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Contribution to the determination of the chronology of the Brînzeni local group of Trypolye culture

The author focuses on the chronology of the Brînzeni (Brynzen) group of the Tripolye culture in the context of the radiocarbon dates obtained from two settlements sites in Moldova - Văratic Holm i Brînzeni XI (IX). Thanks to the conducted analyzes and the results of the latest research, it is possible to place the discussed results in a wider context, including materials in relation to the inner-Trypolye context and contacts with other communities in Central and Eastern Europe.

KEY WORDS: neolithic, Trypolye culture, Brînzeni, western Ukraine, Moldova, chronology

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INTRODUCTION

At the beginning of the 4th millennium BC, western Ukraine and northern Moldova, were a new cultural borderland of two different socio-economic models and strategies connected with the Funnel Beaker (TRB) culture and communities of the late stage of the Trypolye culture (TC). The main differences are visible in pottery production, house features, and settlement model (cf. Dergachew 1980; Harper et al. 2019; Hawinskyj, Rybicka 2021; Müllner et al. 2016; Kruk, Milisauskas 1999; Videiko 2004). However, both groups did not live in complete isolation, and the interactions between them are visible in the archaeological material, e.g. through the presence of culturally different artifacts in both the TC and TRB contexts interpreted as imports, the use of raw materials that confirm some form of exchange or trade, as well as in manufacturing combining various technologies and stylistic of pottery (Movscha 1985; Rybicka 2017; Rybicka, Diachenko 2016; Zacharuk 1955; Zbenovich 1976). The main aim of the article is to analyze the chronology of interactions between a specific variant of the Late Trypolye community – the Brînzeni local group, both in terms of its relationships with its inner cultural context, as well as based on the analysis of materials confirming the interaction with TRB.

The first studies of the settlements considered now as a Brînzeni local group took place at the beginning of the 20th century. However, formal separation of them among others was not made until the 1970s (Dergachew 1980; Movsha 1971). The area where Brînzeni local group's sites are recorded covers the northern Prut and middle Dniester regions, mainly in the northern part of today's Moldova. The group is characterized by a settlement model in the type of medium-sized settlements (up to several hectares) established mainly in the area of uplands. According to the research carried out in the 1970s at Brînzeni III and Costeşti IV, they can be described as settlements predominantly on a circular or oval plan, consisting of about 30 houses preserved in the form of burnt constructions, the so-called ploshchadkas (Markevich 1981). Based on Valentin Markevich's work (1981), the economy was based on agriculture with the use of domesticated types of cereals – wheat and barley, legumes, oilseeds and fruit trees (Markevich 1981, 136-137). The lithic industry was differential and in fact even some raw material from Volhynia ware probably used (Jastrzębski 1989; Rybicka 2015; 2017; Rybicka, Diachenko 2016).

The characteristics of the Brînzeni local group constitute an important starting point for further analysis of the chronology. Currently, this issue is widely discussed in a number of publications aimed at defining the specificity of changes, as well as precisely specifying their chronology (cf. Diachenko, Harper 2016; Rybicka 2017; Rybicka, Diachenko 2016; Sirbu et al. 2020). It should be emphasized that the influence of the Brînzeni local group was associated with the acceleration of the dynamics of social interactions, including relations with the TRB culture in western Ukraine, which in the archaeological material manifested themselves in syncretic ornamentation and forms of pottery. The evidence of contacts are numerous examples of settlements with components of the Brînzeni decoration style as an important and clearly different influence or even imports in the context of other local groups of TC (Rybicka 2017; 2020). Such communities were noticed not only in northern Moldova, but much further, to the Prut, Dniester and Bug interfluve (Movscha 1985; Ryzhov 1998; 2007; Tkachuk 1998; Videiko 2000; 2003).

