

Research Article

Paweł Valde-Nowak*

The Neolithic Sequence of the Middle Dunajec River Basin (Polish Western Carpathians) and Its Peculiarities

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Abstract: For some time, there has been more information about the Neolithic settlement on the left bank of the middle Dunajec in the Wiśnicz Foothills. In addition to the intense traces of Linear Pottery Culture, there are clear traces of the continuation of the settlement here at the fifth millennium BC and the beginning of the fourth, which represent groups of the Lengyel-Polgar cycle. These discoveries confirm the high qualities of this part of the Polish Carpathians for early agricultural colonization. Also, the selection for the settlement of the highest landscape zone and hilltops is very characteristic and tells a lot about the specificity of this mountain group for prehistoric settlement, also in the context of the old approaches to the existence of trans-Carpathian passages in the Neolithic.

Keywords: Neolithic, Carpathians, Dunajec, Wiśnicz Foothills

1 Introduction

For some time now, the amount of information about the Neolithic settlement on the left bank of the middle Dunajec in the Wiśnicz Foothills has been increasing. In addition to the numerous traces of the Linear Pottery Culture (LBK), there are clear remains of the continued settlement of this area in the fifth millennium BC and at the beginning of the fourth, represented here by the presence of Samborzec-Opatów and Modlnica groups of the Lengyel-Polgar cycle (LP-C) and by the Malice Culture. These discoveries confirm the high value of this part of the Polish Carpathians for early agricultural colonization. Several among Neolithic features from this region are definitely worth further discussion.

The left-bank part of the central Dunajec river basin is a geographical unit called Wiśnicz Foothills. It is made up of exposed hills between 330 and 480 m above sea level. The foothills are characterized by elongated, wide flattened humps, separated by narrow depressions of erosive origin. The Wiśnicz Foothills are built by the lower and upper Cretaceous flysch formations covered with dusty soils reminiscent of Loess's covers. It is worth noting that cold pools often occur in the valleys, while the highlands are sunny from the early hours of the morning. Single finds from Late Paleolithic and Mesolithic confirm very sparse penetration of this area. Neolithic settlement must have been very strong here. It continued in the Bronze Age and the later times of further development of the agricultural economy.

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* **Corresponding author: Paweł Valde-Nowak**, Institute of Archaeology, Jagiellonian University, 11 Gołębia Street, 31-007 Kraków, Poland, e-mail: p.valde-nowak@uj.edu.pl
ORCID: Paweł Valde-Nowak 0000-0003-1023-7389

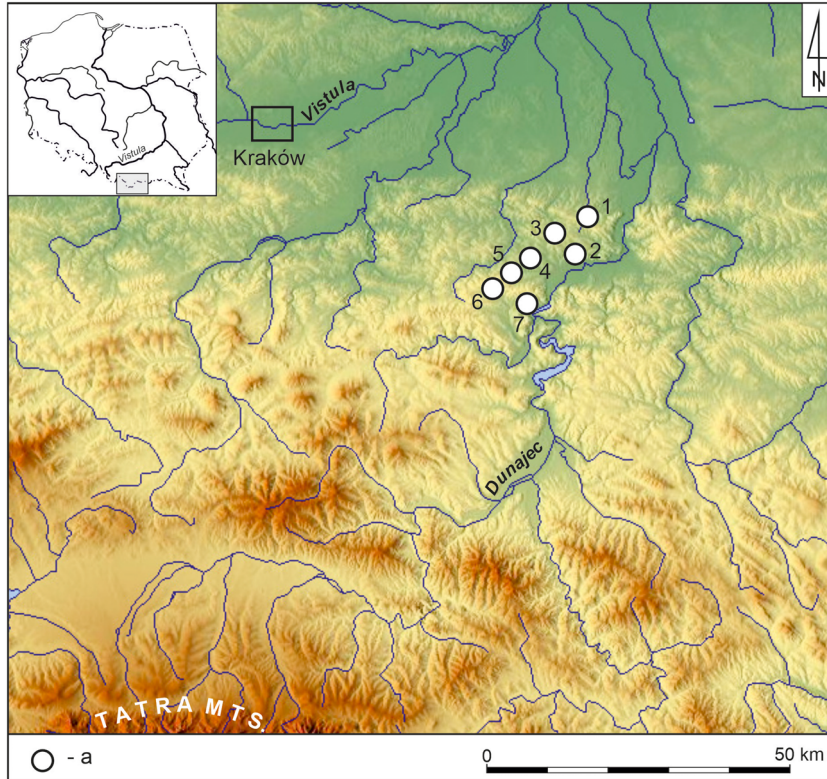


Figure 1: Neolithic excavation sites: (a) on the left bank of the middle Dunajec river. (1) Gwoździec, com. Zakliczyn, site 2; (2) Żerków, com. Gnojnik, site 1; (3) Łoniowa, com. Dębno, site 18; (4) Biesiadki, com. Gnojnik, site 16; (5) Tworkowa, com. site 20; (6) Czchów, com. loco, site 10; (7) Jurków, com. Czchów, site 3.

