SPRAWOZDANIA ARCHEOLOGICZNE 73/1, 2021
PL ISSN 0081-3834
DOI: 10.23858/SA/73.2021.1.2596

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LINEAR POTTERY CULTURE FACE VESSEL FROM THE SITE BISKUPICE 18, SOUTHERN POLAND

ABSTRACT

Korczyńska M., Kenig R., Nowak Marek, Czekaj-Zastawny A., Nowak Maciej and Moskal-del Hoyo M. 2021. Linear Pottery culture face vessel from the site Biskupice 18, southern Poland. *Sprawozdania Archeologiczne* 73/1, 389-420.

This paper presents the stylistic analysis of a unique face vessel fragment, found at a recently excavated settlement of the Linear Pottery culture near Biskupice, located in the Carpathian foothill region in southern Poland. The evaluation is based on a multivariate analysis of the stylistic features of 130 human face vessels from 91 Central European Neolithic sites of the Linear Pottery culture and the Alföld Linear Pottery culture, and is conducted with the help of multiple correspondence analysis (MCA). The main objective of the research is to find the closest analogies of the Biskupice by tracking similarities between the manner of execution of the combination of facial elements and accompanying motifs appearing on the Biskupice vessel and on other depictions of the human face. This investigation also aims to make inferences about the chrono-cultural connections of the first agrarian societies in the area of the Carpathian foothills with other regions of the Linear Pottery world.

Keywords: Linear Pottery culture, Early Neolithic, anthropomorphic representation, face vessels, multivariate statistics

Received: 29.01.2021; Revised: 18.04.2021; Accepted: 19.00.2021

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1. INTRODUCTION

Figural representations of humans in form of both figurines and ornaments on vessels, including the so-called face vessels, are relatively common findings in the Early Neolithic of South-Eastern and Central Europe. Figural art of the first agricultural societies in these territories has been the subject of intensive research since the 1960s (*e.g.* Höckmann 1967; 1966; Kaufmann 1976; Gimbutas 1989; Bánffy 1991). In the 21st century, this topic was the subject of three important monographs, which were focused on: (1) anthropomorphic figurines and vessels with figural motifs of the Linear Pottery culture (LBK) (Becker 2011), (2) stylistics of Early – Late Neolithic anthropomorphic vessels from the Near East, through the Balkans, to Central Europe (Schwarzberg 2011) and (3) the Neolithic and Chalcolithic figural representations from South-Eastern Europe (Hansen 2007). Early Neolithic figurines were also recently studied in Macedonia (Naumov 2015) and Saxony (Lehmann 2018). The majority of recent works follow a typo-chronological stylistic analysis (*e.g.* Beljak-Pažinová 2018; Csengeri 2011; 2013; 2014), but there are also studies that include an emblematic and ideological interpretation of ornamental motifs (*e.g.* Domboróczki 2013) or the symbolic meaning of pottery (*e.g.* Tomašovičová 2018; Sebők 2014, 2018).

It should be noted that there are noticeably fewer examples of vessels with anthropomorphic ornaments in the LBK compared to its "eastern" counterpart, *i.e.* the Alföld Linear Pottery culture (ALPC), not to mention Early and Middle Neolithic cultures in the Balkan Peninsula. In the territory of Poland, such vessels are rare, *i.e.* only a human figure motif engraved on a spherical LBK bowl from Brzezie 17 (Czekaj-Zastawny 2014, fig. 39), the LBK face vessel from Żegotki (Czerniak 1998, fig. 6) and an abstract example from Zwięczyca, related to the Bükk culture (Sebők 2014, 80-81, fig. 20: 7) can be quoted. Therefore, the appearance of a new face vessel with horn-liked protrusions from Biskupice is an exceptional find of the Early Neolithic period north of the Carpathian and Sudety Mountains.

The aim of this article is to present a stylistic analysis of this new find in the context of other Early Neolithic representations from Central Europe in order to determine the degree of similarity of the Biskupice face vessel with similar human representations of the LBK and ALPC. This work is based on a multivariate statistical analysis of the complex of elements of the human face and accompanying stylistic features. As a result, the closest analogies to the Biskupice artefact, as well as the area of their occurrence, will be shown.

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2. FIND CONTEXT

The site at Biskupice is located in the Wieliczka Foothills (Kondracki 1998), on a loess-mantled hummock of south-eastern exposition, surrounded by two streams: on the south by the Królewski Brook, a left-hand tributary of the Raba River, and on the north by a nameless one (Fig. 1). This site belongs to the LBK settlement macroregion located in the loess uplands of the Upper Vistula River Basin (Fig. 2), which covers a number of important settlement clusters on both sites of this river (Czekaj-Zastawny 2008; 2009). One of the significant aggregations is located on the right bank of the Upper Vistula River in the Raba River Basin (*i.e.*, Brzezie 17, Brzezie 49, Targowisko 11/12, Targowisko 13, 14 and 16, Szarów 9; Czekaj-Zastawny 2008, 41; Czekaj-Zastawny 2014; Lityńska-Zając and Czekaj-Zastawny 2020). However, the Biskupice site lies outside of the main cluster of the settlement zone (Fig. 3), on the left bank of the Raba River (Czekaj-Zastawny 2008, 88). Its location on a relatively high hill (*ca.* 312 m.a.s.l.) is quite a unique feature in this zone, more closely resembling the cluster of settlements situated in more southern areas of the foothills, near the Dunajec river (Czekaj-Zastawny *et al.* 2020).

The site was discovered during systematic field surveys (long-term campaign: the Polish Archaeological Record/AZP) and was chronologically attributed to the Early

Fig. 1. Biskupice, site 18. Aerial photography of the trench in season 2020 with Biskupice village in the background (photo: M. Korczyńska)

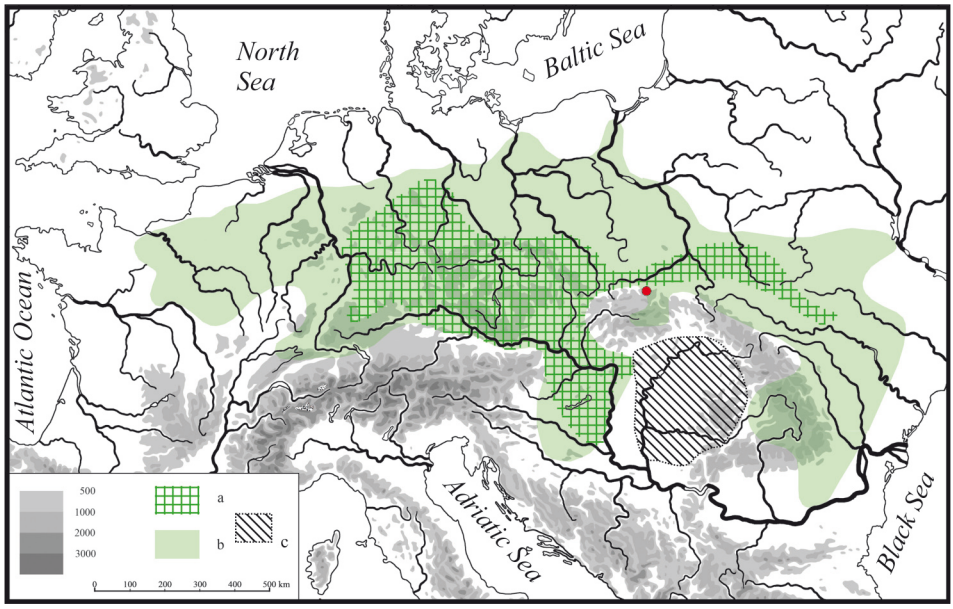

Fig. 2. Extent of the LBK and the ALPC; a – extent of the LBK in the oldest phase; b – maximal extent of the LBK; c – extent of the ALPC (Czekaj-Zastawny *et al.* 2018; Hansen 2007, fig. 181, modified)

Neolithic and the Roman period. In 2013, rescue excavations, related to construction works, were conducted on the site. In one small trench, neither artefacts nor features were found (Lasota-Kuś 2013), while in the other one, several dozen archaeological features were documented, representing a well preserved LBK household unit (longhouse with post construction and elongated pits). The stylistic analysis of the pottery showed that all features are related to the Želiezovce phase of the LBK (Czerniak 2014). The great preservation of the LBK features, as well as the exceptional location of the settlement within the region called for a more detailed excavation, which was conducted in 2020. The excavation covered an area of 1,100 square meters, in which the remains of three LBK household units were discovered.

The face vessel was found in pit no. 25, which is functionally connected to house no. 2 (Fig. 4). The house was located in the eastern part of the trench, and was oriented along a NE-SE axis, with a deviation of about 28° from the north. Traces of 37 posts, arranged in five rows, were documented. Seventeen of them belonged to the three internal lines of posts supporting the load-bearing structure, while 20 smaller ones belonged to two outer rows connected with the construction of the walls. The diameter of the first group of postholes reached 40 cm, whereas the diameter of the outer rows was about 10 cm. In several cases, pits for the posts were also visibly preserved, but only in the internal rows. Moreover, six lateral pits were found. Thanks to the well-preserved traces of the house, it was

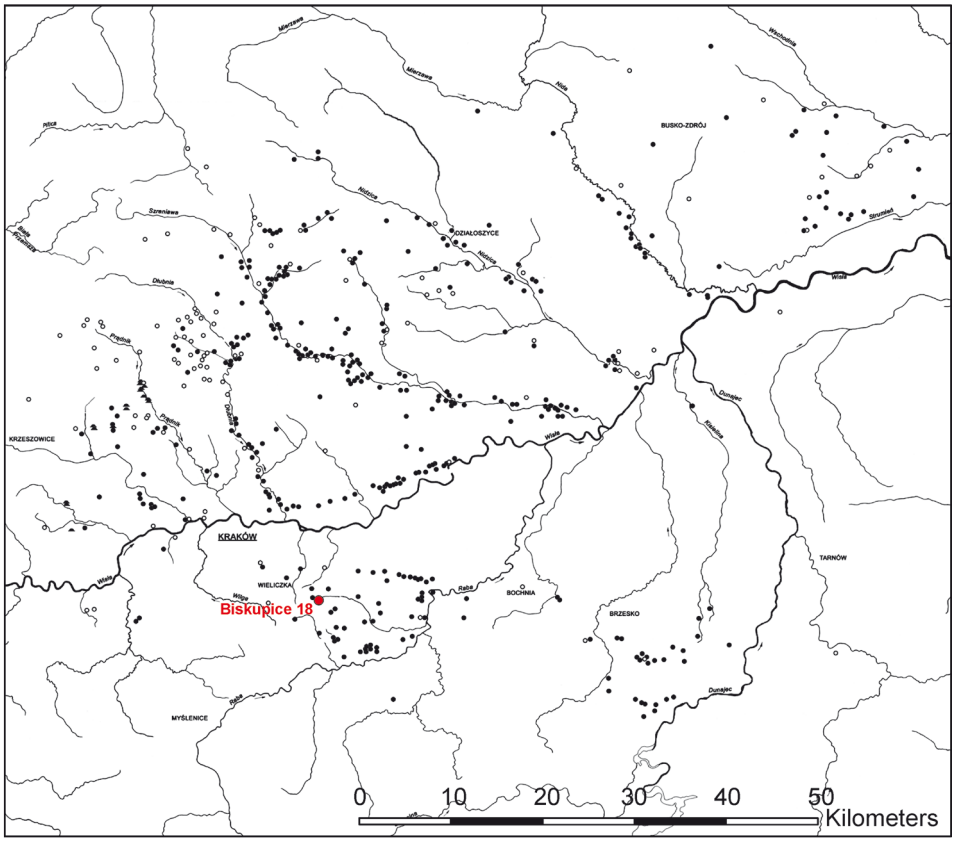

Fig. 3. Location of the site in Biskupice against the background of the LBK settlement in western Lesser Poland (Czekaj-Zastawny 2014, fig. 57)

possible to reconstruct its size. Originally, the house was rectangular, and about 6 m wide. Its length was approximately 11 m, placing it among the shortest constructions known from LBK settlements in the Upper Vistula Basin (see: Czekaj-Zastawny 2008, 39-42). According to the division proposed by P. J. R. Modderman (1986, fig. 29), this house may be classified as Type 2 (*i.e.* with one corridor on the north side) based on the arrangement of the all posts of the structure. A house of the same type, in terms of both the layout of the internal space and the length, is known from the site Brzezie 17, a few kilometres east of Biskupice (Czekaj-Zastawny 2008; Czekaj-Zastawny 2014).

