

EARLY MIGRATION PERIOD GLASSWARE IN CHERNYAKHIV CULTURE

Networks of Distribution (Based on Glass Finds from Viitenky and Velyka Buhaivka Burial Grounds)

V L A D Y S L A V S H C H E P A C H E N K O 

The article aims to investigate the impact of the Migration Period processes on the intensity of interactions between the Romans and barbarians. Specifically, our focus is on the circulation of glassware during the Late Roman to Early Migration Period within the Chernyakhiv culture. The part of the glass goods under investigation is believed to be Roman imports, which makes them a valuable resource for studying Roman – barbarian contacts. To accomplish this, we tried to reconstruct the supply system of two Chernyakhiv sites for glass goods using a dataset of 79 glass items from Viitenky and Velyka Buhaivka burial grounds in Eastern and Central Ukraine. The conducted analysis demonstrates certain transformations in the structure of glass assemblages from both sites occurred at the beginning of the Migration Period. However, the nature of these changes suggests that the Hunnic invasion did not destroy pre-existing economic connections. Instead, the ‘turbulent epoch’ led to new Roman – barbarian contacts and a large influx of Roman imports, including glass goods, to the region of Chernyakhiv culture.

Keywords: Eastern Europe, Late Roman Period, Early Migration Period, Chernyakhiv culture, glassware.

INTRODUCTION

The date traditionally recognized as the beginning of the Migration Period is 375 CE – the year of the arrival of the Huns in Eastern Europe. A specific time of the Hunnic invasion, as well as its destructive power, is known due to the descriptions left by various antique authors (*Wołoszyn 2020*). A series of these catastrophic events is traditionally considered to have led to the gradual collapse of the Chernyakhiv culture¹, associated with the tribal alliance under the leadership of Goths (*Bierbrauer 1995, 39; Kazanskiy 2011; Magomedov 2001, 144; Pinar Gil/Jiřík/Vávra 2019, 415; Shchukin 2005, 251, 252, 254; Tejral 1986, 190; 1992, 241*). However, the concept in question lacks sufficient support from archaeological evidence, as demonstrated by recent studies (*Lyubichev/Myzgin 2020; Petrauskas 2021, 25, 26*). During the Early Migration Period², life persisted at numerous Chernyakhiv sites. Furthermore, the wide distribution of ceramic and glass imports within the Chernyakhiv area indicates that interactions between the Romans and barbarians did not cease even after the Hunnic invasion commenced.

Our research aims to examine the circulation pattern of glassware in the Chernyakhiv culture in

order to understand how the Hunnic invasion and other migration processes of this period reflected upon the sustainability of its distribution networks. The analysis will focus on the supply system of two Chernyakhiv sites (Viitenky and Velyka Buhaivka burial grounds) for glass goods.

THE SITES

The Viitenki burial ground (Bohodukhivskiyi district, Kharkiv region) is part of the archaeological complex of the same name, which is situated in Eastern Ukraine, approximately 50 km west of Kharkiv (Fig. 1: 1), in a valley with a small watercourse, which today is a pond. Since 2004, it has been excavated by the Germanic-Slavonic Archaeological Expedition of the Vasil Karazin Kharkiv National University, under the heading of Mikhail Lyubichev, in cooperation with the Eurasia Department of the German Archaeological Institute. The archaeological complex consists of synchronous settlement and burial ground. Both sites related to the ‘classic Chernyakhiv culture’ horizon, associated with C3–D1 stages. However, earlier materials dated to C1b–C2 stages are also known in Viitenky

¹ By this term, we mean the Chernyakhiv-Sântana de Mureş culture within its entire distribution area.

² This correlates to D1 stage of the Central European relative chronological system developed in the works of H.-J. Eggers, K. Godłowski, and J. Tejral (*Eggers 1955; Godłowski 1970; Tejral 1986; 1992; 1997*). The relative dates further represented in the text correspond to this chronological system.

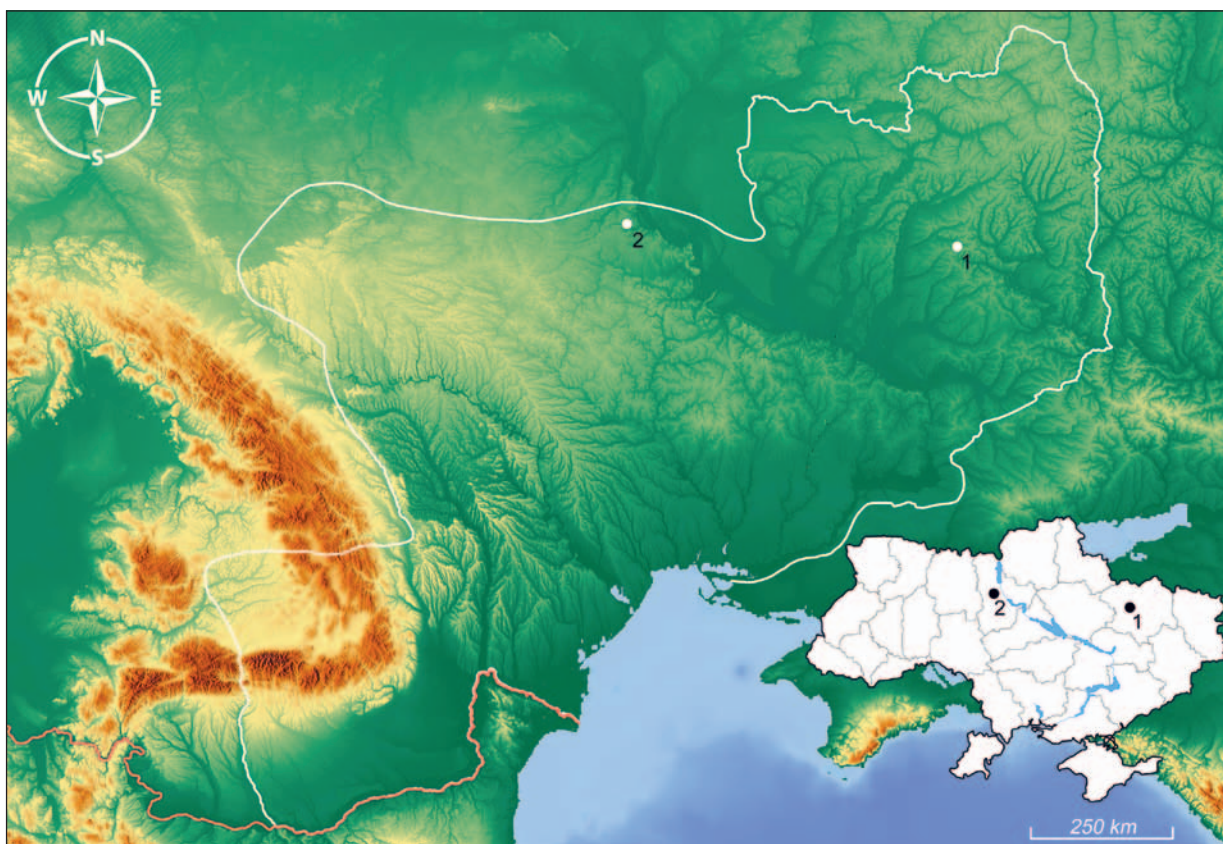


Fig. 1. Geographical location of the sites. 1 – Viitenky; 2 – Velyka Buhaivka. White line – the distribution area of the Cherniakhiv-Sântana de Mureș culture; red line – Roman Limes.

(Lyubichev 2019, 95–99). The burial ground occupies the southeastern slope of the valley and is located a little above the settlement (Fig. 2: A). From 2005 to 2020, at this site, 261 burials have been excavated, including inhumations and cremations.³

The Velyka Buhaivka burial ground (Obukhivskyi district, Kyiv region) is situated in Central Ukraine, approximately 20 km southwest of Kyiv (Fig. 1: 2). It occupies the eastern slope of the valley with a small watercourse, which flows into the Stugna – one of the right tributaries of the Dnipro River. The burial ground covers part of the synchronous settlement located on both slopes of the valley (Fig. 2: B). It had been excavated by a joint expedition of the Institute of Archaeology of the Ukrainian National Academy of Sciences and Dr. hmanov National Pedagogical University, under the heading of O. Petrauskas and R. Shyshkin, during 1994–2005. Within ten years of investigation, 156 Chernyakhiv burials were discovered at the site, including inhumations and cremations. Most of them are attributed to C3–D1 stages, although

earlier finds are also known here (Petrauskas 2018, 22–24; Petrauskas/Shyshkin 2013, 5–16).

METHODS AND APPROACHES

The reconstruction of vessels' manufacturing, finishing, and decoration process is based on generally accepted information about the glassworking technology (Antonaras 2017; Fünfschilling 2015; Lazar 2003; Price/Cottam 1998) and complemented by traceological studies and electron microscopy.⁴ To examine traces of abrasive tools, we visually inspected the surface of the artefacts and used macro photography to capture isolated areas. The geochemical studies were conducted by O. Rumyantseva, who has partially published her findings (Rumyantseva et al. 2020; 2021; Rumyantseva/Lyubichev/Trifonov 2018).

We utilized two distinct methods to quantify fragmented glass, well known as Estimated Vessel Equivalency (EVE) and Minimum Number of Individuals (MNI). The first was developed by H. E. M. Cool

³ The materials are partly published, for the list see Lyubichev 2019, 62, 63.

⁴ The technical terminology is implemented in this study, which is used in Price/Cottam 1998.

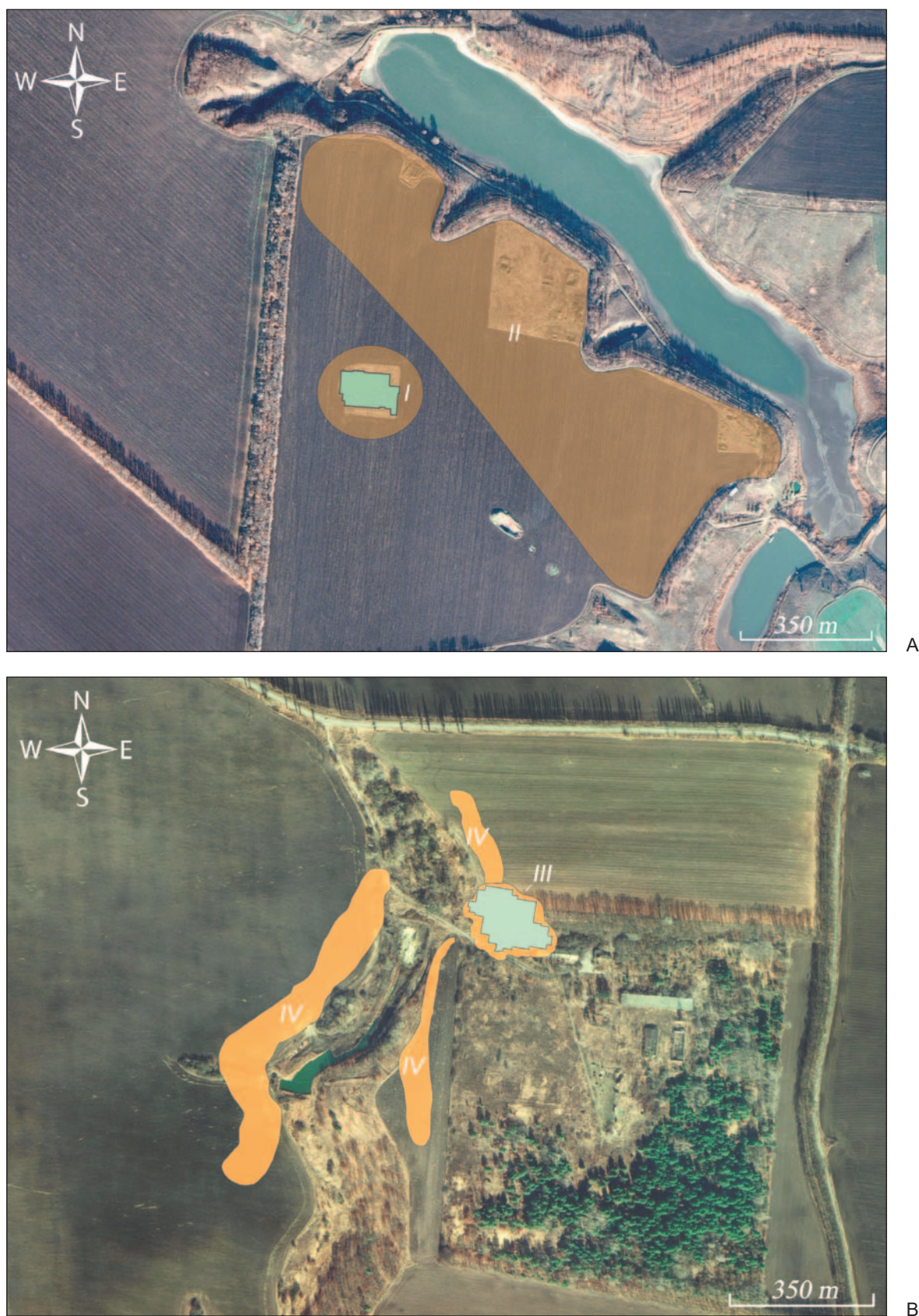


Fig. 2. The topographical position of the burial grounds (I, III) and their surrounding synchronous settlements (II, IV).
A – Viitenky; B – Velyka Buhaivka.

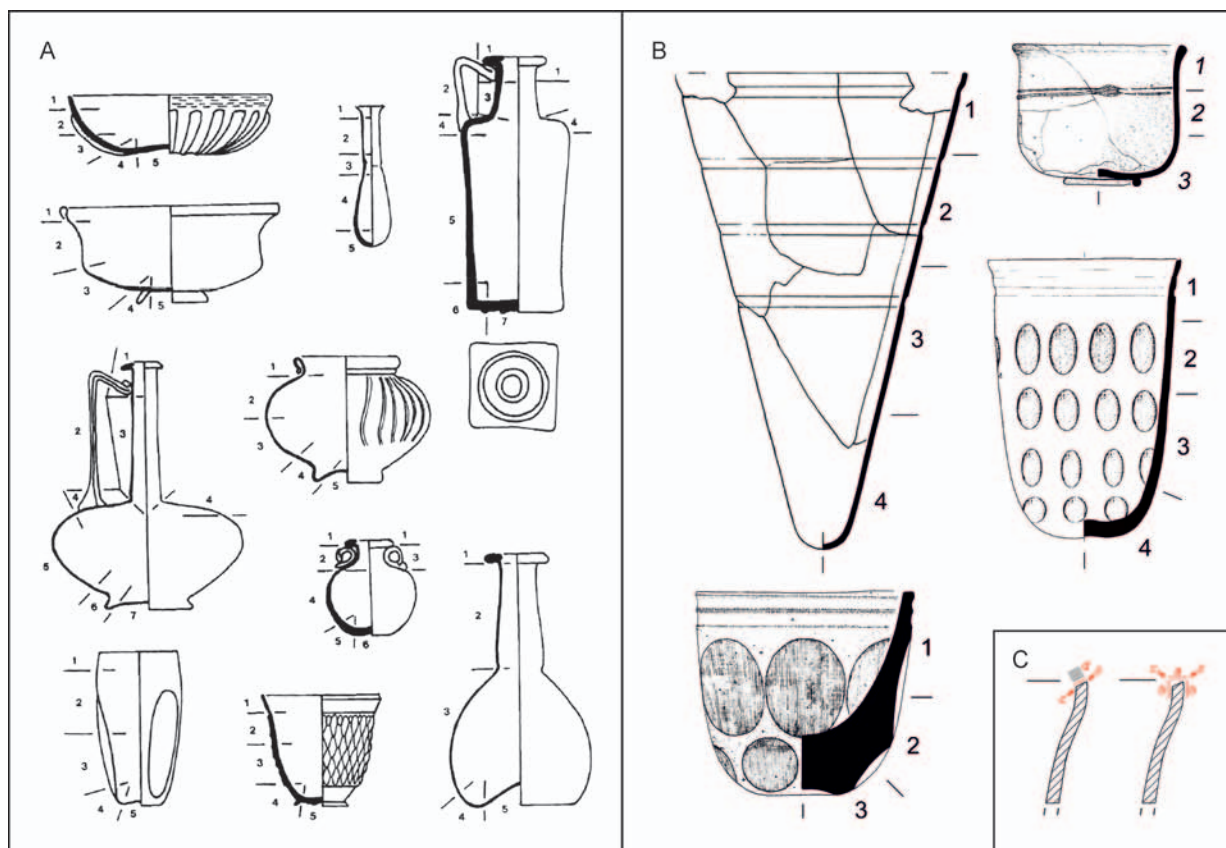


Fig. 3. The division of glass vessels into profile zones. A – division according to Cool/Baxter 1996; B – our adaptation proposed for the main forms of the Chernyakhiv glassware; C – the cold-finished edge of the cracked-off rim and its structural details⁵; a – horizontal surface; b – vertical interior and exterior surfaces; c – lips; d – a sign that marks the polished surface. Drawings A – after Cool/Baxter 1996, B – after Petrauskas 2016; Vornic/Ciobanu 2010; by author, C – by author.

and M. Baxter in the 1990s. Their method is an attempt to improve EVE, previously only used for quantifying ceramic assemblages, and make it suitable for glass studies. They divided vessels into profile zones (Fig. 3: A) and decided that each zone of a particular vessel form could be given a numerical value representing an equal portion of a vessel totalling 100% if all zones are present. When looking at a fragmentary glass vessel, the tally of zones preserved is then added to produce a percentage that represents each vessel (Cool/Baxter 1996; Prior 2014, 111, 112). We have developed an analogous division into profile zones for the most common forms of Chernyakhiv glassware (Fig. 3: B).

The second method involves comparison of technological (manufacture, finishing, and decoration techniques) and morphological (profile shape, glass thickness, colour, and quality) features of the vessels

to identify similar fragments that may belong to the same object (Prior 2014, 113, 114).

