means it would be surprising as vessels making part of assemblages of both categories while showing certain MDC traits are only an imitation or rather a local transformation of the pottery of this culture. The degree of the transformation is different in each of these categories, though. Considering that the degree of similarity seems to be higher in vessels in category E assemblages than in those of category F, one can theoretically assume that the former are slightly older than the latter.

Graves containing assemblages of the last of the distinguished categories, i.e. G, on Grzęda Sokalska, belonging already to the MC, were found either within the space originally covered by a *kurgan* mound or on its rim. The first group includes assemblages from graves nos. 1, 2 and 4 on site 38 in Łubcze [Bagińska 1996a], grave no. 1 on site 25 [Koman 1999:45, 50, Fig. 7:1-5] and from grave no. 1 on site 37 [Bagińska 1997:40, 47] in the same locality as well as from grave no. 2, on site 25, in Nedeżów [Bagińska 1997a:190]. The other group comprises the assemblages from grave no. 1, in *kurgan* 2, on site 1 located in the roof part of the clay-pit from which clay was taken to build the CWC *kurgan* [Koman, Machnik 1991:9, 11, Fig. 1], from

grave no. 3 (probably of the MC), on site 1 in Werszczyca [Bagińska 1997:49-50, Fig. 4e] and the assemblage from grave no. 8, on site 31, in Werszczyca, already discussed in this paper, located about 2.5 m from the original rim of the *kurgan* mound. In both cases, the burials with category G assemblages should be treated as younger than the graves for which *kurgans* were built. This is true also for the graves that were situated in the space covered by their mounds. For the graves were placed there by sinking them into the mounds as was certainly the case with *kurgan* 2, on site 25, in Łubcze, where a burial (grave no. 1) with a category G assemblage cut into the corner of a grave pit centrally located under the *kurgan* mound and containing a category A assemblage [Koman 1999:43, 45, Fig. 2]. Also in two other cases, namely, on site 37 in Łubcze [Bagińska 1997:47, Fig. 2A] and on site 25 in Nedeżów [Bagińska 1992:10, Fig. 1] graves with category G assemblages were sunk (dug in) in the more or less central part of the *kurgan*, most likely through its mound. It could have been them that damaged the pre-existing graves with assemblages of category A.

The burials containing category G assemblages come from different MC phases, beginning with the Early Mierzanowice phase, or even the Proto-Mierzanowice one, [Bagińska 1997a:203-204], temporally close to or in part even contemporaneous with younger CWC grave assemblages in Małopolska [Kadrow, Machnik 1997; Włodarczak 2001:118, Fig. 9]. This is suggested by the range of calibrated probability distributions of the dates for grave no. 1, on site 37 in Łubcze [Machnik 1999:246, Fig. 16] coming most likely from that very phase of the MC. In its broadest length, the range covers the period of 2510–2290 BC. Relying on ¹⁴C dating of Małopolska MC assemblages [Machnik, Kadrow 1997:169, 170, Fig. 70-71], a younger period should be adopted here, i.e., **2450–2300 BC** within that broad range. It would be a period, considering its lower limit, very close to the dates adopted by us for the assemblages of categories E and F on Grzęda Sokalska. It is worth noting again here the similarity in ornamentation between a cup from the above-discussed MC grave (Fig. 9), on site 37, in Łubcze and a beaker from a category E assemblage (Fig. 7) in grave no. 2, in *kurgan* 2, on site 2 in the same locality [Machnik 1999:139, Fig. 5:5]. The similarity was one of the arguments that we used for rejecting the ¹⁴C date obtained for this assemblage as being too early¹⁶.