Feature 25 is located in the eastern part of house no. 2 (Fig. 4). It is an elongated pit (type 4 according to: Czekaj-Zastawny 2008, 55), measuring approx. 4 × 2 m, with a depth of approx. 40 cm. The vertical profile was shaped like a trough, being more shallow in the north (Fig. 4: B). The fill of the feature was dark-brownish, with numerous smaller

Fig. 4. Biskupice, site 18. Orthophotograph of house no. 2 (A) and the cross section of feature no. 25 (B) (photo: M. Korczyńska)

inclusions, as well as with a significant number of artefacts. In this feature, apart from the face vessel, pottery (373 fragments) and lithic materials made of Jurasic flint (237 artefacts) and obsidian (one example) were discovered (Fig. 5). Also, stones (48 fragments) and daub (5 pieces) were documented. Figure 5 shows the exact position of the face vessel

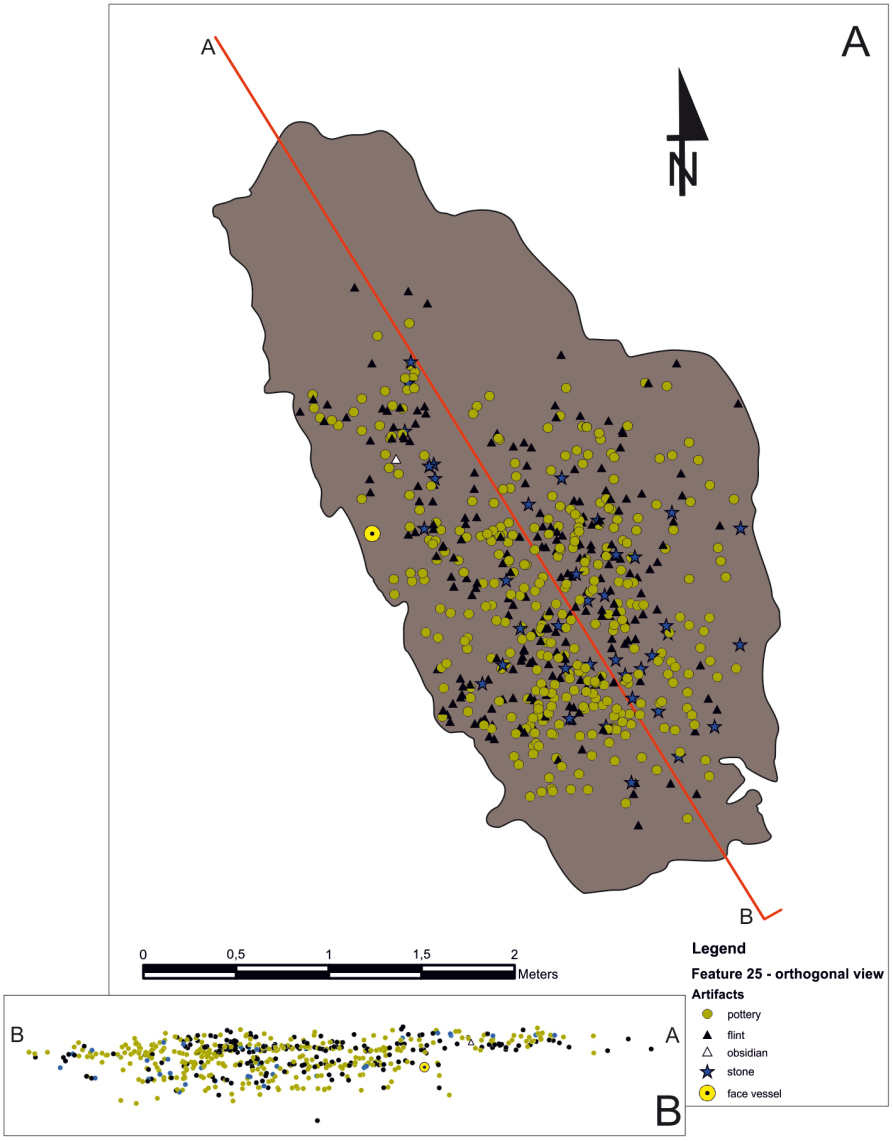

Fig. 5. Biskupice, site 18. Location of artifacts in feature no. 25 in plan view (A) and section view (B) (prepared by: M. Korczyńska)

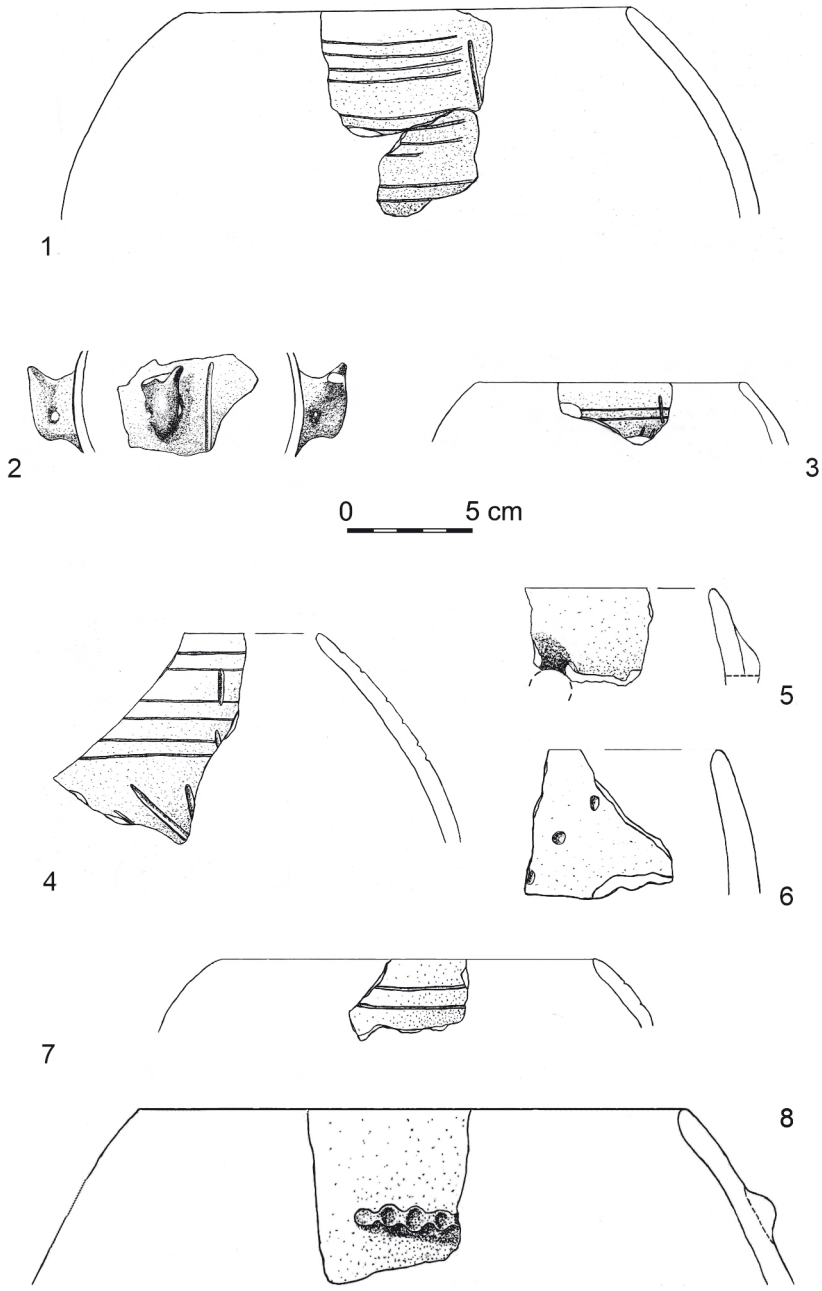

Fig. 6. Biskupice, site 18.
Selection (1-8) of characteristic pottery from feature no. 25
(illustration by: R. Kenig)

within the pit. It was noticed that this pottery fragment appeared near the wall of the house, and that there were no other artefacts in its immediate vicinity. In general, however, the face vessel was embedded in the horizontal layer with the largest and best-preserved potsherds, concentrated mainly in the southern part of the backfill.

The analysis of all the pottery fragments found in pit no. 25 – including their dimensions, weight, state of preservation, and technology, as well as the presence / absence of decorations, and the reconstruction of possible vessel types – showed the structure of the ceramic inventory. A minimum number of 73 different vessels was determined based on rim fragments. These represent five technological groups (according to Czekaj-Zastawny and Rauba-Bukowska 2014; Rauba-Bukowska and Czekaj-Zastawny 2020). With regard to form, spherical bowls, open bowls, vessels with a high neck, footed vessels, and a miniature vessel were discerned (Fig. 6). It is worth mentioning the presence of fragments of two vessels with holes below the rim, like a kind of short funnel (Fig. 6: 5). Much of the pottery is ornamented, including 35 pieces with engraved lines (mainly in the form of arched lines), but there are also other motifs, such as simple cuts, especially under the rim (Fig. 6: 1, 3, 4). The second type of ornament, present on 25 fragments, is that of plastic decorations, such as bumps, finger and nail imprints, and clay bands (Fig. 6: 8). Three of the above-mentioned potsherds are ornamented with both engraved lines and plastic additions in the form of bumps.

The diagnostic features of the pottery (style and technology) indicate that the assemblage is related to the late phase of LBK, namely the Želiezovce phase (*i.a.* Pavúk 1969, fig. 6; Kadrow 2020, 147; Moskal-del Hoyo *et al.* 2017; Rauba-Bukowska and Czekaj-Zastawny 2020).

3. THE FACE VESSEL FROM BISKUPICE

As already mentioned, apart from the above-mentioned ornamented sherds, in feature 25, a fragment with an almost complete image of a human face was preserved (Fig. 7 and 8). The shape of the rim indicates that the ornament was placed on a medium-walled (thickness *ca.* 8 mm) spherical bowl. The vessel belongs to the category of larger forms, being not as delicate as the so-called tableware. The entire countenance is inscribed in the shape of the letter "M", formed by engraved lines, which is considered in this study as the "main motif". The details of the face were shaped by the linear arrangements of convex clay bands. One of the elements, parallel to the rim of the vessel, forms an eyebrow with small conical protrusions on both edges (*ca.* 2 cm in length). In the centre, a vertical convex band shapes the nose. Even the nostrils are visible in its lower, slightly widened part. On both sides of the nose, just below the brow, there are two short, horizontal lines symbolizing the eyes. The left horn-shaped protrusion is complete, while the right one has a broken tip. The preserved part of the pot ends just below the "nose". On the outer part of

Fig. 7. Biskupice, site 18. Face vessel from feature no. 25 (photo by: A. Walanus)

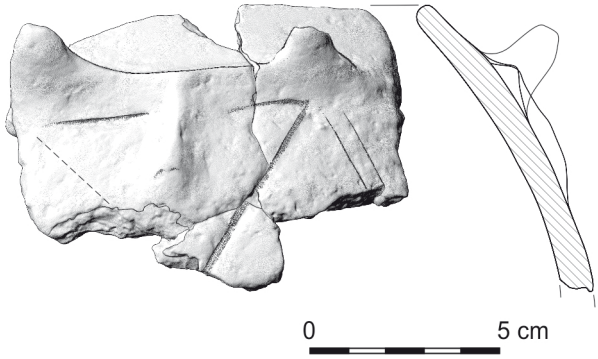

Fig. 8. Biskupice, site 18. 3D Model of the face vessel
(prepared by: M. Korczyńska, based on data obtained by: Jakub Gawryjołek
from Centrum Druku in Kraków)

the vessel, the original surface has only been preserved partially, and the inner surface is abraded. The vessel was made of a fabric that contains a relatively high amount of organic and chamotte temper. Coarse sand is also visible, but rather as a natural component of the clay raw material.

Based on the presence of two distinct protrusions connected with the eyebrows, which resemble horns, the representation from Biskupice can be regarded as one of the so-called "mixed creatures" – term used for the representations with human traits, which are sup-

plemented with stylistic elements that resemble animal features – for example, horn-like protrusions (Becker 2011, 119). Vessels with representations of "mixed creatures" (in German "Mischwessen", *ibidem*) spread from middle Germany through the Czech Republic to Austria (Fig. 9) are dated to the Music-Note phase, as well as to the Želiezovce style/phase/group. Until now, from the territory of Poland and Slovakia, such creatures were only known from two settlements: Żegotki (Fig. 10: 1; Czerniak 1998, fig. 6) and Spišský Hrhov (Soják 2000, tab. 32).