The selection of the highest landscape zone and hilltops for the settlement is very characteristic and tells a lot about the specificity of the mountainous areas for prehistoric groups, also in the context of old approaches to the existence of trans-Carpathian passages in the Neolithic (Figure 1). In addition to presenting the sequence of this new Central European center of Neolithization, this chapter aims to discuss some more original features.

Discovery of the group of Neolithic villages on the Wiśnicz Foothills, in-between the Dunajec and Uszwica rivers took place in the 1990s of the twentieth century, in the venture of Archaeological Picture of Poland, performed by the joint-work of archaeologists from Tarnów (Okoński, 1997, pp. 60–64). This work was preceded only by a stray find of an individual ceramic fragment of the Samborzec-Opatów group, that have long been included in the literature (Nosek, 1950). The aforementioned discoveries have completed the already emerging picture of the prehistoric settlement of the Polish Carpathians.

2 LBK Sequence

In the Carpathian part of the Dunajec river basin, several sites of the LBK have been excavated. The following localities can be listed: Gwoździec, com. Zakliczyn, site 2–329 m a.s.l. (Czekaj-Zastawny et al., 2020; Kukułka, 2001), Łoniowa, com. Dębno, site 18–358 m a.s.l., Żerków, com. Gnojnik, site 1–346 m a.s.l. (Valde-Nowak, 2009, 2014), Biesiadki, com. Gnojnik, site 16–356 m a.s.l. (Kalita, Kukułka, Szpunar, & Szpunar, 2016), Jurków, com. Czchów, site 3–277 m a.s.l., and Czchów, com. loco, site 10–305 m a.s.l. (Valde-Nowak, 2020). The remains of longhouses were discovered on the first three sites. The most important discoveries in this area were made in Łoniowa. The complete outline of the house was exposed here,

referring to the longest buildings of this type in Poland. Two features found inside the building outline, pits 19 and 23, and especially their inventory has been recognized as graves. Due to the characteristics of the soil, the bone remains in this site could not have been preserved. The fascinating problem of the Neolithic “houses of the living and the dead” returns here, and more broadly speaking the problem of the possible functions of such houses (cf. Czerniak, 2019). Other important facts, apart from the unique features of the longhouse in Łoniowa, which characterize the LBK settlement cluster on the left bank of the Dunajec river, include the presence of traces from all three development phases. Materials from the oldest phase, more and more frequently found on the right bank of the upper Vistula (Doros et al., 2019) were discovered in Gwoździec and Żerków (Figure 2), materials from the middle (music note) phase were discovered in Łoniowa, Biesiadki, and Gwoździec, and the third phase (Żeliezovce) is best represented in Łoniowa and Żerków (Figure 3). A separate problem, that is difficult to elaborate on in this article, is the reference to the LBK sites placed deeper in the West Carpathians in Poprad and Liptov basins (Soják, 1999, 2000; Soják & Furman, 2018) or even further south in the Zvolen basin (e.g., Beljak Pažinová & Javorek, 2018). However, it can be noted that their topographic position does not indicate the selection of the highest places in the area, as we can see over the middle Dunajec river basin.

3 LP-C Sequence

3.1 Samborzec-Opatów Group

Site 3 in Jurków, Czchów commune was discovered in 1932 by M. Klimaszewski. The first and, in fact, the only publication of discovered materials was included by S. Nosek in the PMA Reports in 1950. Materials from the site were assigned to the oldest phase of the Lengyel Culture in the Małopolska region. In later years, researchers continued to connect Jurków with the Samborzec-Opatów group, first distinguished by Z. Podkowińska in 1953. The ceramic material found in 1932 was collected from a randomly exposed and surface-dug cavity. The cavity itself, as S. Nosek writes, was “filled with hummus, charcoal, dirt and crusts” (Nosek, 1950, p. 81). In total, 71 fragments of pottery, 1 fragment of a spindle, and 2 fragments of pugging came from the site. Most of the material was quite damaged. Breakthroughs are completely unreadable, in

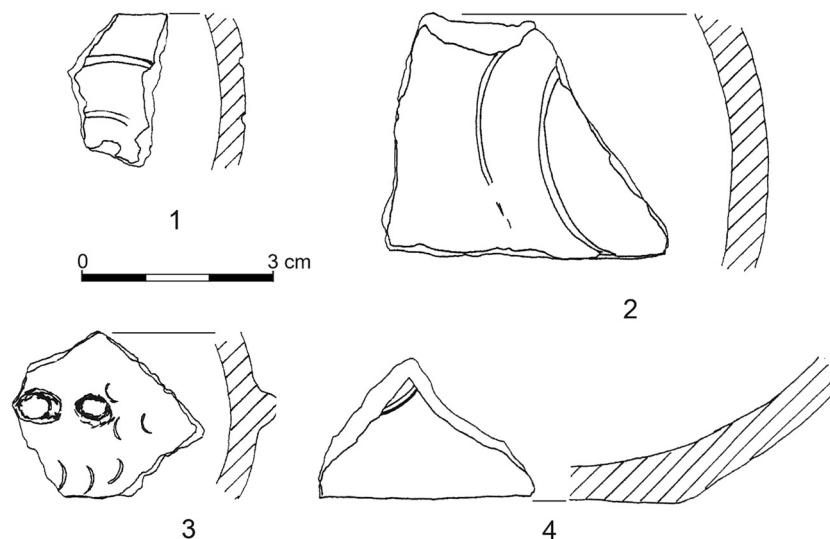


Figure 2: Żerków, com. Gnojnik, site 1. Pottery of early LBK (1–4) found during AZP survey (AZP sheet No. 106–63 – Archive of Voivodships Office for the Protection of Monuments in Krakow, delegation in Tarnów).