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In general, many scholars agree that the appearance of the Brînzeni local group is parallel, or even marks the beginning of the CII phase of TC (ca. 3400-3300 – 3000/2900 BC, cf. Kruts, Ryzhov 2000; Rassamakin, Menotti 2011, for different opinion see: Kadrow 2013; Tkachuk 2005a). However, the precise framework of initial phase of the Brînzeni group is problematic. The current research does not provide detailed analyzes of the absolute chronology covering the period of its appearance in the group’s formative area in northern Moldova (Diachenko, Harper 2016, 88). Therefore, the chronology so far was based primarily on the 14C samples for Zhvanets including set for Brînzeni and Gordioni local groups. The results span between 3480-2700 BC (cf. Videiko 1999, 40-41) and allowed to determine the existence of Brînzeni local group between 3400-3100 BC (Rassamakin 2012). At least the backgrounds of the Brînzeni local group needs more careful attention. Nevertheless, certain remarks regarding the chronology of Zhvanets are important in the context of presence of the TRB’s influences. Moreover, syncretic materials with features of Brînzeni from Volhynia let us assumed that the appearance of the group in question and took place earlier (Diachenko, Harper 2016, 88; Rybicka 2017, 136). Strong relations have been documented at Novomalin-Podobanka, outside its formative area (eg. Król et al. 2013; Król, Rybicka 2016; Rybicka 2015; 2017; Rybicka, Diachenko 2015; Vertel-letskyi 2016). Hence, it should be assumed, that in northern Moldova the stylistic features of the Brînzeni local group were already clearly developed, and were so attractive that they influenced the northern areas. The very nature of the relationship, as well as the genesis of syncretic materials, are uncertain. Definitely, Brînzeni communities play an important role in trade with the TRB communities and others representing different variants of the Trypoye culture. Two options seem likely: from an extreme proposal suggesting a direct migration of small groups of Brînzeni communities to the north (Dergachev 1980, 132; Diachenko, Kirilenko 2016; Ryzhov 2007; Tkachuk 1998), to the transmission of patterns and ornaments of pottery beside the trade of Volhynia flint (Dergachev 1980, 133; Rybicka 2020).

Nevertheless, the assumption about the possibility of separating two or more stages of the Brînzeni local group’s development requires more detailed chronological analysis based on both, relative chronology and absolute dates. The contribution for these considerations may be the analysis of new 14C samples for the sites of Brînzeni XI (IX) and Vâratic Holm and their characteristics in the context of the functioning of the Brînzeni local group outlined above.

Fig. 1. The general distribution of Late Tripolye local groups (ca. 3800–3100 BC). After Tkachuk 2004; with additions according to Diachenko, Harper 2016

**Vâratic III Holm**

The Vâratic Holm is located in a settlement microregion in northern Moldova (Edineț district) near the Prut, which marks the contemporary Moldovan-Romanian border. The settlement was discovered in 1958 by Nikolai A. Ketratu, and was excavated by Vsevolod I. Markevich in 1974. The results of the research were presented only in brief, after-conference paper and a few references in the publications of Valentin Der- gachev (1980) and Vsevolod I. Markevich (1981).

According to the mentioned authors, the site can be characterized as a settlement consisting of dwellings preserved in the form of burnt-out field (Dergachev 1980, 52, Kruts 2012, 232). During the research, a kiln for firing pottery was also noted (Markevich 1981, 37–38). Fragments of the pottery represent the typical forms and ornamentation for other Brînzeni sites in this area. Particularly noteworthy is the high percentage of table pottery with painted decorations – approx. 50–55% (Dergachev 1980, 64–65; Markevich 1981, 65, 97, fig. 51:5, 52:12). Also some far reference to the Aegean zone (Dergachev 1980, 61). Among other, numerous stone, bone and antler tools were indicated, including a fragment of an axe and triangular dagger, which has some far reference to the Aegean zone (Dergachev 1980, 64–65; Markevich 1981, 65, 97, fig. 51:5, 52:12). Also some fragments of anthropomorphic statues have been identified. Documented flint tools were made from local as well as imported raw materials (Markevich 1981, 91).