4. THE STYLISTIC FEATURES OF THE HUMAN FACE MOTIF FROM BISKUPICE

4.1. Materials and methods

The stylistic analysis of the human face motif from Biskupice, presented in the context of other LBK and ALPC face vessel finds, aims to reveal which Central European pottery tradition has the greatest influence on the style of the find from Biskupice. In order to reach this goal, a multivariate analysis was carried out. It was based on multiple variables,

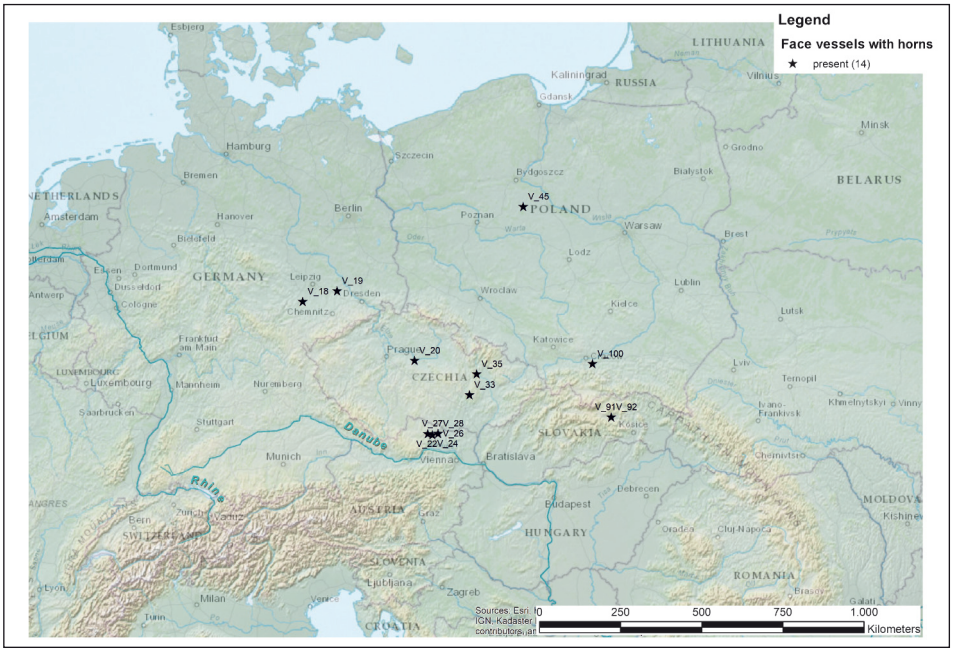

Fig. 9. Distribution of the "mixed creatures" face vessels in Europe (prepared by: M. Korczyńska). For site designations see Table 1

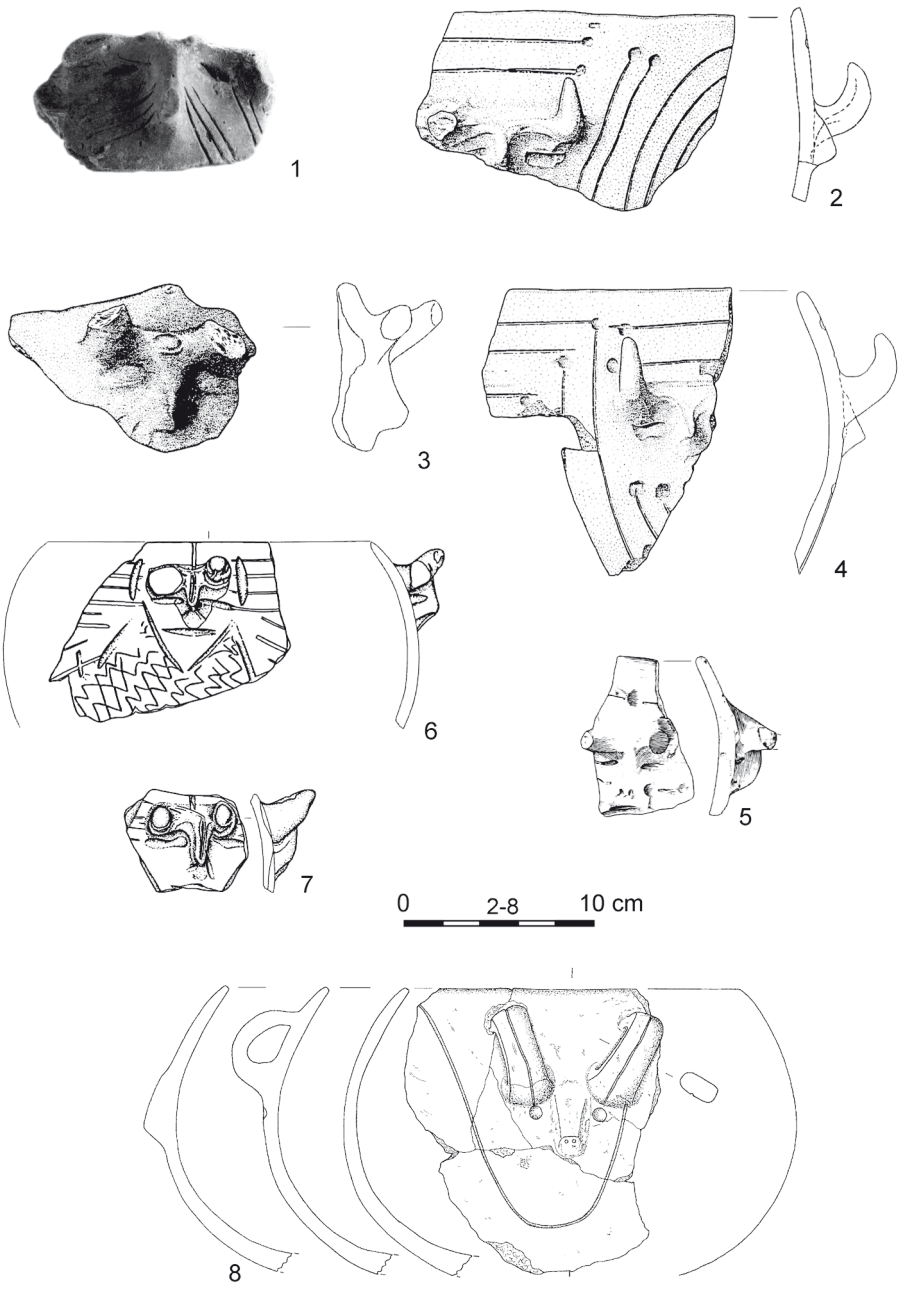

Fig. 10. Examples of face vessels supplemented by horn-like protrusions: 1 – Żegotki (no scale); 2-4 – Pulkau; 5 – Mohelnice; 6-7 – Spišský Hrhov and 8 – Mügeln (after: Becker 2011, figs. 67-68; Conrad *et al*. 2012, fig. 7; Czerniak 1997, fig. 6; prepared by: M. Korczyńska)

which reflect the style of the face representations. For this purpose, a database of 130 LBK and ALPC face vessels was compiled (Tab. 1). In addition, one face vessel with protrusions (Pavlů and Šumberová 2017) from the Stroke Ornamented Ware culture was also included in the dataset. In order to keep the formal coherency of the data, solid figurines were not taken into consideration. The dataset is based on the catalogues of V. Becker (2011) and H. Schwarzberg (2011). However, it was complemented by finds acquired in the last 10 years (mostly from the area of the ALPC). It includes only representations in which the degree of fragmentation allows the determination of the type of so-called "facial field" (in German "Gesichtsfeld", Schwarzberg 2011, fig. 2), and thus a classification of the facial elements within. Basically, for the classification of particular elements of the representations, the typology developed by H. Schwarzberg (2011) was implemented. For example, the main motif in relation to finds from the Rhine area was, according to Schwarzberg, included in the group of M-motifs, although it was described by V. Becker as a U-motif. Additionally, the typology was complemented by a few additional categories (types), which were not included in Schwarzberg's original grouping. In such cases, new variables were included in a descriptive way (see Tab. 1. Suppl., *e.g.*, concerning a possible hair style). Furthermore, in some disputable cases, it was decided to assign the face elements to a slightly different class than the one proposed by Schwarzberg. In addition, for 19 objects, despite the presence

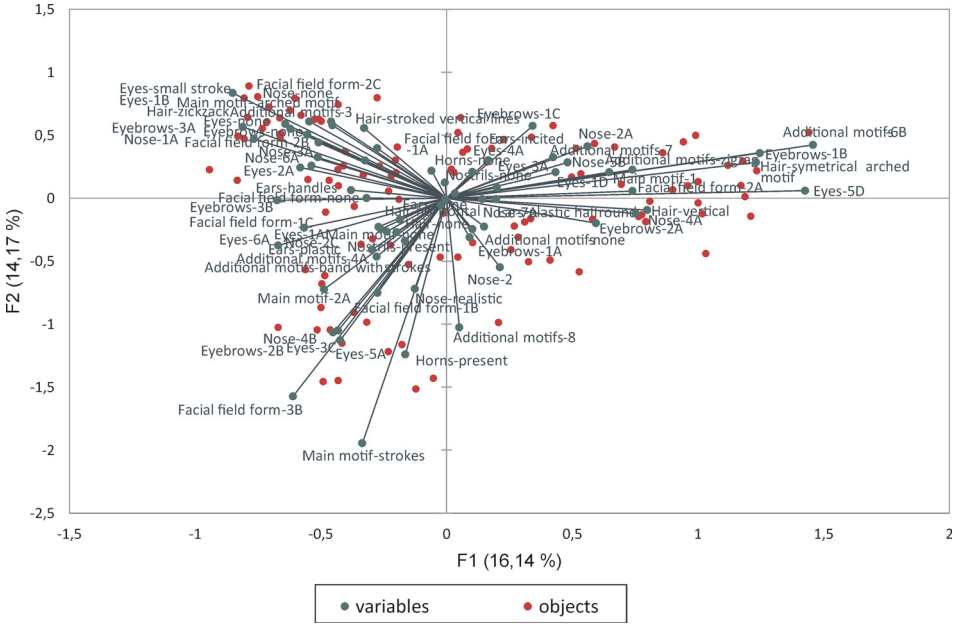

Fig. 11. Plot of the first and second dimensions of the multiple correspondence analysis (MCA) of the face vessels, according to their stylistic features (prepared by: M. Korczyńska)

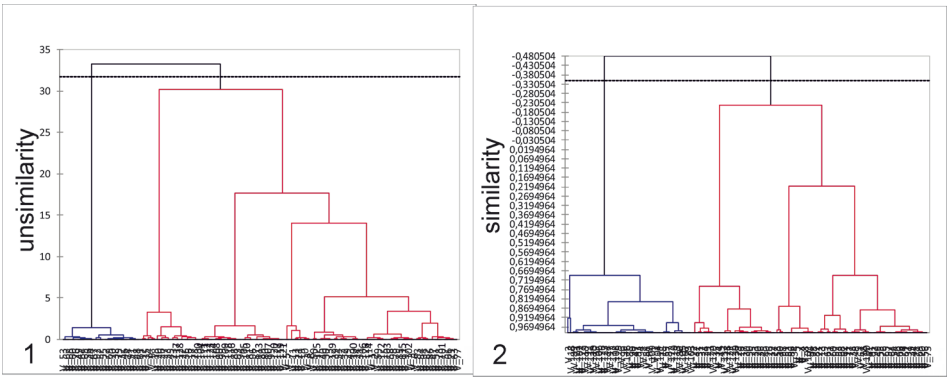

Fig. 12. Dendrograms of the hierarchical cluster analysis of face vessels, based on the relationships of unsimilarity (1) and similarity (2) among the coordinates of the objects in the geometrical space of the first three principal MCA axes (prepared by: M. Korczyńska)

