

## REVIEWS AND SHORT REVIEW NOTES

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(Review) Agnieszka Czekaj-Zastawny, Anna Rauba-Bukowska, Agnieszka Kukulka (eds), *Najstarsza osada kultury ceramiki wstęgowej rytej z terenu Polski. Gwoździec stan. 2, gm. Zakliczyn/ The earliest settlement of the Linear Pottery Culture from the territory of Poland Gwoździec Site 2, com. Zakliczyn*. Kraków 2021: Instytut Archeologii i Etnologii PAN, Muzeum Okręgowe w Tarnowie. ISBN 978-83-66463-50-9. 436 pages with colour figures and CD with the catalogue of features, colour tables and plan of the site; DOI: 10.23858/Krk/k/001

One of the most thrilling discoveries concerning the Early Neolithic in the drainage basin of the Upper Vistula made in the last 25 years are the results of a research conducted in 1996-2006 by Agnieszka Kukulka in Gwoździec (in the Wiśnicz Foothills). These works resulted in discovering a previously unknown fact that the Carpathian Foothills had been exploited by a population of the Linear Pottery culture (LBK) as early as in the first phase of its stylistic development. They also brought to light numerous, immensely important archaeological finds, including probably the most spectacular clay model of a human foot (Kukulka 2000; 2001). These results were the main inspiration for further wide-area field research conducted by A. Czekaj-Zastawny in 2016-2018 within the framework of the project of the National Science Centre entitled '*The oldest phase of the Linear Pottery Culture in the Lesser Poland (5600/5500-5300 BC) – genesis, dating, settlement, economy*'. The District Museum in Tarnów participated in the research, lasting several years, which was enriched with numerous and diverse specialist examinations and analyses conducted by experts in archaeology, traceology, archaeobotany, archaeozoology and organic chemistry. The reviewed monograph that is the result of this cooperation is, it is important to note, an extensive interdisciplinary study of all the data and finds obtained at the site in Gwoździec. It should be stressed that it includes results of all earlier research conducted at

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this site – the earliest (1996-2006) as well as later work carried out in 2018 within the framework of archaeological supervision after finishing the wide-area research in 2016-2018.

The monograph is composed of eight main sections preceded by a short note 'From the Editors'. The first part, 'Introduction' (authors: Agnieszka Czekaj-Zastawny, Agnieszka Kukułka and Maria Lityńska-Zajęc) contains preliminary data concerning the site in Gwoździec, including a description of its location, environmental conditions and outline of the research history. It also includes information on the corpus of sources used in the discussed paper, which encompasses 172 features and 10 187 artefacts, almost all of which are linked with the period of settling the discussed territory by LBK communities.

Part two, entitled 'Prehistoric materials' is the longest section of the monograph. It presents analyses of all the mobile and immobile archaeological finds and environmental data obtained during the excavations. In this section, comprehensive information on the methodology of archaeological research (authors: Agnieszka Czekaj-Zastawny and Tomasz Oberc) as well as the question of the poor state of preservation of the archaeological remains discovered at the site – caused mainly by intense erosion processes were discussed in the first place (authors: Robert Kenig, Tomasz Oberc and Andreas Kotula). The subsequent chapters present preliminary information concerning the settlement chronology (author: Agnieszka Czekaj-Zastawny) and the functional identification of the features discovered at the site – it is accompanied by their classification within the framework of the internal periodisation of the LBK (authors: Agnieszka Czekaj-Zastawny and Tomasz Oberc). The research resulted in linking 128 features with the LBK. The great majority of them were remains of four households (I-IV) representing two main chronological-stylistic stages; the pre-music note phase (Ib, the so-called Zofipole phase) and the early music-note phase (IIa). What is more, 21 pits concentrated in the eastern part of the site allowed researchers to distinguish the latest stage of settling the site in the Early Neolithic, which stylistically corresponds to the early *Želiezovce* phase of the LBK (IIIa). Individual households as well as the concentration of the early *Želiezovce* phase pits were discussed in chronological order. The functional identification of the features from this concentration employed the entire number of the collected information – concerning their sizes, morphologies, character of their fills, the number and diversity of the artefacts discovered inside as well as archaeobotanical and archaeozoological data and results of other specialist analyses (*e.g.*, chemical and traceological examinations).