**Brînzeni XI (IX)**

The present-day Brînzeni is located in northern Moldova (Edineț district) near the border with Romania. The villidge is surrounded by the complex of TC settlements. The site was discovered by Vsevolod I. Markevich in 1976, who gave its number IX at that time. Due to the existence of a site with this name (Mersâna), some correction was made and now it is mainly refers as Brînzeni XI or Brînzeni XI (IX). Brînzeni XI (IX) is located in the Bucșa River valley on a slightly flattened headland. The first excavations by Markevich took place in 1977. The main interest focused on the discovery of the remains of the burnt house (dwelling no. 1). Excavations were continued by Moldavian teams (dwelling No. 2, pit) and researchers from the Lomonosov State University in Moscow in 1981 (dwelling No. 3).

In total, the remains of three dwellings and one pit were excavated. So far, the results of the research, apart from minor announcements, have not been fully elaborated. A detailed discussion of the results is not possible due to the partial lack of preserved documentation. This is crucial for works carried by the Moscow expedition. However, in the time following the research, some information about the excavations was presented in short communications or catalogues (Markevich 1985, 101; Stratulat 2008, cf. Terna, Heghea 2017, 316, 319).

On the basis of the preserved materials, certain characteristics of the discovered objects can be determined. The dimensions of the dwellings were varied – house no. 1 – 6.4x5.7 m; No. 2 – 9.45x6.25 m, and the largest house No. 3 – 12.5x9 m. More detailed information concerns the first two structures. They were located along the NW-SE axis. The upper storey of hut no. 1 rested on roof beams covered with a 5–8 cm layer of clay. On the remains of the walls, there were imprints of of bundles and branches. Additionally, during the research of the dwelling no. 2, western remnants of a collapsed wooden structure with structural impressions were discovered. Under the ground floor of the house no. 1, a several-dozen-centimeter layer of a mixture of wastes: animal bones and pottery was documented. According to Stanislav Ţern and Sergiu Heghe (2017, 319), it was the material for leveling the slope on which the building was constructed. It seems likely that there was also a small wooden outbuilding at the dwelling no. 2, which burned out completely during the destruction of the structure. Inside the dwelling no. 2 there are two fireplaces and a clay bank, while at dwelling no. 3 – two clay benches, including one on the upper floor and a stove were documented. The discovered and examined pit was located in the vicinity of dwelling no. 1. There were fragments of pottery, numerous tools made of bone and antlers, as well as post-consumer wastes.

The pottery discovered at the site can be divided into two main categories: fragments of tableware constitute 75% of the entire collection, while the rest is “thick-made” kitchen pottery. In terms of technology, the first group is characterized by a well-formed pottery mass without any visible admixture, while shells are the traditional addition to the clay from which kitchen pottery were made. The outer surfaces are often polished. The morphology of the vessels includes various forms: amphorae, pear-shaped pots, small vases. In most cases, the decorations were painted with black without primer. More rarely, ornamentation was done in red. Ornamentation includes forms typical of the entire complex of sites around Brînzeni. The most characteristic are decorations in the form of multiplied lines and ovals, festoons and anthropo- and zoomorphic images (Ţerna, Heghea 2017, fig. 26, 27; cf. Bicbaev 2016, fig. 10:11). A small findings include three partially preserved female figures, decorated spuns and weaving weights of various shapes.

**Contribution to the chronology of the Brînzeni local group – radiocarbon markings for Vâratic III Holm and Brînzeni XI (IX)**

The specificity of inner-Trypolje contacts is complex issue, especially in the context of general cultural changes of the turn of the CI and CII phases (Dergachev 1980; cf. Diachenko, Harper 2016 – futher references there). It was related, among others, to the phenomenon of increasing the mobility of local communities, a change in the settlement and economic strategy, the emergence of new pottery decoration and contacts with communities representing by a different cultural set. Detailed considerations regarding the interpretation of radiocarbon dates for the late TC communities were carried out, among others by Yuri Rassamakin (2012) and latter by Aleksander Diachenko and Thomas K. Harper (2016). In this case, it is also possible to supplement them with new results.

