

Chronological framework of the fortified settlement in Spišský Štvrtok in the context of the Otomani-Füzesabony cultural complex

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ABSTRACT

In contrast to other contemporaneous cultural groups, the Otomani-Füzesabony cultural complex (OFCC) is conspicuous, *inter alia*, due to covering a relatively wide geographical area. Within it can be observed a high variability of source bases, which is conditioned by the differing emergence and adaptation backgrounds, as well as by a varying length of duration across different geographical regions. To make things worse, this diversity of archaeological sources is reflected also in the different use of terminology and in various absolute and relative chronological systems. When dealing with the chronological issues of the OFCC in the territory of Eastern Slovakia the fortified settlement in Spišský Štvrtok, deserves special consideration. Despite the absence of any absolute dates from the site, significantly represented material culture allows one to review its relative chronological framework. In this respect, the morpho-typology of selected pottery and metal artefacts, together with their decorative motifs, provide useful information about its relative chronology. A formalised description of jugs, which represent the chronologically most sensitive group of pottery, allows for a partial use of statistical methods as well. As a result, we can obtain a relatively comprehensive view of the initial phase, the length of occupation, and the abandonment period of the fortified settlement. In combination with ¹⁴C dates this information might in future contribute to a more exact understanding of the chronological relations within a wider area of East-Central Europe.

KEY WORDS

Relative chronology; Otomani-Füzesabony cultural complex; settlement; Spišský Štvrtok; pottery; metal artefacts.

INTRODUCTION

The issue of dating artefacts, as well as individual archaeological sites and their mutual chronological relations, has been of crucial importance since archaeology was constituted as an independent discipline of science. Along with the development of natural scientific methods of absolute dating it still remains a highly discussed and popular topic as well in recent specialised literature. Even though radiocarbon analyses offer a variety of interpretational possibilities, for the majority of find assemblages from significant sites, only the relative dating is available.

One example of such a site is also the fortified settlement in Spišský Štvrtok, which culturally belongs to the Otomani-Füzesabony cultural complex (hereinafter OFCC). Despite its significance, this settlement still lacks any detailed absolute-chronological framework which would reflect the specificities of the local culture and the current state of research. Through the evaluation of selected materials from the settlement, contextualised within the complex issue of the OFCC, we can demonstrate the persisting necessity of relative-chronological systems, specifically Reinecke's periodisation system. Even though this system has already 'celebrated' its hundredth anniversary, it still represents a very useful tool for the classification

of Bronze Age archaeological materials, both in Slovakia and in the wider region of Central Europe. Its application brings new information and at the same time facilitates international communication.

ON THE ISSUE OF THE CHRONOLOGICAL RELATIONS OF THE OFCC

The history and the current state of research on the OFCC are burdened by significant terminological and ideological variability, which logically results in different approaches to the issues of relative chronology. This variability mainly arises from the vast spatial distribution of the cultural complex, which partly extends over the territory of five present-day states, namely north-eastern Romania, eastern Hungary, western Ukraine, eastern Slovakia, and south-eastern Poland. The overall situation is still more complicated by the fact that – within this vast area – the OFCC emerged, adapted itself, and faded out in the background of many different cultural traditions. This process was also heterogeneous from a chronological point of view (for more details see BADER 1978; GOGÁLTAN 1999, 15–54; BALAGURI 2001; THOMAS 2008, 333–341; CZEBRESZUK 2013; BÁTORA – VADÁR 2015, 40).

Previous discussions have made it clear that successfully answering questions of supra-regional significance will only be possible if there is a unity in the approaches of the individual ‘national schools’ to the highest possible extent (OLEXA 1987, 255; BADER 1998, 72–73; KOÓS 2003, 302; ŠTEINER 2009, 10–14; MOLNÁR 2014, 16–25; VLADÁR 2014, 32–35; BÁTORA – VLADÁR 2015, 39). The current specialised literature therefore gradually abandons the chaotic nomenclature which is impacted by historical interpretation or by a more detailed geographical and chronological definition. Researchers are now using with increasing frequency the general term Otomani-Füzesabony culture (GANCARSKI 1999b; 2002; THOMAS 2008; OLEXA 2003; JAEGER 2010; 2016; GOGÁLTAN 2015; PRZBYŁA 2016; PRZBYŁA – SKONECZNA 2013, and others), or Otomani-Füzesabony cultural complex (ŠTEINER 2003; 2009; OLEXA – NOVÁČEK 2013; 2015; 2017; ORAVKINOVÁ 2018).

RELATIVE CHRONOLOGY

The heterogeneity based on the above-mentioned ‘national schools’ is expressed to the full extent in the perception, terminology, and definition of the relative chronology of the OFCC. Moreover, a significant variability of published opinions can also be observed within individual research circles, which are presently defined geopolitically.

Of crucial importance for the treatment of problems associated with the OFCC in the territory of Romania was the three-stage chronological classification created by I. Ordentlich (1970). A different concept was introduced by T. Bader (1978; 1998), who, unlike Ordentlich, pursued a 4-stage classification. It is necessary to remark that Romanian researchers in their studies apply the principles of the so-called long chronology, on the basis of which they define the duration of the OFCC in the territory of Romania from the stage Br A1 to as late as the stage Br D. The Hungarian and Slovak archaeologists, on the other hand, classify the available materials within the system of ‘short chronology’ with a duration within stages Br B1/B2 (BADER 1998, 74–75).

The tripartite classification system of the OFCC materials also has a long tradition among the Hungarian researchers (e.g. MOZSOLIC 1957; 1969; KÖSZEGI 1968; KOVÁCS 1982), where the duration is delimited by the stages Br A1 to Br B (KÖSZEGI 1968, 129–136). This system was also used by I. Bóna, who implemented an original periodisation system of the Bronze Age

in the Carpathian Basin (BÓNA 1958; 1975; 1992). Since he in his synthetic works only seldom referred to Reinecke's periodisation, the international adoption of the system remained problematic. A better contribution with regard to an in-depth study of chronological aspects was therefore represented by a concept of relative-chronological relations of the OFCC, which was created by E. Schalk on the basis of multiple sites. In this system she also took into consideration the periodisation systems used in the neighbouring countries as well as the previous classification systems of the cultural complex (SCHALK 1981; 1992; 1994). Also helpful in this regard are several published studies which focused on the synchronisation of the relative-chronological system by I. Bóna with Reinecke's periodisation scheme (KISS 2012; KISS *et al.* 2015; FISCHL *et al.* 2015).

Slovak researchers, with the exception of terminological variations, were relatively coherent and disciplined in their opinions regarding the relative-chronological context of the OFCC in the territory of Slovakia. They primarily applied the three-stage classification of source materials with total duration from the turn of stages Br A1/Br A2 to the stage Br B1 (TOČÍK - VLADÁR 1971, 393; FURMÁNEK - VELIAČIK 1980, 165; BÁTORA 1981, 14; BÁTORA 1983, 184-185; FURMÁNEK - VELIAČIK - VLADÁR 1991, 82). It was only new knowledge that allowed L. Olexa to argue for a more detailed 5-stage classification within the same chronological duration (OLEXA 1987). Further specifications have been published since the beginning of the 21st century in comprehensive works focused on the analysis and evaluation of source materials from the western territories of the cultural complex. These publications complete and extend the five-stage classification model, which they delimit by the stage Br A1 and by the beginning of the stage Br B2 (THOMAS 2008; ŠTEINER 2009; OLEXA - NOVÁČEK 2013; 2015).

Despite the indisputable benefits of the previous and mainly the current classification systems of the source materials of the OFCC, we encounter difficulties in their application. The relative-chronological classifications are often only based on the material from a single site and the regional variability is only seldom taken into consideration (ŠTEINER 2009; OLEXA - NOVÁČEK 2013; 2015). Applying these classifications in other enclaves thus might be problematic. Even though synthetic classifications are based on the evaluation of materials from multiple ecumenes, the determinants in them are exclusively represented by artefacts from funerary contexts, whereas the typologically more varied settlement finds are reflected only sporadically (THOMAS 2008). At the same time, they use a diametrically different terminology and chronological classification of individual stages (BADER 1998, tab. 1; ORAVKINOVÁ 2018, tab. 1), whereby they end up creating an even more distinct deepening of the already existing disunity. The only connecting element is often the definition of phases/horizons within the stages of Reinecke's periodisation system, which for this reason is also preferred in this paper (modified after FURMÁNEK - VLADÁR 2015, obr. 2).