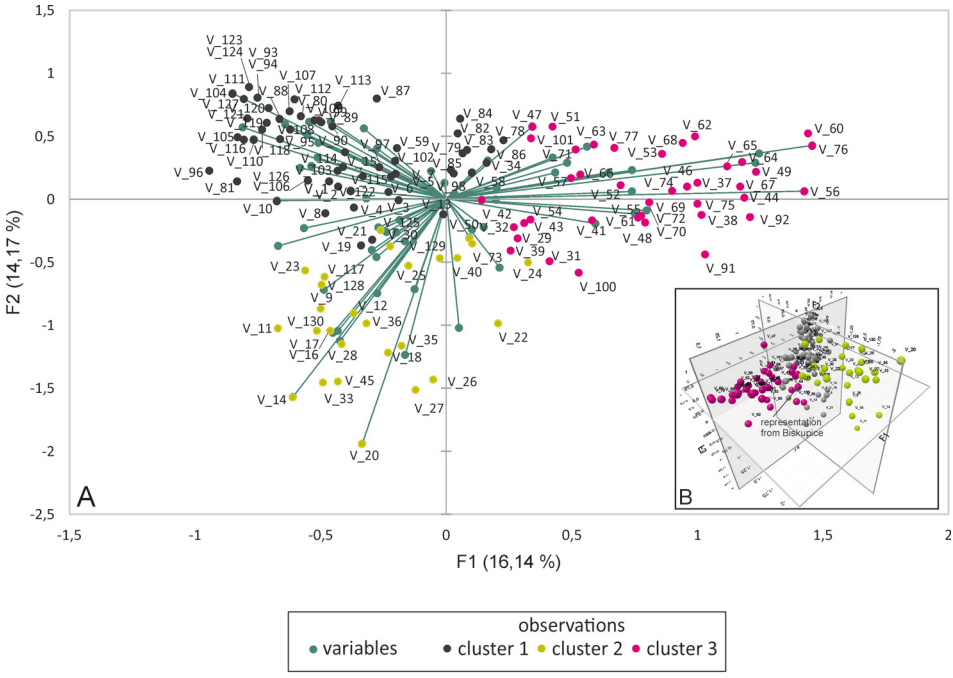

Fig. 13. Three clusters of face vessels with respect to the first and second MCA dimensions (A) and within the three-dimensional MCA plot (B) (prepared by: M. Korczyńska)

of other elements, the mouth part was not preserved, therefore, this variable (mouth type) was excluded from further multivariate statistics. The following variables were used in the analysis: "facial field" form, eyes, nose, eyebrows, possible hair style, the main motif (M-motif, Ʊ-motif, arched motif), and in the case of face vessels with complex ornamentation, the secondary motif (based on Schwarzberg 2011, Abb. 7 and complemented by the authors see: Tab. 1. Suppl.). A schematic illustration of the types has been published by H. Schwarzberg (2011, fig. 2-6). Finally, a variable consisting of the presence or absence of horn-like protrusions/bosses was created, as both anthropomorphic and syncretic anthropo-/zoomorphic representations (in the sense of V. Becker 2011) were investigated. All variables were considered as equal and none of them was pre-weighted. In the next step, as we are dealing with nominal, categorical data, in order to investigate a correlation of particular stylistic features, a multiple correspondence analysis (MCA) was performed. This extension of the simple correspondence analysis (CA) is successfully applied in archaeological studies, as it is useful when a dataset has more than two categorical columns or contains multiple response (non-binary) data (for application examples see: *e.g.* Korczyńska 2014; Macheridis 2017). The result of the MCA was directly represented in the geometric space (Fig. 11 and 13). The biplot of the first and the second axis explains altogether

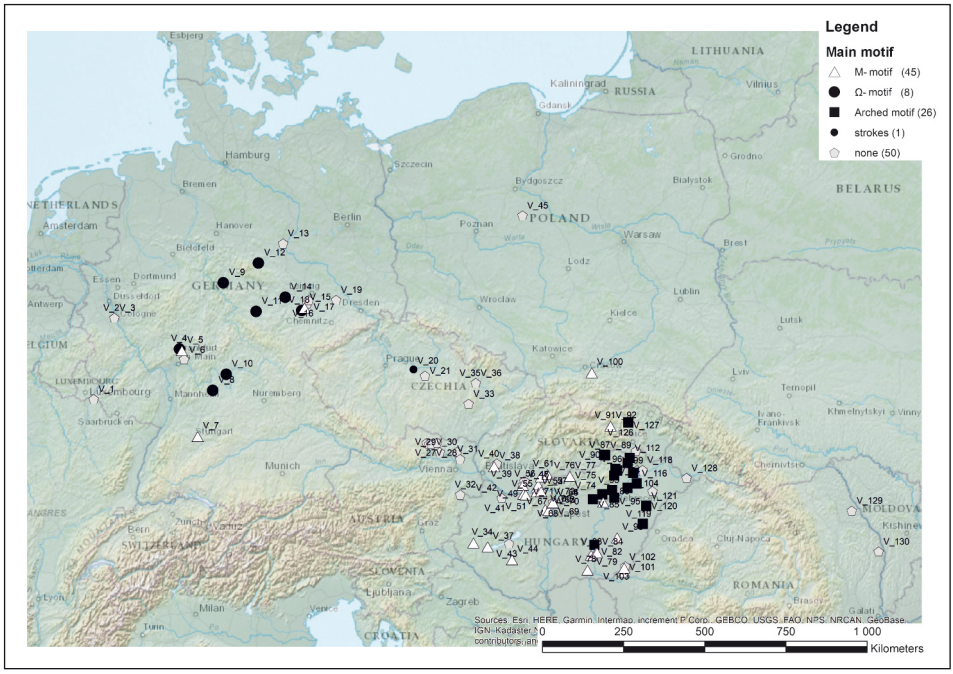

Fig.14. Distribution of face vessels, taking into account the differentiation of the main motif (prepared by: M. Korczyńska). For site designations see Table 1

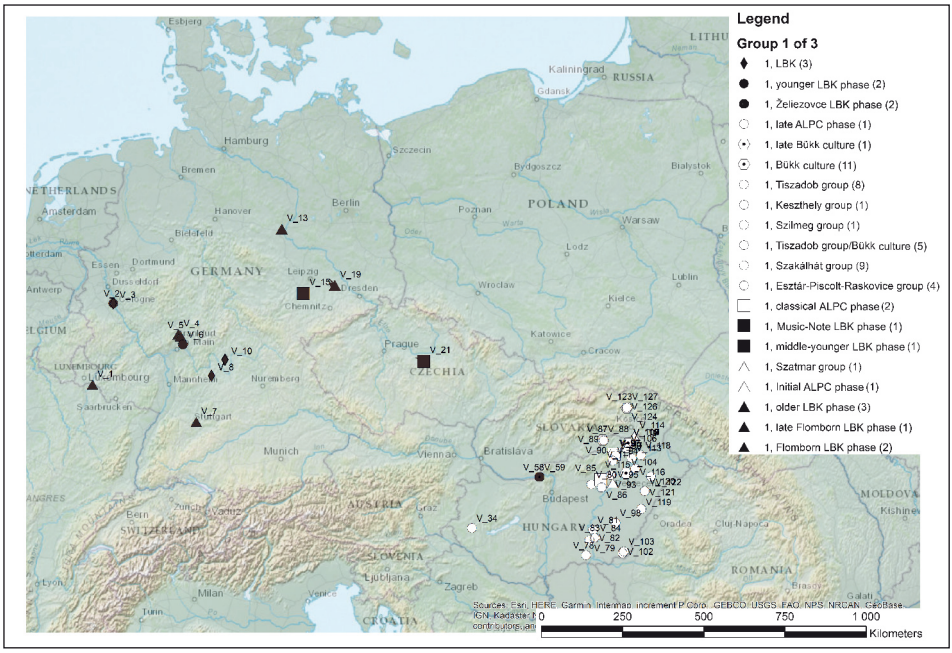

Fig. 15. Mapping of face vessels belonging to the first cluster; LBK sites marked in black, ALPC sites marked in white (prepared by: M. Korczyńska). For site designations see Table 1

30% of all cases – a common problem of the MCA performed for archaeological data – in order to increase the statistical sufficiency the third axis was included in the further analysis as well. In the next step, in the accordance with the plot of the F1, F2 and F3 principal coordinates, a k-means cluster analysis was performed to determine the number of clusters, and the evaluation of the intra-class variance of the k-means cluster analysis was conducted. Additionally, to support the decision as to the number of clusters, dendrograms of the hierarchical cluster analysis were used (Fig. 12). Finally, the clusters were pictured on the MCA plots (Fig. 13A and 13B) and the face vessels were mapped not only according to the main motif (Fig. 14) but also according to the affiliation of their k-mean cluster (Fig. 15-17, see also: Tab. 1).

4.2. Results of the analysis

The variable which seems to play the most important role for the MCA structure and further indication of all three clusters, is the main motif. The test values of this variable are significant when considering the first two dimensions of almost all levels (categories) at the 0.05 level of significance. Also, some categories of the type of the nose, possible hair-

style and additional motif seem to play a significant role in determining the style of the face vessels. Along the second axis, a significant role was also played by the presence or absence of the horn-like protrusions. A graphical result of the MCA forms an arc-shaped layout in the plot of first two dimensions (Fig. 11 and 13). Although the so-called arc effect is characteristic for data with patterned continuity between objects and variables (Zimmermann 1997, 10-14; for an example of application see: Mrówka 2011) the immediate interpretation of the plot in the sense of chronological diversification in our case is rather problematic. Accidental stylistic similarities of diachronous face vessels clustered in the 1st quarter of the plot (see: below) might cause a spurious correlation and influence the outcome. As a result of the hierarchical cluster analysis, two or possibly three clades could be distinguished (Fig. 12). The k-means analysis suggests the division of objects into two (intra-class variance 0.711) or alternatively three (intra class-variance 0.442) clusters as well (Fig. 13). As the plot of two clusters, based on the k-means analysis, was not satisfying from an archaeological point of view, a statistically second-best option, namely three clusters, was taken into further consideration. Although the MCA plots might be regarded as a sufficient description of the analysis (Fig. 13), for a better understanding and for a correct interpretation of the obtained clusters, the spatial information of the origin of the face vessels was also taken into account.

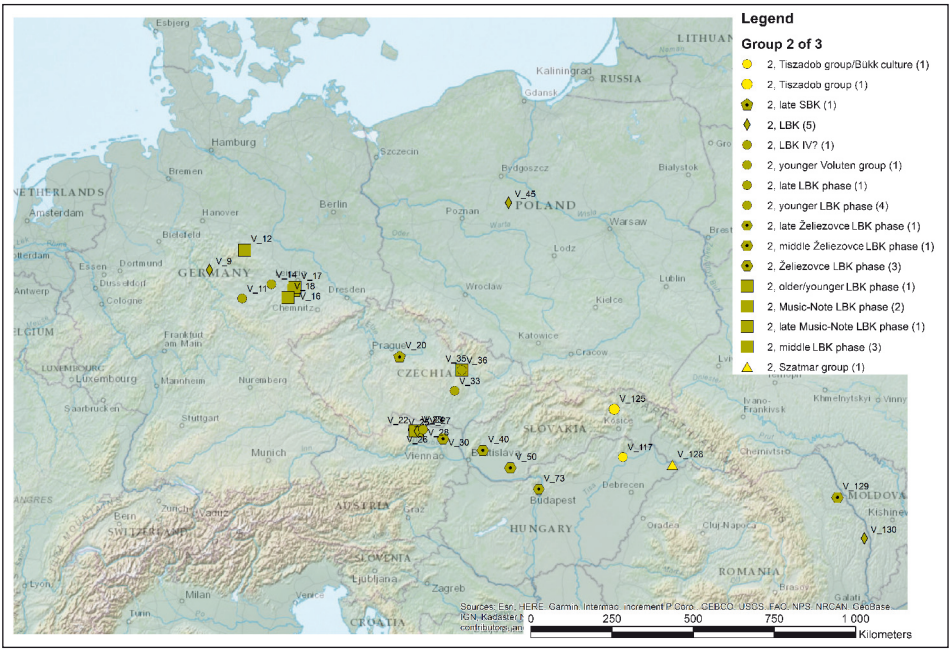

Fig. 16. Mapping of face vessels belonging to the second cluster; LBK sites marked in dark yellow, ALPC sites marked in bright yellow (prepared by: M. Korczyńska). For site designations see Table 1