Most of the glass finds from Viitenki and Velyka Buhaivka are represented by fragmented artefacts that complicate their typological attribution. In this situation, the technological and morphological features of vessels, such as their manufacturing process, finishing and decoration techniques, as well as the thickness, colour, and quality of the glass, are of particular interest. The combination of different variations of these parameters in one product is not random but represents a deliberate choice of the glassblower rooted in a particular craft tradition (Cholakova 2015, 75–77). The studying of the consistency and frequency of these combinations within the isolated glass collections could indirectly help to outline the production of particular workshops or a wider vessel manufacturing tradition of the

⁵ For the convenience of describing the technological operations performed by the craftsman in the process of finishing a cracked-off edge of the rim, we have divided the profile of the rim into one horizontal (top; Fig. 3C: a) and two vertical (interior and exterior) surfaces (Fig. 3C: b). Depending on the angle of the horizontal surface, the edge can be sloped inwards or outwards. We have designated the angles formed by the intersection of the upper horizontal and vertical surfaces of the rim as lips (Fig. 3C: c).

area (Cholakova 2015, 311). These ideas align with the theoretical concept of technological style, also known as *chaîne opératoire*, which provides a framework for comprehending the cultural and societal significance of technology. It was introduced in the 1950s by A. Leroy-Gourhan and has been further developed in various archaeological and anthropological studies (Martinon-Torres/Killick 2015, 7, 8). In glass studies, the concept of technological style is cultivated by A. Cholakova (2015).

To analyse the patterns of glassware distribution networks, we created an integrated classification system for the studied material, similar to the one presented by A. Cholakova (2015). A groping process is based on the morphological, technological, and geochemical features of analysed vessels.

GLASSWARE FROM VIITENKY

During sixteen years of investigation, more than 130 glass artefacts were discovered at the Viitenky burial ground. There are only five almost intact vessels. Less than a fifth part of the finds is informative objects (25 specimens).⁶ Uninformative items are mainly represented by deformed and melted glass shards. Analysed data includes 25 artefacts originating from burials and surrounding layers.

The entire assemblage from Viitenky presents a wide range of shapes, techniques of decoration, and glass colour tints. However, most of the shards from the burial ground belong to free-blown vessels. There are only a few exceptions made in another way (probably by casting). Vessel finishing and decoration are made by both cold-working and hot-working techniques. The first includes light abrasion and wheel-engraving with vessel's rotation or without it, rim polishing, while the second consist of applied trails – marvered or left standing in relief (made of glass of the same colour as a vessel), applied blobs of dark blue glass and fire-rounded rims. The glass hues vary from intentionally decolourised to the various tints of the natural blue-green or yellow-green colour depending on the concentration of mineral impurities in the glassmaking sands. Four main glassware groups are defined in Viitenky.

Glass groups from Viitenky

Hemispherical cups with fire-rounded rims. The group represented by seven blown artefacts (EVE – 700,

MNI – 7), finished and decorated by hot-working techniques (Appendix A: 1–7, Fig. 4: A). Judging from the diversity of their glass colour and quality it may be concluded that they belong to different vessels. These are hemispherical cups with convex or rare straight walls and a plain slightly concave base or applied base ring. The majority of these artefacts known within the Chernyakhiv culture are decorated with applied relief threads or pinched ribs, although undecorated samples are known too. The rim hot-finishing technique also relates to the use of pontil.

The specimens from Viitenky are made of different groups of raw materials that explain a wide range of colour variations. One of them is blown of almost colourless glass with a blue hue, which belongs to the Levantine I group (Tab. 1: 3). Two artefacts that are made of transparent red and almost colourless glass with a green tint match High Iron Manganese Titanium (HIMT) group raw material (Tab. 1: 1, 2). As well as one specimen has a mixed composition that contains two decolourisers (both antimony and manganese) and is closer to Levantine I group or Roman blue-green glass regarding its chemical makeup (Tab. 1: 4).

The vast majority of these cups uncovered in the Chernyakhiv culture area come from burials, associated with the C3 stage, although later specimens occur too (Ionița 1982, fig. 27–31; Petrauskas 2017, pl. VI–IX; XI–XVI; Shchepachenko 2022, 129, fig. 4, appendix 1: 30; Stawiarska 2014, 120, appendix 1: 86, fig. 36: 86). Their distribution area covers almost all the expansion zone of the Chernyakhiv culture. However, the largest concentration of these artefacts is noticed within the Prut (Pruth) – Dniester interfluvium and in the North of modern Ukraine (Fig. 5: A). The huge number of vessels with fire-rounded rims come from the Komariv glass workshop (Fig. 5A: 3, B).

Several specimens from Viitenky were found in burials that allow determine their chronology. An intact cup was discovered in grave 211 (Appendix A: 6, Fig. 4A: 2), along with a collection of items from the C3/D1 stage (Lyubichev 2019; Shchepachenko 2020). Additionally, two other artefacts were found in graves 101 and 121 (Appendix A: 2, 5, Fig. 4A: 4, 7), both of which date back to the C3/D1 stage (Lyubichev 2019).

Cylindrical beakers with cracked-off rims and wheel-cut decoration include free-blown vessels (eight artefacts; EVE – 200, MNI – 2) made of transparent green (or colourless with green hue) glass with a large number of air bubbles (Appendix

⁶ Oleg Petrauskas and Volodymyr Pasternak once suggested dividing fragmented glassware based on its informational potential (Petrauskas/Pasternak 2003, 65, 66).

Tab. 1. The results of geochemical studies of glassware from Viitenky and Velyka Buhaivka.

Number	Source [Appendix]	Illustration [Fig.]	Chemical type	Bibliography
1	A: 2	4: A: 4	HIMT group	<i>Rumyantseva/Lubichev/Trifonov 2018</i> , 188, fig. 5: 13, tab. 2: 26
2	A: 3	4: A: 5	HIMT group	<i>Rumyantseva/Lubichev/Trifonov 2018</i> , 188, fig. 5: 15; tab. 2: 22
3	A: 4	4: A: 6	Levantine 1 group	<i>Rumyantseva/Lubichev/Trifonov 2018</i> , 187, fig. 4: 2; tab. 2: 12
4	A: 5	4: A: 7	mixed, contain both decolourisers, close to Levantine 1 or Roman blue-green group	<i>Rumyantseva/Lubichev/Trifonov 2018</i> , 189, 6: 5; tab. 2: 35
5	A: 8	6: A: 7	HIMT group	<i>Rumyantseva/Lubichev/Trifonov 2018</i> , 188, fig. 5: 4; tab. 2: 19
6	A: 9	—	HIMT group	<i>Rumyantseva/Lubichev/Trifonov 2018</i> , 188, fig. 5: 3; tab. 2: 25
7	A: 10	6: A: 4	HIMT group	<i>Rumyantseva/Lubichev/Trifonov 2018</i> , 188, fig. 5: 10; tab. 2: 28
8	A: 11	6: A: 6	HIMT group	<i>Rumyantseva/Lubichev/Trifonov 2018</i> , 188, fig. 5: 1; tab. 2: 29
9	A: 16	7: A: 1	HIMT group	<i>Rumyantseva/Lubichev/Trifonov 2018</i> , 188, fig. 5: 12; tab. 2: 24
10	A: 22	11: 5	Levantine 1 group	<i>Rumyantseva/Lubichev/Trifonov 2018</i> , 187, fig. 4: 4; tab. 2: 10
11	A: 23	11: 1	Levantine 1 group	<i>Rumyantseva/Lubichev/Trifonov 2018</i> , 187, fig. 4: 3, 5; tab. 2: 8, 9
12	B: 10	13: A: 5	HIMT group	<i>Rumyantseva et al. 2021</i> , 339, 340, fig. 3: 8
13	B: 11	13: A: 10	HIMT group	<i>Rumyantseva et al. 2021</i> , 339, 340, fig. 3: 16
14	B: 17	13: A: 13	HIMT group	<i>Rumyantseva et al. 2021</i> , 339, 340, fig. 3: 9
15	B: 20	13: B: 1	HIMT group	<i>Rumyantseva et al. 2021</i> , 339, 340; fig. 3: 6
16	B: 21	13: B: 2	HIMT group	<i>Rumyantseva et al. 2021</i> , 339, 340; fig. 3: 7
17	B: 26	7: B: 8	Daniel Foy's série 3.2	<i>Rumyantseva et al. 2021</i> , 339, 340; fig. 2: 29
18	B: 32	7: B: 4	decolourized with antimony, close to D. Foy's group 4	<i>Rumyantseva et al. 2021</i> , 338, 339; fig. 2: 11
19	B: 39	14: A: 2	decolourized with antimony, close to D. Foy's group 4	<i>Rumyantseva et al. 2021</i> , 338, 339; fig. 2: 4
20	B: 40	14: A: 4	decolourized with antimony, close to D. Foy's group 4	<i>Rumyantseva et al. 2021</i> , 338, 339; fig. 2: 5
21	B: 41	14: A: 1	decolourized with antimony, close to D. Foy's group 4	<i>Rumyantseva et al. 2021</i> , 338, 339; fig. 2: 6
22	B: 45	14: A: 5	decolourized with manganese, close to Daniel Foy's série 3.2	<i>Rumyantseva et al. 2020</i> , 327, 328, 337, 338; fig. 2: 5; tab. 1: 3, 9
23	B: 46	14: A: 9	decolourized with manganese, close to Daniel Foy's série 3.2	<i>Rumyantseva et al. 2020</i> , 327, 328, 337, 338; fig. 2: 6; tab. 1: 3, 11
24	B: 47	14: A: 7	decolourized with manganese, close to Daniel Foy's série 3.2	<i>Rumyantseva et al. 2020</i> , 327, 328, 337, 338; tab. 1: 3, 15
25	B: 48	14: A: 11	decolourized with antimony, close to D. Foy's group 4	<i>Rumyantseva et al. 2020</i> , 327, 328, 335–337; fig. 2: 3; tab. 1: 3, 5
26	B: 49	14: A: 12	decolourized with antimony, close to D. Foy's group 4	<i>Rumyantseva et al. 2020</i> , 327, 328, 335–337; fig. 2: 2; tab. 1: 3, 3
27	B: 52	15: 1	decolourized with antimony, close to D. Foy's group 4	<i>Rumyantseva et al. 2021</i> , 338, 339; fig. 2: 3

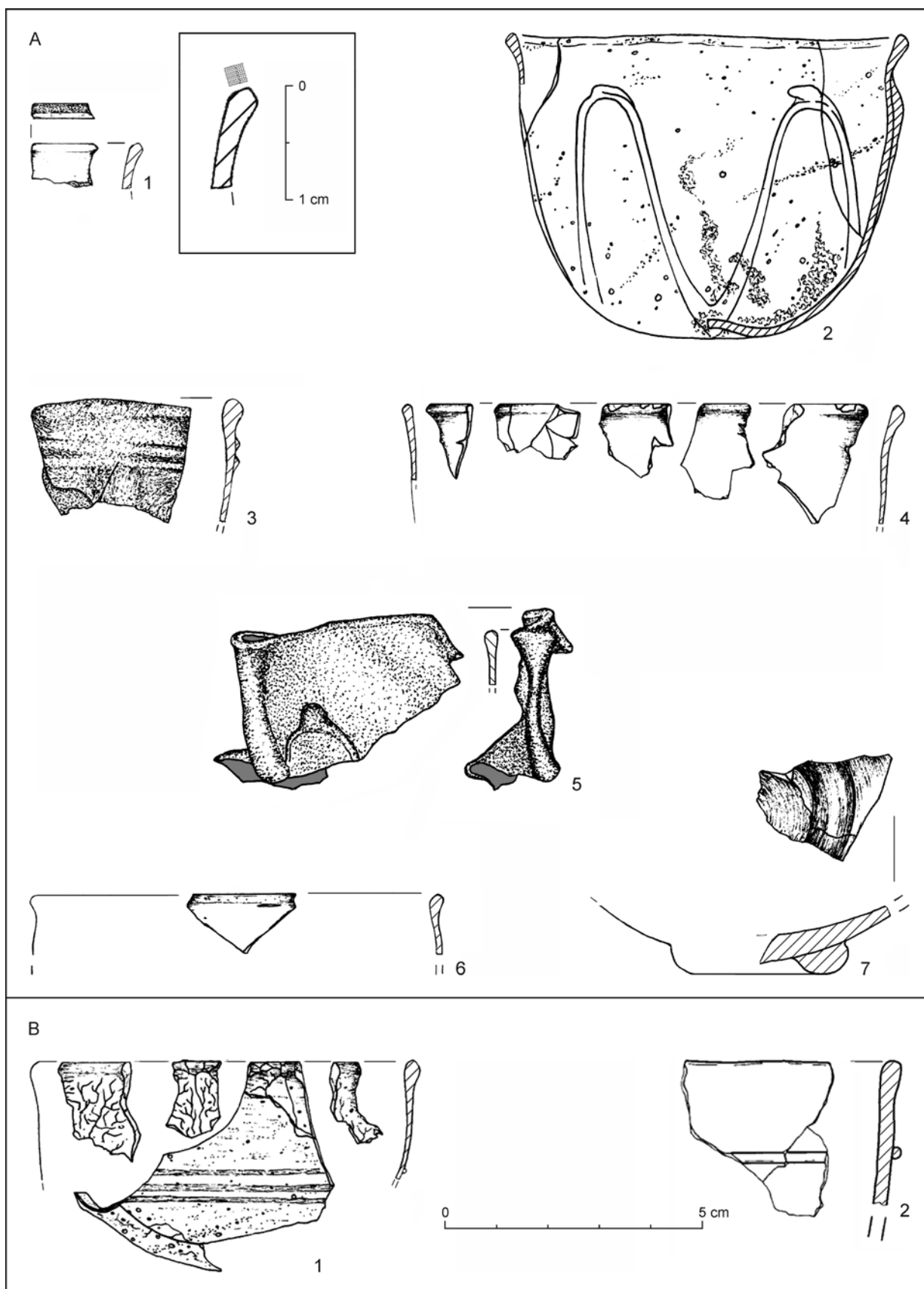


Fig. 4. Hemispherical cups with fire-rounded rims. A – Viitenky; B – Velyka Buhaivka. Drawings A – by author, B – 1 by author, 2 after *Petrauskas/Shyshkin 2013*.

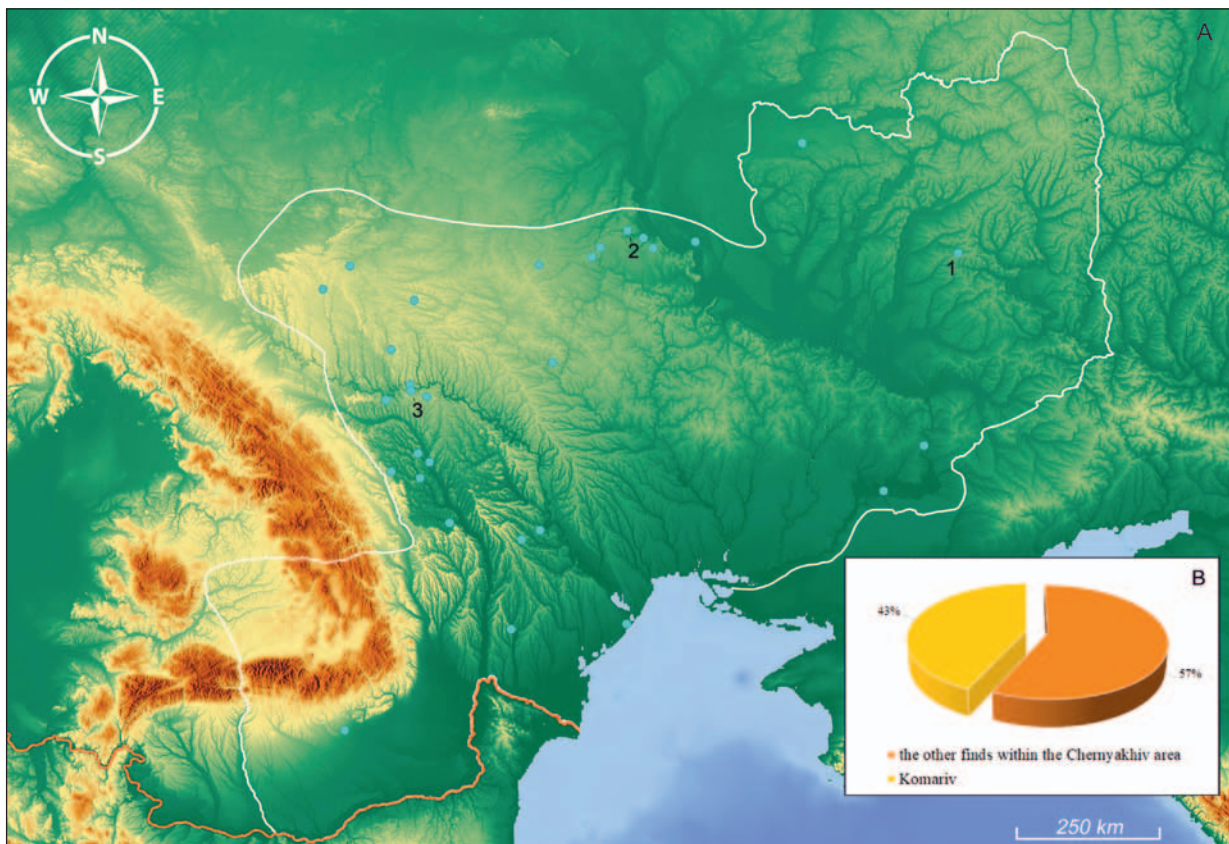


Fig. 5. The distribution pattern of hemispherical cups with fire-rounded rims within the Chernyakhiv culture. 1 – Viitenky; 2 – Velyka Buhaivka; 3 – Komariv. White line – distribution area of the Chernyakhiv culture; red line – Roman Limes. A – personal data, B – after Shchepachenko 2023.

A: 8–15, Fig. 6: A). These objects have curved rims with cracked-off and polished edges. After this reworking, the edge usually has a sloping inward horizontal surface.⁷ Vessels are decorated with uneven slightly abraded horizontal bands and a few horizontal rows of unpolished (or polished) wheel-cut oval facets. All the analysed artefacts were made of raw glass close to the HIMT group (Tab. 1: 5–8).

The majority of these characteristics are typical for tall cylindrical vessels well known as Eggers 230 type beakers (Eggers 1951).⁸ It should be mentioned that some other glassware forms that occurred in European *Barbaricum* (Eggers 223, 226–229 type bowls) exhibit similar decoration patterns and techniques. So far, only one such intact bowl is known in the Chernyakhiv culture area, which comes from grave 100 of Velyka Buhaivka burial ground (Appendix B: 52, Fig. 15: 1).⁹ However, it differs from beakers of the Eggers 230 type as

well as vessels' shatters with cold decoration from Viitenky in terms of the glass colour and quality, method of the rim finishing, some special decorative techniques, and geochemical characteristics (see below).