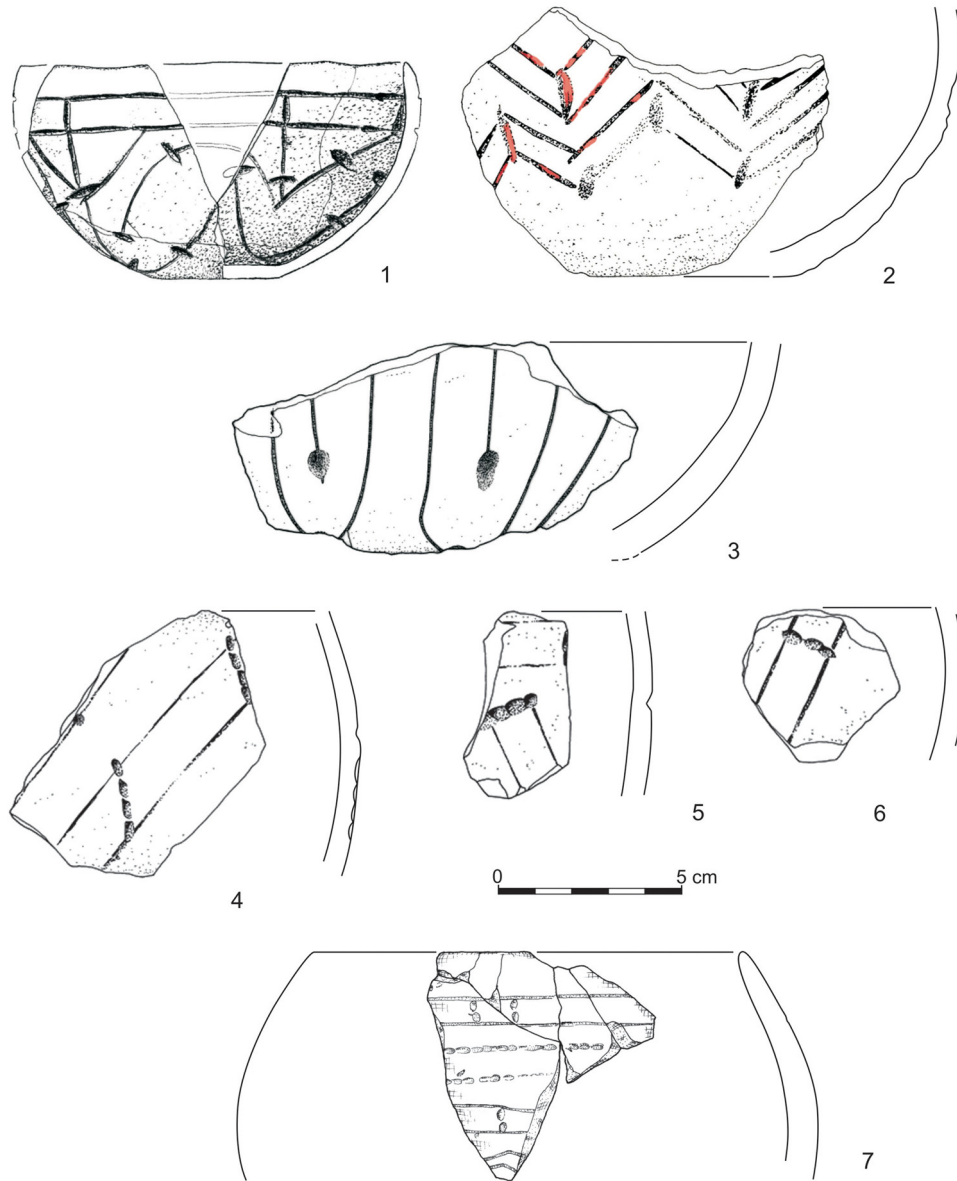


Figure 3: Music note (4), Źeliezovce (1, 2, and 5–7), and LBK pottery inlaid with white paste Bükki Culture pottery (3) from Wišnicz Foothill. Łoniowa, com. Dębno, site 18: 1, (3) feature 8; (4) feature 155; Źerków, com. Gnojnik, site 1: 2 (inlaid with red paste), (5–7) feature 17A.

many cases, the original surfaces of the dishes are not preserved. Only seven pieces of ceramics had decorations, two of them were decorated through puncturing, the next two had nodules, one had a plastic strip, and the last two had cuts and nail dimples. Additionally, one piece of pottery probably shows traces of ornamentation with painting. The painting is on the outside of the vessel and has the form of a very thin, flaking blackish layer. The ornament visible on two pieces was made with a two-tooth tool. Both fragments belonged to pear-shaped cups. One of them was probably decorated with an ornament of insertable angles and with horizontal lines above (Figure 4(3 and 4)). One of the most important fragments of pottery found at the site in Jurków is a fragment of the upper part of the vessel with a bulge under the rim (Figure 4(1)), considered to be a determinant of the Samborzec-Opatów group. The flint core (Figure 4(8)) was found in the 1980s by the author on the surface of an arable field several meters from the escarpment, in which Mieczysław Klimaszewski accidentally discovered a pit with ceramic material.