The comprehensive chronological analysis of the distinguished categories of grave assemblages unearthed during excavations of *kurgans* on Grzęda Sokalska

¹⁶ As being consistent with the expectations, one may also accept a radiocarbon date obtained for another assemblage of category G in the area in question, namely, for the assemblage from grave no. 8, on site 31 in Werszczyca [Bagińska, Machnik, 2003:43-44, 53, Fig. 5f, 11]. The range of probability distributions of this date, i.e. 2140–1770 BC corresponds to the chronology of the classic and beginnings of the late phase of the MC [Kadrow, Machnik 1997:169, Fig. 70-71]. Such a dating of this assemblage is also supported by a bone disc making part of it [Bagińska, Machnik 2003:43, Fig. 5f] and being one of grave goods typical of this very development phase of the MC. By contrast, there is no consistency whatsoever with expectations in the case of a ¹⁴C date obtained for the unquestionably late assemblage of category G from grave no. 2, on site 25, in Nedeżów [Bagińska 1997a:193, Fig. 1a, c-d]. The date obtained for this assemblage, 4270±60BP (Ki-6302) is absolutely too early because it corresponds to the oldest dates obtained for the CWC.

justifies two major conclusions. First, all assemblages from category B to category G are younger than those of category A (i.e. showing traits of the older phase of the CWC), for which the investigated *kurgans* were built. Second, there is no convincing evidence for any major time differences in depositing assemblages of individual categories beginning with category B. On the contrary, the ^{14}C dates obtained for them, after calibration, would indicate in some cases close chronological proximity. This, in turn, agrees with certain stratigraphic observations (see the location of two niche graves containing assemblages of categories B and D on the original rim of the *kurgan* on site 31 in Werszczyca; Fig. 2).

Of course, there must have been some time differences between these assemblages but they were not very large, at most several decades. The same conclusion can be drawn from the situation discovered in a niche grave in the *kurgan* on site 4 in Hubinek. For if one assumed that the vessels found there, characteristic of category B assemblages, were actually grave goods of an earlier deceased person, whose bones had been moved to the wall of the grave chamber when a body accompanied by category C grave goods was placed in the grave, the time difference between the two burials (hence between assemblages B and C) would not be greater than it takes a human body to decompose making it possible for the same grave to be used again.

6. CONCLUSIONS. AN ATTEMPT TO EXPLAIN THE PROCESS OF CULTURAL CHANGES ON GRZĘDA SOKALSKA IN LIGHT OF THE ANALYSIS OF THE DISTINGUISHED CATEGORIES OF GRAVE ASSEMBLAGES

The first community that appeared on Grzęda Sokalska after the FBC was the population of the older phase of the CWC. In light of radiocarbon dating, this could have happened as early as in the first two centuries of the 3rd millennium BC. The traces of these people are *kurgans* with graves containing assemblages of category A distinguished here. The vessels and other artifacts included in these assemblages (e.g. stone shaft-hole axes and flint arrowheads), encountered across large areas of the vast range of the CWC, indicate that the phase of *kurgan* building could have lasted on Grzęda Sokalska a long time—certainly to about the middle of the 3rd millennium BC. Those were the times (the first half of the 3rd millennium BC) when GAC populations still lived in areas to the north and east of Grzęda Sokalska, i.e. on the considerable portion of the Lublin Upland, Volhynia and Podolia, while the Małopolska Upland was inhabited by the communities of the late phase of the local, Kraków-Sandomierz group of the CWC, which would soon eliminate the so-called Złota culture on the Sandomierz Upland.

The situation changed around the middle of the 3rd millennium BC when we observe a noticeable weakening and soon afterwards a complete demise of GAC settlement in the vast areas of Volhynia and Podolia [Kadrow, Szmyt 1996; Szmyt 1999]. These areas, separating like a wide belt until then (i.e. in the first half of the 3rd millennium BC) the zone of “compact settlement” of CWC populations from the eastern peripheral branch of this culture [Buchvaldek 1981], which undeniably the MDC was, thus stopped being a barrier for the eastern movement of CWC representatives [Machnik 1996; 1999] and the western movement of MDC populations. An archaeological trace of the appearance of a small group of MDC representatives on Grzęda Sokalska at the turn of the 26th century BC is category C of grave assemblages. Their arrival could have been preceded by a reconnaissance by some individuals of this culture south of Grzęda Sokalska, in the area of today’s Lubaczów not far away, who left behind a trace in the form of a grave assemblage of the same category in Młodów [Machnik, Pilch 1997].