ABSOLUTE CHRONOLOGY

The duration of the OFCC from the viewpoint of absolute chronology can be defined on the basis of hitherto published results of ¹⁴C analyses (**Fig. 1**). Despite the fragmentary character of the dates and absence of information in several regions, they refer to a relatively wide general interval of duration of the cultural complex. The earliest dates are known from the sites in the catchment area of the Rivers Berettyó (Gáborján - Bln-1643, 2199-1960 calBC 2σ, Bln-1642, 2199-1771 calBC 2σ, Bln-1644, 2130-1829 calBC 2σ, Vésztő - Bln-1629, 2285-1926 calBC 2σ), Maros (Battonya - Bln-1705, 2341-1958 calBC 2σ), and the upper reaches of the River Tisza (Rétközberencs - Bln-1224, 2192-1631 calBC 2σ; RACZKY - HERTELENDI - HORVÁTH 1992). The above-mentioned regions, together with the area of north-western Romania, can be regarded

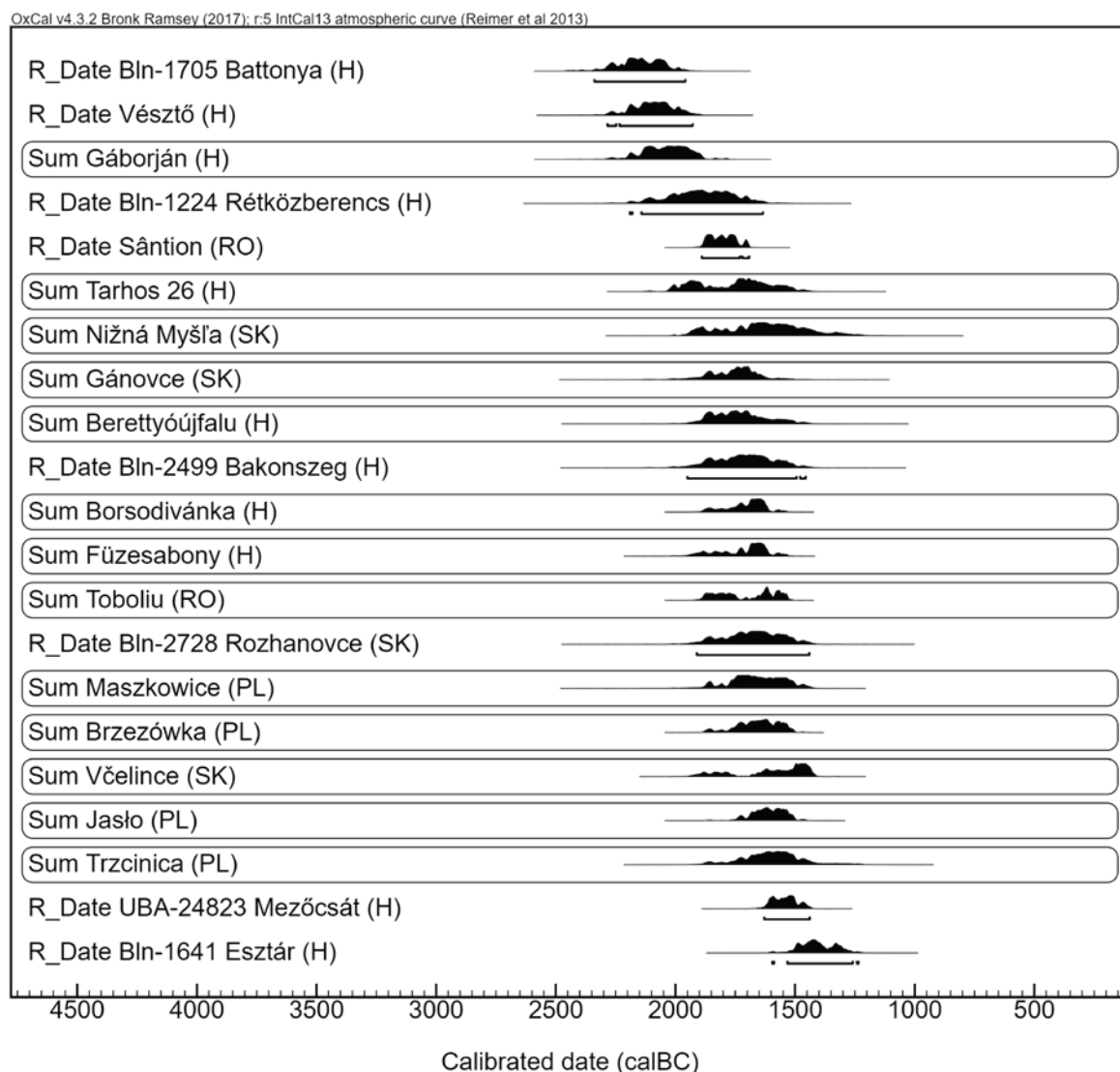


Fig. 1: Published calibrated radiocarbon dates from contexts belonging to the OFCC (RACZKY – HERTELENDI – HORVÁTH 1992; FORENBAHER 1993; GANCARSKI 1999a; BARTA 2001; 2008; GÖRS-DORF – FURMÁNEK – MARKOVÁ 2004; BARTA 2013; PRZYBYŁA – SKONECZNA 2013; DUFFY 2014; JAEGER – OLEXA 2014; GOGÁLTAN 2015; PRZYBYŁA 2016; GANCARSKI – MADEJ 2018; LIE *et al.* 2018; SZATHMÁRI – GUBA – KULCSÁR 2018).

as the presumed centres of the emergence of the complex, whose manifestations subsequently spread to the neighbouring regions in later phases of its development.

The earliest manifestations of the OFCC in its western geographical enclave are evidenced from 1965 BC at the earliest, which is documented by the dates from funerary contexts in Nižná Myšľa (1965–1754 calBC 2 σ ; JAEGER – OLEXA 2014). The earliest human presence in the northernmost territories featuring OFCC elements, i.e. in the area delimited by the River Dunajec, in the time around 1876 BC or 1830 BC at the earliest, is dated by the results of ^{14}C analysis of samples from the fortification and from the stratigraphically earliest contexts at the site of Maszkowice (D-AMS-10625, 1876–1841, 1782–1689 calBC 2 σ , MKL-2439, 1830–1610 calBC 2 σ ; PRZYBYŁA 2016, fig. 8). The ^{14}C dates from the stratigraphically latest contexts at the

same site date the fading out of the OFCC manifestations to the year 1506 BC (D-AMS-10628, 1621–1506 calBC 2σ ; PRZYBYŁA 2016, fig. 8), the dates from Nižná Myšľa date it to 1430 BC (Bln-2810, 1740–1430 calBC 2σ ; OLEXA – NOVÁČEK 2013, 12) and the dates from the layer with finds belonging to the earliest phase of the Piliny culture in Včelince date to 1430 BC (Bln-5557, 1530–1430 calBC 2σ , Bln-5558, 1500–1430 calBC 2σ ; GÖRSDORF – FURMÁNEK – MARKOVÁ 2004, 88). On the basis of a series of relatively late dates from the settlements of Trzcinica and Nižná Myšľa we can assume that some elements survived in individual distribution enclaves until as late as 1350–1300 BC (GANCARSKI 1999a, 149–150; OLEXA – NOVÁČEK 2013, 12).

The current state of research on absolute chronology in correlation with a detailed analysis and evaluation of archaeological materials is unfortunately limited. Apart from the basic definition of the extent, so far it does not enable one to define in more detail the duration of individual phases and verify the legitimacy and supra-regional applicability of the currently used relative-chronological systems (THOMAS 2008, 341–349; ŠTEINER 2009, 118–110; OLEXA – NOVÁČEK 2013, 12).