In northern Moldova, the Brînzeni local group was preceded by the communities of the Badrazhskaya local group, with which it is probably genetically linked. Currently, four radiocarbon dates for the Hancăuţi I site are known. They represent the second stage of development of this group at the turn of the CI–CII period. They maximum range spans between 3980–3636 BC (σ) and 4039–3532 BC (2σ) (Diachenko, Harper 2016, table 1; Lazarovichi 2010). The synchroni-
zation of the origins of Brinzeni communities in the context of their relations with the areas of central Ukraine seems to be more problematic. It seems reasonable to indicate the parallel between Brinzeni and Kosenovskaya local groups (Ryzhov 2007), especially since both groups indicate certain relationships with the genetic sequence concerning large settlements. Sergii Ryzhov believes that the establishing of both groups was the result of partial migration and gradual acculturation of the community of the Tomashovskaya group, representing a variant of the Trypoyle culture within which large settlements functioned. According to him, along with gradual decline of gigant settlement, some communities undertook a journey to the west, which was initially marked by the time of intensification of mutual contacts. The so-called imports of Brinzeni pottery in Majdanetskoe identified by Taras Tkachuk could be treated as some evidence of the presence of relation between both communities (Diachenko, Menotti 2015; Tkachuk 2005, 49; 2008, 39). In the opinion of Alexander Diachenko and Thomas K. Harper (2016, 87–88), the analysis of radiocarbon samples from Majdanetskoe allows establishing the chronology of these contacts for the period in which the settlement functioned in the years 3750/3700–3650 BC, along with a possible slight extension of the range of the Tomashovskaya group by approx. 50 years. This suggestion meets with Müller et al. (2016), who elaborated chronology of Majdanetskoe for 3800–3670 BC.

At a later stage, the Bug-Dniester interfluve was occupied by the communities of the Chechelnetskaya group, which significantly influence the formed Brinzeni and Kosenovskaya communities. For the groups mentioned, Diachenko and Harper propose the following chronological frames: up to about 3650 BC for the Chechelnetskaya group, and 3700–3550 BC for the Badrazhskaya group, and finally, 3500–3400 BC for the Kosenovskaya group (Diachenko, Harper 2016, 89, fig. 3). Furthermore, some materials form Sharin in the Uman area put our considerations in some doubt. According to the Dymytro Kushtan (2015, 438) findings the middle site represents a Koshilovetskaya local group with some general features typical for other local groups, including some common among Brinzeni one. The chronology of Sharin could be put in the range of 3600–3200 BC (Bicbaev et al. 2017; Kuštan 2015, 438; Rassamakin 2012, table 2.5, nos. 35–40). Perhaps those two examples could be treated as a continuation of contacts between the communities started just after the fall of settlement system during subphases T3/T4 in Müller et al’s scheme (2016, 165) of Trypoyle culture? Therefore this hypothesis needs more further confirmation in archeological finding, but remains as an intriguing proposition.

Due to the consistent and characteristic type of pottery production of the Brinzeni group, the task to distinguish a traditional model of its development, covering the formative, classical and final stage is extremely difficult. The results of proceed radiocarbon analyzes are certainly facilitate this attempt. Two samples were selected for dating and examined by the AMS method in Poznań Radiocarbon Laboratory. The first of them, from Văratic III Holm, was a fragment of an animal bone, derived from layers excavated in 1974. The second one from Brinzeni XI (IX), is also a fragment of an animal bone taken from trench No. 1 obtained in 1981. The results present as follows: Văratic Poz-109779 4830 ± 40 BP (3656–3535 BC for σ; 3698–3523 BC for 2σ) and for Brinzeni Poz-109778 4630 ± 40 BP (3499–3361 BC for σ; 3620–3342 BC for 2σ).