There are two detailed typological divisions of Eggers 230 type beakers. The first system, presented by E. Straume in 1987, is based on the morphological characteristics of the vessels such as wall thickness and decoration quality (Straume 1987, 28, 29). By this principle, she divided beakers of Straume I (Eggers 230) type into two series, labelled as 'A' and 'B'. The vessels in the first series have thin walls (rim/bottom part – 0.2–0.4 cm) and slightly abraded, unpolished decoration, while the second series consists of more thick-walled (rim/bottom part – 0.3–0.6 cm) beakers decorated with deep wheel-cut polished bands and facets. Although Straume's classification mainly focuses on artefacts from Northern Europe, she uses Chernyakhiv finds

⁷ The described technical details are shown by illustration (Fig. 3: C).

⁸ Kowalk (Rau 1972) or Straume I (Straume 1987).

⁹ Compared to 26 well-preserved beakers of the Eggers 230 type (Petrauskas 2016, 92, appendix).

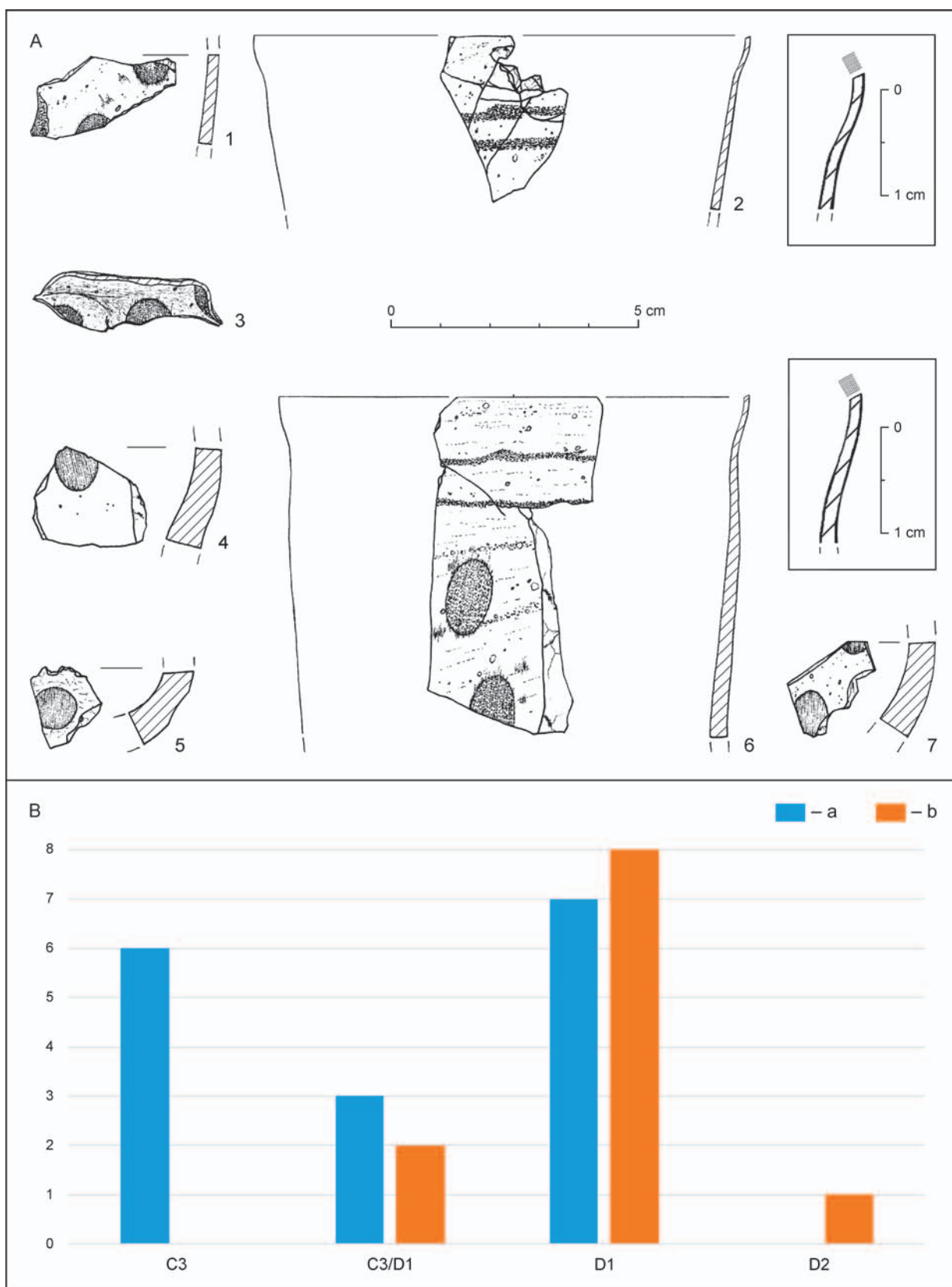


Fig. 6. Cylindrical beakers. A – cylindrical beakers with cracked-off rims and wheel-cut decoration from Viitenky; B – the chronology of Eggers 230 type beakers and thick-walled beakers with cold-finished rims and wheel-cut decoration in the Chernyakhiv culture. Drawings A – by author, B – after *Shchepachenko* 2022. Legend: a – Eggers 230 type beakers; b – thick-walled ‘barbarian’ beakers.

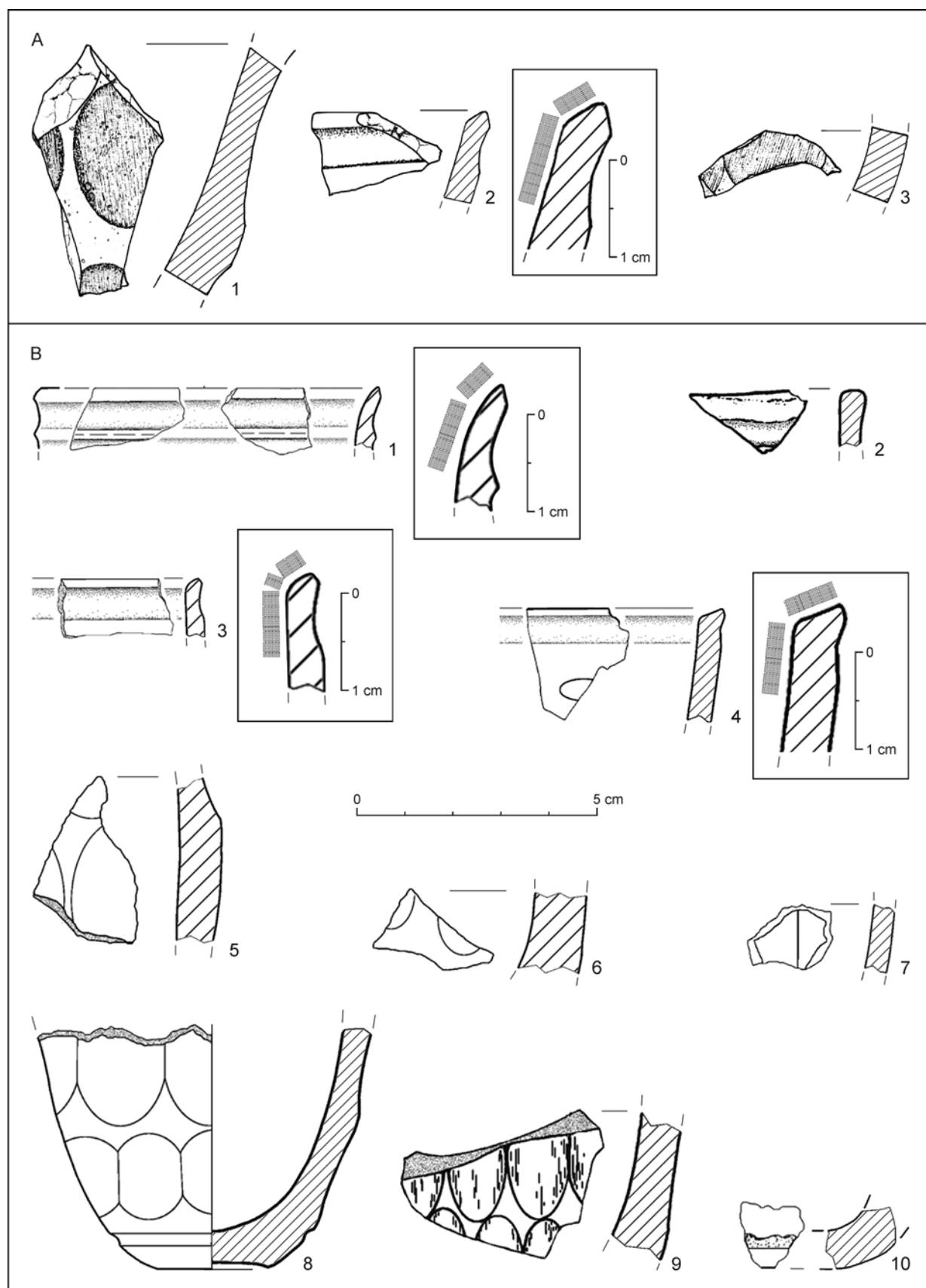


Fig. 7. Thick-walled beakers with cold-finished rims and wheel-cut decoration. A – Viitenky; B – Velyka Buhaivka. Drawings A – by author, B – 1–3 by author, 4–10 after *Petrauskas/Shyshkin 2013*.

as a comparative material. Another typological division was proposed by O. Petrauskas (2016), based on differences in metric characteristics of the beakers (Petrauskas 2016). He noticed that his division to some extent coincides with Straume's classification. The 'large' vessels in his first typological group¹⁰ mainly have morphological features of the A series, while the beakers in the 'smaller' second group¹¹ have features characteristic of the B series according to Straume's classification (Petrauskas 2016, 96).

Cylindrical beakers of the Eggers 230 type were the most common glassware in the Chernyakhiv culture (Fig. 8: A; Gavritukhin 2011, fig. 2, appendix 1), probably, because of the considerable time of their circulation within the area (Fig. 6: B). The peak of their distribution in this region, as generally accepted, was at the C3 stage (Gavritukhin 2011, 43, 45; Gorokhovskiy 1988, 44; Petrauskas 2016, 91, 97, 98; Tejral 1992, 235, fig. 5). Although, a significant number of the Eggers 230 type beakers are also known in the dated context, associated with the D1 stage. According to the observations made by O. Petrauskas, vessels from the second group have a slightly later chronological position and did not occur in the area until the middle of the 4th c. CE (C3/D1 stage; Petrauskas 2016, 97, 98).

*Thick-walled beakers with cold-finished rims and wheel-cut decoration.*¹² The group comprises only three artefacts (Appendix A: 16–18, Fig. 7: A) undoubtedly associated with different vessels (EVE – 150, MNI – 3). At least one of the objects may be attributed as a beaker of the Straume IB3 variant (Straume 1987, 30). All the specimens are made of transparent green glass and decorated with deep broad straight wheel-cut bands or deep oval wheel-cut polished facets. The rim is formed by grinding. The edge is carefully polished and has a sloping inward, rounded horizontal surface. The distinctive technological feature of these beakers is a broad shallow groove observed on the vessel's interior surface just below the edge of the rim. The chemical makeup of only one of the specimens has been analysed which is close to HIMT group raw material (Tab. 1: 9).

Massive thick walls, deep wheel-cut polished, carefully elaborated decoration, and rims formed by grinding on all surfaces are typical features

of the group of products represented within the Chernyakhiv culture by beakers of Straume IB3, VII, VII and IX types (Straume 1987, 30, 36–38, 40).¹³ The above-mentioned morphological characteristics and some other attributes indicate that these artefacts were manufactured in a different way, probably – by casting.¹⁴

Thick-walled beakers of these types did not occur in the area of the Chernyakhiv culture until the middle of the 4th c. CE (Gorokhovskiy 1988, 44; Rau 2008, 226, 230; Shchepachenko 2022, 129, 130), although most popular they became slightly later, at the D1 stage (Fig. 6: B; Gavritukhin 2017, 83–95; Petrauskas 2021, 19–21; Tejral 1992, 235–237).

Certain specimens from the Viitenki assemblage are worth mentioning separately: a hemispherical cup resembling Straume IB3 type vessels from grave 86/2 (Appendix A: 19, Fig. 9: 1) and a tall cylindrical beaker with honeycomb facet-cut decoration from grave 117 (Appendix A: 20, Fig. 9: 2). They were discovered in burials dated to C3/D1 and D1 stages, respectively (Lyubichev 2019, 96–99). These blown vessels have relatively thick walls, curved rims with cracked-off and carefully polished edges, and scrupulously elaborated wheel-cut polished decoration. The beaker from grave 117 also has a wide shallow groove on its interior surface just below the edge of the rim, while the cup from grave 86/2 is adorned with uneven slightly abraded bands. Considered specimens exhibit morphological and technological features similar to those known from both cylindrical beakers of Eggers 230 type and thick-walled beakers with cold-finished rims and wheel-cut decoration (Fig. 10: II/III).

Hemispherical bowls and conical beakers with cracked-off rims (EVE – 425, MNI – 5). Objects quite diverse in terms of their typology and morphology were integrated under this general heading due to the specific technological characteristics separating them from other glassware discovered in Viitenky. These are vessels with curved cracked-off rims and cold decoration, which may be attributed to Isings 96/AR 60 and Isings 106a, d/AR 68 types (Appendix A: 21–25, Fig. 11).¹⁵ The curved rim has a cracked-off and polished edge. After this reworking, the edge usually has a rounded or sloping outward horizontal surface. Most vessels are decorated with

¹⁰ With a height of 13 cm and a rim diameter of 9 cm.

¹¹ With a height of 10.5 cm and a rim diameter of 7 cm.

¹² Their wall thickness is more than 0.3 cm at the rim part and more than 0.6 cm at the bottom.

¹³ We do not consider materials originating from Komariv, where a large number of vessels with various variants of cold decorations are known (Rumyantseva 2014).

¹⁴ The internal profile of the vessel does not match the external profile, the interior surface is rough and shows traces of contact with a foreign object during manufacture, and the exterior surface is matt (Fünfschilling 2015, 36, 37; Price/Cottam 1998, 11).

¹⁵ According to Isings 1957 and Rütli 1991.

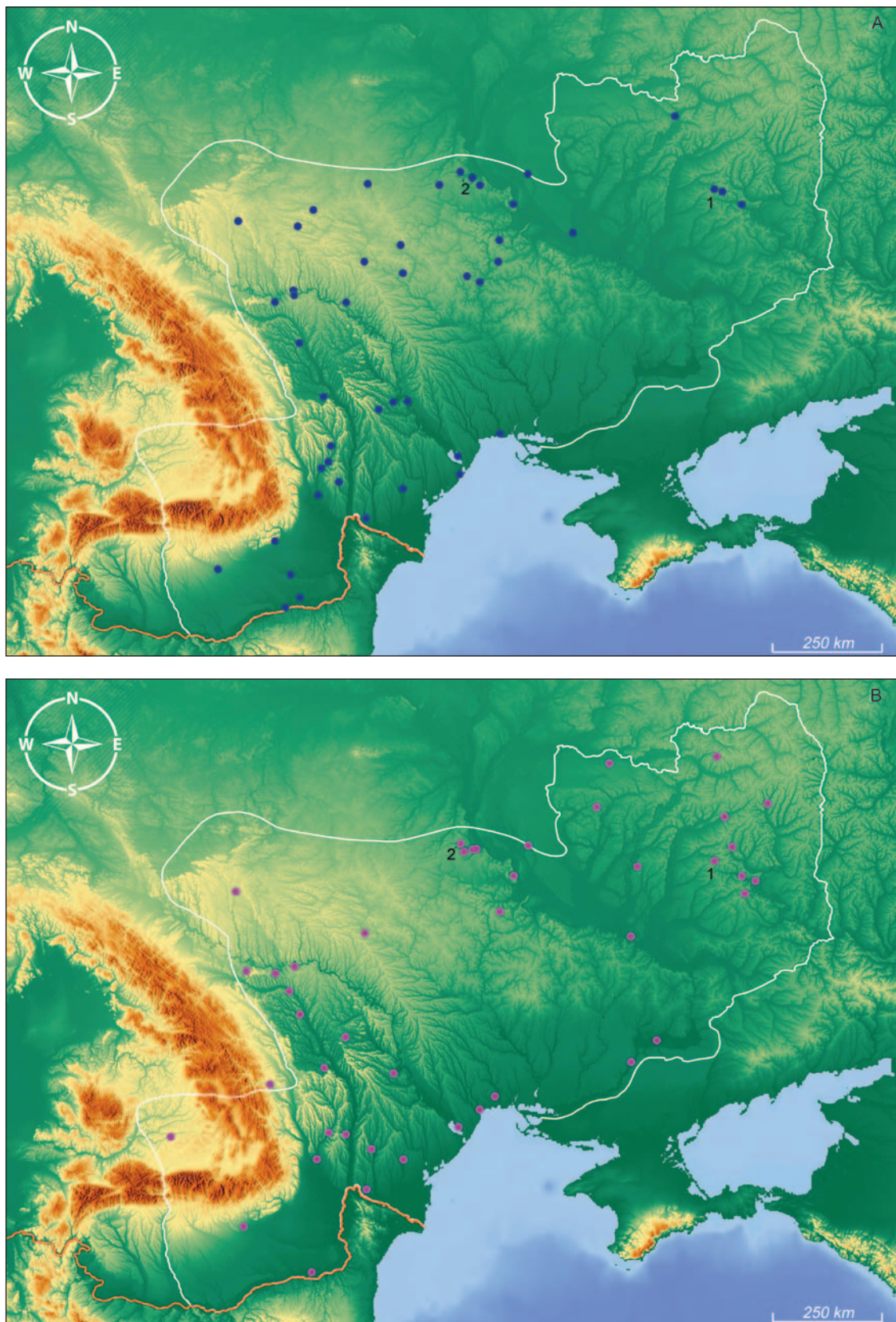


Fig. 8. The distribution patterns within the Chernyakhiv culture area. A – Eggers 230 type beakers; B – thick-walled beakers with cold-finished rims and wheel-cut decoration. 1 – Viitenky; 2 – Velyka Buhaivka. White line – distribution area of the Chernyakhiv culture; red line – Roman Limes. The modern Ukrainian territory – personal data, the territory of modern Moldova and Romania – according to Croitoru 2009; Gomolka-Fuchs 1999; Pánczél/Dobos 2007.