ANALYSIS OF SELECTED ARTEFACTS FROM THE FORTIFIED SETTLEMENT IN SPIŠSKÝ ŠTVRTOK

The fortified settlement from the turn of the Early and Middle Bronze Age at Myšľa Hôrka hill in Spišský Štvrtok (Levoča District, Slovakia), has long been the focal point of the professional community. A proof thereof are many archaeological excavations and surveys, which were carried out in the settlement area or in its close neighbourhood (NOVOTNÁ 1962; PIVOVAROVÁ 1962; 1963; NOVOTNÝ – KOVALČÍK 1967; KOVALČÍK 1970). Their outcomes, mainly those of the large-scale systematic excavations conducted by J. Vladár (VLADÁR 1970; 1972; 1973; 1976), indisputably placed the site within the most important sources for the study of Bronze Age society and the phenomenon of fortified settlements in Central Europe (e.g. COLES – HARDING 1979, 77; FURMÁNEK – VELIAČIK 1980, 165; FURMÁNEK – VELIAČIK – VLADÁR 1991, 81–82; FURMÁNEK 2004, 69–70; MARKOVÁ – ILON 2013, 824–825; KIENLIN 2015, 38; JAEGER 2016, 101–138).

In the published literature we can find various opinions on the chronological classification of the settlement. The main reason for this disunity does not consist so much in the different opinions, but rather in the absence of a comprehensive publication or presentation of the available materials. The site excavator J. Vladár, even during his excavations and shortly after their end, defined in survey summaries that the settlement was inhabited over the course of multiple phases (he sometimes mentions two phases, at other times he mentions three phases) within the interval of stages Br A3 to Br B1. He also emphasized the presence of relics from the terminal transitional Otomani-Piliny stage and the Otomani-Suciu de Sus horizon (VLADÁR 1970; 1972; 1975; 1976). The other researchers defined the chronological framework of the site in a different way, supposing the duration of the settlement to be in stages Br A2 to Br B1 (NOVOTNÝ – KOVALČÍK 1967), or only in stage Br B1 (GAŠAJ 2002, fig. 10; ŠTEINER 2009, tab. XXXIV).

In order to define a more detailed relative-chronological framework of the settlement, we excerpt from the voluminous collection of finds several selected groups of ceramic and metal artefacts. Our selection involves only those artefacts, whose detailed analysis with regard to morpho-typology and decorative elements can provide some clues about the duration and intensity of settlement occupancy.

POTTERY

From the morpho-typological point of view, in the ceramic assemblage one can distinguish several variants of jugs, cups, bowls, amphorae, pots, and other ceramic forms, which together with their decorative motifs provide potential information about the relative chronology of the settlement (**Fig. 2**).

Among the earliest ceramic forms, which are represented in the collection in a series, are the sporadically occurring so-called barrel-shaped jugs (**Fig. 2: 1-5**; type B1 A by THOMAS 2008; type D3a and D3b by ŠTEINER 2009; type PC by OLEXA – NOVÁČEK 2013). In the collection from Spišský Štvrtok they are decorated with simple variants of decomposed spiral ornaments (**Fig. 3: 1**). There is also a remarkable ceramic vessel, which is decorated with an ornament in the form of connected spirals (**Fig. 3: 2**). Regarding the numerous analogies from cemeteries and settlements of the OFCC, the barrel-shaped jugs with continuous spiral decoration can be dated to the turn of stages Br A2/A3 and to stage Br A3 (THOMAS 2008, Taf. 89; ŠTEINER 2009, 60; OLEXA – NOVÁČEK 2013, 28).

As regards the frequency of occurrence, most distinctly represented are jugs with a high mouth, bulbous to biconical body, and a well-distinguished flat or concave bottom or a low foot (**Fig. 2: 6-9**; type B1 B and B1 D by THOMAS 2008; type D3c by ŠTEINER 2009). On these vessels we can identify numerous variations of ornaments, above all decomposed spirals, concentric motifs and motifs forming the upper semi-arches, which are concentrated around the plastic appliqués (**Fig. 3: 3-8**). The occurrence of analogies to this ceramic form in combination with decorative ornaments can be dated in general to stage Br B1 and to the beginning of stage Br B2 (THOMAS 2008, Taf. 89; ŠTEINER 2009, 61).

Less frequent are jugs on a low foot, with the maximum convexity shifted to the upper part of the body (**Fig. 2: 10**; type B1 DAC by THOMAS 2008; type D10 by ŠTEINER 2009). In the collection from the settlement area, this type is associated with geometrical incised-and-relief ornaments (**Fig. 3: 9, 10**) as well as with the only evidence of an incised festoon motif (**Fig. 3: 11**). Similar ornaments associated with this ceramic form are known from the terminal phases of the settlements in Košice-Barca and Nižná Myšľa, from the burial grounds in Streda nad Bodrogom (ŠTEINER 2003, tab. II; ŠTEINER 2009, tab. II: 23, 24, 26, 27) and Včelince (FURMÁNEK – MARKOVÁ 1998, obr. 8; FURMÁNEK – MARKOVÁ 2001, Abb. 6: 6, 8, 11), from Nagyzrovágy (KOÓS 2003, Taf. 10: 6) and from the milieu of the early phase of the Piliny culture – from the cemetery in Tornala (FURMÁNEK 1981, Abb. 5). The same geometrical ornaments as those on the jugs from Spišský Štvrtok are present on amphorae of the Piliny culture (FURMÁNEK 1977, Taf. VI: 10). The finds from selected contexts are mostly dated to the end of stage Br B1 and to the turn of stages Br B1 and Br B2 (FURMÁNEK 1981, 46; KOÓS 2003, 306; ŠTEINER 2003, 85; ŠTEINER 2009, 115–116).

The results of the traditional typological analysis of jugs, which represent the chronologically most sensitive group of ceramic vessels in the collection, were verified with the help of methods of formalised typological synthesis (according to MACHÁČEK 2001; ŠABATOVÁ 2007). The advantages of its application to the collection of jugs from Spišský Štvrtok consist in their presumed chronological significance and a relatively good differentiability with a high number of decorated individuals (79.1% fragments out of the total number are decorated). The input data comprised of the qualities of decorated individuals, whose state of preservation allowed one to carry out a formalised description of morphology (shape of the neck, body, bottom, etc.) and decoration (technology, localisation, orientation, composition of elements). Morphological and decorative attributes which were attested in a small number of individuals, and undecorated jug fragments were excluded from the analysis. These predefined selection