It seems that it is possible to postpone the beginning of the Brinzeni group formation earlier, then it was previously suggested (cf. Rassamakin 2012; Bicbaev et al. 2017). A similar tendency in the establishing of chronology for the influences of Brinzeni stylistics can be observed concerning its influence on other local groups (cf. Diachenko, Harper, 2016; Nikitin et al. 2010; Ryzhov 1998; 2007; Tkachuk 1998; 2005). The research of the settlement in Bilshivtsi indicated that in the layers reffered to the Koshylovickaya local group, both ceramics linked to the Brinzeni style and Funnel Beaker culture were found (Tkachuk 2001–2002, 210). The absolute chronology of this site could be established with the consideration of only one date (3695–3370 BC). For more precise series of dates from Verteba Cave’s corresponding Koshylovickaya local group provide other arguments (Nikitin et al. 2010; Kadrov 2013). Followin the suggestions of Sławomir Kadrow about the earlier dating of the CI/CIi phase around 3600–3500 BC, it is
possible to indicate it even about 100 years earlier (Kadrow 2013; Diachenko, Harper 2016, 88; Rybicka 2017, 128; see different opinion in Nikitin et al. 2010). This considerations fits also to the results to the radiocarbon dates for the pottery of Koshylovickaya pottery from that site (Nikitin et al. 2010, table 1, fig. 8). These results are valuable in the context of new radiocarbon samples and also previous research at Brînzeni (Markevich 1981; Movsha 1985), Costești IV (Markevich 1981) and Zhvanets (Movsha 1985), as well as for the some sites in Volynia region (Rybicka 2017, 2020).

The chronology could be also established according to the relations of Brînzeni local group with south-estern group of Funnel Beaker Culture. According to the preliminary outline the contacts of Trypoyle and Funnel Beaker cultures should be extended far beyond CI/CII phase and relation to the specific group. For examples, a cases of long-term settlements at Gródek and Zimne can be given (Gumiński 1989). According to the radiocarbon dating and relative chronology, Gródek was settled in two phases. The first one is dated for 3650–3400, while the second one covers the time between 3400–3100 BC. For both the imports of Trypoyle pottery were confirmed. Nevertheless, the earlier stage is characterised by the relations to the Brînzeni local group, while the second one to the later Gordiniști. (Rybicka 2017; Rybicka et al. 2020, 88; Wlodarczak 2006; Zawisław 2013). Similar situation with relation to both local groups of TC was noted at Zimne with dates of 3700/3600–3400 BC (Bronicki et al. 2017; Rybicka et al. 2020, 88; Włodarczak 2006; Zawiślak 2013). For this main of concern the dates from the settlement at Kurgany-Dubova 3336–3105 BC (Król, Rybicka 2016, fig. 6) and Myrogoszcz (Verteletskyi, Bardetskyi 2018) are especially important. Pottery from the first site is different than those from Novomalin-Podobanka. The bowls are made in a technology much closer to the TRB, and their surface is completely covered with red paint. Bearing in mind the aforementioned features, a fundamental change in the technology of cookware can be observed, which shows increasingly strong references to TRB technology. It seems that this site could be treated as a link that marks the beginning of the formation of a younger phenomenon, which would be the Kostianets-Kurgan horizon (Rybicka 2017, 103; Verteletskyi 2016, 39–54).

Table 1. Radiocarbon dates from sites of Brînzeni local groups an other mentioned in paper.