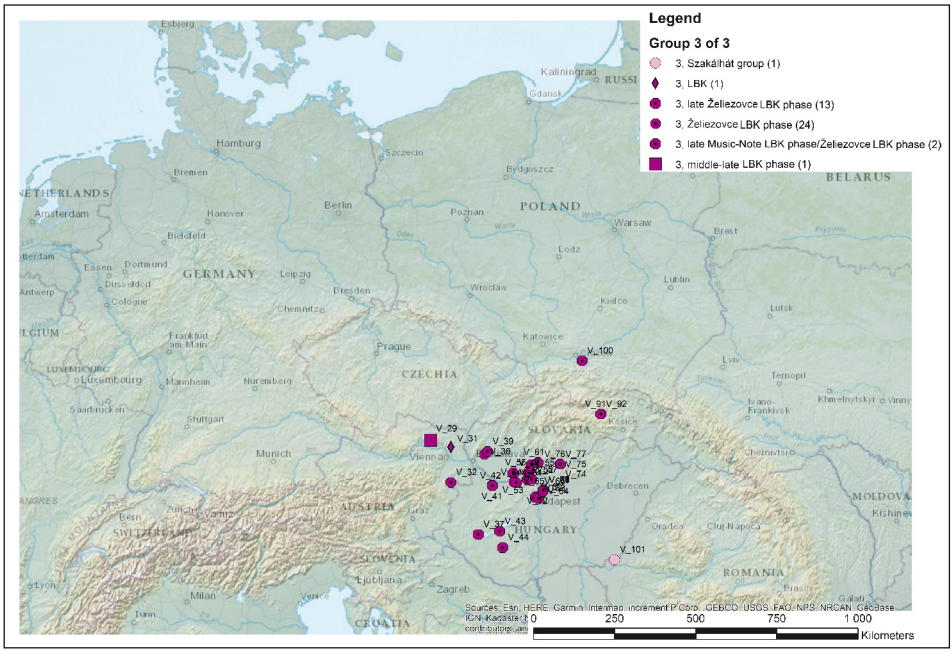

Fig. 17. Mapping of face vessels belonging to the third cluster; LBK sites marked in dark pink, ALPC sites marked in bright pink (prepared by: M. Korczyńska). For site designations see Table 1

Traditionally, the main motif, such as the Ʊ-motif, the M-motif, and the arch motif, is regarded as a crucial variable, as it describes the regional diversification of the face vessels and is widely discussed in the literature (*e.g.*, Becker 2011; Schwarzberg 2011; Raczky and Anders 2003). Mapping the main motifs based on our dataset yields a result that is coherent with current observations (Fig. 14). Face vessels with a Ʊ-motif are typical for the Rhine-Elbe area, a "sickle" motif (or arch motif) for the northern settlements of the ALPC, while the M-motif is common in southern and south-western Hungary. However, its variations might also be observed on a few vessels from Germany. It should be noted, however, that V. Becker (2011, Taf. 58) classified the "facial fields" from Friedberg-Dorheim (V_5) and Stuttgart-Bad Cannstatt and (V_7) as U-shaped, while in the present analysis the authors decided to classify this motif as a variant of the M-motif (comp. Schwarzberg 2011). Furthermore, a straightforward mapping of the main motifs (Fig. 14) can be discussed in relation to the maps of the clusters obtained by the multivariate analysis (Fig. 15-17), in the case of which no singular stylistic feature is taken into consideration, but mapped face vessels constitute a complex compound of various stylistic trends.

The first cluster (responding well to the 1st quadrant of the MCA plot of the two principal axes, Fig. 13) includes all representations dated to the Flomborn phase from the area

of Germany, as well as every object from the Rhine area and, surprisingly, almost all ALPC artefacts (Fig. 15). Included in this cluster are also the big pots and smaller vessels of the Szakálhát group (Sebők and Kovács 2009), which due to the presence of the M-main motif, and therefore some similarity to the face vessels known from the Želiezovce phase, were nevertheless placed in the 2nd quadrant of the first two principal axes (Fig. 13: A). Most of the representations in this cluster do not have limited "facial fields"and/or plastically shaped eyebrows. Moreover, in the case of the majority of the ALPC vessels, a hypothetical coiffure is shown with stroked vertical lines, whereas groups of angular ornamentations (Schwarzberg's Type 3) are additional motifs. The only "horned" vessel in this cluster is a disputed representation from Mügeln in Saxony (V_19, see: mixed creature in Conrad *et al.* 2012 *versus* zoomorphic representation in Lehmann 2018, 43).

In the second cluster (3rd and 4th quadrants of the MCA plot, Fig. 13), with a few exceptions, almost all vessels from the classic LBK phase from Central Germany, the Czech Republic and Lower Austria are included (Fig. 16). Representations in this cluster have either a main motif in the form of an "Ʊ" sign (Schwarzberg's Type 2A) or they lack any main motif at all. This cluster also includes objects with a hypothetical hair style in the form of a decoration of horizontal lines, as well as almost all of the representations of mixed creatures. Geographically, this group covers quite a large area, spreading longitudinally from Saxony-Anhalt to eastern Romania.

The third cluster is the most coherent as it consists almost exclusively of vessels of the Želiezovce phase of the LBK, with the mixed creature from Biskupice among them (Fig. 17). It consists of almost all objects located in the 4th quadrant of the first two axes of the MCA plot (Fig. 13). This group includes the vessels, which in most cases have a "facial field" in the form of an inverted triangle, depicted with the following variables according to Schwarzberg's Types: a carved line (2A), narrow, engraved eyes (1D and 3A), straight eyebrows connected with a nose (4A) and either no main motif, or an M-motif (1). Interestingly, the vessel from Biskupice (V_100) and two other objects from Spišský Hrhov (V_91 and V_92) are the only examples of "mixed creatures" in this cluster.

5. DISCUSSION AND CONCLUSIONS

The representation from Biskupice contains both human and animal features, and thus belongs to the type of the so-called "mixed creatures" (after Becker 2011 type 4.2). In most cases of this type, zoomorphic features are represented by horns. Representations of horns appear frequently in connection with cattle, and probably the first association are bucrania and the famous wall paintings in the so-called communal spaces of Çatalhöyük (*e.g.*, Hodder 2006; Twiss and Russel 2010). During the transition of the Starčevo/Körös culture to the LBK/ALPC, the motif of a sheep/goat was replaced by that of a bull (Raczky *et al.* 2010, 160-161). This transition may also be related to the increasing role of bovines

in animal husbandry (*ibidem*; Bánffy 2019, 87-113). As a consequence, there are zoomorphic bull figurines known already from an older phase of the ALPC (*i.e.*, Polgár-Ferencihát grave, Raczky and Anders 2018, 323-324, fig. 3: 2), and so-called centaur figurines found in the Körös culture sites in north-west Hungary, also known as "Horns of Consecration" in the Central Hungarian Plain (*ibidem*). The significant role of cattle is also reflected in the ornamentation of the vessel of the earliest ALPC site, Košice-Červený rak, in eastern Slovakia, recalling a human-animal (bull) hybrid (Kaminská *et al.* 2008, 85-86, fig. 7-8). This phenomenon occurred simultaneously with the northward spread of the Neolithic lifeway into its "marginal zones" (Kalicz and Raczky 1982). In this context, the lack of face vessels with horns in the territory of the ALPC (Fig. 10) is an interesting phenomenon. It is uncertain what kind of ideological factor might be responsible for the spatial and chronological limitation of the quadrupedal figurines with human faces, which are restricted only to the early phases of the ALPC (for the compilation of this representation type see: Becker 2011, 269-70), and the complete absence of human representations with horns in this cultural milieu.

In turn, in the LBK, among zoomorphic figural vessels and handles, bovids form a substantial group (see: Becker 2007), as demonstrated by handles from Šturovo and Straubing-Lerchenhaid (Becker 2007, 25, 28). Knobs resembling cattle horns also appear on vessels with representations of mixed features. Their human-like faces correspond well with the stylistic details of the anthropomorphic representations, and, apart from horns, they only seldom include motifs known from zoomorphic objects, like a piercing on the head. Aside from the aforementioned centaur figurines, such a feature appeared, for example, between the "horns" of the mixed creature vessel from Pulkau (V_28, Fig. 10: 3; Becker 2011, 481, fig. 67: 3). For that reason, these are usually studied together with the purely anthropomorphic representations, and interpretations of these vessels are strongly connected to those of typical anthropomorphic representations.

The diversification of the LBK and the ALPC is visible not only in the distribution of the mixed creatures with horn-liked protrusions, but also in the general stylistic identity of the face vessels. Multivariate analysis confirmed the crucial role of the main motifs in research on the stylistic differentiation of the analysed objects. However, in some cases, the combination (presence or absence) of other variables seems to be even more significant for constructing the clusters. The anthropomorphic vessels of the Szakálhát group might be used as an example. Based on the second motif and nose-type, despite the presence of the main M-motif, they are clustered together with other ALPC artefacts (Fig. 15). The assignment of the vessel from Biskupice to the third cluster is quite convincing, as this cluster incorporates almost all of the face vessels dated to the Želiezovce phase of the LBK. Moreover, the stylistic analysis of ornamented pottery fragments deposited in pit no. 25 shows strong similarities with the "standard" pottery found at the sites of this group (*e.g.*, Bajč or Štúrovo, Pavúk 1969, fig. 31, 49: 1, 4, 5). Territorially, this cluster is most compact, unlike the previous ones, which generally spread over multiple regions, where the majority of

figural representations of both the LBK and the ALPC have been found. Let us recall in this context, that, according to the opinion of some authors, the spatial variability in the appearance of the main (mainly M and arch) motifs mirrors regional identities (Raczky and Anders 2003, 170; Schwarzberg 2011, 186). On the other hand, while face vessels with an M-motif from the Želiezovce phase concentrate in the region of Transdanubia, representations of mixed creatures are more common at Lower Austria and Moravia. So, the vessel from Biskupice, due to its syncretic manner, is an exceptional example of the influences from both regions, where the occurrence of a mixed creature has been included in the canon of the Želiezovce style. Certainly, the LBK, during the development of the Želiezovce phase/style, drew ideas, knowledge and information from neighbouring territories (Rauba-Bukowska and Czekaj-Zastawny 2020). Hence, the details of the face vessel from Biskupice can be also observed in other areas and in slightly different cultural environments. In its third stage of development, the LBK was characterized by extremely developed interregional contacts, as evidenced by the presence of imported pottery and raw stone materials (Czekaj-Zastawny 2017).

For now, we do not wish to speculate about the social meaning and the role of the face vessel from Biskupice. Given the plethora of interpretive theories on the subject, such considerations would be premature before detailed evaluation of both the artefact and the site are complete. Therefore, future work shall include a comprehensive study of the vessel from Biskupice within its archaeological context. The clay raw materials and the technology used will be studied from a mineralogical and petrographic point of view to enhance the knowledge about the provenance of the vessel (local *versus* import). An attempt will be made to determine substances stored in the pot using lipid residue analysis. Also, the context of its deposition will be analysed by conducting a microstratigraphic study of feature no. 25. In conjunction with the results of the present stylistic analysis, these investigations will hopefully advance the discussion on the symbolic function of this exceptional find – a key topic in the discussion of figural representations in the Neolithic – and will also contribute to the understanding of interregional contacts maintained by the inhabitants of the settlement at Biskupice.

Acknowledgments

The archaeological excavations and the work on the materials from Biskupice were conducted within the framework of collaboration between the W. Szafer Institute of Botany of the Polish Academy of Sciences and the Institute of Archaeology of Jagiellonian University, and was made possible by the financial support of the Polish National Science Centre (NCN grant number: 2018/30/E/HS3/00867). The authors are also thankful to Julio M. del Hoyo-Meléndez for proofreading the final manuscript and to two anonymous reviewers for their comments and suggestions. Finally, we would like to thank Adam Stachura from Centrum Druku in Kraków for scanning and printing the 3D model of the face vessel.

Table 1. Catalogue of the LBK and ALPC face vessels in Central Europe. Prepared by: M. Korczyńska. Table provides a selection of the dataset. The complete version of this table is included as an electronic supplementary material (Tab.1. Suppl.)