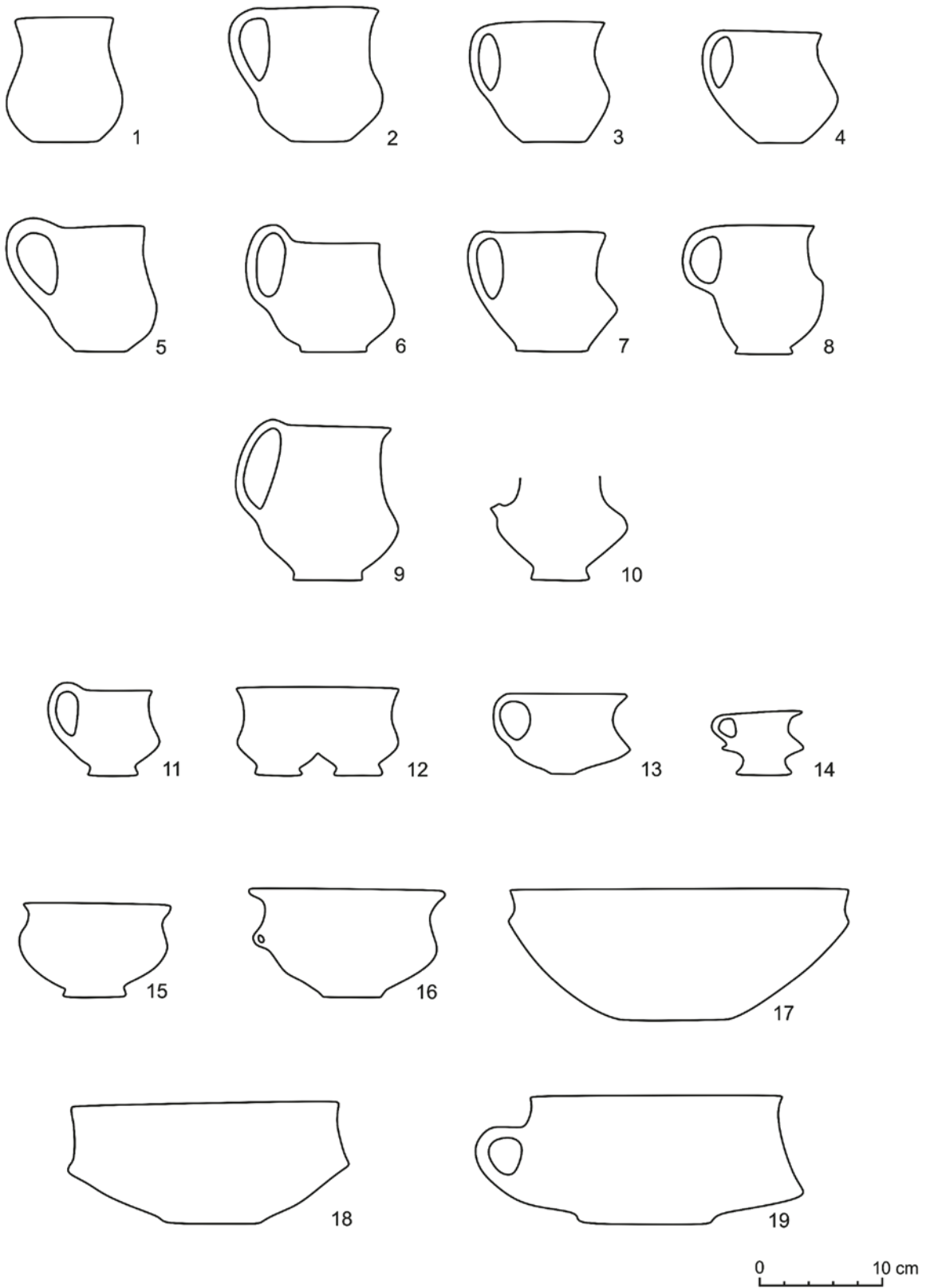


Fig. 2: Spišský Štvrtok. Selected forms of ceramic vessels.

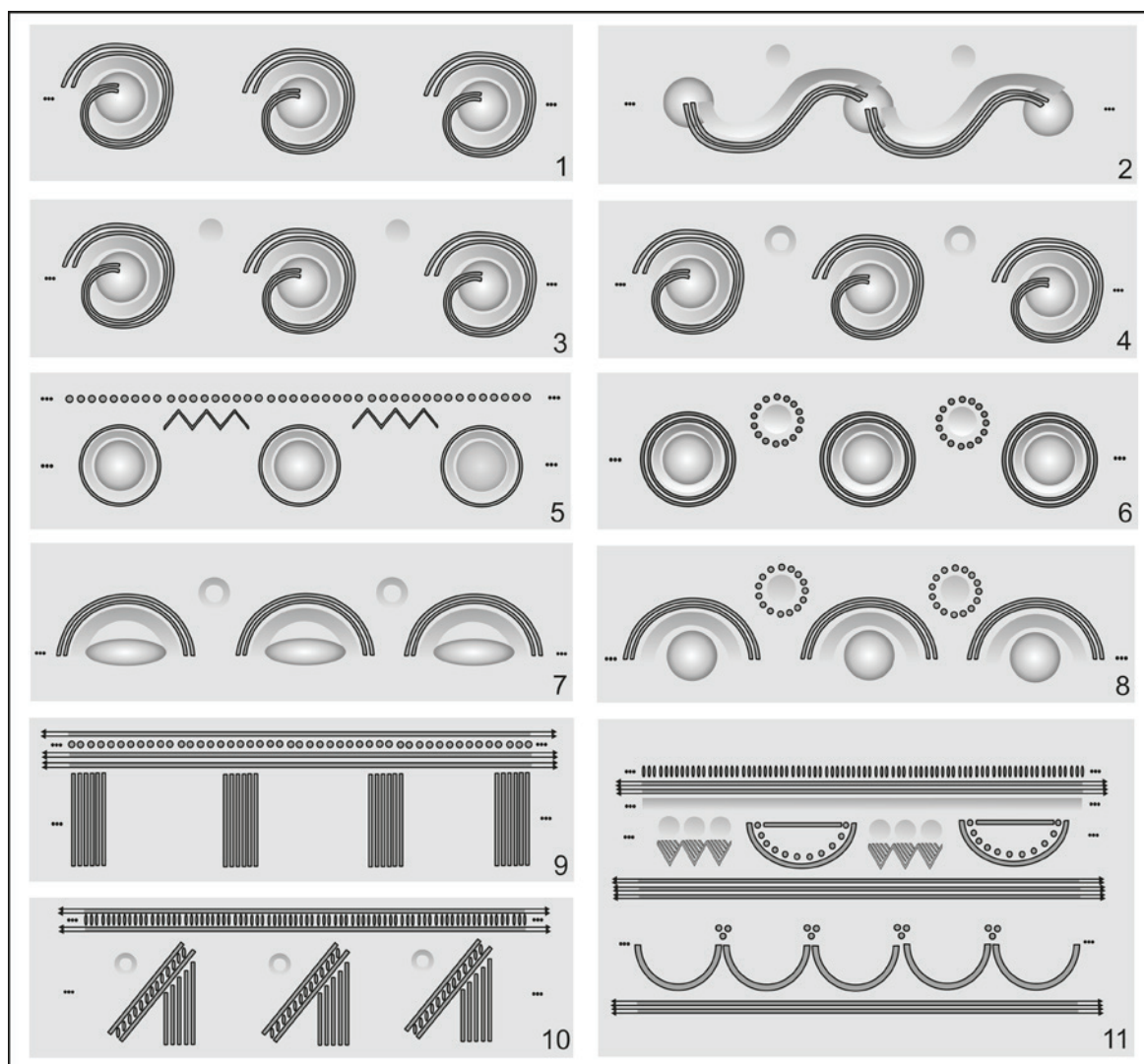


Fig. 3: Spišský Štvrtok. Decorative motifs on jugs.

criteria were met by a total of 131 individuals, which were subjected to the correspondence analysis. The resulting graph forms a parabola (**Fig. 4**). Its left side concentrates the chronologically earlier barrel-shaped forms decorated with connected and decomposed spirals. The centre of the parabola mostly concentrates forms with a high neck and with ornaments in the form of decomposed spirals. The right side of the graph, on the other hand, concentrates individuals with a more distinct profile, the bottom on a low conical foot, and geometrical decorative motifs. The clusters in individual parts of the parabola correlate with individual types of vessels distinguished by means of traditional typological analysis, whereby they independently prove their possible chronological causality.