<table>
<thead>
<tr>
<th>No.</th>
<th>Site</th>
<th>Lab. Code</th>
<th>Sample</th>
<th>BP</th>
<th>BC 68.2%</th>
<th>BC 95.4%</th>
<th>Local group/culture</th>
<th>References</th>
</tr>
</thead>
<tbody>
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<td>3.</td>
<td>Hancăuți I</td>
<td>Hd-17930</td>
<td>Charcoal</td>
<td>4938±42</td>
<td>3762–3659</td>
<td>3797–3643</td>
<td>Koshilovetskaya</td>
<td>Lazarovici 2010</td>
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<tr>
<td>6.</td>
<td>Bicze Złote</td>
<td>Ki-13068</td>
<td>Pottery</td>
<td>4810±100</td>
<td>3697–3384</td>
<td>3794–3365</td>
<td>Koshilovetskaya</td>
<td>Nikitin et al. 2010</td>
</tr>
<tr>
<td>7.</td>
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<td>3634–3378</td>
<td>3703–3341</td>
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<td>Nikitin et al. 2010</td>
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<td>Pottery</td>
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<td>3635–3374</td>
<td>3711–3106</td>
<td>Koshilovetskaya</td>
<td>Nikitin et al. 2010</td>
</tr>
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<td>Sharin</td>
<td>Ki-11870</td>
<td>Pottery</td>
<td>4610±100</td>
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<td>3635–3030</td>
<td>Kachchuk</td>
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<td>BP</td>
<td>BC</td>
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<tr>
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<td>Brînzeni IX (XI)</td>
<td>Poz-81797</td>
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<td></td>
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<td>Poz-127134</td>
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<td>3491–3193 3502–3105</td>
<td>Verteletsyki 2020</td>
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<td>Kurgany Dubova</td>
<td>Poz-77974</td>
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<td>Ki-6879</td>
<td>Animal bone</td>
<td>4350±55BP</td>
<td></td>
<td>3022–2904 3310–2888</td>
<td>TRB Bronicki et al. 2003</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Zimne</td>
<td>Ki-6872</td>
<td>Animal bone</td>
<td>4295±60BP</td>
<td></td>
<td>3012–2878 3095–2696</td>
<td>TRB Bronicki et al. 2003</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Zimne</td>
<td>Ki-6876</td>
<td>Animal bone</td>
<td>4230±50BP</td>
<td></td>
<td>2906–2703 2920–2634</td>
<td>TRB Bronicki et al. 2003</td>
<td></td>
</tr>
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<td>42</td>
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<td>Ki-6871</td>
<td>Animal bone</td>
<td>4160±50BP</td>
<td></td>
<td>2874–2674 2886–2586</td>
<td>TRB Bronicki et al. 2003</td>
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<td>Ki-6870</td>
<td>Animal bone</td>
<td>4120±50BP</td>
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<td>2860–2585 2876–2506</td>
<td>TRB Bronicki et al. 2003</td>
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</tr>
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<td>4080±55BP</td>
<td></td>
<td>2851–2498 2862–2498</td>
<td>TRB Bronicki et al. 2003</td>
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Summary and proposition for general chronology of Brînzeni local group