ID	Site	N	E	Chronology	Literature	Cluster analysis three classes
V_1	Remerschen-Schengerwis	49°29'22.0"N	6°21'08.3"E	Flomborn LBK phase	Becker 2011, Taf. 75.1; Schwarzberg 2011, 125.2	1
V_2	Köln-Lindenthal -1	50°55'34"N	6°55'34"E	younger LBK phase	Becker 2011, Taf. 75.5; Schwarzberg 2011, 125.5	1
V_3	Köln-Lindenthal -2	50°55'34"N	6°55'34"E	LBK	Becker 2011, Taf. 75.7	1
V_4	Bad Nauheim-Nieder Mörlen	50°22'51"N	8°43'34"E	late Flomborn LBK phase	Schwarzberg 2011, Taf. 124.4	1
V_5	Friedberg-Dorheim	50°20'57"N	8°47'22.3"E	older LBK phase	Becker 2011, Taf. 58.2; Schwarzberg 2011, Taf. 122.1c	1
V_6	Schöneck-Kilianstädten	50°12'5"N	8°51'13"E	younger LBK phase	Becker 2011, Taf. 75.2; Schwarzberg 2011, Taf. 125.1	1
V_7	Stuttgart-Bad Cannstatt	48°48'39"N	9°13'29.8"E	Flomborn LBK phase	Becker 2011, Taf. 58.1; Schwarzberg 2011, Taf. 122.1a-b	1
V_8	Acholshausen	49°38'43"N	9°38'43"E	LBK	Becker 2011, Taf. 73.2; Schwarzberg 2011, Taf. 126.2	1
V_9	Göttingen	51°32' 2"N	9°56'8"E	LBK	Becker 2010, Taf. 73.1; Schwarzberg 2011, Taf. 124.2	2
V_10	Hausen	49°56'0"N	10°1'0"E	LBK	Becker 2011, Taf. 58.3; Schwarzberg 2011, Taf. 123.2	1
V_11	Kleinfahner	51°2'15"N	10°50'42"E	younger LBK phase	Becker 2011, Taf. 59.1; Schwarzberg 2011, Taf. 123.3	2
V_12	Derenburg	51°52'15"N	10°54'30"E	older/younger LBK phase	Becker 2011, Taf. 60.1; Schwarzberg 2011, Taf. 124.1	2
V_13	Balrleben	52°12'19.2"N	11°35'25.0"E	older LBK phase	Becker 2011, Taf. 59.2; Schwarzberg 2011, Taf. 123.3	1
V_14	Karsdorf	51°16'59"N	11°39'0"E	younger LBK phase	Meller 2012: 174	2
V_15	Draschwitz	51°6'1"N	12°10'56"E	middle-younger LBK phase	Becker 2011, Taf. 66.4; Schwarzberg 2011, Taf. 125.9	1
V_16	Zauschwitz	51°10'49.9"N	12°15'48.2"E	middle LBK phase	Becker 2011, Taf. 66.3; Schwarzberg 2011, Taf. 125.4	2
V_17	Eythra	51°14'0"N	12°18'0"E	middle LBK phase	Lehmann 2019, Taf.11.3	2

V_18	Grana-Kleinosida	51°3'19"N	12°6'19"E	middle LBK phase	Schwarzberg 2011, Taf.125:6	2
V_19	Mügeln	51°14'17.6"N	13°03'33.4"E	older LBK phase	Conrad, Conrad, Ender, Herbig, Homann 2012, Abb.7	1
V_20	Kolín	50°01'00"N	15°12'00"E	late SBK	Pavlů, Šumberová 2017, Fig. 6.2, 6.3	2
V_21	Močovice	49°54'23"N	15°30'54"E	Music-Note LBK phase	Becker 2011, Taf. 60.3; Schwarzberg 2011, Taf. 119.1a-b	1
V_22	Poigen	48°41'44"N	15°33'57"E	late LBK phase	Becker 2011, Taf. 67.1; Schwarzberg 2011, Taf. 115.1	2
V_23	Fraunhofen - Ried Milchtaschen	48°40'24"N	15°37'50"E	Music-Note LBK phase	Becker 2011, Taf. 61.2; Schwarzberg 2011, Taf. 118.3	2
V_24	Breiteneich -1	48°40'27.07"N	15°41'34"E	late Music-Note LBK phase	Becker 2011, Taf. 61.1; Schwarzberg 2011, Taf. 119.2	2
V_25	Breiteneich -2	48°40'27.07"N	15°41'34"E	LBK	Becker 2011, Taf. 72.4	2
V_26	Pulkau -1	48°42'0"N	15°51'0"E	younger LBK phase	Becker 2010, Taf. 67.4; Schwarzberg 2011, Taf. 117.2	2
V_27	Pulkau -2	48°42'0"N	15°51'0"E	LBK	Becker 2011, Taf. 68.1; Schwarzberg 2011, Taf. 117.3	2
V_28	Pulkau -3	48°42'0"N	15°51'0"E	younger LBK phase	Becker 2011, Taf. 67.3; Schwarzberg 2011, Taf. 121.4	2
V_29	Ziersdorf	48°31'42.42"N	15°55'37.2"E	middle-late LBK phase	Becker 2011, Taf. 56.5; Schwarzberg 2011, Taf. 114.4	3
V_30	Thomasl	48°31'53.6"N	16°23'54.0"E	Želiezovce LBK phase	Becker 2011, Taf. 54.1; Schwarzberg 2011, Taf. 113.1	2
V_31	Ulrichskirchen	48°24'0"N	16°29'0"E	LBK	Becker 2010, Taf. 71.2	3
V_32	Draßburg - Taborac	47°44'46"N	16°29'17"E	Želiezovce LBK phase	Becker 2011, Taf. 72.7; Schwarzberg 2011, Taf. 112.2	3
V_33	Vavřinec - Koňská Jáma	49°24'9"N	16°43'11"E	younger LBK - Voluten group	Becker 2011, Taf. 62.1; Schwarzberg 2011, Taf. 119.1	2
V_34	Zalaegerszeg-Andráshida	46°50'21"N	16°51'4"E	Keszthely LBK group	Becker 2011, Taf. 55.2; Schwarzberg 2011, 83.3	1
V_35	Mohelnice -1	49°46'36.5"N	16°55'7"E	Music-Note LBK phase	Becker 2011, Taf. 68.2	2
V_36	Mohelnice -2	49°46'36.5"N	16°55'7"E	LBK IV?	Becker 2011, Taf. 75.3	2
V_37	Keszthely	46°45'55.2"N	17°14'34.19"E	late Želiezovce LBK phase	Becker 2011, Taf. 62.3	3
V_38	Blatné	48°15'56"N	17°25'15"E	Želiezovce LBK phase	Becker 2011, Taf. 70.1	3
V_39	Cifer-Pác -1	48°19'0"N	17°30'0"E	Želiezovce LBK phase	Becker 2011, Taf. 64.1; Schwarzberg 2011, Taf. 112.1	3

ID	Site	N	E	Chronology	Literature	Cluster analysis three classes
V_40	Cifer-Pác -2	48°19'0"N	17°30'0"E	Želiezovce LBK phase	Becker 2011, Taf. 70.4	2
V_41	Győr -1	47°41'0"N	17°38'0"E	late Želiezovce LBK phase	Becker 2011, Taf. 69.7; Schwarzberg 2011, Taf. 85.4	3
V_42	Győr -2	47°41'0"N	17°38'0"E	Želiezovce LBK phase	Becker 2011, Taf. 69.8	3
V_43	Balatonszárszó	46°49'33"N	17°50'5"E	Želiezovce LBK phase	Becker 2011, Taf. 69.1; Schwarzberg 2011, Taf. 84.1	3
V_44	Ráksi	46°31'1.24"N	17°55'8.76"E	late Želiezovce LBK phase	Becker 2011, Taf. 55.3; Schwarzberg 2011, 85.3	3
V_45	Żegotki -1	52°40'31"N	18°12'31"E	LBK	Czerniak 1996, ryc. 6	2
V_46	Bajč -1	47°55'0"N	18°13'0"E	late Želiezovce LBK phase	Becker 2011, Taf. 56.1; Schwarzberg 2011, Taf. 115.4	3
V_47	Bajč -2	47°55'0"N	18°13'0"E	late Želiezovce LBK phase	Schwarzberg 2011, Taf. 116.1	3
V_48	Bajč -3	47°55'0"N	18°13'0"E	late Želiezovce LBK phase	Becker 2011, Taf. 64.4	3
V_49	Iža - Velký Harcás	47°45'2"N	18°14'0"E	Želiezovce LBK phase	Schwarzberg 2011, Taf. 120.1	3
V_50	Dvory nad Žitavou	47°59'37"N	18°15'51"E	middle Želiezovce LBK phase	Schwarzberg 2011, Taf. 111.1	2
V_51	Patince	47°44'15"N	18°17'40"E	Želiezovce LBK phase	Becker 2011, Taf. 75.4; Schwarzberg 2011, Taf. 114.1	3
V_52	Mužla-Čenkov -1	47°47'32"N	18°35'52"E	Želiezovce LBK phase	Becker 2011, Taf. 63.3; Schwarzberg 2011, Taf. 116.2	3
V_53	Mužla-Čenkov -2	47°47'32"N	18°35'52"E	Želiezovce LBK phase	Becker 2011, Taf. 63.4; Schwarzberg 2011, Taf. 121.2	3
V_54	Mužla-Čenkov -3	47°47'32"N	18°35'52"E	Želiezovce LBK phase	Becker 2011, Taf. 65.1; Schwarzberg 2011, Taf. 120.7	3
V_55	Bíňa	47°55'20"N	18°38'33"E	Želiezovce LBK phase	Becker 2011, Taf. 70.3; Schwarzberg 2011, Taf. 115.3	3
V_56	Vel'ký Pesek / Sikenica - Agota Major	48°4'30"N	18°43'0"E	Želiezovce LBK phase	Becker 2011, Taf. 69.9	3
V_57	Štúrovo -1	47°47'56"N	18°43'20"E	Želiezovce LBK phase	Becker 2011, Taf. 63.1; Schwarzberg 2011, Taf. 116.3	3
V_58	Štúrovo -2	47°47'56"N	18°43'20"E	Želiezovce LBK phase	Becker 2011, Taf. 63.2; Schwarzberg 2011, Taf. 117.4	1

V_59	Štúrovo -3	47°47'56"N	18°43'20"E	Želiezovce LBK phase	Becker 2011, Taf. 70.5; Schwarzberg 2011, Taf. 121.1	1
V_60	Biatorbágy-Tyúkberek	47°28'0"N	18°50'0"E	late Želiezovce LBK phase	Becker 2011, Taf. 55.1; Schwarzberg 2011, Taf. 83.1	3
V_61	Tupá	48°7'0"N	18°54'0"E	Želiezovce LBK phase	Becker 2011, Taf. 70.2; Schwarzberg 2011, Taf. 120.3	3
V_62	Törökbálint-Dulácska -1	47°26'42"N	18°55'44"E	late Noteknopf/Želiezovce LBK phase	Schwarzberg 2011, Taf. 85.1	3
V_63	Törökbálint-Dulácska -2	47°26'42"N	18°55'44"E	late Noteknopf/Želiezovce LBK phase	Schwarzberg 2011, Taf. 85.2	3
V_64	Budapest-Aranyhegyi -1	47°34'45.0"N	19°01'48.2"E	Želiezovce LBK phase	Becker 2011; Schwarzberg 2011	3
V_65	Budapest-Aranyhegyi -2	47°34'45.0"N	19°01'48.2"E	Želiezovce LBK phase	Becker 2010; Schwarzberg 2011	3
V_66	Budapest-Aranyhegyi -3	47°34'45.0"N	19°01'48.2"E	Želiezovce LBK phase	Becker 2011; Schwarzberg 2011	3
V_67	Budapest-Békásmegyer -1	47°36'0"N	19°3'0"E	late Želiezovce LBK phase	Becker 2011, Taf. 54.2; Schwarzberg 2011, Taf.83.2	3
V_68	Budapest-Békásmegyer -2	47°36'0"N	19°3'0"E	late Želiezovce LBK phase	Becker 2011, Taf. 55.4	3
V_69	Budapest-Békásmegyer -3	47°36'0"N	19°3'0"E	late Želiezovce LBK phase	Becker 2011, Taf. 55.5	3
V_70	Budapest-Békásmegyer -4	47°36'0"N	19°3'0"E	late Želiezovce LBK phase	Becker 2010, Taf. 55.6	3
V_71	Budapest-Békásmegyer -5	47°36'0"N	19°3'0"E	late Želiezovce LBK phase	Becker 2011, Taf. 69.4; Schwarzberg 2011, Taf. 84.5	3
V_72	Budapest-Békásmegyer -6	47°36'0"N	19°3'0"E	late Želiezovce LBK phase	Becker 2011, Taf. 69.5; Schwarzberg 2011, Taf. 84.10	3
V_73	Budapest-Békásmegyer -7	47°36'0"N	19°3'0"E	late Želiezovce LBK phase	Becker 2011, Taf. 61.4; Schwarzberg 2011, Taf. 84.9	2
V_74	Szécsény -1	48°5'0"N	19°31'0"E	Želiezovce LBK phase	Becker 2011, Taf. 57.1	3
V_75	Szécsény -2	48°5'0"N	19°31'0"E	Želiezovce LBK phase	Becker 2011, Taf. 57.2	3
V_76	Szécsény -3	48°5'0"N	19°31'0"E	Želiezovce LBK phase	Becker 2011, Taf. 57.3	3
V_77	Szécsény -4	48°5'0"N	19°31'0"E	Želiezovce LBK phase	Becker 2011, Taf. 65.1	3
V_78	Csanytelek-Újhalastó -1	46°19'19"N	20°00'19"E	ALPC, Szakálhát group	Becker 2011, Taf. 177.4; Schwarzberg 2011, Taf. 89.3	1
V_79	Csanytelek-Újhalastó -2	46°36'22.28"N	20°06'17.29"E	ALPC, Szakálhát group	Becker 2011, Taf. 178.5; Schwarzberg 2011, Taf. 86.1	1