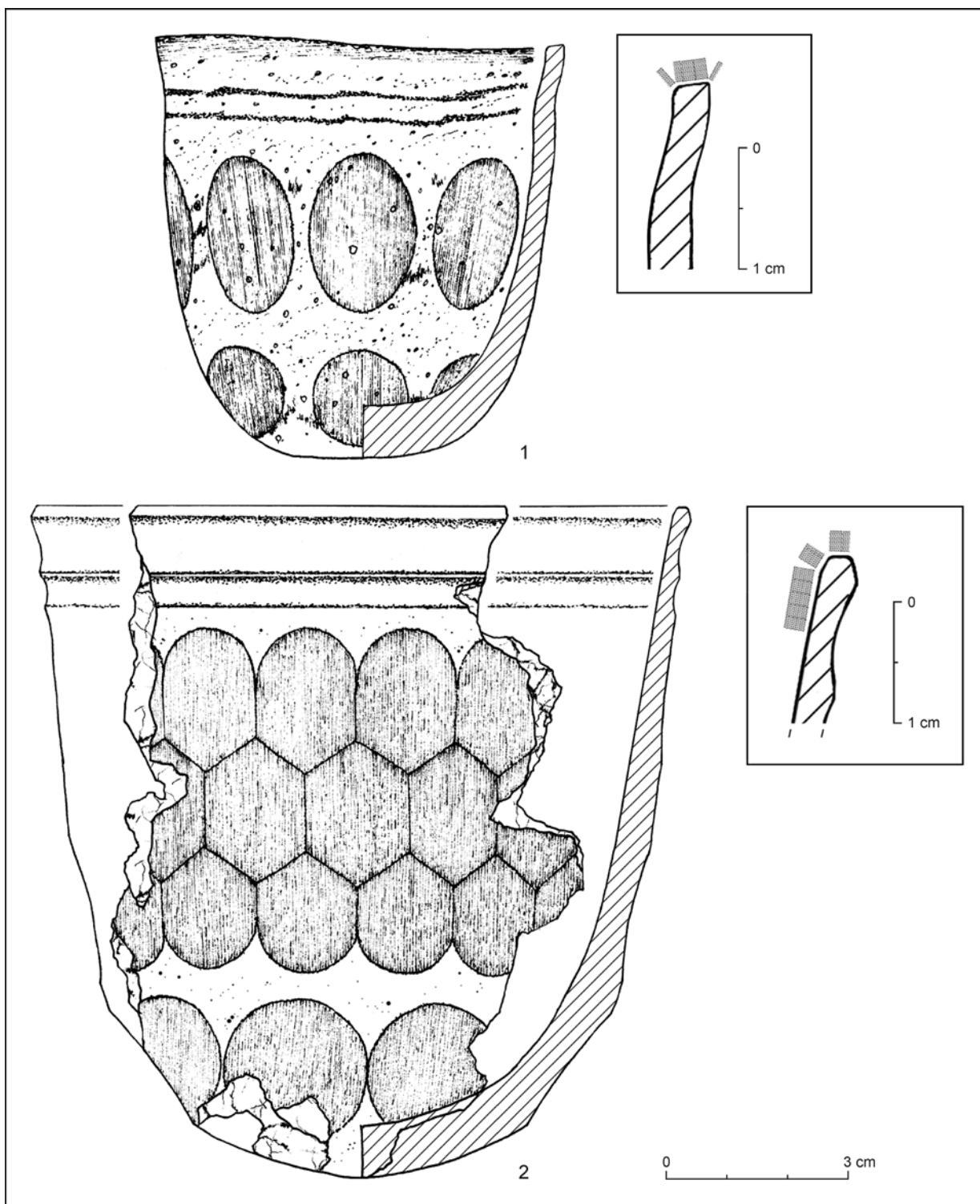


Fig. 9. Vessels from Viitenky. It exhibits morphological and technological features similar to those known from both cylindrical beakers of Eggers 230 type and thick-walled beakers with cold-finished rims and wheel-cut decoration. Drawings by author.

slightly abraded straight bands, made with the vessel's rotation. Their distinctive element is a wide shallow groove on the exterior surface just below the edge of the rim. Some specimens combine the cold

decoration with applied marvered blue blobs. The chemical makeup of only two of these objects has been analysed which is close to Levantine I group raw material (Tab. 1: 10, 11).

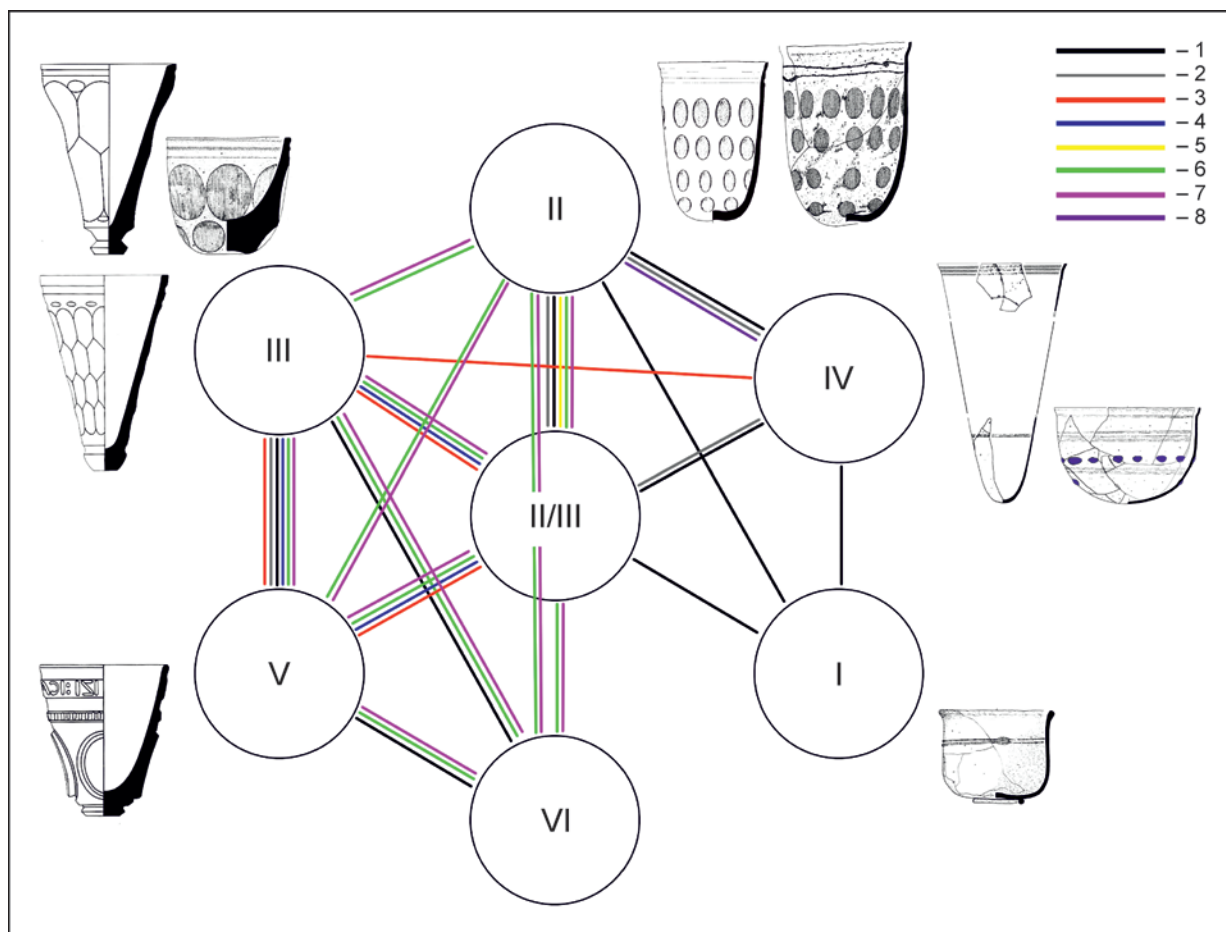


Fig. 10. Network representing technological similarity between various glassware groups from Viitenky and Velyka Buhaivka. I – hemispherical cups with fire-rounded rims; II – cylindrical beakers with cracked-off rims and wheel-cut decoration (Eggers 230 or Straume I type); III – thick-walled beakers with cold-finished rims and wheel-cut decoration (Straume IB3, VII and IX types); IV – hemispherical bowls and conical beakers with cracked-off rims (Isings 96/AR 60 and Isings 106a, d/AR 68 types); V – thick-walled beakers with cold-finished rims and deep relief cut decoration (Eggers 238 or Straume VIII type); VI – thick-walled vessels covered with a layer of coloured glass; II/III – vessels that exhibit morphological and technological features similar to those known from both cylindrical beakers of Eggers 230 type and thick-walled beakers with cold-finished rims and wheel-cut decoration. 1 – manufacturing method; 2 – rim finishing technique; 3 – a reworking of the edge of the rim; 4 – a broad, shallow groove observed on the vessel's interior surface just below the edge of the rim; 5 – uneven slightly abraded horizontal bands; 6 – deep, broad straight wheel-cut bands, made with vessel's rotation; 7 – deep oval wheel-cut polished facets; 8 – unpolished wheel-cut oval facets. Drawings of vessels after *Petrauskas 2016; Straume 1987* and by the author. Network diagram by the author.

The majority of these artefacts were discovered in burials that allow clarifying their dating. The bowls of Isings 96 type (Appendix A: 21, 22, Fig. 11: 4, 5), including one decorated with applied blue blobs, were unearthed in context, dated to D1 stage (*Lyubichev 2019, 97–99; Shchepachenko 2022, 126*). It is worth noting that, the so-called *Nuppengläser* became the most popular in Chernyakhiv culture with the beginning of the Migration Period (*Gavritukhin 2017, 101–103; Petrauskas 2021, 21*). The conical beakers (Appendix A: 23, 25, Fig. 11: 1, 2) also come from contexts related to the D1 stage (*Lyubichev 2019, 97–99; Shchepachenko 2022, 126*).

GLASSWARE FROM VELKYA BUHAIVKA

More than 160 glass artefacts were excavated at Velyka Buhaivka burial ground. Less than a third of the items are identifiable and informative objects (54 specimens) that represent the analysed database. The studied material originates from burials as well as the surrounding layers.

It is worth noting that the local finds demonstrate worse preservation than glassware from Viitenky. Most of these artefacts are broken into small pieces or burnt and melted. This fact probably explains

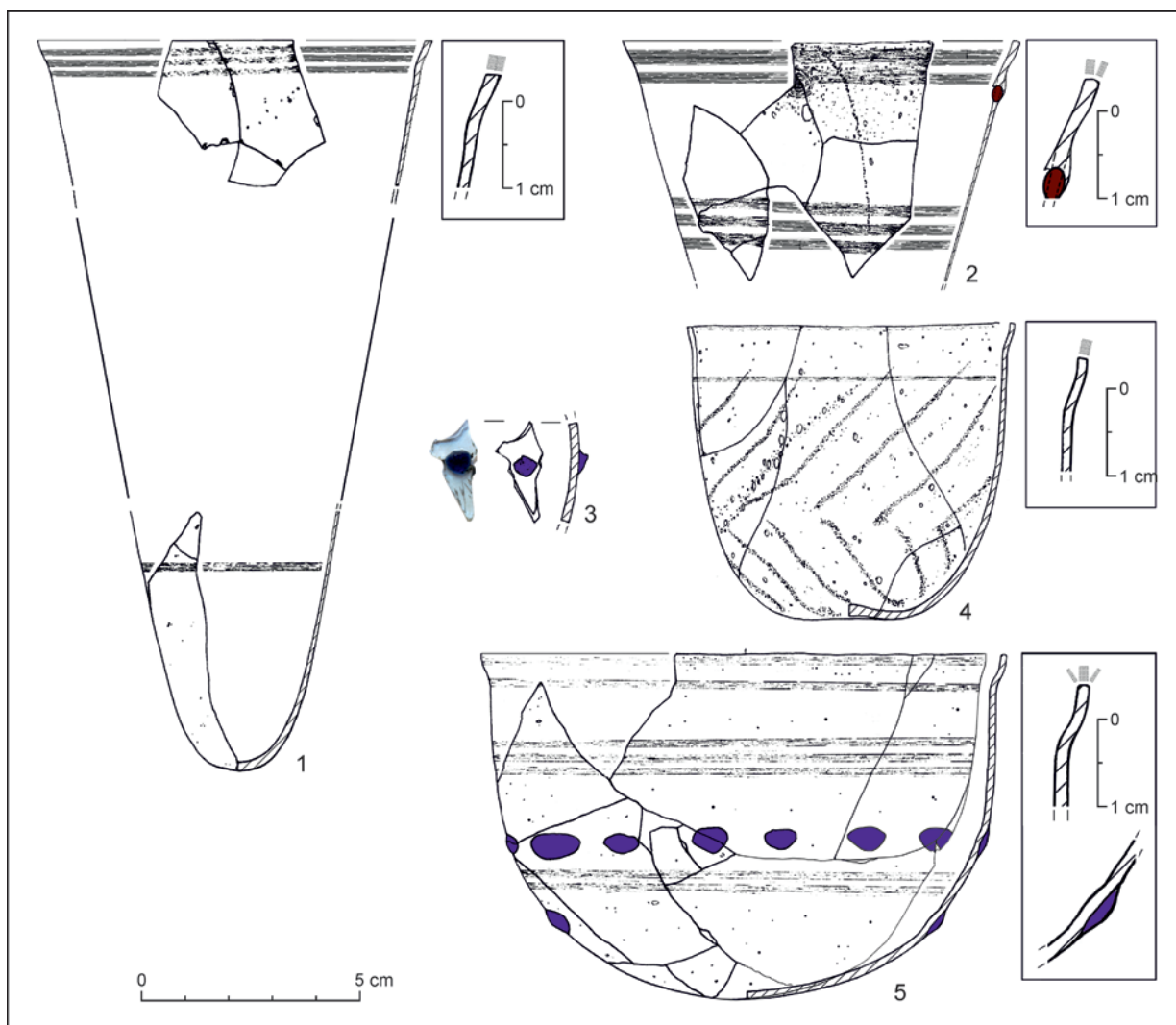


Fig. 11. Hemispherical bowls and conical beakers with cracked-off rims from Viitenky. Drawings by author.

a different ratio of informative and uninformative glass items within the considered collections.

The glass assemblage from Velyka Buhaivka resembles a collection from Viitenky in terms of vessels' shapes as well as finishing and decoration techniques. The majority of the artefacts are blown, although specimens manufactured by non-blown methods are represented too. The colour range of objects varies from perfectly decolourised to natural blue-green or green, including almost colourless, with various green tints. The finishing and decoration methods are represented by different hot-working (fire-rounded rims, applied trails and blobs) and cold-working (cracked-off rims, polishing, wheel-cutting) techniques, comprising covering with a layer of coloured glass and deep relief cutting, which are unnoticed among glassware from Viitenky. Six main technological groups are defined in Velyka Buhaivka, four of which are present in Viitenky.

Groups from Velyka Buhaivka

Hemispherical cups with fire-rounded rims, which in relatively large quantities have been detected in previously analysed assemblage, are also present in Velyka Buhaivka (Appendix B: 1, 2, Fig. 4: B). This group was discussed in much more detail above. Only two samples are known from this assemblage (EVE – 200, MNI – 2), one of which was uncovered in burial dated to the C3 stage (Petrauskas 2017, pl. VII). Similar to vessels from Viitenky, local artefacts are blown of glass diverse in colour and quality. Unfortunately, the chemical makeup of none of these objects has been analysed so far.

Cylindrical beakers with cracked-off rims and wheel-cut decoration attested in Viitenky are well represented in Velyka Buhaivka glass assemblage (Appendix B: 3–17, Fig. 12: A). At least 15 artefacts of this kind come from the site (EVE – 350, MNI – 3). Local

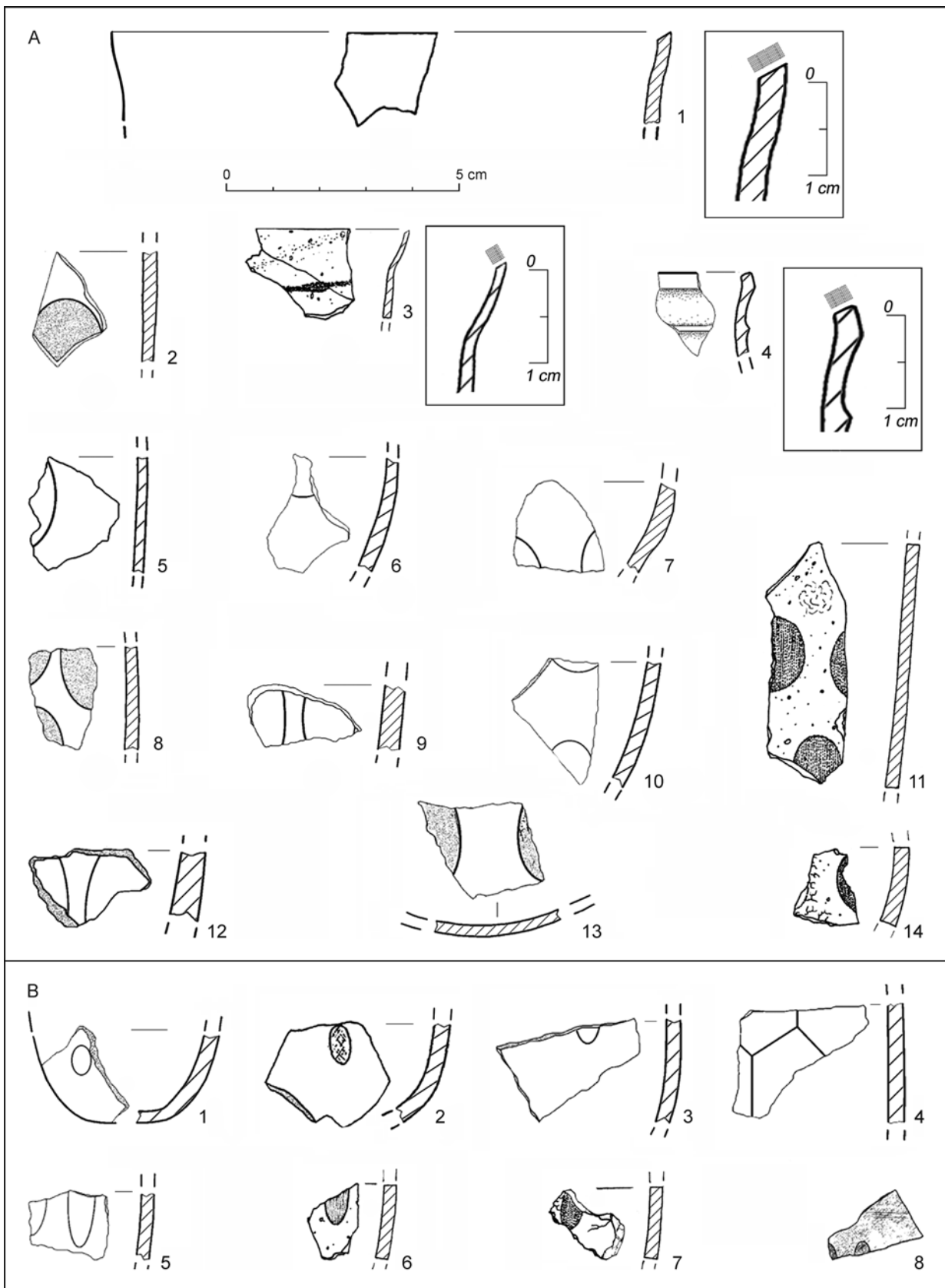


Fig. 12. Velyka Buhaivka. A – cylindrical beakers with cracked-off rims and wheel-cut decoration; B – vessels similar in morphology. Drawings A – 3, 11, 14 by author, 1, 2, 4–10, 12, 13 after *Petrauskas/Shyshkin 2013*, B – after *Petrauskas/Shyshkin 2013*.

objects are homogeneous in terms of morphological characteristics (glass colour and quality, finishing and decoration techniques, ornamental design) and virtually identical to the beakers of Eggers 230 type discussed above. The chemical composition of only three of these items was analysed which is close to HIMT group raw glass (Tab. 1: 12–14).