$^{14}$C dates from Vânătac III Holm and Brînzeni XI (IX) can be interpreted differently. The formative period could be synchronized with the final phase of the Tomashovskaya group, and the final duration of Majdanetskoe, functioning approximately in the period 3800–3650 BC (cf. Müller et al. 2016). The imported pottery (only 6 pieces has been found) identified by Taras Tkachuk, could prove the mutual contacts in very beginning of the group. In reference to discussion about the absolute chronology of Vânătac III Holm and Brînzeni XI (IX) sites, it could be suggest that both settlements functioned between 3600–3400 BC. The very nature of contacts of Brînzeni group in the beginning can be difficult to describe. For main matter of concern about the chronology the consideration about migration, acculturation, or the transmission of ideas, should be left aside. Undoubtedly, it should be stated that if the aforementioned pieces of pottery should be associated with some sort of influence. Nevertheless, it can be underline that already during Tomashovskaya group, the different type of fine decorated pottery was available, or even it found interest among the inhabitants of the “gigant settlements”. So, those observations allowed to enable the formation period of the Brînzeni group several decades in advance, then the mentioned $^{14}$C results suggest, perhaps by about 50–100 years to 3650/3700 BC. The other argument in favor of the early chronology of the Brînzeni local group is its connections with the Koshylovickaya group and the appearance of syncretic assemblies in Volhynia. This date is indirectly confirmed by radiocarbon markings from Vânătac III Holm (Markevich 1981, 91). The $^{14}$C results seem precise and perhaps they can mark the beginning of mutual contacts between the TRB culture and TC communities, which could be based on the exchange of local raw materials. Certainly, the intensification of contacts took place a bit later, as evidenced by import of the specific wares, and finally by the syncretic settlements like at site in Novomalin-Podobanka. What should be mentioned is that not only Brînzeni local group participated in contacts with TRB in western Ukraine. It is evidenced by the lack of any references or Brînzeni features in some settlements as Kotoryny (TRB settlement, where also Baden complex features were present) or Leżnica. Moreover, some analogies to the sites of the TRB and other groups of TC from Volhynia appear at Zhanets. The last time Brînzeni components could be recorded in Kurgan-Dubova dated 3350–3100 BC, which already announce further directions of stylistic change related to another group of the TC – Gordioniti. The reason why the Brînzeni local group disappear as far uncertain. In opinion of Taras Tkachuk (2002, 112; 2005, 48) some smaller communities form the motherland of Brînzeni local groups moved into the north in the are of Sluch and Horyn rivers, where they become a component for other sites in the Horiw type of Trojanow local group (cf. Kruts, Ryzho 2000). Otherwise Viacheslav Bicbaev (1994) stressed that the transition from the Bryznenskaya to Gordinetskaya local is marked by sites of the Kirilen type probably synchronous with early Gordinetskaya local group (Sirbu 2019).

Summarizing the above considerations, an attempt can be made to describe the general characteristics of the chronology of the Brînzeni local group. The material from the Starye Badrazhhy combines both Brînzeni and Badrazhskaya features (Dergachev 1980; Markevich 1981; cf. Kruts 2012, 232). It can be considered as a link between 3800–3650 BC or narrowing the chronology to 3700–3650 BC based on relations to other late TC communities (Diachenko, Harper 2016, 87). Taking into account the dating of the site in Vânătac Holm, the beginnings of the Brînzeni local group can be established to the turn of 3700/3650 BC. Such dating also corresponds to the chronology of the Majdanetskoe settlement and the finds that can be considered Brînzeni ones. The next stage was marked by tightening the relationship between Trypolye and TRB. With time specific syncretic complexes are formed in Volhynia, which combine the features of both cultures. The appearance of syncretic sites in Volhynia can be dated to the period of functioning of, among others, Nowomalin-Podobanka settlements around 3600–3350 BC. Probably the appearance of such settlements had to be preceded by an earlier interaction. It may be indirectly confirmed by imports or references to Brînzeni vessels, e.g. in Zimne and Gródek, dated 3700/3600–3400 BC. The importance of the Brînzeni group at that time may also be demonstrated by the fact that distant references to the Bryznene style were recorded in Koshylovickaya local group in Werteva cave and the nearby settlement in Bilshywyka, radiocarbon dated from 3700–3380 BC (Tkachuk 2013, 214).