ID	Site	N	E	Chronology	Literature	Cluster analysis three classes
V_80	Tarnaméra-Cselőháza	47°39'22"N	20°09'29"E	late ALPC	Schwarzberg 2011, Taf. 79.2	1
V_81	Szelevény-Felsőföldek	46°48'07"N	20°12'04"E	ALPC, Esztár-Piscolt-Raskovice group	Becker 2010, Taf. 176.6; Schwarzberg 2011, Taf. 81	1
V_82	Szentes-Ilonapart	46°39'16"N	20°14'25"E	Szakálhát group	Becker 2010, Taf. 178.2	1
V_83	Szentes-Jaksorpart	46°39'16"N	20°14'25"E	ALPC, Szakálhát group	Schwarzberg 2011, Taf. 91	1
V_84	Szentes-Komitatshaus	46°39'13"N	20°16'03"E	ALPC, Szakálhát group	Becker 2011, Taf. 178.3; Schwarzberg 2011, Taf. 90	1
V_85	Füzesabony-Kettőshalom	47°45'00"N	20°25'00"E	classical ALPC phase	Becker 2011, Taf. 176.4; Schwarzberg 2011, Taf. 89.1	1
V_86	Kömlő	47°36'04"N	20°26'28"E	ALPC, Szakálhát group	Becker 2011, Taf. 177.3	1
V_87	Domica cave -1	48°28'39"N	20°28'10.06"E	ALPC, Bükk culture	Becker 2011; Schwarzberg 2011	1
V_88	Domica cave -2	48°28'39"N	20°28'10.06"E	ALPC, Bükk culture	Becker 2011; Schwarzberg 2011	1
V_89	Aggtelek cave -1	48°28'16.5"N	20°29'51"E	ALPC, Tiszadob group	Schwarzberg 2011, Taf. 78.7	1
V_90	Aggtelek cave -2	48°28'16.5"N	20°29'51"E	ALPC, Tiszadob group	Schwarzberg 2011, Taf. 79.9	1
V_91	Spišský Hrhov -1	49°00'00"N	20°38'30"E	Želiezovce LBK phase	Becker 2011, Taf. 68.3; Schwarzberg 2011, Taf. 118.1	3
V_92	Spišský Hrhov -2	49°00'00"N	20°38'30"E	Želiezovce LBK phase	Becker 2011, Taf. 68.4; Schwarzberg 2011, Taf. 118.2	3
V_93	Mezőkeresztes-Cet-halom	47°49'49"N	20°41'22"E	ALPC, Tiszadob group/Bükk culture	Csengeri 2014, fig.8.2	1
V_94	Miskolc-ALDI	48°05'50"N	20°44'53"E	ALPC, Tiszadob group/Bükk culture	Csengeri 2014, fig.9.4	1
V_95	Tiszavalk-Négyes	47°41'18"N	20°44'58"E	ALPC, Szatmar group	Becker 2011, Taf. 176.2; Schwarzberg 2011, Taf. 78.4	1
V_96	Sajószentpéter I	48°13'02"N	20°46'53"E	classical ALPC phase	Becker 2011, Taf. 176.3	1
V_97	Sajószentpéter-Kövecses	48°13'02"N	20°46'53"E	ALPC, Bükk culture	Schwarzberg 2011, Taf. 93.5	1
V_98	Gyoma-Őzed	46°56'10"N	20°49'025"E	ALPC, Szakálhát group	Becker 2011, Taf. 177.2; Schwarzberg 2011, Taf. 86	1
V_99	Sajóvámos	48°11'29"N	20°49'54"E	ALPC, Tiszadob group/Bükk culture	Csengeri 2014, fig.7.4	1
V_100	Biskupice	49°57'35"N	20°7'28"E	Želiezovce LBK phase		3

V_101	Battonya-Gödrösök	46°17'0"N	21°01'00"E	ALPC, Szakálhát group	Becker 2011, Taf. 177.1; Schwarzberg 2011, Taf. 89.1	3
V_102	Battonya-Vid	46°21'42"N	21°01'15"E	ALPC, Szakálhát group	Becker 2011, Taf. 178.1	1
V_103	Battonya-Parázs tanya	46°23'42"N	21°03'15"E	ALPC, Szakálhát group	Becker 2011, Taf. 178.4	1
V_104	Polgár-Nagy-Kasziba	47°52'02"N	21°07'00"E	ALPC, late Bükk culture	Raczky/Anders 2003, 159, 162 u. 161 Abb. 3,7; Schwarzberg 2011, Taf. 93.1	1
V_105	Encs-Kelecsény -1	48°19'42"N	21°07'15.2"E	ALPC, Tiszadob group/Bükk culture	Csengeri 2014, fig.6.4	1
V_106	Encs-Kelecsény -2	48°19'42"N	21°07'15.2"E	ALPC, Tiszadob group/Bükk culture	Csengeri 2014, fig.9.5	1
V_107	Garadna-Elkerülő út -1	48°25'07"N	21°10'29"E	ALPC, Bükk culture	Csengri 2011, fig.1,2,3	1
V_108	Garadna-Elkerülő út -2	48°25'07"N	21°10'29"E	ALPC, Bükk culture	Csengri 2011, fig.4	1
V_109	Garadna-Elkerülő út -3	48°25'07"N	21°10'29"E	ALPC, Bükk culture	Csengri 2011, fig.8.1	1
V_110	Garadna-Elkerülő út -4	48°25'07"N	21°10'29"E	ALPC, Bükk culture	Csengri 2011, fig.8.2	1
V_111	Garadna-Elkerülő út -5	48°25'07"N	21°10'29"E	ALPC, Bükk culture	Csengri 2011, fig.8.3	1
V_112	Garadna-Elkerülő út -6	48°25'07"N	21°10'29"E	ALPC, Bükk culture	Csengri 2011, fig.8.4	1
V_113	Mezőzombor-Temető	48°08'54"N	21°16'07"E	ALPC, Tiszadob group	Becker 2011, Taf. 179.2; Schwarzberg 2011, Taf. 80.1	1
V_114	Kéked-Hosszúföldek	48°32'45"N	21°20'45"E	initial phase Alföld LBK (ALPC I)	Csengri 2018, Tab.2.2	1
V_115	Tiszavasvári-Keresztfal	47°57'08"N	21°22'18"E	ALPC, Tiszadob group	Schwarzberg 2011, Taf. 78.10	1
V_116	Tiszavasvári-Paptelekhat	47°57'08"N	21°22'18"E	ALPC, Tiszadob group	Schwarzberg 2011, Taf. 78.12	1
V_117	Szegi-Ady Endre	48°11'42"N	21°22'35"E	ALPC, Tiszadob group/Bükk culture	Csengeri 2014, fig.7.6	2
V_118	Kenézlő-Fazekaszug	48°11'53"N	21°31'46"E	ALPC, Tiszadob group	Becker 2011, Taf. 179.1	1

ID	Site	N	E	Chronology	Literature	Cluster analysis three classes
V_119	Berettyószentmárton-Morotva	47°11'53"N	21°32'18"E	ALPC, Esztár-Piscolt-Raskovice group	Becker 2011, Taf. 176.7; Schwarzberg 2011, Taf. 82.1	1
V_120	Debrecen-Tócópart	47°32'0"N	21°38'00"E	ALPC, Esztár-Piscolt-Raskovice group	Becker 2011, Taf. 176.8; Schwarzberg 2011, Taf. 82.4	1
V_121	Tiszaigar-Homokbánya	47°32'0"N	21°38'00"E	ALPC, Esztár-Piscolt-Raskovice group	Becker 2011, Taf. 176.10	1
V_122	Szilmeg, Polgár-Folyás	47°48'33"N	21°48'21"E	ALPC, Szilmeg group	Becker 2011, Taf. 176.5	1
V_123	Šarišské Michaľany -1	49°4'9"N	21°8'14"E	ALPC, Bükk culture	Becker 2011, Taf. 179.7; Schwarzberg 2011, Taf. 114.2	1
V_124	Šarišské Michaľany -2	49°4'9"N	21°8'14"E	ALPC, Tiszadob group	Schwarzberg 2011, Taf. 114.3	1
V_125	Šarišské Michaľany -3	49°4'9"N	21°8'14"E	ALPC, Tiszadob group	Becker 2011, Taf. 179.5; Schwarzberg 2011, Taf. 115.2	2
V_126	Šarišské Michaľany -4	49°4'9"N	21°8'14"E	ALPC, Tiszadob group	Becker 2011, Taf. 179.4; Schwarzberg 2011, Taf. 121.7	1
V_127	Šarišské Michaľany -4	49°4'9"N	21°8'14"E	ALPC, Bükk culture	Becker 2011, Taf. 179.6	1
V_128	Sonkád „Új Élet“	48°3'0"N	22°45'0"E	ALPC, Szatmar group	Becker 2011, Taf. 176.1; Schwarzberg 2011, Taf. 78.6	2
V_129	Iacobeni	47°26'35"N	27°19'08"E	Želiezovce LBK phase	Becker 2011, Taf. 61.3; Schwarzberg 2011, Taf. 98.2	2
V_130	Huşi	46°40'27"N	28°3'35"E	LBK	Becker 2011, Taf. 72.8; Schwarzberg 2011, Taf. 98.1	2

References

Bánffy E. 1991. Cult and archaeological context in Middle and South-East Europe in the Neolithic and the Chalcolithic. *Antaeus* 19-20, 183-248.

Bánffy E. 2019. *First Farmers of the Carpathian Basin. Changing Patterns in Subsistence, Ritual and Monumental Figures* (= *Prehistoric Society Research Paper* 8). Oxford & Philadelphia: Oxbow Books.

Becker V. 2007. Rinder, Schweine, Mischwesen. Zoomorphe Funde der westlichen Linearbandkeramik. In R. Gleser (ed.), *Zwischen Mosel und Morava - Neue Grabungen und Forschungen zur Vor- und Frühgeschichte Mitteleuropas* (= *Saarbrücker Studien und Materialien zur Altertumskunde* 11). Bonn: Dr. Rudolf Habelt GmbH, 9-95.

Becker V. 2011. *Anthropomorphe Plastik der westlichen Linearbandkeramik (= Saarbrücker Beiträge zur Altertumskunde* 83). Bonn: Dr. Rudolf Habelt GmbH.

Beljak-Pažinová N. 2018. Faces from the past. Some thoughts about anthropomorphic and zoomorphic figurines and images in the Neolithic period. *Studia Historica Nitrensia* 22.1, 3-26.

Conrad M., Ender W., Herbig C. and Homann A. 2012. Eine Straße durch die Zeiten. Archäologische Grabungen an der Ortsumgehung Mügeln. *Archaeo* 9(2012), 4-17.

Csengeri P. 2011. Középső Neolitikus Arcos Edények Garadnáról (Hernád-Völgy). *A Herman Ottó Múzeum Évkönyve* 50, 67-104.

Csengeri P. 2013. Figural representations from the Initial Phase of the Alföld Linear Pottery culture from Novajidrány (Hernád Valley, Northeast Hungary). In A. Anders and G. Kulcsár (eds), *Moments in Time. Papers Presented to Pal Raczky on His 60th Birthday* (= *Prehistoric Studies* 1). Budapest: L'Harmattan, 91-112.