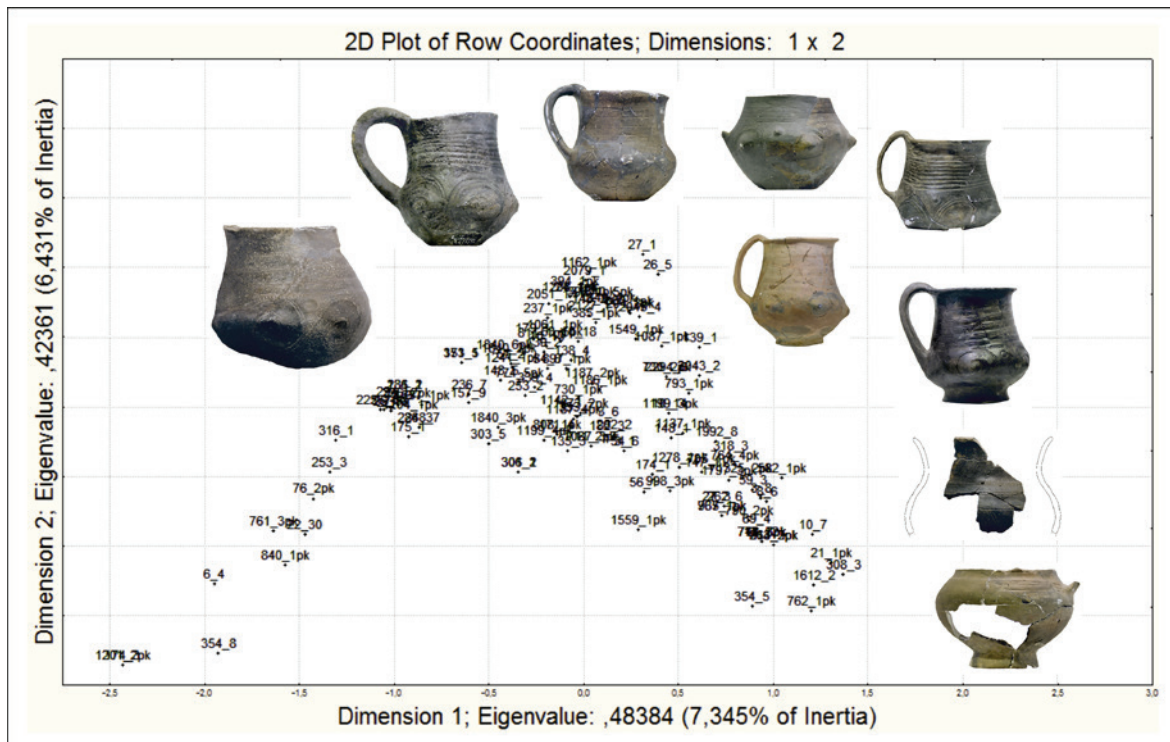


Fig. 4: Spišský Štvrtok. Correspondence analysis graph for jugs with representation of individual forms.

If we take into consideration that the presumed chronological development of individual forms of jugs is partly also reflected in the profile and decorative composition of cups, then we can evidence the forms on a low conical foot (**Fig. 2: 11, 12**) typical of stage Br B1 and the beginning of stage Br B2 (ŠTEINER 2009, 113–114, 118). Possible chronological relations are also indicated by the presence of analogous decorative motifs in the form of concentric elements and elements arranged in the upper semi-arch around a plastic appliqué situated in their middle, or horizontally oriented festoon motifs and incised zigzags (**Fig. 5: 1–9**).

The occurrence of a geometrical ornament (**Fig. 5: 11**) on the body of a cup with unspecified profile is quite remarkable. It can be associated with materials typical of the end of stage Br B1 and the turn of stages Br B1/B2 with numerous analogies on vessels from the terminal phase of the OFCC (ŠTEINER 2009, 115–118) and the early phase of the Piliny culture (FURMÁNEK 1977, Taf. III: 17; FURMÁNEK 1981). Within the same horizon probably also falls a decorated cup with an atypical distinctly biconical profile of the body and a slight indent in its lower part (**Fig. 2: 13, 5: 10**). Similar forms are known from funerary assemblages in Tornaľa (FURMÁNEK 1977, Taf. V: 8; VII: 16). With the latest settlement phase, we can associate a cup on a high hollow conical foot with a distinctly out-turned rim and sharply profiled biconical body (**Fig. 2: 14**), decorated with a simple incised ornament. Close analogies to this form, which are known among the material from the cemetery in Gelej (KEMENCZEI 1979, Taf. XIII: 14), are dated to the terminal horizon of the OFCC with the centre of occurrence in the material of the chronologically subsequent Tumulus cultures (BÓNA 1963 I, táb. 5; IV, táb. 2; KEMENCZEI 1979, 32).

Chronologically more sensitive forms of bowls seem to be those with a composite profile, whose occurrence in the material culture of the OFCC is dated from the turn of stages Br A2/

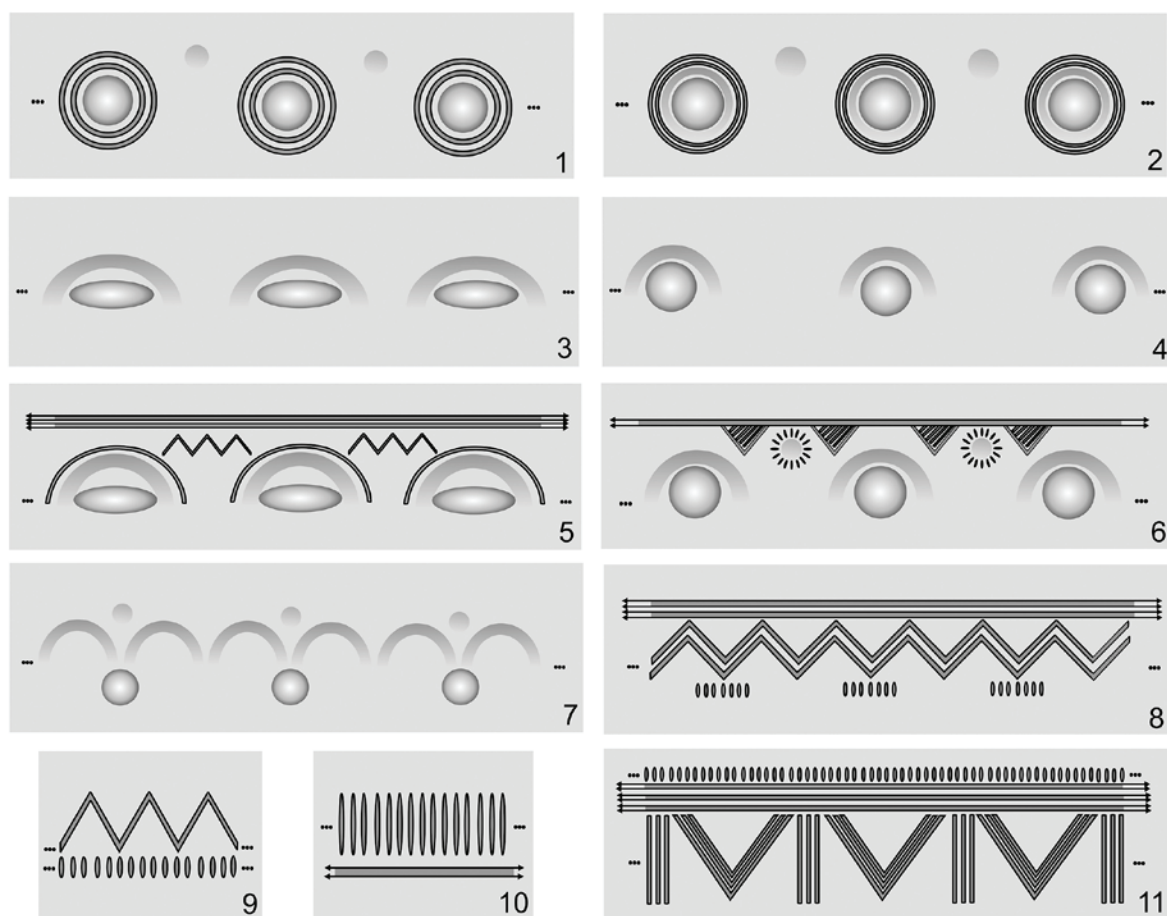


Fig. 5: Spišský Štvrtok. Decorative motifs on cups.

A3 onward. A significant element is the shape of the base, where the presence of a bottom on a low conical foot refers to the typological development of bowls in stage Br B1 (ŠTEINER 2003, 84; ŠTEINER 2009, 63–64; THOMAS 2008, Taf. 89; OLEXA – NOVÁČEK 2013, 24–26). Later forms of footed bowls are also present in the spectrum of vessels from Spišský Štvrtok (**Fig. 2: 15, 16**) in combination with decorative motifs represented by grooves forming the lower semi-arch concentrated around an applied thorn-like projection (**Fig. 6: 1**). Bowls with similar ornaments and morphology were found in the cemetery at Streda nad Bodrogom (e.g. POLLA 1960, Taf. XVII: 6, XXIV: 4, XXVIII: 3), as well as at the cemetery at Dunaújváros with a dating to the late Koszider period, which corresponds to the end of stage Br B1 (VICZE 2011, fig. 31, pl. 202: 10, 206: 6, 221: 3). A bowl analogous to forms with a low conical neck, distinctly profiled biconical body with the maximum convexity in its upper part, and with a flat bottom (**Fig. 2: 17, 18**) is known from the fill of the water well in Gánovce (VLČEK – HÁJEK 1963, fig. 6: 6). Numerous parallels to bowls with a similar morphology are also found among the material from the burial ground in Füzesabony (KÖSZEGI 1968, XVII: 6, XVIII: 2, XX: 3, XXI: 1, 4), as well as in the milieu of the early phase of the Piliny culture (FURMÁNEK 1977, Abb. 6: II). The atypical form of a bowl with a low conical neck, strongly profiled biconical body and a flat well-distinguished bottom (**Fig. 2: 19**), decorated with a linear groove and lobate plastic knobs on the maximum convexity, with three hemispherical indentations in the area above and between the knobs (**Fig. 6: 2**), probably cannot be dated earlier than to the