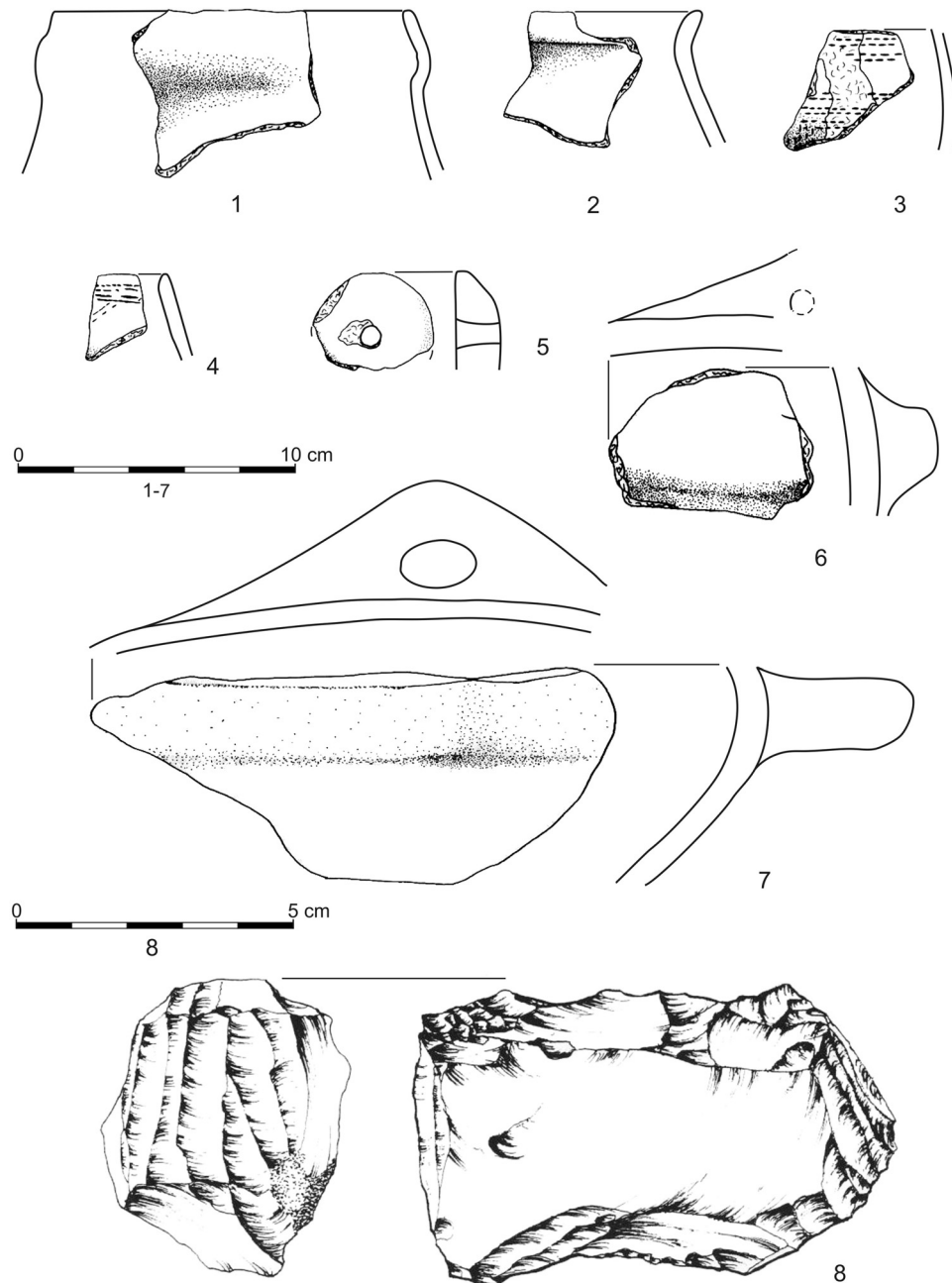


Figure 4: Jurków, com. Czchów, site 1. Samborzec-Opatów pottery (1–7) and flint core (8).