There is also a *subgroup* (EVE – 400, MNI – 4) of artefacts among glassware from Velyka Buhaivka, which are similar to considered beakers referring to their manufacture and decoration methods as well as chemical makeup (Appendix B: 18–25, Fig. 12: B). These are blown vessels made of transparent green (or colourless with green tint) glass and decorated predominantly with narrow oval wheel-cut facets. Their typological attribution is complicated due to poor preservation and the absence of any recognisable constructive details. In addition, none of them was uncovered in a dated context. The chemical composition of the two analysed specimens is similar to HIMT group raw material (Tab. 1: 15, 16).

Thick-walled beakers with cold-finished rims and wheel-cut decoration are slightly more numerous in Velyka Buhaivka than in Viitenky (Appendix B: 26–36, Fig. 7: B). The group consists of 11 artefacts belonging at least to four different vessels (EVE – 400, MNI – 4). The chemical composition of the two specimens was analysed. The first is made of colourless glass with a strong green tint decolourised with antimony while the second specimen, decolourised with manganese, is similar to Daniel Foy's series 3.2 and has a lighter green hue (Tab. 1: 17, 18). One of the artefacts comes from burial related to the D1 stage (Petrauskas/Shyshkin 2013, 16).

Thick-walled beakers with cold-finished rims and deep relief cut decoration include five artefacts (Appendix B: 37–41, Fig. 13A: 1–4) made of almost colourless glass with a light green tint associated at least with two different vessels (EVE – 200, MNI – 2). They may be recognized as Eggers 238 (or Straume VIII) type beakers. The distinctive characteristic of these objects is a unique ornamental design, which combines deep straight wheel-cut bands, engraved inscriptions,¹⁶ and large deep relief cut medallions. The rim is formed by grinding, the edge is carefully polished, and has a rounded or sloping inward horizontal surface. Some of their morphological features, such as massive thick walls and rim finishing technique, arrange them closer to vessels manufactured in a non-blown way. Three analysed specimens are made of glass

decolourised with antimony similar to D. Foy's group 4 (Tab. 1: 19–21).

The Eggers 238 type beakers are not so numerous within the Chernyakhiv culture area. They occur mainly in Southwestern Ukraine, Moldova, and Romania (Fig. 14: B). The artefacts from Velyka Buhaivka are probably the northernmost find of these vessels, known in the Chernyakhiv distribution area (Petrauskas/Pasternak 2003, 69, 70). Only a few objects were discovered here in a dated context, associated predominantly with the D1 stage (Croitoru 2009, 219; Gavritukhin 2017, 93; Pánczél/Dobos 2007, 74).

Thick-walled vessels covered with a layer of coloured glass. The group comprises eight bad-preserved wall fragments (Appendix B: 42–49, Fig. 13A: 5–12) belonging at the minimum three different vessels (EVE – 150, MNI – 3). As their designation indicates, these objects are covered with a thin layer of opaque dark blue (otherwise light blue) glass, while a thicker basic layer is made of transparent green or almost colourless material with a green tint. They are also decorated with deep straight wheel-cut bands and oval wheel-cut facets. Two of the analysed specimens are made of virtually colourless transparent glass decolourised with antimony, similar to D. Foy's group 4 (Tab. 1: 25, 26), and covered with a layer of coloured material with the same chemical makeup. This point indicates that the glass used for overlay decoration was coloured at the same place where these finished vessels had been produced (Rumyantseva et al. 2020, 327, 328, 335–337). Three more artefacts are made of raw glass decolourised with manganese, similar to D. Foy's group 3.2 (Tab. 1: 22–24). The geochemical characteristics of their basic glass layer differ from those of glass used for overlay decoration, suggesting different imported sources of both coloured and decolourised raw materials (Rumyantseva et al. 2020, 327, 328, 337, 338).

Vessels with glass overlay are represented in the Chernyakhiv culture by a limited number of finds (Fig. 14: B). Predominantly, these are thick-walled artefacts decorated with deep straight wheel-cut bands, cut polished facets¹⁷, and engraved inscriptions¹⁸. Only one of such vessels is known from a dated context (Tocileni, grave 21/RO), related to the D1 stage (Gomolka-Fuchs 1999, 137, 139, fig. 7: 1). Vessels covered with a layer of coloured glass occur in Central and Northern Europe, where they are associated mainly with the end of the Late Roman and Migration Period (Gavritukhin 2007, 13, 14; Stawiarska 1999, 156–158; Stjernquist 2004, 119,

¹⁶ Greek inscriptions are the most numerous, but the engraved ornament on some of these beakers only imitates the actual letters.

¹⁷ Velyka Buhaivka/UA (Petrauskas/Pasternak 2003, 70, 71, fig. 4: 5, 6; Petrauskas/Shyshkin 2013), Mala Rohan/UA (Gavritukhin 2007, 13, fig. 4: 25), Komariv/UA (Rumyantseva et al. 2020).

¹⁸ Tocileni, grave 21/RO (Gomolka-Fuchs 1999, 137, 139, fig. 7: 1).

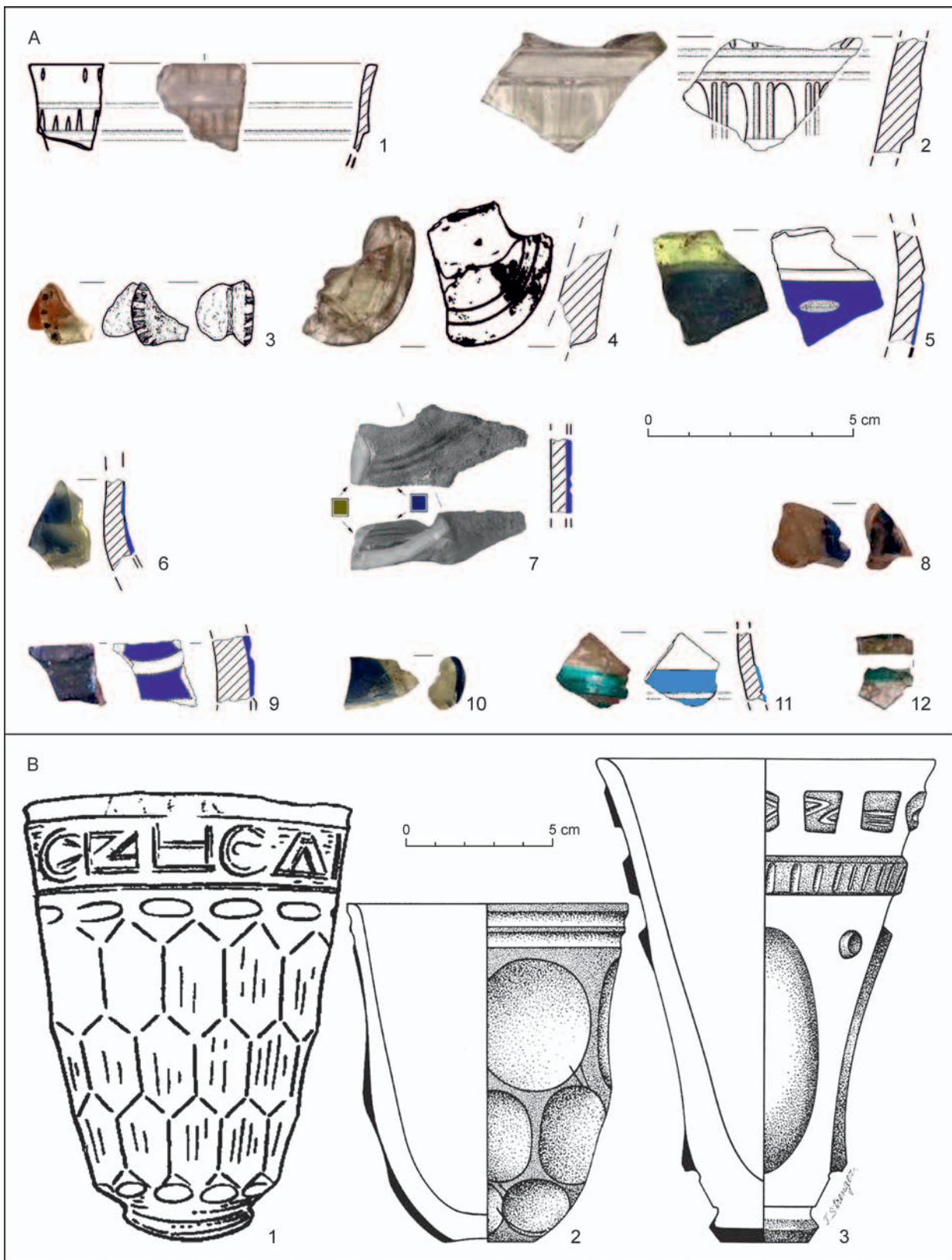


Fig. 13. A – Velyka Buhaivka. 1–4 – thick-walled beakers with cold-finished rims and deep relief cut decoration; 5–12 – thick-walled vessels covered with a layer of coloured glass. B – vessels combining decorative details of these glassware groups. 1 – Ranzheve/UA (after Symonovich 1977); 2 – Himlingøje/DK; 3 – Tu/NO (2, 3 after Straume 1987). Drawings A – after Petrauskas/Shyshkin 2013, photo by author.

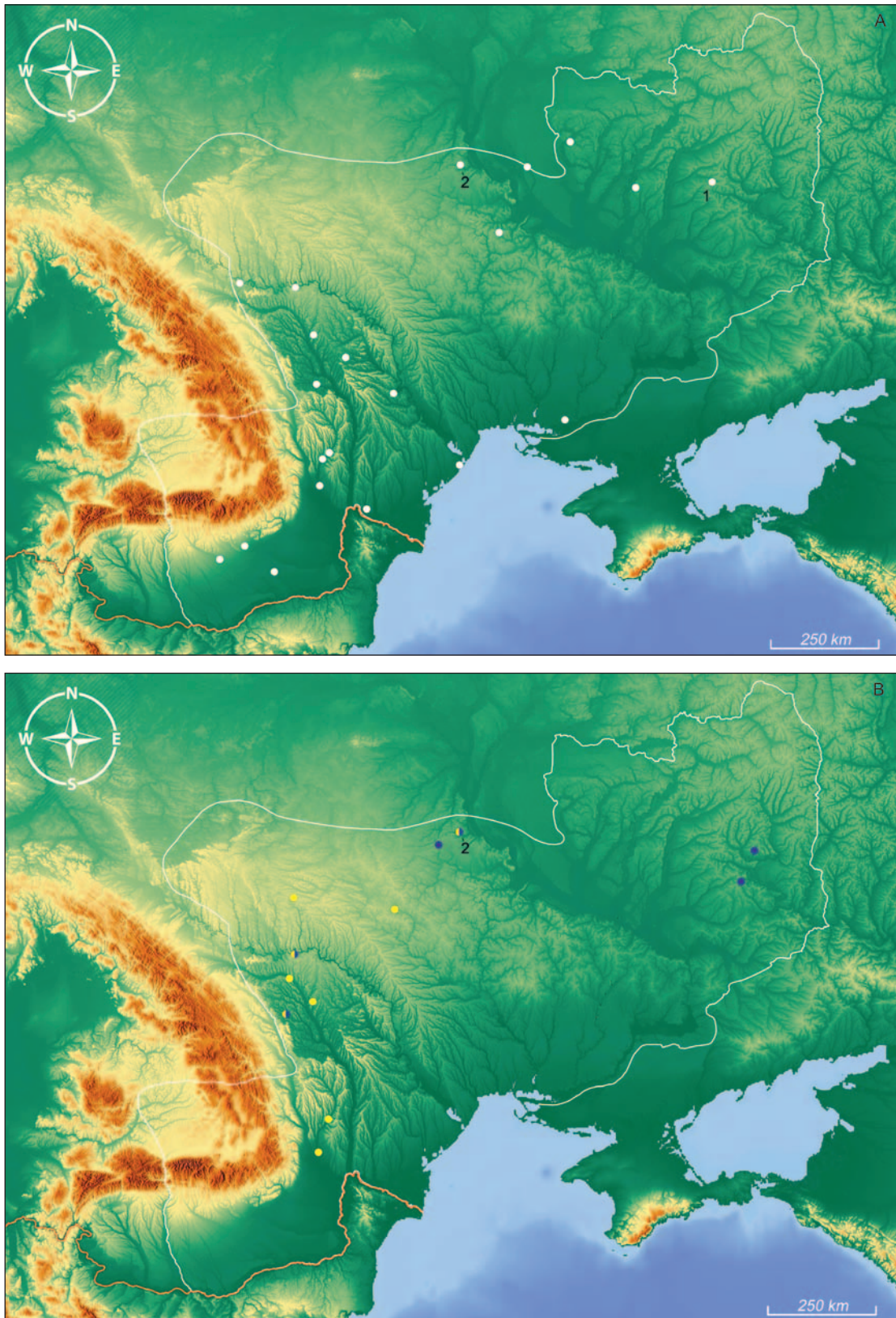


Fig. 14. The distribution patterns of glassware groups from Viitenky and Velyka Buhaivka within the Chernyakhiv culture. A – hemispherical bowls and conical beakers with cracked-off rims (Isings 96/AR 60 and Isings 106a, d/AR 68 types); B – Eggers 238 type beakers (yellow dots) and thick-walled vessels covered with a layer of coloured glass (blue dots). 1 – Viitenky; 2 – Velyka Buhaivka. White line – distribution area of the Chernyakhiv culture; red line – Roman Limes. The modern Ukrainian territory – personal data, the territory of modern Moldova and Romania – after Croitoru 2009; Gomolka-Fuchs 1999; Pánczél/Dobos 2007.

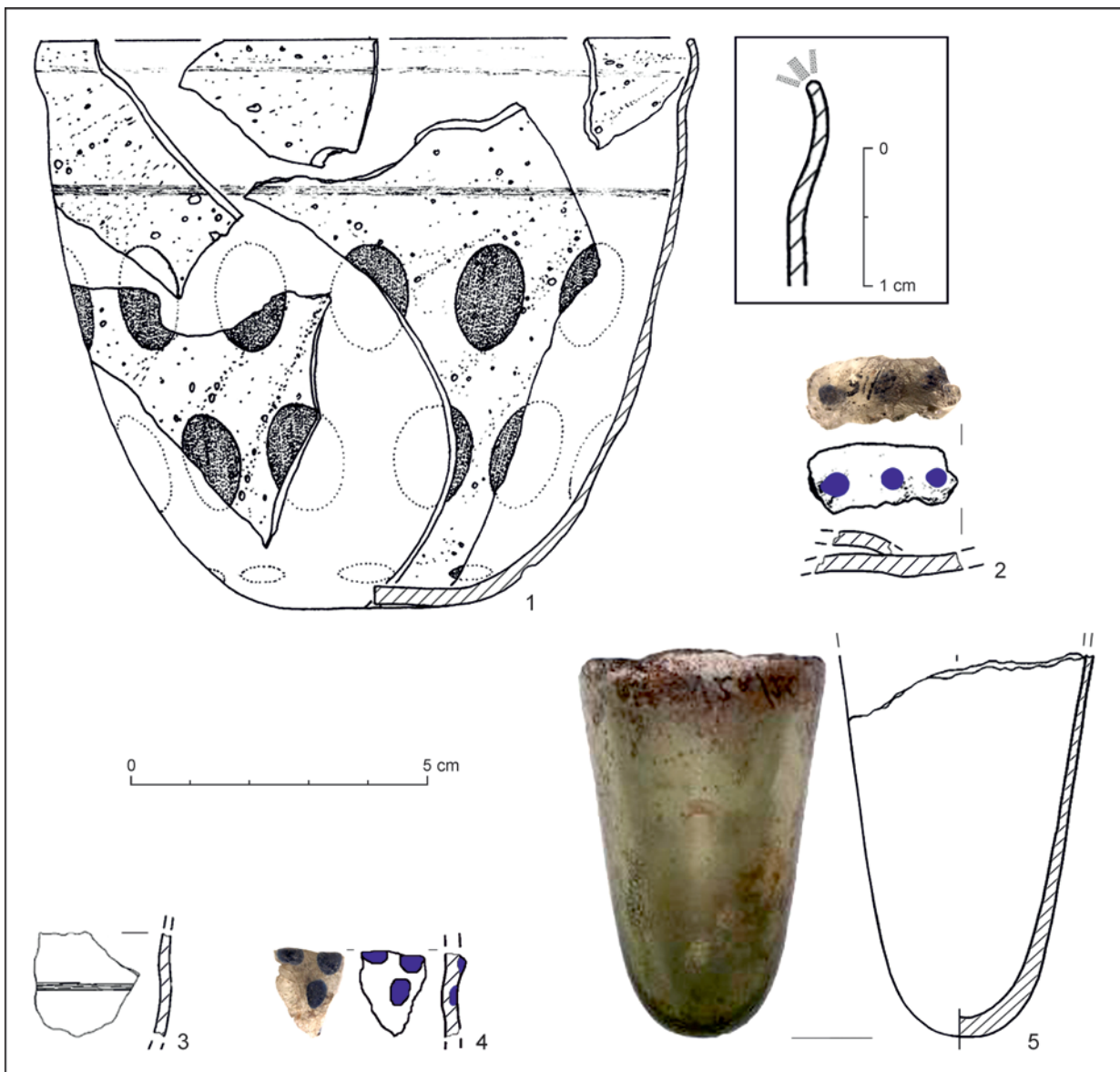


Fig. 15. Velyka Buhaivka. Hemispherical bowls and conical beakers with cracked-off rims. Drawings 1, 5 by author, 2–4 after Petrauskas/Shyshkin 2013.