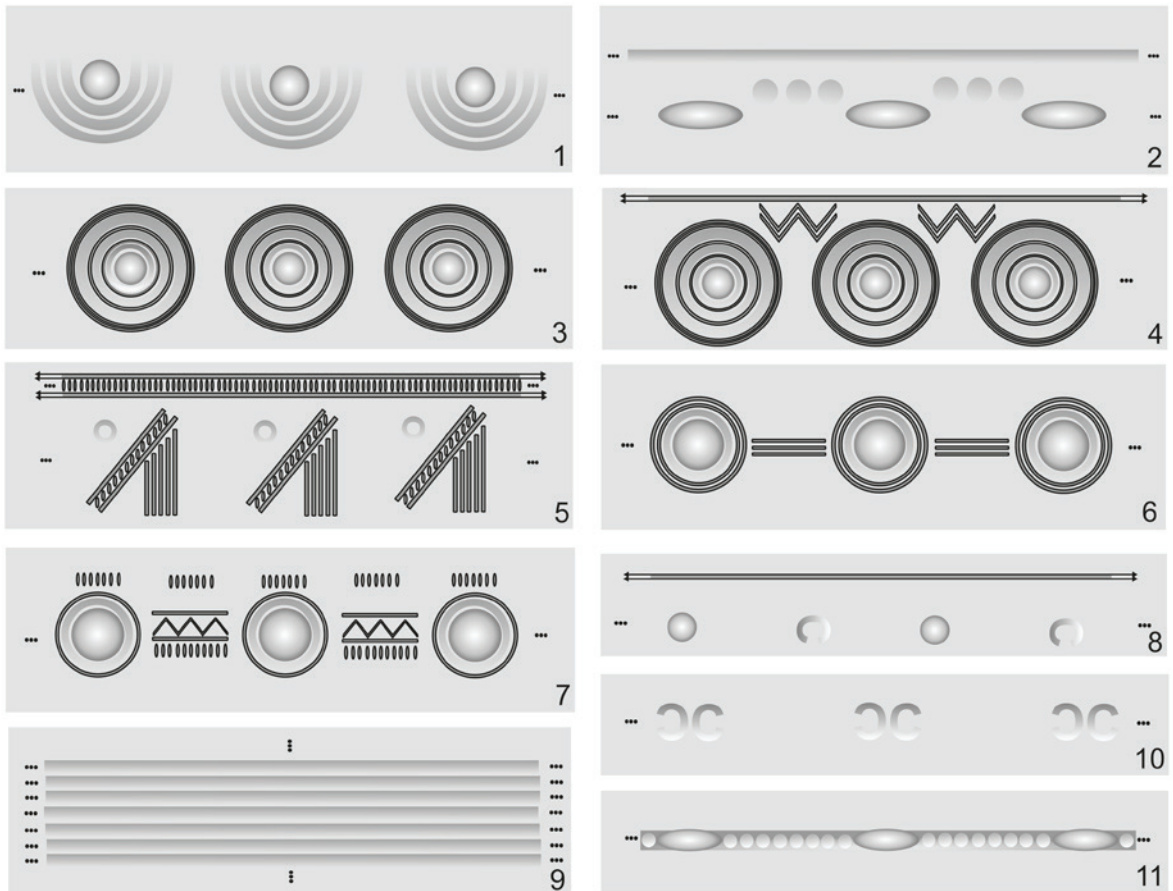


Fig. 6: Spišský Štvrtok. Decorative motifs on bowls (1, 2), amphorae (3-5), cylindrical vessels (6, 7, 9) and pots (8, 10, 11).

turn of stages Br B1/B2. Although we do not yet know any exact parallels, the morphology of the bowl corresponds to the full extent with the form of jugs from the terminal phase of the OFCC and early phase of the Piliny culture (FURMÁNEK 1977, Abb. 7: I). As does the decorative motifs in the form of three hemispherical indentations, which is typical of pottery from the Koszider horizon.¹

In the group of amphorae, we detected significant forms of decoration only in fragments with an unidentifiable morphology. Of particular remarkableness are variations of elements of incised-and-relief decoration oriented concentrically around thorn-like lugs (**Fig. 6: 3, 4**). An analogous form of decoration can be observed among the material from the settlement in Nagyrozvágy which is dated to stage Br B1 (KOÓS 2003, 306, Taf. 3, 4: 1). Also present are geometrical ornaments (**Fig. 6: 5**) with analogies to the amphorae of the Piliny culture (FURMÁNEK 1977, Taf. VI: 10), which allow one to shift the dating of the assemblage to the turn of stages Br B1/B2.

Even though the collection of pots from the settlement in Spišský Štvrtok does not significantly differ from cookware which are known from other published settlement assemblages of the OFCC (FISCHL 2006; ŠTEINER 2009; PRZYBYŁA – SKONECZNA 2013), we detected some chronologically sensitive elements mainly in decorative patterns. The decoration in the upper

1 Kind information by K.P. Fischl.

part of the vessel bodies in the form of plastic appliqué reminding one of the letter C (**Fig. 6: 8, 10**) is remarkable, in that it, in the same way as the sporadic occurrence of textile imprints roughening the surface of pots, indicates a relationship to the traditions of the Hatvan culture (TÁRNOKI 1988, pl. 13: 15, 16; ŠTEINER 2002). On the other hand, the numerous parallels of pots with applied finger-imprinted plastic ribbon from which protrudes a tongue-shaped knob (**Fig. 6: 11**) are known from burial grounds of Tumulus cultures in Tiszafüred and Skalka I with dating from the stage Br B2 (TOČÍK 1964a, 54, Abb. 4: 13; KOVÁCS 1975, 49, pl. 2: 19, 11: 131, 16: 170).

The analysis of ceramic forms ends with cylindrical vessels. Despite their fragmentary state of preservation, they are very well recognisable due to typical decorative motifs (**Fig. 6: 6, 7, 9**). The above-mentioned forms typically occur with the OFCC, and morphologically similar vessels are also evidenced in the milieu of the Hatvan culture (KALICZ 1968, Taf. CXXVIII) or Vátya culture (VICZE 1992, Abb. 56). Analogically decorated vessels are known from the settlements in Rozhanovce (GAŠAJ 1983, obr. 3), Košice-Barca (ŠTEINER 2009, tab. IV: 9–10), Túrkeve-Terehalom (CSÁNYI – TÁRNOKI 1992, Abb. 119), Maszkowice (PRZYBYŁA – SKONECZNA 2013, fig. 13), the site of Taktaharkány (BÓNA 1975, Abb. 190), from the context of a cremation grave in Draňov (GAŠAJ 1991, obr. 3: 1), and from an inhumation grave in Seňa (HORVÁTHOVÁ 2011, tab. III: 6). The above-mentioned finds are generally dated to the time span from the end of stage Br A2 to stage Br B1 (GAŠAJ 1983, 134; CSÁNYI – TÁRNOKI 1992, 164; ŠTEINER 2009, 69; HORVÁTHOVÁ 2011, 129) and so far we leave aside the evidence of their occurrence in chronologically later development phases of the OFCC (ŠTEINER 2009, 70).

METAL ARTEFACTS

The collection of metal artefacts, which comprises more than 200 objects made from bronze alloy and 37 objects made from gold, counts Spišský Štvrtok among the settlements with an exceptional array of metal artefacts. The amount and the morphological variability of artefacts represent a significant contribution not only to the study of the specifics of metallurgical production and its position in the technical system of the local society, but also to a more detailed determination of the relative-chronological framework of the settlement. In this context we assess selected bronze objects from the group of ring-shaped artefacts and the other components of clothing.