3.2 Malice Culture

Within the framework of excavation work of the three sites, respectively: Biesiadki, site 16, Łoniowa, site 18, and Tworkowa, site 20–315 m a.s.l., some Malice Culture materials were determined (Figure 5). In 2006, 12 of the Neolithic objects in Biesiadki were devastated by the local ventures, way unwarranted nor authorized by the Monuments Preservation Service. The action bore immediate results in two boat-shaped vessels recovered, inherent with the Malice Culture, topped by approx. 280 shards of ceramics. Also, 145 of the stone artefacts stand to represent the Malice Culture there (Kalita et al., 2016, p. 37). It is vital to mention that an ornamented fragment of the bowl on an empty footing was collected there. Specifically, the adornment was triangular in shape and dotted. Such ornaments are leading features of the Rzeszów phase of the Malice

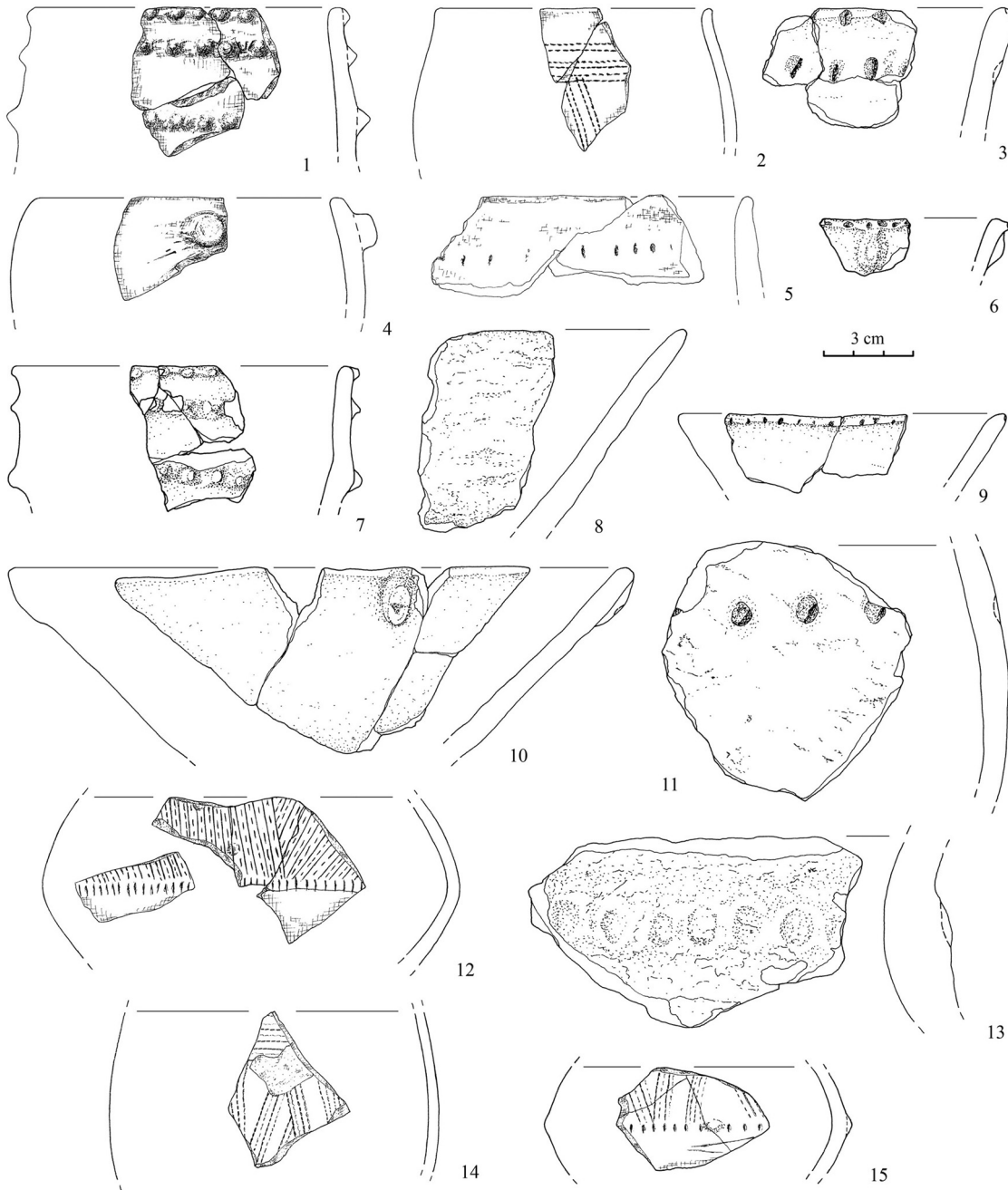


Figure 5: Łoniowa, com. Dębno, site 18, features 7 (3–11, 13), 9 (1–2, 12, 14–15). Selected Malice Culture pottery.

Culture (Kadrow, 1990; 2017, p. 72). The collected archaeological materials distinguish both the stroke-patterned pottery series and hollowed-foot small beaker fragments, respectively (Figure 5). The references for colonization of the Łoniowa site as part of the Malice Culture settlement reach back to its classic phase thereon (Michalak-Ścibior, 1996, p. 47). Łoniowa 18 has been dated back to 5880 ± 40 BP (Poz-15978). Upon calibration, the interval of 4850–4670 cal BC would be affirmed at the 95.4% probability or the bracket narrowed down in time to 4795–4710 cal BC at the 68.2% probability index thereof (Valde-Nowak, 2009, p. 23). Only a handful of ceramic fragments from Tworkowa site most probably can be associated with the advanced classic phase of the Malice Culture. The lack of stroke-wise ornamented potteries alludes to the Rzeszow phase (Kadrow, 1990, pp. 63–69, Figures 14, 19; cf Nowak, 2009, pp. 110, 131). This may find

evidence in the radiocarbon surveys over the charcoal from the feature 10 in Tworkowa (Poz. 47533): 5200 ± 40 BP; 4073 (89.0%) – 3948 cal BC.