120). However, their earlier finds are also noted within this area (Gavritukhin 2007, 13; Stawiarska 1999, 156). Taking into account the chronology of Western European artefacts, some researchers suggest attributing Chernyakhiv items to the D1 stage, although they don't exclude the later dating of these vessels (Gavritukhin 2007, 14; Petrauskas/Pasternak 2003, 70, 71).

Hemispherical bowls and conical beakers with cracked-off rims are represented in Velyka Buhaivka by vessels of Isings 96/AR 60 and Isings 106a, d/AR 68 types. The group consists of five fragmented artefacts (Appendix B: 50–54, Fig. 15), associated at least with four different vessels (EVE – 275, MNI – 4). The decoration includes slightly abraded

straight bands made with the vessel's rotation, deep oval wheel-cut unpolished facets, and applied blue blobs. Identical to items from Viitenky, local artefacts are relatively diverse in glass colour and quality. The chemical makeup of only one of the objects has been analysed. It is decolourised with antimony and is close to D. Foy's group 4 (Tab. 1: 27).

Some of the vessels were discovered in burials that allow clarifying their dating. The bowl of Isings 96 type comes from the assemblage associated with C3/D1 stage, whereas the bottom part of Isings 106d type beaker was unearthed in a slightly later context, dated to the D1 stage (Petrauskas/Shyshkin 2013, 16).

ORIGIN OF GLASSWARE GROUPS

Our recent studies demonstrate that at the end of the late Roman time (stage C3) the Chernyakhiv glass cups with fire-rounded rims were an original typological group of vessels, which had no simultaneous analogues outside their distribution area (Shchepachenko 2023). Considering the typological specificity and chronology of the Chernyakhiv finds, along with the lack of similar products from synchronous glassmaking centres of neighbouring Roman provinces, it is possible to assume that the place of their probable origin was the Komariv workshop. The glass cups with fire-rounded rims are recognised as one of the items produced in this workshop (Rumyantseva/Belikov 2017, 260; Shchapova 1978, 238, 239). It is worth noting that the geochemical composition of some Chernyakhiv cups with fire-rounded rims shows similarity to the raw materials and glass processing wastes from Komarov, which is further evidence in favour of this hypothesis (Shchepachenko 2023, 110, tab. 1).

It is equally essential to focus on some observations that may indicate the common origin of the vessels representing the second and third glassware groups from Viitenky as well as the second, third, fourth, and fifth groups from Velyka Bukhailivka.

The first remark is the hypothesis regarding the non-Roman provenance of these vessels. The possibility of producing the Eggers 230 type beakers in *Barbaricum* has been widely discussed since the 1970s (Gomolka-Fuchs 1999; Lund Hansen 1987; Näsman 1984, 144; Rau 1972, 170; 1974; Rosokhatskii 1987, 145; Straume 1987, 61). The emergence of this view is mainly due to the nature of the distribution of these vessels, which, except for isolated finds, do not occur in the Roman provinces. This idea, perhaps, is the most relevant nowadays (Gavritukhin 2011, 42).¹⁹ Some researchers consider Southeastern Europe as the location of production centres for Eggers 230 type beakers, including the Komariv glass workshop (Näsman 1984, 144; Petrasuskas 2016, 92; Rau 1972, 170; 1974; Straume 1987, 61).²⁰

The lack of relevant analogues among the Roman provincial glassware and the localisation outside the *Limes* may indicate the possibility of production within *Barbaricum* for the other types of glass vessels, such as Straume IB3, VII–IX, or artefacts with glass overlay. Although this hypothesis is accepted by different scientists (Lund Hansen 1987; Näsman 1984, 144, 145; Stjernquist 2004, 121–126; Straume 1987, 62–64), other views occur too (see Gavritukhin

2017, 95; Gomolka-Fuchs 1999, 140). Some researchers suggest looking for the place of production for these artefacts in Southeastern Europe (Gavritukhin 2011, 51, 53; Näsman 1984, 144, 145; Stjernquist 2004, 122, 125, 126; Straume 1987, 62–64).

The second one is a technological similarity between thick-walled vessels with various cut motifs, including artefacts with a glass overlay, which has been repeatedly stressed by different scholars (Gavritukhin 2017, 95; Näsman 1984, 144, 145; Stjernquist 2004, 121–126). Indeed, shared morphological features like massive thick walls, the same individual elements of ornamental design, and analogous finishing and decoration techniques of Straume IB3, VII–IX types beakers are reasonable arguments to support this assumption. A network graph of technological similarity between glassware groups from Viitenky and Velyka Bukhailivka clearly demonstrates this interrelation (Fig. 10: III, V, VI). The graph as well suggests a connection between Eggers 230 type beakers and thick-walled vessels with cold decoration (types Straume IB3, VII–IX). This assumption is further reinforced by extraordinary glass artefacts from Viitenki, which exhibit morphological and technological features characteristic of both these vessel groups (Fig. 9).

In addition, a few artefacts, which combine decorative motifs of vessels related to different glassware types considered above, are known in *Barbaricum*. For example, a glass beaker from Ranzheve/UA (Fig. 13B: 1) close to Straume VIII type vessels with engraved inscription is adorned with a ‘honeycomb’ facet-cut design typical for Straume VIIA artefacts. Beakers from Himlingøje/DK (Fig. 13B: 2) and Tu/NO (Fig. 13B: 3) are embellished with a glass overlay that is exceptional for vessels attributed by Eldrid Straume to the IB3 variant and type VIII.

The third point is the similarity in distribution patterns of Eggers 230 type beakers and thick-walled vessels of Straume IB3, VII, VIII, and IX types in *Barbaricum*. Each of these glassware groups is known from the Chernyakhiv culture in present-day Ukraine, Moldova, and Romania (Fig. 8; 14: B), from the Wielbark and Pszeworsk cultures in Central and Northern Poland (Stawiarska 1999, 147–160, 290–308, cat. n. 162–195, 199–206, 208), as well as in Denmark, Southern Norway, Southern and Eastern Sweden, including Gotland (Lund Hansen 1987, 88, 89, 102, 119; Näsman 1984, 49–53, 57–65; Straume 1987, 28–33, 36–40, map 2; 4; 5).

All the facts provide plausible evidence for the hypothesis about the existence of a single technological

¹⁹ Although the opposite views exist too (see Stawiarska 2014, 96).

²⁰ However, despite the significant number of glassware decorated with wheel-cut facets unearthed here, it is still hard to assert confidently the possibility of their production in the Komariv workshop (Rumyantseva/Belikov 2017, 262).

tradition in the manufacture of vessels with different kinds of cold decoration, known as Eggers 230, 237, 238 or Straume I, IB3, VII–IX types.

In contrast to the abovementioned glassware groups, hemispherical bowls and conical beakers with cracked-off rims are not so numerous in Chernyakhiv culture (Fig. 14: A) as well as rare beyond this area in *Barbaricum* (Gavritukhin 2017, 101–103). Their distribution pattern predominantly encompasses Roman provinces (Barkóczy 1988, 82–84; Fünfschilling 2015, 347; Isings 1957, 126–131) that suggest their Roman origin. Individual differences in the glass colour and quality of these vessels perhaps point out the various centres of their manufacturing within the Empire.

CONCLUSIONS

Investigation of glassware from Viitenky and Velyka Buhaivka burial grounds allows us to draw some conclusions concerning their chronology and the supply system of the sites for glass goods. The types of glass vessels discovered here occurred within the Chernyakhiv culture during the period restricted by C3–D1 stages and can be divided into several chronological groups (Fig. 16).²¹ Glassware associated with the C3 stage is represented mainly by hemispherical cups with fire-rounded rims and Eggers 230 type beakers. At C3/D1 stage, both assemblages demonstrate the presence of Eggers 230 type beakers. In addition, glass cups with fire-rounded rims and a beaker of Straume IB3 variant are noted from this period in Viitenky, and a hemispherical bowl of Isings 96 type comes from Velyka Buhaivka. Glassware groups related to the D1 stage from both Viitenky and Velyka Buhaivka mainly consist of Eggers 230 type artefacts, thick-walled beakers with cold-finished rims and wheel-cut decoration, and hemispherical bowls of Isings 96 type decorated with applied blue blobs as well as conical beakers of Isings 106a, d type. Furthermore, the assemblage from Velyka Buhaivka also comprises vessels of Eggers 238 type and thick-walled glassware covered with a layer of coloured glass.

Corresponding to our calculations, the glassware collections from Viitenky and Velyka Buhaivka

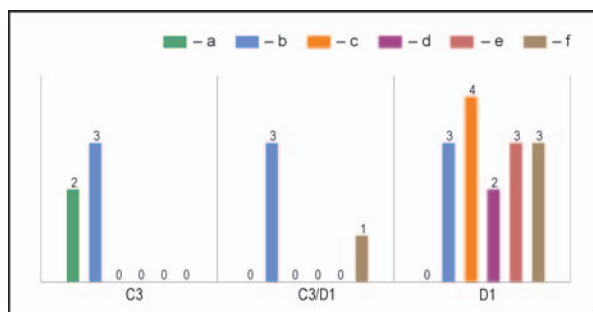


Fig. 16. The supplying model of the burial grounds for glassware during the C3–D1 stages. A – Viitenky; B – Velyka Buhaivka. Legend: a – hemispherical cups with fire-rounded rims; b – cylindrical beakers with cracked-off rims and wheel-cut decoration; c – thick-walled beakers with cold-finished rims and wheel-cut decoration; d – thick-walled beakers with cold-finished rims and deep relief cut decoration; e – thick-walled vessels covered with layer of coloured glass; f – hemispherical bowls and conical beakers with cracked-off rims.

include no less than 19 and 22 different vessels, respectively. It is worth noting that more than half of these objects are associated with the D1 stage (Fig. 16).²² It is also important that the greatest variety of vessel shapes and decorations are attested for local collections at the beginning of the Migration Period.

The geography of the origin of glassware discovered in Viitenky and Velyka Buhaivka is quite diverse. However, only a small group of these artefacts may be confidently associated with Roman imports (Appendix A: 21–25; B: 50–54, Fig. 11; 15). They are relatively heterogeneous, referring to their morphology and typology, which probably points to different production centres of these vessels within the Roman provinces.

Most of the local artefacts lack direct equivalents among the typical forms of Roman glassware, suggesting a non-Roman origin. Under this term, we consider the possibility of glassware production in *Barbaricum*, which can be associated with two technological traditions. The first one probably passed the way of evolution from Eggers 230 type beakers at the C3 stage to different kinds of thick-walled vessels with cut decoration (Straume IB3, VII, VIII and IX types) and glass overlay at the end of the D1 stage. The morphological and technologi-

²¹ The artefacts discovered outside the burials are dated according to the chronology of their analogues. Cylindrical beakers of the Eggers 230 type, known within the Chernyakhiv culture in equal numbers from dated context, related to C3, C3/D1, and D1 stages, are counted three times according to their chronology. Vessels that exhibit morphological and technological features similar to those known from both cylindrical beakers of Eggers 230 type and thick-walled beakers with cold-finished rims and wheel-cut decoration from Viitenky are counted twice as belonging to both these groups. A subgroup of items close to Eggers 230 type beakers from Velyka Buhaivka is not considered due to their uncertain typological and chronological position.

²² A subgroup of items close to Eggers 230 type beakers from Velyka Buhaivka is not considered due to their uncertain typological and chronological position.

cal similarity of these glassware groups (Fig. 10: II, II/III, III, V, VI) and the same distribution patterns of these vessels in *Barbaricum* are the main arguments to support this assumption. A certain place of their manufacturing is still unknown however an enormous number of the finds should suppose the presence of more than one production centre of these objects and, possibly, may indicate the commercial nature of their circulation. The origin of the second technological group, hemispherical cups with fire-rounded rims, presumably may be associated with the Komariv glass workshop.

Certain transformations in the structure of glass assemblages from Viitenky and Velyka Buhaivka occurred at the beginning of the Migration Period. First, there is a significant increase in the number of vessels, including glassware of Roman origin, compared with previous chronological periods. At the same time, economic connections

between local societies and production centres following the non-Roman technological tradition, which was represented during the Late Roman Period by the widespread distribution of Eggers 230 type beakers, continued into the Early Migration Period, as evidenced by the spread of thick-walled vessels with cut decoration. However, objects related to the production of the Komariv glass workshop and dated to the D1 stage are absent in both collections.

Although the study of assemblages from only two sites doesn't provide enough information to draw any undoubtable conclusions, we can assume that the beginning of the Migration Period didn't destroy the pre-existing economic connections. Moreover, it seems that the 'turbulent epoch' contributed to the new Roman – barbarian contacts and provided a massive inflow of Roman imports, including glass goods, to the area of the Chernyakhiv culture.

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APPENDIX A

Glass groups from Viitenky A catalogue

1. Glass vessel (cultural layer) – a rim shard; exterior surface is smooth and shiny, interior surface is damaged by geochemical analysis; transparent, colourless glass mass, contains isolated air bubbles; fire-rounded rim, edge slightly polished. Fig. 4A: 1.
2. Glass vessel (grave 101) – a fragmented cup, rim shards only preserved; smooth and shiny surface, partly damaged by iridescence; transparent, red glass mass, contains isolated air bubbles; fire-rounded rim; reconstructed rim diameter – 9.5 cm, wall thickness – 0.3–0.1 cm. Fig. 4A: 4.
3. Glass vessel (grave 110) – a rim shard, melted and deformed; creased and matt surface; transparent, almost colourless glass mass with a green tint, contains isolated air bubbles; fire-rounded rim; decorated with a relief applied glass thread of the same colour that creates a zigzag design; wall thickness – 0.25–0.2 cm. Fig. 4A: 5.
4. Glass vessel (cultural layer) – a rim fragment; smooth and shiny surface; transparent, almost colourless glass mass with a strong blue tint, contains isolated air bubbles; fire-rounded rim slightly bent outwards; reconstructed rim diameter – 8 cm, wall thickness – 0.3–0.2 cm. Fig. 4A: 6.
5. Glass vessel (grave 121) – a base fragment, surface is damaged by iridescence; transparent, colourless glass mass; applied base-ring; reconstructed base diameter – 3.5 cm, wall thickness – 0.1–0.3 cm. Fig. 4A: 7.
6. Glass vessel (grave 211) – a hemispherical cup, intact; smooth and shiny surface; transparent, almost colourless glass mass with a green tint, contains numerous air bubbles; fire-rounded rim, slightly bent outwards; slightly concave base has pontil-mark; decorated with marvered applied glass thread of the same colour that creates a zigzag design covers almost whole vessel's surface; height – 5.8 cm, rim diameter – 8 cm, wall thickness – 0.3–0.2–0.3 cm. Fig. 4A: 2.
7. Glass vessel (cultural layer) – a rim shard, melted and deformed; creased and matt surface; transparent, almost colourless glass mass with a green tint; fire-rounded rim; decorated with a relief applied glass thread of the same colour; wall thickness – 0.4–0.2 cm. Fig. 4A: 3.
8. Glass vessel (grave 32) – a bottom part fragment; smooth and shiny surface; transparent, yellow-green glass mass contains numerous air bubbles; decorated with two deep oval wheel-cut polished facets; wall thickness – 0.6–0.7 cm. Fig. 6A: 7.
9. Glass vessel (cultural layer) – a fragment of the body part, destroyed by geochemical analysis; smooth and shiny surface; transparent, green glass mass contains numerous air bubbles; decorated with two narrow uneven abraded bands; wall thickness – 0.4 cm.