Within the group of ring-shaped ornaments, a Salgótarján armlet with asymmetrical terminals in the form of spirals (**Pl. 5/1: 1**) undoubtedly deserves attention, which was found in the settlement as a part of a hoard in the house 10/68, together with another two coil armlets (**Pl. 5/1: 6, 7**). The whole surface of the artefact, except the smaller spiral rosette, is decorated with incised semi-arches, lines and zigzags. In terms of typology, it corresponds to variant 2 of the archaic forms of type Apa, with the centre of occurrence in stage Br B (TARBAY 2015, 85). Asymmetrical armlets with the same morphology and similar decoration were found at the site of Áporka (DAVID 2002b, Taf. 96: 2), in the hoards from Hodejov I (FURMÁNEK 1977, Taf. XXII: 6), Stockerau (TARBAY 2015, fig. 13), and Včelince (FURMÁNEK 1977, Taf. XXXII: 15).

Spiral-shaped ornaments for legs and arms are represented by two morphologically identical coil armlets with terminals in the form of small discoid rosettes, which are made from metal rods of a triangular cross-section and D-shaped cross-section (**Pl. 5/1: 6, 7**). Both of these armlets were found in association with the Salgótarján armlet discussed above in a hoard inside the house 10/68. Close analogies are found in hoards containing typical artefacts of the Koszider horizon, which are generally dated to stage BIIIb, which is synchronous with stage Br B1 (MOSZOLICS 1967, 124), e.g. Hodejov I (FURMÁNEK 1977, Taf. XXI: 12), Kölesd (MOSZOLIC

1967, Taf. 32: 1), Kőröstetétlen (KOVÁCS 1977, Abb. 6: 2), Mezőberény (MOSZOLICS 1967, Taf. 67: 22), Stupava (MOSZOLICS 1967, Taf. 41: 9), Százhalombatta (SZABÓ 2015, III.37). A pair of identical coil armlets belonged to funerary equipment in the grave of a wealthy female at the site of Polgár (DANI *et al.* 2003, Abb. 3: 2, 5).

The other garment components are surprisingly represented by a decorative pin with a smooth needle and flat-hammered head curled into a double roll (**Pl. 5/1: 2**). The variants with a smooth needle are regarded as archaic forms of later roll-headed pins with a twisted needle. The occurrence of forms corresponding to the pin from Spišský Štvrtok in south-western Slovakia are associated with the classic phase of the Únětice culture (NOVOTNÁ 1980, 17–20), which is dated to the beginning of stage Br A2 (BÁTORA 2000, Abb. 692). Unlike the variants with a twisted needle, the earlier variants with a smooth needle only sporadically occur in the context of the OFCC, e.g. in Nižná Myšľa (OLEXA 2003, tab. XVIII: 3) or in Pecica (GÁVAN – IGNAT 2014, pl. IX: 13). Their early dating is confirmed also by their occurrence in a cemetery at Dunaújváros, which is dated to phase II of the Vátya culture, synchronous with stage Br A2 (VICZE 2011, fig. 31, pl. 122: 5).

Chronologically later forms are represented by a sickle-shaped pin (**Pl. 5/2: 1**) with the morphology and decoration of the pin-head corresponding to the variant Regelsbrunn (NOVOTNÁ 1980, 60–67; ŘÍHOVSKÝ 1983, 3–4; DAVID 1998b, Abb. 3, 4), which typically occurs in later phases of stage Br B (DAVID 1998b, Abb. 14, 15). An identical pin with quatrefoil ornamentation is evidenced in the collection of objects from the cemetery in Dunaújváros (ŘÍHOVSKÝ 1983, Taf. 1: 3, 4), in hoards from the sites of Mende (DAVID 2002b, Taf. 161: 2), Rákospalota (DAVID 2002b, Taf. 187: 1), Sânnicolaul Român (DAVID 2002b, Taf. 146: 3), Simontornya (ŘÍHOVSKÝ 1983, Taf. 2: 7), and in Vyškovce nad Ipľom (DAVID 1998b, Abb. 3: 3, 4), where the last-mentioned example is already dated to the early phase of the Tumulus cultures which did not begin until the stage Br B1 (OŽĎÁNI 1986, 29; OŽĎÁNI 2015, 137–139).

As a specific feature of the OFCC, or more precisely of its Koszider horizon, we can regard the occurrence of disc-headed pins, the so-called Barca-type pins (**Pl. 5/1: 3–5**; GÁVAN 2016, fig. 2). Analogous finds are frequent in layer I of the settlement at Košice-Barca (NOVOTNÁ 1980, 48–49), which is dated to stage Br B1 (ŠTEINER 2009, 99–107), in the settlement at Nagyrozvágy (DAVID 2002a, 446), in the burial grounds at Bracovce (NOVOTNÁ 1980, 48), Nižná Myšľa (OLEXA – NOVÁČEK 2015, obr. 11: 18, 19), Szabolcs (DAVID 2002b, Taf. 267: 4), and Tiszafüred (KOVÁCS 1982, Abb. 6: 8). The occurrence of similar pins still continued in funerary assemblages from the early phase of the Piliny culture at the sites of Tornaľa (FURMÁNEK 1977, Taf. XI: 18) and Zagyvapálfalva (KEMENCZEI 1967, Taf. XXVII: 1), which allows us to extend their presence as well into the following stage Br B2 (FURMÁNEK 1977, 277–278).

Pendants in the collection of finds from the settlement are represented by two variants: flat moon-shaped pendants (**Pl. 5/2: 2–5**) and open heart-shaped pendants (**Pl. 5/2: 6–12, 14, 15**). The former ones – moon-shaped pendants, except the undecorated forms, are covered on the whole surface with diverse variations of punched beading. Finds with a similar ornamentation come from Košice-Barca, from the hoards in Hodejov I (FURMÁNEK 1980, 17), Nižná Myšľa (OLEXA 2003, tab. XXIII: 5) and from the funerary assemblage from Zsadány (MOSZOLICS 1967, Taf. 71: 1, 2; DAVID 2002b, Taf. 151: 1, 2). Although the occurrence of the above-mentioned two variants of pendants is dated identically to the time span from the end of stage Br A3 to stage Br B1 (FURMÁNEK 1982, 321), among the open heart-shaped pendants we can also find forms with an indicated spine as well as forms without a spine (**Pl. 5/2: 12, 14, 15**). These last-mentioned pendants might probably be regarded as later forms of the stage Br B1, which survived until the beginning of stage Br B2 (FURMÁNEK 1982, 322).

The collection also comprises a unique rectangular piece of sheet metal with rolled-up edges, decorated with punched beading arranged in a zigzag motif (**Pl. 5/2: 19**). The artefact was part of a hoard deposited in the so-called stone box in the house 29/72 (VLADÁR – ORAVKINOVÁ 2015, obr. 12, 16). As regards its functional purpose, it might have belonged to a set of belt fittings (FURMÁNEK 1977, 296; KOBAL 2000, 70). Parallels to the artefact are found in the hoard from Hodejov I (FURMÁNEK 1977, Taf. XXII: 8), which is dated to the final phase of the Otomani-Piliny horizon (FURMÁNEK – VLADÁR 2006, 189). Such an artefact also occurs in the hoard from Vyškovce nad Ipľom (BALAŠA 1955, 467, obr. 208), which is already dated to the early phase of the Tumulus cultures (OŽĎÁNI 1986, 29), as well as in the cemetery of the Tumulus culture in Skalka I, with the origins of burial activities in stage Br B2 (TOČÍK 1964a, 54, Abb. 9: 17). Identical objects outside the territory of Slovakia are evidenced in the hoards from the Ukrainian sites of Podgorjany and Kolodne, which are dated to the phase Podgorjany II (KOBAL 2000, 83, 93, Taf. 3: 65, 4: 15). They are coeval with the Koszider horizon, which is characteristic of stage Br B (KOBAL 2000, 15, Abb. 1).