3.3 Modlnica Elements

Remains of this kind were found only at one location, namely the site no.10 in Czchów and situated on the latitudinal-wise stretching eminence, the same, as the site of the Samborzec-Opatów group. The site, therefore, constitutes a joint-representation to the so-oriented nexus for the most distant, southbound extent of the Danube-pottery cycle in both the Dunajec River Valley and the Polish Carpathians. Clear signs of the Lengyel settlement have been found in plough-soil. This place has been carefully researched since 1997 (Madej & Valde-Nowak, 1998), but a dozen of unpainted fragments of the Lengyel ceramics and individual flint-made artefacts were discovered only in the 1999 research campaign. Amongst those, a shard of the flat-and-large-noduled bowl (Figure 6(3)), fragments of the bowl of the hollow foot (Figure 6(1 and 4)), or a cone-shaped handle should be mentioned (Figure 6(5)). From amongst flint-made artefacts, a Sąspów flint-made end-scraper draws attention, molded into the distal part of the length (over 7 cm) blade. Such materials can be attributed to the unpainted Lengyel III phase in Slovakia, which can be associated with the younger phase of the Pleszów-Modlnica group in the area north of the Carpathians (Pavúk, 2000; Kaczanowska, 2006; Zastawny & Grabowska, 2011).

4 Some Peculiarities

A fact that gains significance with subsequent discoveries is the increasingly complete cultural and chronological sequence of the Danube Neolithic on the left bank of the middle Dunajec, starting from the very beginning of early agricultural colonization. The classification of this place as the then optimal economic enclave is an important message about the settlement and economic realities at the beginning of the Neolithic. The belt of typical loess in the north of the Carpathians is very narrow in the region of Pilzno

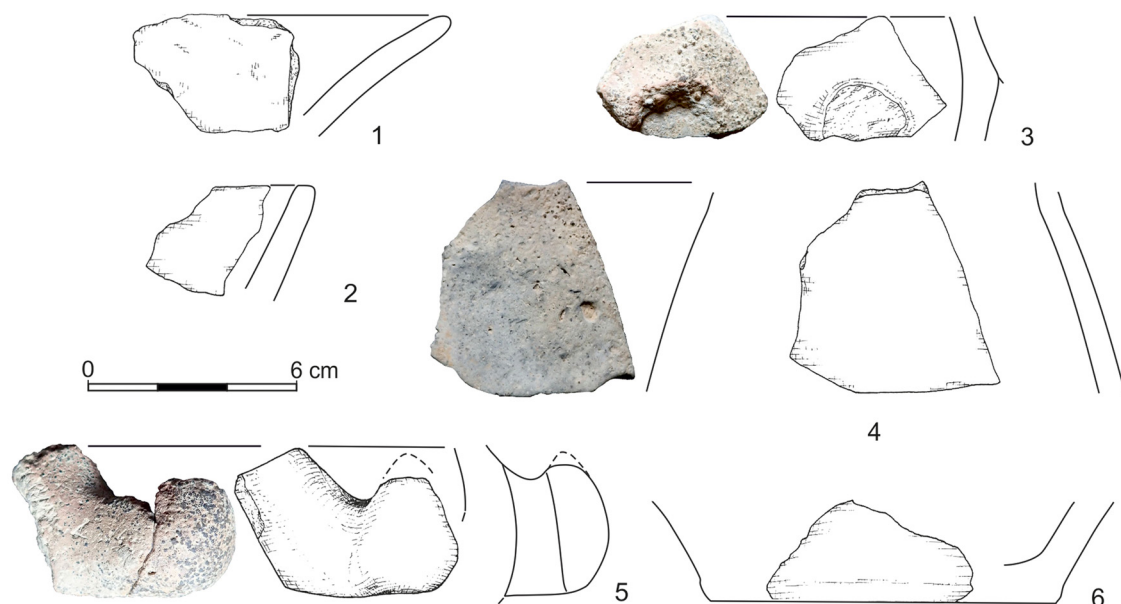


Figure 6: Czchów, com. loco, site 10. Ceramics with the features of Modlnica unit.