10. Glass vessel (cultural layer) – a body part shard, melted and deformed; smooth and shiny surface, partly creased and matt; transparent, yellow-green glass mass contains numerous air bubbles; decorated with a deep oval wheel-cut polished facet; wall thickness – 0.4–0.75 cm. Fig. 6A: 4.
11. Glass vessel (grave 206) – a cylindrical beaker, only the upper part preserved; smooth and shiny surface; transparent, yellow-green glass mass contains numerous air bubbles; curved rim, edge cracked-off and polished, has sloping inward horizontal surface; decorated with two narrow uneven abraded bands and two shallow oval wheel-cut unpolished facets arranged in two rows; the adornment executed negligently, numerous scratches are observed on the exterior surface outside the facets; reconstructed rim diameter – 9.5 cm, wall thickness – 0.11–0.32 cm. Fig. 6A: 6.
12. Glass vessel (cultural layer) – a bottom part shard; smooth and shiny surface; transparent, green glass mass contains isolated air bubbles; decorated with a deep oval wheel-cut polished facet; wall thickness – 0.7–0.77 cm. Fig. 6A: 5.
13. Glass vessel (cultural layer) – a body part fragment, melted and deformed; smooth and shiny surface, partly creased; transparent, almost colourless glass mass with a green tint contains isolated air bubbles; decorated with three shallow oval wheel-cut unpolished facets; the adornment executed negligently, numerous scratches are observed on the exterior surface outside the facets; wall thickness – 0.15–0.18 cm. Fig. 6A: 3.
14. Glass vessel (cultural layer) – a body part fragment, melted and deformed; smooth and shiny surface, partly creased; transparent, green glass mass contains isolated air bubbles; decorated with three shallow oval wheel-cut unpolished facets; the adornment executed negligently, numerous scratches are observed on the exterior surface outside the facets; wall thickness – 0.24–0.3 cm. Fig. 6A: 1.
15. Glass vessel (grave 260) – a rim shard; smooth and shiny surface; transparent, green glass mass contains isolated air bubbles; curved rim, edge cracked-off and polished, has sloping inward horizontal surface; decorated with two narrow uneven abraded bands; reconstructed rim diameter – 10 cm, wall thickness – 0.15–0.2 cm. Fig. 6A: 2.
16. Glass vessel (cultural layer) – a body part shard; smooth and shiny surface; transparent, green glass mass contains isolated air bubbles; decorated with two large oval wheel-cut polished facets of different sizes, arranged in two rows; wall thickness – 0.7–1.2 cm. Fig. 7A: 1.
17. Glass vessel (cultural layer) – a rim shard, melted and deformed; the interior surface is smooth and shiny, the exterior – creased and matt; transparent, green glass mass contains isolated air bubbles; rim is formed by grinding, edge is polished, has sloping inward horizontal surface; a wide shallow groove is traced on the interior surface, just below the edge of the rim; decorated with a wide deep straight wheel-cut band just below the rim; wall thickness – 0.55–0.6 cm. Fig. 7A: 2.
18. Glass vessel (cultural layer) – a bottom part fragment; smooth and shiny surface; transparent, almost colourless glass mass with a strong green tint, contains isolated air bubbles; decorated with two large deep oval wheel-cut polished facets; wall thickness – 0.6–0.8 cm. Fig. 7A: 3.
19. Glass vessel (grave 86/2) – a cylindrical beaker, intact; smooth and shiny surface; transparent, green glass mass contains numerous air bubbles; curved rim, edge cracked-off and polished, has sloping inward horizontal surface and slightly rounded lips; decorated with two narrow uneven abraded bands and fifteen deep oval wheel-cut polished facets arranged in two rows, one of the facets observed at the base; the adornment executed negligently, numerous scratches are observed on the exterior surface outside the facets; height – 6.5–6.9 cm, rim diameter – 6.7 cm, wall thickness – 0.3–0.8 cm. Fig. 9: 1.
20. Glass vessel (grave 117) – a cylindrical beaker, fragmented; surface is heavily damaged by iridescence; transparent, green glass mass; curved rim, edge cracked-off and polished, has slightly rounded lips; a wide shallow groove is traced on the interior surface, just below the edge of the rim; decorated with two wide deep straight wheel-cut bands just below the rim and deep oval wheel-cut polished facets, which are arranged in three rows and create 'honeycomb' design, one more row of larger deep oval wheel-cut polished facets located in bottom part; height – 11.2 cm, reconstructed rim diameter – 10.8 cm, wall thickness – 0.3–0.8 cm. Fig. 9: 2.
21. Glass vessel (grave 96) – a hemispherical bowl, fragmented; smooth and shiny surface; transparent, almost colourless glass mass with a green tint contains numerous air bubbles; curved rim, edge cracked-off and polished, has sloping outward horizontal surface; a wide shallow groove is observed on the exterior surface, just below the edge of the rim; slightly concave base; decorated with a narrow straight abraded band that encircles the vessel in the upper part, and 24 narrow uneven abraded bands, which create 'arrowed' design covers almost whole vessel's surface; height – 6.8–7 cm, rim diameter – 7.5 cm, wall thickness – 0.2–0.3 cm. Fig. 11: 4.
22. Glass vessel (grave 102) – a hemispherical bowl, fragmented, smooth and shiny surface; transparent, almost colourless glass mass with light blue-green tint contains isolated air bubbles; curved rim, edge cracked-off and polished, has rounded lips; a wide shallow groove is observed on the exterior surface, just below the edge of the rim; decorated with six narrow straight abraded bands, which encircle the vessel in the upper and bottom parts, as well as applied marvered blobs of opaque dark blue glass, arranged in two rows; height – 8 cm, reconstructed rim diameter – 12 cm, wall thickness – 0.18–0.3 cm. Fig. 11: 5.
23. Glass vessel (graves 102, 115) – a conical beaker, only rim and bottom part preserved; smooth and shiny surface; transparent, colourless glass mass contains isolated air bubbles; curved rim, edge cracked-off and polished, has sloping outward horizontal surface; decorated with four narrow straight abraded bands, three of them are traced just below the edge of the rim and one – at bottom part; reconstructed rim diameter – 9 cm, wall thickness – 0.2–0.08–0.3 cm. Fig. 11: 1.
24. Glass vessel (cultural layer) – a body part fragment; smooth and shiny surface; transparent, colourless glass mass with a light green tint; decorated with a relief blob of opaque dark blue glass; wall thickness – 0.2 cm. Fig. 11: 3.
25. Glass vessel (grave 260) – a conical beaker, only upper part preserved; smooth and shiny surface; transparent, colourless glass mass contains numerous air bubbles; a foreign item is observed in glass mass; curved rim, edge cracked-off and polished, has sloping outward horizontal surface and rounded lips; decorated with five narrow straight abraded bands, two of them are broader and traced just below the edge of the rim and three more – at the mid-part; reconstructed rim diameter – 9 cm, wall thickness – 0.25–0.06 cm. Fig. 11: 2.

APPENDIX B

Glass groups from Velyka Buhaivka A catalogue

1. Glass vessel (grave 20) – a hemispherical cup, fragmented, only upper part preserved; melted and deformed; smooth and shiny surface; transparent, almost colourless glass mass with strong blue tint contains numerous air bubbles; fire-rounded rim; decorated with a relief applied glass thread of the same colour, which encircles the vessel three times in the upper part; reconstructed rim diameter – 7.7 cm, wall thickness – 0.3–0.1–0.05 cm. Fig. 4B: 1.
2. Glass vessel (cultural layer) – a rim shard, melted and deformed; transparent, colourless glass mass; fire-rounded rim; decorated with a relief applied glass thread of the same colour, which encircles the vessel in the upper part; wall thickness – 0.4–0.28 cm. Fig. 4B: 2. References: *Petrauskas/Shyshkin 2013*, 70, fig. 191: 2, appendix 2: 319.
3. Glass vessel (grave 11) – a body part fragment; transparent, green glass mass contains isolated air bubbles; decorated with two shallow oval wheel-cut facets; wall thickness – 0.6 cm. Fig. 12A: 9.
4. Glass vessel (cultural layer) – a body part fragment; smooth and shiny surface; transparent, almost colourless glass mass with a strong green tint contains isolated air bubbles; decorated with two deep oval wheel-cut unpolished facets; wall thickness – 0.37 cm. Fig. 12A: 14.
5. Glass vessel (cultural layer) – a body part fragment, melted and deformed; creased and matt surface; transparent, green glass mass; decorated with two deep oval wheel-cut polished facets; wall thickness – 0.27–0.3 cm.
6. Glass vessel (cultural layer) – a rim shard, melted and deformed; smooth and shiny surface; transparent, yellow-green glass mass contains isolated air bubbles; curved rim, edge cracked-off and polished, has sloping inward horizontal surface; decorated with a narrow uneven abraded band; wall thickness – 0.18–0.2 cm. Fig. 12A: 3.
7. Glass vessel (cultural layer) – a body part fragment, melted and deformed; smooth and shiny surface, partly creased and matt; transparent, green glass mass contains numerous air bubbles; decorated with three deep oval wheel-cut unpolished facets arranged in two rows; wall thickness – 0.3 cm. Fig. 12A: 11.
8. Glass vessel (cultural layer) – a rim shard; transparent, colourless glass mass with a green tint; curved rim, edge cracked-off and polished, has sloping inward horizontal surface; decorated with two wide deep straight wheel-cut bands; wall thickness – 0.3 cm. Fig. 12A: 4. References: *Petrauskas/Shyshkin 2013*, 66, fig. 185: 3, appendix 2: 59.
9. Glass vessel (cultural layer) – a body part shard; transparent, yellow-green glass mass contains isolated air bubbles; decorated with an oval wheel-cut facet; wall thickness – 0.3 cm. Fig. 12A: 6. References: *Petrauskas/Shyshkin 2013*, 66, fig. 185: 7, appendix 2: 14.
10. Glass vessel (cultural layer) – a body part fragment; transparent, colourless glass mass contains isolated air bubbles; decorated with an oval wheel-cut facet; wall thickness – 0.2 cm. Fig. 12A: 5. References: *Petrauskas/Shyshkin 2013*, 66, fig. 185: 6, appendix 2: 7.
11. Glass vessel (cultural layer) – a bottom part shard; transparent, yellow-green glass mass contains isolated air bubbles; decorated with two deep oval wheel-cut facets; wall thickness – 0.35 cm. Fig. 12A: 10. References: *Petrauskas/Shyshkin 2013*, 66, fig. 185: 5, appendix 2: 47.
12. Glass vessel (cultural layer) – a body part fragment; transparent, colourless glass mass with yellow tint; decorated with two deep oval wheel-cut facets; wall thickness – 0.5 cm. Fig. 12A: 12. References: *Petrauskas/Shyshkin 2013*, 69, fig. 188: 18, appendix 2: 248.
13. Glass vessel (cultural layer) – a body part fragment; transparent, green glass mass; decorated with two deep oval wheel-cut facets; wall thickness – 0.45 cm. Fig. 12A: 7. References: *Petrauskas/Shyshkin 2013*, 73, fig. 194: 5, appendix 2: 501.
14. Glass vessel (cultural layer) – a body part fragment; transparent, colourless glass mass with a green tint; decorated with three oval wheel-cut facets arranged in two rows; wall thickness – 0.2 cm. Fig. 12A: 8. References: *Petrauskas/Shyshkin 2013*, 79, fig. 205: 8, appendix 2: 905.
15. Glass vessel (cultural layer) – a body part shard; transparent, green glass mass; decorated with a deep oval wheel-cut facet; wall thickness – 0.3 cm. Fig. 12A: 2. References: *Petrauskas/Shyshkin 2013*, 79, fig. 206: 15, appendix 2: 891.
16. Glass vessel (cultural layer) – a rim shard; transparent, colourless glass mass; curved rim, edge cracked-off and polished, has sloping inward horizontal surface; decorated with a narrow uneven abraded band; wall thickness – 0.3 cm. Fig. 12A: 1. References: *Petrauskas/Shyshkin 2013*, 79, fig. 205: 4, appendix 2: 963.
17. Glass vessel (cultural layer) – a body part fragment; transparent, colourless glass mass with a green tint; decorated with two oval wheel-cut facets; wall thickness – 0.3 cm. Fig. 12A: 13. References: *Petrauskas/Shyshkin 2013*, 79, fig. 205: 7, appendix 2: 906.
18. Glass vessel (cultural layer) – a body part fragment; smooth and shiny surface; transparent, colourless glass mass with light green tint contains isolated air bubbles; decorated with narrow, deep oval wheel-cut polished facet; wall thickness – 0.25–0.28 cm. Fig. 12B: 6.
19. Glass vessel (cultural layer) – a body part fragment; smooth and shiny surface; transparent, colourless glass mass with a light green tint; decorated with narrow, deep oval wheel-cut unpolished facet; wall thickness – 0.3 cm. Fig. 12B: 7.
20. Glass vessel (cultural layer) – a bottom part fragment; transparent, yellow-green glass mass contains isolated air bubbles; decorated with a small narrow oval wheel-cut facet; wall thickness – 0.3 cm. Fig. 12B: 1. References: *Petrauskas/Shyshkin 2013*, 66, fig. 185: 9, appendix 2: 48.
21. Glass vessel (cultural layer) – a bottom part fragment; transparent, yellow-green glass mass contains isolated

- air bubbles; decorated with two small narrow oval wheel-cut facets; wall thickness – 0.4 cm. Fig. 12B: 2.
References: *Petrauskas/Shyshkin* 2013, 66, fig. 185: 8, appendix 2: 68.
22. Glass vessel (cultural layer) – a body part fragment; transparent, colourless glass mass; decorated with four deep oval wheel-cut facets, which are arranged in two rows and create a ‘honeycomb’ design; wall thickness – 0.3 cm. Fig. 12B: 4.
References: *Petrauskas/Shyshkin* 2013, 69, fig. 188: 22, appendix 2: 227.
 23. Glass vessel (cultural layer) – a body part fragment; transparent, colourless glass mass; decorated with an oval wheel-cut facet; wall thickness – 0.3 cm. Fig. 12B: 3.
References: *Petrauskas/Shyshkin* 2013, 69, fig. 188: 27, appendix 2: 258.
 24. Glass vessel (cultural layer) – a body part fragment; decorated with two small narrow oval wheel-cut facets; wall thickness – 0.3 cm. Fig. 12B: 5.
References: *Petrauskas/Shyshkin* 2013, 71, fig. 191: 12, appendix 2: 284.
 25. Glass vessel (cultural layer) – a body part fragment; transparent, colourless glass mass; decorated with a small narrow oval wheel-cut facet; wall thickness – 0.2 cm. Fig. 12B: 8.
References: *Petrauskas/Shyshkin* 2013, 71, fig. 191: 16, appendix 2: 276.
 26. Glass vessel (grave 91) – a cylindrical beaker, only the bottom part preserved; transparent, green glass mass contains isolated air bubbles; decorated with the deep oval wheel-cut polished facets arranged in two rows and a narrow, deep straight wheel-cut band, located below; the same but larger wheel-cut polished facet is traced on the base; wall thickness – 0.4–1 cm. Fig. 7B: 8.
References: *Petrauskas/Shyshkin* 2013, 40, fig. 122: 3, appendix 2: 435.
 27. Glass vessel (cultural layer) – a body part fragment; transparent, almost colourless glass mass with green tint contains isolated air bubbles; decorated with deep oval wheel-cut polished facet; wall thickness – 0.7–0.8 cm.
 28. Glass vessel (cultural layer) – a rim shard, melted and deformed; smooth and shiny surface, partly creased and matt; transparent, almost colourless glass mass with green tint contains isolated air bubbles; rim is formed by grinding, edge carefully polished and has rounded horizontal surface; a wide shallow groove is traced on the interior surface, just below the edge of the rim; decorated with two wide deep straight wheel-cut bands just below the rim; wall thickness – 0.3–0.45 cm. Fig. 7B: 1.
 29. Glass vessel (cultural layer) – a body part fragment; transparent, red glass mass; decorated with three deep oval wheel-cut facets arranged in two rows; wall thickness – 0.8 cm. Fig. 7B: 5.
References: *Petrauskas/Shyshkin* 2013, 66, fig. 185: 11, appendix 2: 63.
 30. Glass vessel (cultural layer) – a body part fragment; transparent, colourless glass mass with a green tint; decorated with two deep oval wheel-cut facets; wall thickness – 1.2 cm. Fig. 7B: 6.
References: *Petrauskas/Shyshkin* 2013, 66, fig. 185: 10, appendix 2: 103.
 31. Glass vessel (cultural layer) – a rim shard, melted and deformed; transparent, colourless glass mass; rim is formed by grinding, edge carefully polished and has rounded horizontal surface; a wide shallow groove is traced on the interior surface, just below the edge of the rim; decorated with a wide deep straight wheel-cut band just below the rim; wall thickness – 0.3 cm. Fig. 7B: 3.
References: *Petrauskas/Shyshkin* 2013, 68, fig. 187: 4, appendix 2: 200.
 32. Glass vessel (cultural layer) – a rim shard; transparent, colourless glass mass; rim is formed by grinding, edge carefully polished, has sloping inward horizontal surface and rounded lips; a wide shallow groove is traced on the interior surface, just below the edge of the rim; decorated with a wide deep straight wheel-cut band just below the rim and a small deep horizontal oval wheel-cut facet; wall thickness – 0.5 cm. Fig. 7B: 4.
References: *Petrauskas/Shyshkin* 2013, 70, fig. 191: 5, appendix 2: 295.
 33. Glass vessel (cultural layer) – a bottom part shard; transparent, yellow-green glass mass; decorated with a narrow, deep straight wheel-cut band; wall thickness – 0.9 cm. Fig. 7B: 10.
References: *Petrauskas/Shyshkin* 2013, 73, fig. 194: 8, appendix 2: 457.
 34. Glass vessel (cultural layer) – a body part fragment, melted and deformed; transparent, colourless glass mass; decorated with two deep oval wheel-cut facets, which create a ‘honeycomb’ design; wall thickness – 0.4 cm. Fig. 7B: 7.
References: *Petrauskas/Shyshkin* 2013, 74, fig. 198: 12, appendix 2: 612.
 35. Glass vessel (cultural layer) – a rim shard, melted and deformed; transparent, green glass mass; rim is formed by grinding, edge carefully polished and has rounded horizontal surface; decorated with a wide deep straight wheel-cut band just below the rim; wall thickness – 0.4 cm. Fig. 7B: 2.
References: *Petrauskas/Shyshkin* 2013, 75, fig. 201: 12, appendix 2: 632.
 36. Glass vessel (cultural layer) – a bottom part shard; transparent, colourless glass mass; decorated with seven large deep oval wheel-cut facets, which are arranged in two rows and create a design similar to ‘honeycomb’; wall thickness – 0.8–1 cm. Fig. 7B: 9.
References: *Petrauskas/Shyshkin* 2013, 77, fig. 203: 8, appendix 2: 852.
 37. Glass vessel (cultural layer) – a body part fragment, melted and deformed; creased and matt surface; transparent, almost colourless glass mass with a light green tint; decorated with deep relief oval cut medallion; medallion’s surface is polished. Fig. 13A: 3.
 38. Glass vessel (cultural layer) – a body part fragment, melted and deformed; creased and matt surface; transparent, almost colourless glass mass with a light green tint; decorated with deep relief oval cut medallion.
References: *Petrauskas/Shyshkin* 2013, 73, fig. 194: 1, appendix 2: 582.
 39. Glass vessel (cultural layer) – a body part fragment, melted and deformed; creased and matt surface; transparent, almost colourless glass mass with a light green tint; decorated with two narrow, deep horizontal wheel-cut bands, nine narrow, deep vertical wheel cut incisions, three deep oval wheel-cut facets which create a specific geometric design; wall thickness – 0.7–0.9 cm. Fig. 13A: 2.
References: *Petrauskas/Shyshkin* 2013, 73, fig. 194: 1, appendix 2: 492.