MDC representatives who arrived in the region found there population groups exhibiting cultural traits of the already younger phase of the CWC. They left behind an archaeological trace in the form of grave assemblages of category B. The change of traits with respect to those of category A, although it could have begun earlier under the cultural impact coming from the west (chiefly from the Małopolska Upland) in the early phase of the Kraków-Sandomierz group of the CWC, was certainly a result of an influx of individuals from this group in its late development phase on Grzęda Sokalska. A similar situation undeniably took place, albeit incidentally, in the area of Lublin, where so far only two human burials belonging to that group of the same period have been found [Głosik 1968:Tab. V].

The contact between the representatives of two branches of the great CWC complex on Grzęda Sokalska, of which the MDC was part as well, in all likelihood was peaceful. Both communities (i.e. of the Małopolska CWC and MDC) initially kept their individual cultural traits, at least in giving their dead typical vessels to accompany them in their graves. The vessels are the basis on which we distinguish category B and category C assemblages. The burials containing assemblages of both categories were placed close to the bases of mounds of already existing CWC *kur-gans*. There could have been cases, as can be seen at site 4 in Hubinek, when for the purpose of burying a new arrival from the east (MDC) an available chamber of a niche grave was used, a chamber that had been made for a deceased person of the Kraków-Sandomierz group of the CWC.

As a result of a some kind of cohabitation or even closer integration, for instance through marriages between MDC people and CWC representatives showing cultural traits of the late phase of the Kraków-Sandomierz group, a peculiar form of cultural syncretism was reached. Its early manifestation and stage at the same time, taking place in all likelihood already in the first generation of immigrants, would be

graves with category D assemblages. The grave goods placed in such graves included both authentic MDC beakers and vessels with traits of the Kraków-Sandomierz group of the CWC; the latter was also characterized by the niche form of the grave itself. Such would be the beginnings of the new, recently distinguished, syncretic Sokal group [Machnik *et al.* 2001].

A manifestation of deepening syncretism (its successive stage), taking place probably in the generation of children, possibly born to mixed marriages of CWC people and newcomers from the Dnieper drainage, is observed in our opinion in grave assemblages of category E. These assemblages, as we know, include beakers having altered, but still distinguishable MDC traits and CWC vessels exhibiting a certain local character. Therefore, the integration process of both communities must have been advanced enough in this case at that time.

A certain interpretation ambiguity is posed from this point of view by assemblages of category F that occur far beyond Grzęda Sokalska [Machnik *et al.* 2001:39, Fig. 5]. The vessels forming part of them are only a pale imitation of MDC beakers. They could have been made by the generation of grandchildren of those who placed only authentic MDC beakers (category C assemblages), only CWC vessels (category B assemblages) or both (category D assemblages) in the graves of their dead.

The cultural process resulting from the integration of two different human populations did not last very long on Grzęda Sokalska as it can be concluded from the chronological analysis of archaeological sources presented above. It might have continued for the lifetime of two or three human generations. The effects of the process are observable, however, also outside of Grzęda Sokalska, in the area between the upper Bug, Dniester and Vistula rivers. They manifest themselves as beakers showing certain MDC traits and indicating connections, in form and ornamentation, above all to specimens from known category F assemblages, as well as E ones, always, however, in a context indicating their affiliation to the CWC [Machnik, Pilch 1997:160, Fig. 9:6, 15; Machnik *et al.* 2001:395, Fig. 4 D, G]. They are a product of imitation of Bug patterns (from Grzęda Sokalska) by other groups of CWC populations or they were quickly spread over the area mentioned above during pastoral treks [Machnik 1999].