Csengeri P. 2014. Újabb középső neolitikus arcos edények Borsod-Abaúj-Zemplén megyéből. *A Herman Ottó Múzeum Évkönyve* 53, 41-66.

Czekaj-Zastawny A. 2008. *Osadnictwo społeczności kultury ceramiki wstęgowej rytej w dorzeczu górnej Wisły*. Kraków: Instytut Archeologii i Etnologii PAN.

Czekaj-Zastawny A. 2009. *Settlement of the Linear Pottery culture in Southeastern Poland* (= *The First Neolithic Sites in Central/South-East European Transect Volume V = British Archaeological Reports* S2049). Oxford: Archaeopress.

Czekaj-Zastawny A. 2014. *Brzezie 17. Osada kultury ceramiki wstęgowej rytej* (= *Via Archaeologica. Źródła z badań wykopaliskowych na trasie autostrady A4 w Małopolsce*). Kraków: Krakowski Zespół do Badań Autostrad.

Czekaj-Zastawny A. 2017. The first farmers from the South – Linear Pottery culture. In P. Włodarczak (ed.), *5500-2000 BC* (= *P. Urbańczyk (ed.), The Past Societies. Polish lands from the first evidence of human presence to the Early Middle Ages* 2). Warszawa: Instytut Archeologii i Etnologii PAN, 21-62.

Czekaj-Zastawny A. and Rauba-Bukowska A. 2014. Technology of the earliest vessels in the upper Vistula River basin – imports against local pottery. In T. L. Kienlin, P. Valde-Nowak, M. Korczyńska, K. Cappenberg and J. Ociepka (eds), *Settlement, Communication and Exchange around*

the Western Carpathians. International Workshop held at the Institute of Archaeology, Jagiellonian University, Kraków, October 27-28, 2012. Oxford: Archaeopress, 95-107.

Czekaj-Zastawny A., Rauba-Bukowska A. and Hreha R. 2018. Colorants used to decorate the Bükk culture vessels. In Valde-Nowak P., Sobczyk K., Nowak M. and Źrałka J. (eds), *Multas per Gentes et Multa per Saecula. Amici magistro et collegae suo Ioanni Christopho Kozłowski dedicant*. Kraków: Institute of Archaeology, Jagiellonian University and Alter Radosław Palonka, 351-359.

Czekaj-Zastawny A., Rauba-Bukowska A., Kukułka A., Kufel-Diakowska B., Lityńska-Zając M., Moskal-del Hoyo M. and Wilczyński J. 2020. The earliest farming communities north of the Carpathians: The settlement at Gwoździec site 2. *PLoS ONE* 15/1*: e0227008*. DOI: 10.1371/journal.pone.0227008.

Czerniak L. 1998. The first farmers. In M. Chłodnicki and L. Krzyżaniak (eds), *Pipeline of Archaeological Treasures*. Poznań: Poznańskie Towarzystwo Prehistoryczne, 23-36.

Czerniak R. 2014. Sprawozdanie z badań archeologicznych przeprowadzonych na stanowisku nr 18 w Biskupicach, gm. Biskupice pow. wielicki. Kraków: typescript filed in WKZ.

Domboróczki L. 2013. Neolithic Cult Objects and Their Symbolism. In A. Anders and G. Kulcsár (eds), *Moments in Time. Papers Presented to Pal Raczky on His 60th Birthday* (= *Prehistoric Studies* 1). Budapest: L'Harmattan, 487-502.

Gimbutas M. 1989. *Die Sprache der Göttin: Das verschüttete Symbolsystem der westlichen Zivilisation*. Frankfurt am Main: Zweitausendeins.

Hansen S. 2007 *Bilder vom Menschen der Steinzeit: Untersuchungen zur anthropomorphen Plastik der Jungsteinzeit und Kupferzeit in Südosteuropa*. Mainz: von Zabern.

Hodder I. 2006. *Çatalhöyük. The leopard's tale. Revealing the mysteries of Turkey's ancient „town"*. New York: Thames & Hudson.

Höckmann O. 1967. Menschliche Darstellungen in der bandkeramischen Kultur. *Jahrbuch Des Römisch-Germanischen Zentralmuseums Mainz* 12(1965), 1-34.

Höckmann O. 1966. Idolplastik der Theiss- und *Bükk-Kultur*. *Jahrbuch Des Römisch-Germanischen Zentralmuseums Mainz* 13, 1-29.

Kadrow S. 2020. Faza i styl żeliezowski kultury ceramiki wstęgowej rytej w Polsce południowo-wschodniej. In M. Dębiec and T. Saile (eds), *A planitiebus usque ad montes: studia archaeologica Andreae Pelisiak vitae anno sexagesimo quinto oblata*. Rzeszów: Fundacja Rzeszowskiego Ośrodka Archeologicznego, 143-152.

Kalicz N. and Raczky P. 1982. Siedlung der Körös-Kultur in Szolnok-Szanda (Vorbericht*). Mitteilungen des Archäologischen Instituts der Ungarischen Akademie der Wissenschaften* 10/11 (1980/81), 13-24 and 329-340.

Kaminská L., Kaczanowska M. and Kozłowski J. K. 2008. Košice-Červený Rak and the Körös/Eastern Linear transition in the Hornád Basin (Eastern Slovakia)/Košice-Červenýrak a prechod od krišskej kultúry ku kultúre s východnou lineárnou keramikou v údolí Hornádu. *Přehled výzkumů* 49, 83-91.

Kaufmann D. 1976. Linienbandkeramische Kultgegenstände aus dem Elbe-Saale-Gebiet. *Jahresschrift für Mitteldeutsche Vorgeschichte* 60, 61-96.

Kondracki J. 1998. *Geografia regionalna Polski*. Warszawa: Polskie Wydawnictwo Naukowe.

Korczyńska M. 2014. Dynamics of the Depositional Processes: The Example of the Tree Windthrow Structure at the Graveyard in Janowice, site 44 (AZP 106-65/103). In T. L. Kienlin, P. Valde-Nowak, M. Korczyńska, K. Cappenberg and J. Ociepka (eds), *Settlement, Communication and Exchange around the Western Carpathians. International Workshop held at the Institute of Archaeology, Jagiellonian University, Kraków October 27-28, 2012*. Oxford: Archaeopress, 231-248.

Lasota-Kuś A. 2013. Sprawozdanie z nadzoru przeprowadzonego na stanowisku nr 18 w Biskupicach gm. Biskupice pow. wielicki. Kraków: typescript filed in WKZ.

Lehmann C. 2018. Figürliche Darstellungen im Frühneolithikum in Sachsen. Leipzig: unpublished Master-thesis.

Lityńska-Zając M. and Czekaj-Zastawny A. 2021. Utilisation of plant materials in houses of the Linear Pottery culture. A case study of Brzezie. *Journal of Archaeological Science: Reports* 35/2, 102710. DOI: 10.1016/j.jasrep.2020.102710.

Macheridis S. 2017. The use of multiple correspondence analysis (MCA) in taphonomy: The case of Middle Helladic Asine, Greece. *International Journal of Osteoarchaeology* 27/3, 477-487. DOI: 10.1002/oa.2571.

Modderman P. J. R. 1986. On the typology of the houseplans and their European setting. In I. Pavlů, J. Rulf and M. Zápotocká (eds), *Theses on the Neolithic site of Bylany. Památky Archeologické* 77, 383-394.

Moskal-del Hoyo M., Rauba-Bukowska A., Lityńska-Zając M., Mueller-Bieniek A. and Czekaj-Zastawny A. 2017. Plant materials used as temper in the oldest Neolithic pottery from south-eastern Poland. *Vegetation History and Archaeobotany* 26, 329-344. DOI: 10.1007/s00334-016-0595-6.

Mrówka Ł. 2011. Development of pottery style on the Bronze and Early Iron Age cemetery at Kietrz, Głubczyce district, in the light of statistical analyses. *Recherches Archéologiques Nouvelle Serie* 3, , 67-100.

Naumov G. 2015. *Neolitski figurini vo Makedonija/Neolithic Figurines in Macedonia*. Skopje: Magor.

Pavlů I. and Šumberová R. 2017. The social role of Neolithic pots. In H. Schwarzberg and V. Becker (eds), *Bodies of Clay. On Prehistoric Humanised Pottery. Proceedings of the Session at the 19th EAA Annual Meeting at Pilsen, 5th September*. Oxford & Philadelphia: Oxbow Books, 110-120.

Pavúk J. 1969. Chronologie der Želiezovce-Gruppe. *Slovenská Archeológia* 17/2, 269-367.

Raczky P. and Anders A. 2003.The internal relations of the Alföld Linear Pottery culture in Hungary and the characteristics of human representation. In E. Jeremand P. and Raczky (eds), *Morgenrot der Kulturen. Frühe Etappen der Menschheitsgeschichte in Mittel- und Südosteuropa. Festschrift für Nándor Kalicz zum 75. Geburtstag*. Budapest: Archaeolingua, 155-182.

Raczky P. and Anders A. 2018. The woman, the pots, and the cattle figurine. New materiality of an early ALP burial from Polgár-Ferenci-hát. In P. Valde-Nowak, K. Sobczyk, M. Nowak and J. Źrałka (eds), *Multas per Gentes et Multa per Saecula, Amici Magistro et College suo Ioanni Christopho Kozłowski dedicant*. Kraków: Institute of Archaeology, Jagiellonian University and Alter Radosław Palonka, 317-328.

Raczky P., Sümegi P., Bartosiewicz L., Gál E., Kaczanowska M., Kozłowski J. K. and Anders A. 2010. Ecological barrier versus mental marginal zone? Problems of the northernmost Körös culture settlements in the Great Hungarian Plain. In D. Gronenborn and J. Petrasch (eds), *Die Neolithisierung Mitteleuropas. Internationale Tagung, Mainz 24. bis 26. Juni 2005 – The Spread of the Neolithic in Central Europe. International Symposium, Mainz 24 June – 26 June 2005* (= *Römisch-Germanisches Zentralmuseum* Tagungen 4). Mainz: Verlag des Römisch-Germanischen Zentralmuseums, 147-173.

Rauba-Bukowska A. and Czekaj-Zastawny A. 2020. Changes in the pottery production of the Linear Pottery culture. Origins and directions of ideas. In Spataro M. and Furholt M. (eds), *Detecting and explaining technological innovation in prehistory*. Leiden: Sidestone Press, 73-84.

Schwarzberg H. 2011. *Durch menschliche Kunst und Gedanken gemacht. Studien zur anthropomorphen Gefäßkeramik des 7. bis 5. vorchristlichen Jahrtausends* (= *Münchner Archäologische Forschungen* 1). Rahden/Westf.: Verlag Marie Leidorf.

Sebők K. 2018. Evolution of a design system in the eastern part of the Carpathian Basin. Transformations of the vessel-based human representations of the Middle Neolithic Szakalhat culture and the genesis of the Late Neolithic Tiszaculture's 'textile' decoration. *Quaternary International* 491, 110-124.

Sebők K. 2014. Bükk-Keramik in Zwięczyca. In M. Dębiec (ed.), *Zwięczyca 3. Eine bandkeramische Siedlung am Wisłok*. Rzeszów: Oficyna Wydawnicza Zimowit, 80-85.

Sebők K. and Kovács K. 2009. Hengeres testű arcos edény töredékei a fiatal Szakálháti-kultúra rákóczifalva határában feltárt településéről. In L. Bende and G. Lőrinczy (eds), *Medinától Etéig*. Szentes: Koszta József Múzeum, 81-90.

Soják M. 2000. Neolitické osídlenie Spiša. *Slovenská Archeológia* 48/2, 185-314.

Tomašovičová T. 2018. The missing faces / Chýbajúce tváre. *Studia Archaeologica Brunensia* 23, 33-50.

Twiss K. and Russel N. 2010. Taking the Bull By the Horns: Ideology, Masculinity, and Cattle Horns at Çatalhöyük. *Paléorient* 35/2, 19-32.

Zimmermann A. 1997. Zur Anwendung der Korrespondenzanalyse in der Archäologie. In J. Müller and A. Zimmermann (eds), *Archäologie und Korrespondenzanalzse. Beispiele, Fragen, Perspektiven*. Espelkamp: Verlag Marie Leidorf, 9-15.