From the same hoard in the house 29/72 also come five pieces of cone-shaped sheet bronze – tutuli (**Pl. 5/2: 13, 16–18**). Four pieces among them are decorated with circumferential punched beading combining both zigzags and straight lines. An analogous find is known from the cemetery of the OFCC in Streda nad Bodrogom (POLLA 1960, Abb. 15: 7), which is dated to the interval between the later classic phase and the transitional Otomani-Piliny horizon, i.e. from stage Br A3 to the turn of stages Br B1/B2 (ŠTEINER 2003, 85). Similarly, decorated tutuli were also contained in the extensive hoard of weapons and jewellery in Hodejov I (FURMÁNEK 1977, Taf. XXII: 6), which is dated to the Koszider horizon, i.e. the transitional Otomani-Piliny horizon (FURMÁNEK – VLADÁR 2006, 189). The occurrence of tutuli continued in the chronologically subsequent Piliny culture (FURMÁNEK 1977, 296).

RELATIVE-CHRONOLOGICAL FRAMEWORK OF THE SETTLEMENT IN THE CONTEXT OF THE CULTURAL DEVELOPMENT IN THE CARPATHIANS

Although the model of relative-chronological classification of the settlement in Spišský Štvrtok is derived almost exclusively from the traditional morpho-typological analysis of materials, it yielded important information. This knowledge, exemplified by a collection of selected finds, completes the overall picture of the cultural and chronological relations of the OFCC in the region of the Poprad and Hornád basins. Most significant, in terms of relative chronology, proved to be the assemblage of ceramic and metal artefacts. Summarising the outcomes, we can postulate that the site was inhabited from the end of stage Br A3, over the whole stage Br B1 until as late as the turn of stages Br B1 and Br B2, or until the beginning of stage Br B2.

The characteristic material content of individual stages is clearly identifiable in both of the above-mentioned assemblages. Within pottery, they can even be defined separately in various morphological groups, i.e. jugs and mugs, cups and beakers, bowls and pots. The overlap of chronologically sensitive elements indicates a continuous settlement activity at the site in question (**Fig. 7**). The isolated occurrence of old-fashioned artefacts, such as, for example, the roll-headed pin with a smooth needle, might testify to the preservation of older objects in chronologically later find assemblages, whereby it points to possible vertical chronological relations. The sporadic occurrence of pottery with elements of the Hatvan culture indicates the survival of traditions, or interactions with the Hatvan culture, whose latest manifestations probably survived until this period in an enclave in northern Hungary and in the adjacent



Fig. 7: Spišský Štvrtok. Schematic diagram of the distribution of selected artefacts with regard to Reinecke's relative-chronological system.

part of Slovakia (FURMÁNEK 1973, 50; TÁRNOKI 1986, 142; FURMÁNEK – VELIAČIK 1991, 32; BÓNA 1992, 17; GUBA 2016).

According to the current relative-chronological classification systems used with the materials of the OFCC, we can class the settlement in Spišský Štvrtok with the later classic horizon, post-classic horizon, and Otomani-Piliny horizon by P. Šteiner (2009, 76–119), the later classic stage, post-classic stage, and terminal stage by L. Olexa and T. Nováček (OLEXA – NOVÁČEK 2013, 12), and with stages 3 to 5 by M. Thomas (2008, 341–348). Considering the duration of the individual phases, defined approximately in terms of relative chronology (ŠTEINER 2009, 118), we can only indicatively suppose that the settlement occupancy at the site did not last longer than 100 to 150 years. The temporary character of settlement is indirectly evidenced by the very rare superpositions of settlement features, or a higher vertical stratigraphy.

The earliest elements identified in the decorative pottery assemblage fall in the stage Br A3 (Fig. 7). The said stage was introduced into the Slovak adaptation of the Bronze Age Reinecke chronological scheme by A. Točík as a result of source-based evaluation of the Maďarovce culture in south-western Slovakia (Točík 1964a). Subsequently, it was the subject of several discussions in which the paucity of evidence for defining this stage was pointed out, primarily among metal artefacts, which generally characterize broader chronological intervals (BENKOVSKY-PIVOVAROVÁ 1976; 1982). Unlike south-western Slovakia, wherein the stage Br A3 is still perceived as puzzling, in the OFCC, relative-chronological classifications have been implemented more or less steadily. Apart from the standardized morphotypes of bronze artefacts, the decorative motifs of the OFCC fineware are, compared to the ceramic style of the Maďarovce culture, attributed with a higher informational value in terms of rela-

tive chronology. The observed variability regarding pottery decoration is one of the pillars of a detailed morpho-typological and potentially chronologically sensitive classification of the OFCC's material culture noted in several settlements and burial grounds. Moreover, the stage Br A3 comprises dated material content of the later classic horizon, which is, among other elements, typical owing to the development of spiral ornamentation (ŠTEINER 2003; 2009; OLEXA – NOVÁČEK 2013; 2015; 2017; NOVÁČEK 2018). In these instances, the usage of stage Br A3 or any other equivalent nomenclature reflected in the transregional relative chronological schemes can be meaningful.

The analysis of the material culture revealed in the morphology and ornamentation of ceramic and metal artefacts a significant presence of elements, which can be associated with the turn of stages Br B1 and Br B2. The above chronological range is in a wider geographic context already connected with the early phase of the Piliny culture (FURMÁNEK 1977, 321–329; FURMÁNEK 1981; FURMÁNEK 2015, 185; FURMÁNEK – MITÁŠ 2016) and with the early phase of the complex of the Tumulus cultures (OŽDÁNI 1986; 2015). The causality is most distinctly evidenced by the similarity between a part of the collection of metal artefacts from the settlement and the artefacts from the hoards in Hodejov and Vyškovce nad Iplóm. The latest pottery from the site contains elements, which are characteristic of the terminal phase of the OFCC and the eastern groups of Tumulus cultures (tumulus – post-Otomani style; PRZYBYŁA 2009, 120–123). The formal analysis of the material culture, on the other hand, did not prove the presence of elements which would clearly refer to some relationship with the traditions of the Suciú de Sus culture (DEMETEROVÁ 1984; FURMÁNEK – VELIAČIK 1980, 165; 221; FURMÁNEK 1997; 2015, 187–189).

The finds from the settlement in Spišský Štvrtok herewith confirm the continuity of the development and traditions in the material culture from the end of the Early Bronze Age to the Middle Bronze Age (e.g. TOČÍK – VLADÁR 1971, 393; FURMÁNEK 1977, 322–325; FURMÁNEK 2015, 185; FURMÁNEK – VELIAČIK 1980, 165; 1991; FURMÁNEK – VELIAČIK – VLADÁR 1991, 84; DAVID 1998a; ŠTEINER 2009, 115–118; VICZE 2013), above all, the interconnection between the material culture of the OFCC and the Piliny culture. At the same time, it proves the legitimacy of the distinction of a transitional Otomani-Piliny horizon as well as for the ecumene living in the Spiš region.

The argumentation is limited by the fact that from the geographic area in question we currently do not know any comprehensive evaluation and publication of a more extensive collection of pottery assignable to the early Piliny culture, early Tumulus culture or Suciú de Sus culture. Our conclusions are based almost exclusively on analogies to funerary ceramics, which, however, in their morpho-typology and variability do not necessarily always correspond with the primary utility forms from the settlements.

CONCLUSION

The current state of research on the chronology of the OFCC cannot be regarded as satisfactory. We have to deal with several different relative-chronological classifications as well as with the low number of published absolute dates. Moreover, the archaeological contexts which are dated by methods of absolute chronology mostly cannot be confronted with the results of an in-depth relative-chronological analysis of the material culture, and vice versa. Analytical tools, like the periodisation system by P. Reinecke, when unified and systematically used, contribute to more efficient communication among experts at an international level. Their application to older collections, which are exemplified by the finds from Spišský Štvrtok, helps to analyse

and evaluate such collections in a wider cultural and chronological context. At the same time, it generates a suitable base, which after the addition of ^{14}C dates might contribute to a more exact interpretation of the chronological aspects within a wider area of East-Central Europe.

ACKNOWLEDGEMENTS

This study was supported by two research projects: ‘The environment and settlement networks of late Prehistory on the example of selected periods and regions of Slovakia’ (APVV-18-0276) and ‘Economy and society in the Bronze Age in the area of middle Danube according to archaeological and environmental data’ (VEGA 1/0100/19). We would like to express our appreciation to Klára Pusztainé Fischl and Václav Furmánek, for their kind and beneficial consulting of chosen pottery forms. We wish to also thank Anita Kozubová for her constructive comments on the manuscript.

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