and Tarnów and is torn apart. In this situation, the dusty loess-like covers of the Wiśnicz Foothills created an excellent alternative for early agricultural settlement. The location of the housing estates, closely related to the highest landscape zone of the Carpathian Foothills, is undoubtedly significant originality of the southern Neolithic concentration on the Dunajec river. This is strange because the Dunajec and its tributaries create a relatively wide valley at the height of the Wiśnicz Foothills, in which we can easily find locations known from other European clusters of LBK settlements, e.g., low parts of slopes, as well as terraces. On the other hand, the mountain river that is the Dunajec could threaten low locations in flood states. It seems that the explanation of the high location phenomenon, however, lies in the pools of cold in the valleys lasting long in the morning, while the highlands were sunny from the early hours of the morning. For the first farmers, this fact must have been of great importance. Another peculiarity of the cluster on the Dunajec is the presence of a longhouse at site 18 in Łoniowa. Not only its considerable size is impressive (41.5 m long, 7.6 m wide), but also the abovementioned 2 tombs placed in the ground of this building, in its interior, are something special. The stratigraphic layout shows conclusively that both graves were drilled in the ground when the pillars of the western wall of the house were already standing (and at least the pillar pits were hollowed), and the supporting big pillars for the roof were not ready yet. Only further construction works slightly disturbed the filling of the burial pits. It is hard to resist the impression that the builders of the house wanted both tombs to be an integral part of the household, which, for reasons unknown to us, became “the home of the living and the dead,” referring to early Neolithic discoveries from the Mediterranean basin (e.g., Croucher, 2012; Le Mort, Vigne, Davis, Guilaine, & Le Brun, 2008).

Speaking of the house, worth attention is “apses” – difficult to explain features in the form of clay pits. They constitute another peculiarity of the cluster on the Dunajec river (Figure 7). Original features can also be found among stone implements. In the inventories from Gwoździec, Łoniowa, and Czchów, small perforators made of bladelets with a distinct bulbous draw attention. Because of their shape, they could be called conical. They have been retouched on the dorsal side along the entire length of both edges (Figure 8). They

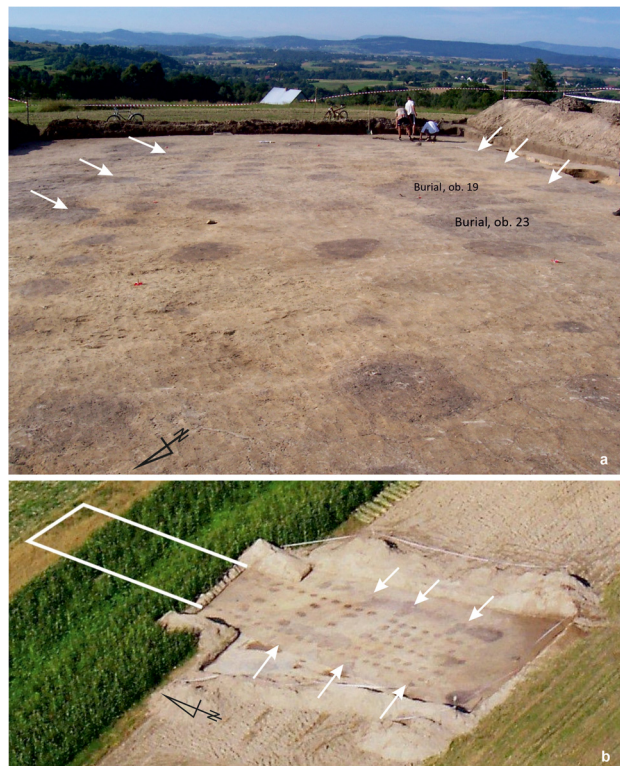


Figure 7: Łoniowa, com. Dębno, site 18, house 2. A general view for the southern part (a) and an aerial photo of the house during excavations (b). White arrows indicate apses in clay pits. Photo by author.