Regarding some of the distinguished categories of grave assemblages, i.e. D-F, as a manifestation of successive stages (degrees) of social integration, and certainly of cultural syncretism, one can observe in it a tendency to gradually lose MDC traits while retaining CWC ones. This may be evidence of a stop in the influx of MDC people to Grzęda Sokalska or adjacent areas (after the arrival of first groups around the middle of the 3rd millennium BC) and enrichment of the local CWC (late-Corded) substrate by cultural traits peculiar to the MDC. It is possible that initially this was caused to some extent by the eastern expansion of the late CWC populations (late-Corded element) into Volhynia and Podolia already rid of

GAC settlement. The ultimate factor, preventing any further integration that had begun in the middle of the 3rd millennium BC between individual branches of the vast CWC complex (including the MDC) and bringing about a rather quick demise of this culture on both the Małopolska Upland and in the entire drainage of the upper Vistula, upper Bug and upper Dniester rivers, was the rise of a new culture, i.e. the MC. It left its trace on Grzęda Sokalska, as we know, in the form category G assemblages with one of such assemblages (in grave no. 1 on site 37 in Łubcze) being a mark of the oldest stage of this culture and at the same time of the upper chronological limit of the CWC in this area falling undoubtedly on ca. 2400 BC.

The dynamics of the dissemination of early MC traits towards the east, in particular in Volhynia, is amazing [Kadrow, Machnik 1997:30, Fig. 7; Machnik, Tkaczuk 2003:494, Fig. 9]¹⁷. The colonization by MC settlers from the west or only a total covering of these areas by a new style (most probably both) brought about again an isolation of the drainage of the middle and upper Dnieper from the area located between the upper Bug, Vistula and Dniester, despite the fact that the MDC continued to exist in its home areas. This is borne out by some late copper goods contained in its grave assemblages [Artemenko 1964:47, Fig. 11; 1967:29-37, Fig. 18-27] in particular by the so-called *Schaftlochäxte* (shaft-hole axes) [Artemenko 1964:40, Fig. 5:19; 1967:30, 31, Fig. 19:2, 20:6].

Translated by Piotr T. Żebrowski

¹⁷ The so-called Volhynia bridge could have become especially impermeable. It is there that we deal with mass occurrence, as far as the Horyń River in the east, of pottery showing traits of the early phase of the MC (without any traces, as it seems, of any other cultures at that time). The traits lasted there longer than in neighboring Podolia [Kadrow, Machnik 1997:139 ff.]. Whereas in the latter area, next to assemblages having early Mierzanowice traits, there occur other assemblages with clear CWC traditions and others indicating strong southern influences coming from the lower Danube drainage, chiefly from the Schneckenberg-Glina III culture. The latter are initially recorded mainly in southern Podolia and Pokucie gradually spreading with time to the remaining part of Podolia (for instance, the so-called Jedyneć group) and causing a break in the development of MC elements in this area making their presence there shorter than in neighboring Volhynia [Machnik 1991:172].

ABBREVIATIONS

AAC	– Acta Archaeologica Carpathica, Kraków
Annales UMCS	– Annales Universitatis Mariae Skłodowska-Curie, Lublin
AP	– Archeologia Polski, Warszawa
APŚ	– Archeologia Polski Środkowoschodniej, Lublin
BerRGK	– Bericht der Römisch-Germanischen Kommission, Mainz
BPS	– Baltic-Pontic Studies, Poznań
BSA	– Annales of the British School of Archaeology at Athens
JIES	– The Journal of the Indo-European Studies, Washington D.C.
KSIA	– Kratkiye soobshcheniya Instituta Archeologii, Moskva
MANH	– Materiały Archeologiczne Nowej Huty, Kraków
NA IA NAN	– Nauchnyy Arkhiv Instituta Arkheologii Natsionalnoy Akademii Nauk Ukrainy, Kiev
PA	– Przegląd Archeologiczny, Wrocław
PBF	– Prähistorische Bronzefunde, München
PZP	– Prahistoria ziem polskich, Wrocław-Warszawa-Kraków-Gdańsk
RA	– Rossiyskaya Arkheologiya, Moskwa
SA	– Sovetskaya Arkheologiya, Moskwa
SIA	– Slovenska Archeologia, Bratislava
SPA	– Sprawozdania Archeologiczne, Kraków
WA	– Wiadomości Archeologiczne, Warszawa

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