However, this phenomenon was probably not one-way in nature. According to Markevich (1981, 91) raw material was imported in Vânătac Holm. Unfortunately, so far it is impossible to describe it in more detailed categories. The functioning of which can be synchronized with the Funnel Beaker where the imports of Brînzeni pottery were recorded. The importance of the Brînzeni group is diminishing with the emergence of other TC communities taking over contact with the TRB communities, as is evident in the Leżnica relics complex. On the other hand, there are also imports and references to TRB in the Brînzeni context (Zhanets, Brînzeni Thsyganka; Bicbaev et al. 2017) or even a sporadic imitation of TRB-ledder ornament, recreated by painting or prints of a double cord recorded in northern Moldova (Rybicka 2017, 79). Indirectly, this may indicate the transition from the phase of inspiration with cultural otherness to the creation of direct demand for items produced by other communities. Nevertheless, the chronology of the Zhanets seems to be debatable. Such a late and wide chronology spans between 3500–2700 BC based on radiocarbon dates should be narrowed, followed the suggestions of Piotr Włodarczak (2006) among other. He determines the functioning of the settlement for the period 3100–2900 BC. This seems to suggest that the site is younger than other Brînzeni settlements. Is especially visible in the context of the presence of Funnel Beaker in the Trypolye context, falling mainly in the period of 3400–3100 BC (Rybicka 2017, 147), and it fits well the tendency to “borrowing” some TRB elements among the Trypolye community. The situation is perceived differently by Taras Tkachuk (2003, 173), who noticed references to the Tomashovskaya local group in the materials from Zhanets. Then the settlement at Zhanets may be treated as a two-phase site. However, Tkachuk (2005a) also believes that the younger $^{14}$C dates should be attributed not to the Brînzeni group, but
to the Kasperovskaya one. The narrowing down the period of settlement in similarly to Piotr Włodarczak's suggestion. The last impulse considered as TRB influence on Brinzeni local group, might be recorded at Zhvanets. It presents analogies to pottery from Leżnica, the functioning of which can be determined up to around 3100 BC. Perhaps, also those dates should be treated as limit of the final stage of settlement in Zhvanets.

**ACKNOWLEDGMENTS**

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**Wykaz cytowanej literyatury**


Rybicka M. 2020. Cultural and settlement changes in the second half of the 4th Millennium BC in the area between Bug, Dniester and Prut rivers. Sprawozdania Archeologiczne 72, 63–85.


Terna S., Heghea S. 2017. Middle and Late Copper Age settlements from the Brînzeni microzone on the Prut river: older research in a modern background. Sprawozdania Archeologiczne 69, 297–325.

Przyczynki do określenia chronologii absolutnej grupy Brînzeni kulury trypolskiej

Streszczenie

W ramach IV tysiąclecia BC obszar dzisiejszej Mołdawii i zachodniej Ukrainy stanowił pogranicze pomiędzy dwoma różnymi modelami kultowymi, reprezentowanymi przez kulturę pucharów lejkowatych oraz regionalne grupy kultury trypolskiej. Sąsiedztwo to wiązało się z rozwojem interakcji między różnymi kulturami, kształtującymi się z overlookingu technologicznego i zależności tematycznych w obszarach gospodarczych i społecznych. Podstawowym elementem wzajemnych kontaków była wymiana przedmiotów materialnych, które pokazują trwałość i zróżnicowanie interakcji między różnymi grupami społecznymi.

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3100 BC. Nowe możliwości interpretacji chronologii grupy Brînzeni pojawiały się wskutek nowych badań wykopiskowych w Ukrainie i Mołdawii oraz pozyskania prób radiowęglowych ze stanowisk badanych jeszcze w ubiegłym stuleciu, w tym tych, znajdujących na obszarze formatywnym grupy. Do badań wytypowano stanowiska Văratic III Holm i Brînzeni XI (IX). Pozyskane oznaczenia radiowęglowe wykonano na próbach kości zwierzęcych. Wynoszą one odpowiednio: dla Văratic Poz-109779 4830 ± 40 BP (3656–3535, for σ; 3698–3523 BC, 2σ), a dla Brînzeni Poz-109778 4630 ± 40 BP (3499–3361 BC, σ; 3620–3342 BC, 2σ)


Analiza pozyskanych dat pozwala na ostrożne oznaczenie ram chronologii grupy Brînzeni. Wstępnie, początek formowania tej grupy można określić na 3700/3650 BC. Kolejną fazę cechuje intensyfikacja kontaktów brynzeńskich z innymi społecznościami tryпольskimi i pucharowymi pomiędzy 3700–3380 BC. W efekcie doprowadziło to do powstania zespołów synkretycznych (ok. 3650 BC). Ostatni etap funkcjonowania wyznaczyłby okres funkcjonowania stanowiska w Zwańcu, przypadający na około 3100 BC.