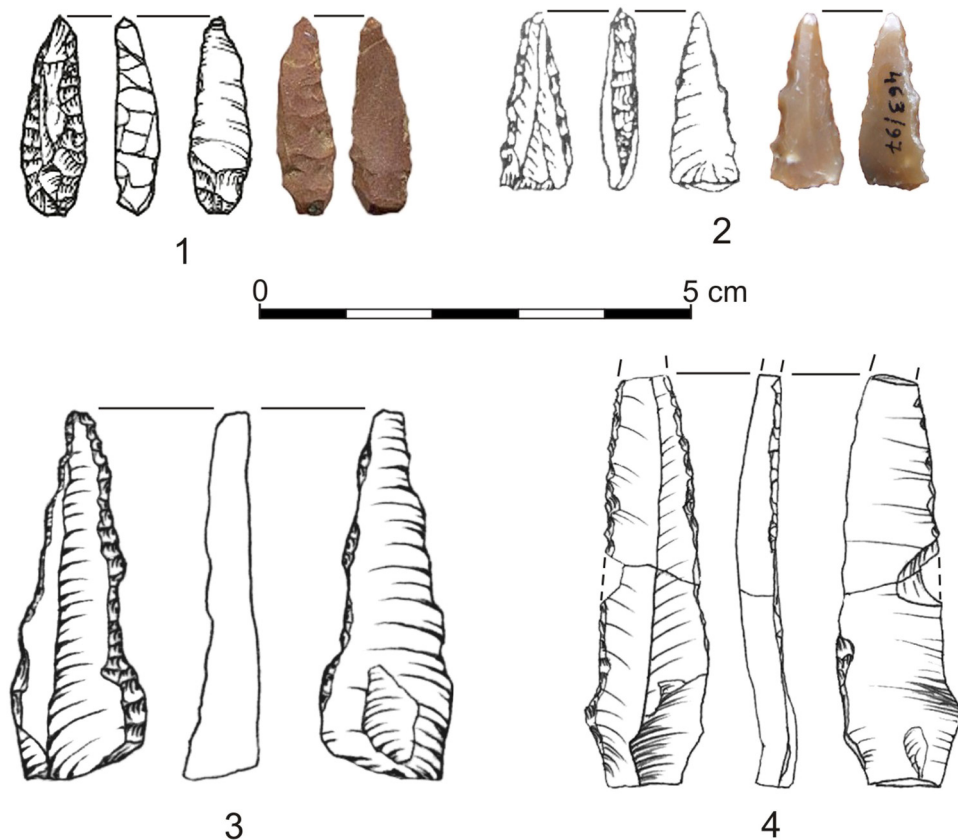


Figure 8: LBK perforator of the conical type. (1) Czchów, com. loco, site 10; (2) Gwoździec, com. Zakliczyn, site 2; (3) Biesiadki, com. Gnojnik, site 16; (4) Żerków, com. Gnojnik, site 1. 1 – Pieniny red radiolarite and 2–4 – Cracow Jurassic flint.

differ significantly from the Vedrovice-type perforators (Dryja, 1998), the spike of which was shaped in the proximal part, which is the opposite of the conical perforators. The typological diversity of perforators in LBK is relatively wide. Some of them refer to the conical specimens on which we are focusing here, others represent different variants of borers, found in the LBK inventories in various regional clusters. In the case of Kuyavia, one can also find, among other specimen, typical conical perforators with a characteristic bulbar scar (Grygiel, 2004, p. 431, Figure 340: 5, 7). This technical footprint signals the use of the hard hammer technique. The conical perforators described above are so characteristic that they can be regarded as relatively certain distinguishing features of LBK in different parts of the range of this culture. On the Dunajec, however, they must have been particularly popular, since one of them was made of the Pieniny radiolarite (Figure 8(1)).

The importance of research on the Dunajec also lies in the valuable archaeobotanical findings. In Żerków, in the well-preserved bipartite fillings of pits (2A, 2B, and 17A), charcoal was found (Moskal, 2010) in three clay pits (2A, 2B, and 17A) related to a longhouse. The remaining samples come from fillings of post cavities. Oak dominates among taxa, while the remaining taxa belong to clone, hazel, and single fragments of *Fraxinus excelsior*, *Pinus sylvestris*, and *Ulmus sp.* Fragments belonging to mistletoe (*Viscum album*) have also been found. Archaeobotanical observations originally made in Żerków have recently been confirmed in palaeobotanical finds at the site in Gwoździec (Czekaj-Zastawny et al., 2020). In addition to the components of a mixed deciduous forest, the grains of cereals such as *Triticum dicoccon* and *Triticum monococcum* L. were found here. Moreover, finds of herbaceous plants also made in Gwoździec are typical of Neolithic semi-arable lands. This is an important contribution to the recognition of the plateaus of this part of the Carpathian Foothills as a zone with optimal conditions for the early-agrarian economy.

Certain facts in the field of flint production also distinguish the Danubian cultural sequence cluster over the central Dunajec. It is about high-quality products and the supply of the best quality raw materials (Table 1). This is

Table 1: Żerków, com. Gnojnik, site 1 and Łoniowa, com. Dębno, site 18. Structure of general raw materials of LBK and Malice stone inventory

	Żerków (LBK)	Łoniowa (LBK)	Łoniowa (Malice Culture)	SUM
Cracow Jurassic flint	89	37	85	211
Chocolate flint	1	9	62	72
Świeciechów flint	2	—	—	2
Volhynian flint	—	2	1	3
Obsidian	42	11	22	75
Other (burnt)	5	2	9	16
SUM	139	61	179	379

important because in the Carpathians, the territory was distant from stone deposits with the highest parameters for percussion processing in the Stone Age. Noteworthy here is the complete omission of the local Carpathian raw materials, except the abovementioned single radiolarite conical perforator found in Czchów and obsidian.

5 Conclusion

The culturally diverse Neolithic remains found in the Wiśnicz Foothills reveal a variety of hitherto unknown threads occurring in mountain archaeology. The issue of the settlement of the Danube population at the very culmination of the foothills is surprising, especially because we are talking about highly uplifted foothills and significant denivelations. This can be explained by the microclimate and perfect sunlight on the peaks, as well as pools of cold in the misty valleys that last long in the morning hours. It can be assumed that these were important LBK factors that made the Carpathian Foothills attractive for the early agrarian economy. The dusty soil covers on the left bank of the Dunajec river certainly played an important role in the decision-making process. It is important that the case of Lengyel-Polgar settlement in the basin of this river cannot be interpreted in terms of the course of the Trans-Carpathian artery, due to the lack of similar traces in the Liptov-Spiz Basin and the areas further south. However, this artery had to function in the era of LBK development.

Abbreviations

AZP	Polish archaeological record
LBK	Linear Pottery Culture
LP-C	Lengyel-Polgar cycle

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