40. Glass vessel (cultural layer) – a body part fragment, melted and deformed; creased and matt surface; transparent, almost colourless glass mass with a light green tint; decorated with deep relief oval cut medallion, wall thickness – 1–1.2 cm. Fig. 13A: 4.
References: *Petrauskas/Shyshkin 2013*, 73, fig. 194: 1, appendix 2: 491.
41. Glass vessel (cultural layer) – a rim shard; transparent, colourless glass mass with a light yellow tint; rim is formed by grinding; decorated with two narrow, deep horizontal wheel-cut bands and five narrow, deep vertical wheel cut incisions, which create a specific geometric design; reconstructed rim diameter – 8 cm, wall thickness – 0.4–0.3 cm. Fig. 13A: 1.
References: *Petrauskas/Shyshkin 2013*, 75, fig. 201: 11, appendix 2: 696.
42. Glass vessel (grave 145) – a body part fragment, melted and deformed; transparent, colourless glass mass; covered with a layer of opaque blue glass. Fig. 13A: 8.
References: *Petrauskas/Shyshkin 2013*, 57, fig. 167: 2, appendix 2: 640.
43. Glass product (cultural layer) – a shard, melted and deformed; creased and matt surface; transparent, green glass mass; covered with a layer of opaque dark blue glass. Fig. 13A: 6.
44. Glass product (cultural layer) – a shard, melted and deformed; creased and matt surface; transparent, green glass mass; covered with a layer of opaque dark blue glass. Fig. 13A: 10.
45. Glass vessel (cultural layer) – a body part fragment, melted and deformed; transparent, green glass mass; covered with a layer of opaque dark blue glass; decorated with narrow, deep straight wheel-cut band and small horizontal oval wheel-cut facet; wall thickness – 0.5 cm. Fig. 13A: 5.
References: *Petrauskas/Shyshkin 2013*, 66, fig. 185: 4, appendix 2: 79.
46. Glass vessel (cultural layer) – a body part fragment, melted and deformed; transparent, yellow-green glass mass; covered with a layer of opaque dark blue glass; decorated with a narrow, deep straight wheel-cut band; wall thickness – 0.8 cm. Fig. 13A: 9.
References: *Petrauskas/Shyshkin 2013*, 70, fig. 191: 11, appendix 2: 300.
47. Glass vessel (cultural layer) – a body part fragment, melted and deformed; transparent, green glass mass; covered with a layer of opaque dark blue glass; decorated with two narrow, deep straight wheel-cut bands; wall thickness – 0.6 cm. Fig. 13A: 7.
References: *Petrauskas/Shyshkin 2013*, 77, fig. 203: 9, appendix 2: 794.
48. Glass vessel (cultural layer) – a body part fragment, melted and deformed; transparent, colourless glass mass; covered with a layer of opaque light blue glass; decorated with a narrow, deep straight wheel-cut band; wall thickness – 0.4 cm. Fig. 13A: 11.
References: *Petrauskas/Shyshkin 2013*, 79, fig. 206: 10, appendix 2: 938.
49. Glass vessel (cultural layer) – a body part fragment, melted and deformed; transparent, colourless glass mass; covered with a layer of opaque light blue glass; wall thickness – 0.3 cm. Fig. 13A: 12.
References: *Petrauskas/Shyshkin 2013*, 72, appendix 2: 362.
50. Glass vessel (grave 11) – a body part fragment, melted and deformed; creased and matt surface; transparent, colourless glass mass with a light green tint; decorated with three applied blobs of opaque dark blue glass, arranged in a triangle; wall thickness – 0.25–0.3 cm. Fig. 15: 4.
References: *Petrauskas/Shyshkin 2013*, 21, fig. 80: 2, appendix 2: 66.
51. Glass vessel (grave 93) – a conical beaker, only the bottom part preserved; smooth and shiny surface; transparent, almost colourless glass mass with a strong green tint contains isolated air bubbles; round base has small flat surface; wall thickness – 0.1–0.4 cm. Fig. 15: 5.
References: *Petrauskas/Shyshkin 2013*, 40, fig. 124: 4, appendix 2: 420.
52. Glass vessel (grave 100) – a hemispherical bowl, fragmented, melted, and deformed; smooth and shiny surface; transparent, almost colourless glass mass with blue-green tint contains numerous air bubbles; curved rim, edge cracked-off and polished, has slightly sloping inward horizontal surface and rounded lips; slightly concave base; decorated with a narrow straight abraded band encircle the vessel in the upper part and ten deep oval wheel-cut unpolished facets arranged in two rows; a row of small narrow horizontal wheel-cut facets is observed at the bottom part; a narrow straight abraded band is traced just below the edge of the rim; reconstructed height – 8.9 cm, reconstructed rim diameter – 11 cm, wall thickness – 0.15–0.2–0.3 cm. Fig. 15: 1.
53. Glass vessel (cultural layer) – a body part shard, melted and deformed; creased and matt surface; transparent, almost colourless glass mass with a light green tint; decorated with three applied blobs of opaque dark blue glass arranged in a row. Fig. 15: 2.
54. Glass vessel (cultural layer) – a body part fragment, melted and deformed; transparent, colourless glass mass; decorated with a narrow straight abraded band; wall thickness – 0.15 cm. Fig. 15: 3.
References: *Petrauskas/Shyshkin 2013*, 74, fig. 198: 5, appendix 2: 594.

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Sklárstvo obdobia staršej doby sťahovania národov na území čerňachovskej kultúry

Distribučné siete (na základe nálezov skla z pohrebísk Vijtenky a Velyka Buhajivka)

Vladyslav Shchepachenko

SÚHRN

Cieľom publikovanej práce je prezentovať vplyv obdobia sťahovania národov na intenzitu vzájomných vzťahov medzi Rimanmi a barbarmi v prostredí čerňachovskej kultúry v období neskorej doby rímskej až staršej doby sťahovania národov, a to prostredníctvom analýzy sklenených výrobkov a ich obehu v rámci vymedzeného územia. Predpokladá sa, že časť skúmaných artefaktov je rímskym importom, čo predstavuje cenný zdroj poznania rímsko-barbarských vzťahov.

Analýzovaný súbor tvorilo 79 sklenených výrobkov z pohrebísk Vijtenky a Velyka Buhajivka, ktoré ležia vo východnej a strednej Ukrajine. Na základe analýzy jednotlivých nálezov z týchto dvoch lokalít sa autor pokúsil rekonštruovať distribučné siete sklenených výrobkov.

Z dôvodu fragmentarizácie nálezov bol vytvorený jednotný systém klasifikácie podobný tomu od A. Cholakovej (2015). Jeho základom je rozdelenie nálezov podľa ich morfológických, technologických a geochemických vlastností.

Rekonštrukcia výroby, úpravy a zdobení nádob sa opiera o doteraz všeobecne akceptované poznatky o technológii spracovania skla (Antonaras 2017; Fünfschilling 2015; Lazar 2003; Price/Cottam 1998), ktoré sú doplnené o výsledky trasologických štúdií a elektrónovej mikroskopie. Geochemické analýzy boli zrealizované O. Rumjancevou,

ktorá svoje výsledky už čiastočne publikovala (Rumyantseva et al. 2020; 2021; Rumyantseva/Lyubichev/Trifonov 2018). Na vyjadrenie počtu jedincov boli použité dve odlišné kvantifikačné metódy – odhadovaný ekvivalent jedincov (EVE) a minimálny počet jedincov (MINI).

Po bližšom štúdiu jednotlivých artefaktov boli identifikované štyri skupiny, s rozličným technologickým spracovaním skla na lokalite Vijtenky a šesť skupín na lokalite Velyka Buhajivka, pričom štyri z nich boli identifikované na oboch lokalitách súčasne. Išlo o polguľovité poháre s olamovaným okrajom a riadielkovou výzdobou (Eggers 230 alebo typ Straume I), tenkostenné poháre so za studena dokončeným okrajom a hlboko rytou reliéfnou výzdobou (Eggers 230 alebo typ Straume VIII), tenkostenné poháre pokryté vrstvou farebného skla, polguľovité misky a kónické poháre s olamovaným okrajom (typ Isings 96/AR 60 a Isings 106d/AR 69). Vyššie spomenuté typy nádob sú prejavmi čerňachovskej kultúry a je ich možné datovať do stupňov C3–D1.

Pôvod sklenených výrobkov nájdených na lokalitách Vijtenky a Velyka Buhajivka je rôzny a iba malý počet z nich môže byť považovaný za rímsky import. Nálezy z oboch lokalít sú veľmi rôznorodé z hľadiska ich morfológie a typológie, čo s najväčšou pravdepodobnosťou

odzrkadľuje rôzne centrality ich výroby v rámci rímskych provincií. Avšak, väčšina zo skúmaných artefaktov nemá vlastností typickú pre rímsku produkciu, a teda je možné uvažovať o ich nerímskom pôvode na území barbarika. Výroba sklenených výrobkov mimo rímskych provincií môže byť spojená s dvomi odlišnými technologickými tradíciami. Prvá z nich pravdepodobne zodpovedá vývoju z pohárov z typu Eggers 230 v stupni C3 na tenkostenný variant nádoby s rytou výzdobou (typ Straume IB3, VII, VIII a IX) a skleneným prekrytím v stupni D1. Morfologická a technologická podobnosť jednotlivých skupín (obr. 10: II, II/III, III, V, VI), spoločne s rovnakou distribučnou sieťou nádob v barbariku, sú hlavnými argumentmi na podporu tejto hypotézy. Aj keď je miesto ich výroby pre bádateľov stále neznáme, veľké množstvo nálezov dovoľuje predpokladať, že výrobných centier bolo viac a taktiež naznačuje obchodný charakter ich obehu. Druhá technologická tradícia je spojená s polguľovitými pohármi s ohňom zaguľatým okrajom. Tento typ nádob sa pravdepodobne vyrábala v sklárskej dielni na lokalite Komariv.

Analýza súboru dokázala, že v období začiatku sťahovania národov došlo na oboch lokalitách k istej

zmene v štruktúre sklenených výrobkov. V porovnaní s predchádzajúcim chronologickým stupňom prichádza nárast v počte výrobkov, vrátane počtu sklenených výrobkov rímskeho pôvodu. Zároveň ekonomické vzťahy medzi miestnymi spoločenstvami a výrobnými centrami odzrkadľovali aj nerímsku technologickú tradíciu. Tá bola počas mladšej doby rímskej reprezentovaná širokým rozšírením pohárov typu Eggers 230. Nerímska technologická tradícia pokračovala aj v období sťahovania národov, čoho dôkazom sú tenkostenné nádoby s rytou výzdobou. Avšak, na oboch lokalitách absentujú predmety datované do stupňa D1, ktoré by pochádzali z dielne v Komarive.

Napriek tomu, že štúdium nálezov len z dvoch lokalít neposkytuje dostatočné množstvo informácií potrebných na vyvodenie ucelených záverov, môžeme predpokladať, že začiatok obdobia sťahovania národov nepreerušil dovtedy existujúce ekonomické vzťahy. Navyše sa zdá, že „turbulentná éra“ prispela k novým rímsko-barbarským kontaktom a ovplyvnila významný prílev rímskych importov vrátane skleneného tovaru do oblasti rozšírenia čerňachovskej kultúry.

Obr. 1. Geografická poloha lokalít. 1 – Vijitenky; 2 – Velyka Buhajivka. Biela línia – distribučná zóna kultúry Cherniakhiv-Sântana de Mureș; červená línia – Limes Romanus.

Obr. 2. Topografická poloha pohrebísk (I, III) a ich súčasných sídlisk (II, IV). A – Vijitenky; B – Velyka Buhajivka.

Obr. 3. Rozdelenie sklenených nádob na profilové zóny. A – rozdelenie podľa Cool/Baxter 1996; B – naša úprava prispôbená hlavným formám sklenenej produkcie čerňachovskej kultúry; C – za studena olamovaný okraj a detaily jeho štruktúry; a – horizontálna plocha; b – vertikálne vnútorné a vonkajšie plochy; c – hrany; d – značka lešteného povrchu. Kresby A – podľa Cool/Baxter 1996, B – podľa Petrauskas 2016; Vornic/Ciobanu 2010; autor, C – autor.

Obr. 4. Polguľovité šálky s ohňom zaguľatým okrajom. A – Vijitenky; B – Velyka Buhajivka. Kresby A – autor, B – 1 autor, 2 podľa Petrauskas/Shyshkin 2013.

Obr. 5. Distribúcia polguľovitých šálok s ohňom zaguľatým okrajom v prostredí čerňachovskej kultúry. 1 – Vijitenky; 2 – Velyka Buhajivka; 3 – Komariv. Biela línia – distribučná zóna čerňachovskej kultúry; červená línia – Limes Romanus. A – osobné dáta autora, B – podľa Shchepachenko 2023.

Obr. 6. Valcovité poháre. A – valcovité poháre s olamovaným okrajom a s riadielkovou výzdobou; B – chronológia pohárov typu Eggers 230 a tenkostenných pohárov so za studena dokončeným okrajom a s riadielkovou výzdobou čerňachovskej kultúry. Kresby A – autor, B – podľa Shchepachenko 2022. Legenda: a – typ pohárov Eggers 230; b – tenkostenné „barbarské“ poháre.

Obr. 7. Tenkostenné poháre so za studena dokončeným okrajom a s rytou reliéfnou výzdobou. A – Vijitenky; B – Velyka Buhajivka. Kresby A – autor, B – 1–3 autor, 4–10 podľa Petrauskas/Shyshkin 2013.

Obr. 8. Distribučná zóna čerňachovskej kultúry. A – poháre typu Eggers 230; B – tenkostenné poháre so za studena dokončeným okrajom a s riadielkovou výzdobou. 1 – Vijitenky; 2 – Velyka Buhajivka. Biela línia – distribučná zóna čerňachovskej kultúry; červená línia – Limes Romanus. Územie dnešnej Ukrajiny – osobné dáta autora,

územie dnešného Moldavska a Rumunska – podľa Croitoru 2009; Gomolka-Fuchs 1999; Pánczél/Dobos 2007.

Obr. 9. Nádoby z lokality Vijitenky. Nádoby vykazujú morfologické a technologické znaky podobné valcovitým pohárom typu Eggers 230 a tenkostenným pohárom so za studena dokončeným okrajom a s riadielkovou výzdobou. Kresby autor.

Obr. 10. Schéma zobrazujúca technologickú podobnosť medzi jednotlivými skupinami sklárskej produkcie z Vijitenky a Velykej Buhajivky. I – polguľovité šálky s olamovaným okrajom; II – valcovité poháre s olamovaným okrajom a s riadielkovou výzdobou (typ Eggers 230 alebo typ Straume I); III – tenkostenné poháre s olamovaným okrajom a so za studena dokončeným okrajom a s riadielkovou výzdobou (typ Straume IB3, VII a IX); IV – polguľovité misky a kónické poháre s olamovaným okrajom (typ Isings 96/AR 60 a Isings 106a, d/AR 68); V – tenkostenné poháre so za studena dokončeným okrajom a s hlbokou rytou reliéfnou výzdobou (Eggers 230 alebo typ Straume VIII); VI – tenkostenné nádoby pokryté vrstvou farebného skla; II/III – nádoby s morfologicky a technologicky podobnými znakmi ako valcovité poháre typu Eggers 230 a ako tenkostenné poháre so za studena dokončeným okrajom a s riadielkovou výzdobou. 1 – spôsob výroby; 2 – techniky dokončovania okraja; 3 – prepracovanie kraja okraja; 4 – široká, plytká ryha na vnútornom povrchu nádoby tesne pod okrajom; 5 – nerovnomerné mierne drsné vodorovné pásy; 6 – hlboké široké pásy vzniknuté rotáciou nádoby; 7 – hlboké oválne riadielkové brúsené fazety; 8 – nebrúsené riadielkové oválne fazety. Kresby nádob podľa Petrauskas 2016; Straume 1987 a autor, schéma autor.

Obr. 11. Polguľovité misky a kónické poháre s olamovaným okrajom z lokality Vijitenky. Kresby autor.

Obr. 12. Velyka Buhajivka. A – valcovité poháre s olamovaným okrajom a s riadielkovou výzdobou; B – morfologicky podobné nádoby. Kresby A – 3, 11, 14 autor, 1, 2, 4–10, 12, 13 podľa Petrauskas/Shyshkin 2013, B – podľa Petrauskas/Shyshkin 2013.

Obr. 13. A – Velyka Buhajivka. 1–4 – tenkostenné poháre s olamovaným okrajom a so za studena dokončeným

okrajom a s hlbokou rytou reliéfnou výzdobou; 5–12 – tenkostenné nádoby pokryté vrstvou farebného skla. B – nádoby kombinujúce dekoračné detaily týchto skupín sklenených výrobkov. 1 – Ranzheve/UA (podľa *Symonovich 1977*); 2 – Himlingøje/DK; 3 – Tu/NO (2, 3 podľa *Straume 1987*). Kresby A – podľa *Petrauskas/Shyshkin 2013*, foto autor.

Obr. 14. Distribúcia skupín sklenených výrobkov z lokalít Vijitenky a Velyka Buhajivka v oblasti čerňachovskej kultúry. A – polguľovité misky a kónické poháre s olamovaným okrajom (typ Isings 96/AR 60 a Isings 106a, d/AR 68); B – poháre typu Eggers 238 (žlté bodky) a tenkostenné nádoby pokryté vrstvou farebného skla (modré bodky). 1 – Vijitenky; 2 – Velyka Buhajivka. Biela línia – distribučné územie čerňachovskej kultúry; červená línia – Limes Romanus. Územie dnešnej Ukrajiny – osobné dáta autora, územie dnešného Moldavska a Rumunska – podľa *Croitoru 2009*; *Gomolka-Fuchs 1999*; *Pánczél/Dobos 2007*.

Obr. 15. Velyka Buhajivka. Polguľovité misky a kónické poháre s olamovaným okrajom. Kresby 1, 5 autor, 2–4 podľa *Petrauskas/Shyshkin 2013*.

Obr. 16. Distribučné siete pohrebísk sklárskymi výrobkami počas stupňov C3–D1. A – Vijitenky; B – Velyka Buhajivka. Legenda: a – polguľovité šálky s olamovaným okrajom; b – valcovité poháre s olamovaným okrajom a s riadielkovou výzdobou; c – tenkostenné poháre so za studena dokončeným okrajom a s riadielkovou výzdobou; d – tenkostenné poháre so za studena dokončeným okrajom a s hlbokou reliéfnou výzdobou; e – tenkostenné nádoby pokryté vrstvou farebného skla; f – polguľovité misky a kónické poháre s olamovaným okrajom.

Tabela 1. Výsledky geochemických analýz skla z lokality Vijitenky a Velyka Buhajivka.