The following chapters discuss analyses conducted on different categories of archaeological materials. Each time, their results were presented in chronological-stylistic order, which corresponds to the subsequent phases of settling the discussed site. First, the most numerous ceramic materials (8789 specimens) were discussed (authors: Agnieszka Czekaj-Zastawny, Anna Rauba-Bukowska, Agnieszka Kukułka and Magdalena Bochnia). The great majority of them are pottery sherds. This collection was discussed in detail with regard to the ornamentation stylistics, diversity of vessel forms and technological properties

of the ceramic compounds used in their production. The study of the technology focused on observation of macroscopic properties, but it also included a microscopic mineralogical-petrographic analysis of 38 sherds representing particular LBK phases, as well as six clay samples taken in the vicinities of the sites. The results of these analyses made it possible to state that the vessels used by the inhabitants of the settlements were made of local raw materials. The following subchapter (authors: Agnieszka Czekaj-Zastawny, Anna Rauba-Bukowska and Agnieszka Kukulka) was dedicated to imported ceramics, represented in Gwoździec by three fragments of ornamented bodies, linked with the environment of the Eastern Linear Tiszadob-Kapušany group from eastern Slovakia. The fact that one of them was discovered in a set linked with the Zofipole phase of the LBK is especially noteworthy. Previously, the earliest discoveries of Eastern Linear ceramics in the drainage basin of the Upper Vistula were recorded in the context of the music-note pottery (*e.g.*, Kadrow 1990; Kaczanowska, Godłowska 2009; Czekaj-Zastawny 2014, 68-72, 123-125; 2017, 52-55; Kozłowski *et al.* 2014). The next subchapter (authors: Agnieszka Czekaj-Zastawny and Agnieszka Kukulka) discusses all non-pottery ceramics finds from Gwoździec, represented by a collection of a dozen or so spindle-whorls and weaving weights, fragments of two bracelets, a piece of a clay spoon as well as a unique model of a human foot and several pieces of unspecified artefacts. The section of the monograph dedicated to ceramics is concluded with a chapter (authors: Harry K. Robson, Fiona England, Alexandre Lucquin and Oliver E. Craig) entitled 'Analysis of ceramic residues preserved within the pottery (ORA – Organic Residue Analysis)', which presents results of analyses conducted on 20 samples of ceramics with the use of gas chromatography-mass spectrometry (GC-MS) and gas chromatography combustion isotope ratio mass spectrometry (GC-C-IRMS). They confirmed that the inhabitants of the settlement processed ruminant adipose fats as well as non-ruminant adipose fats, most probably including fats of freshwater organisms. Some of the vessels contained, leafy plant lipids and remains of products made by insects (honey and wax).

Another category of the analysed finds are 'Lithic artefacts' (authors: Jarosław Wilczyński and Bernadeta Kufel-Diakowska) represented by a collection of 1599 items, including 55 macrolithic stone tools. The authors associated the great majority of them with LBK colonisation and attributed them to the subsequent chronological-stylistic phases of this culture at the site in Gwoździec. The finds were analysed to determine their morphological-typological and functional aspects as well as the raw materials used in their production. The raw material structure of the discovered siliceous materials indicates that Jurassic-Cracow flint played a strategic role in artefact production throughout the entire period of the development of the discussed LBK settlement. The percentage of other raw materials (*e.g.*, erratic and chocolate flint, radiolarite, limnoquartzite and obsidian) was incidental. The analysis of artefacts made of obsidian indicated that its percentage in the collective raw material structure had grown during the latest phase of the settlement. This observation clearly corresponds to data obtained from other sites dated to the Želiezovce

phase discovered in the drainage basin of the Upper Vistula (Szeliga *et al.* 2021). The morphological-typological analysis did not indicate any substantial differences between the collection from Gwoździec and other inventories of this culture discovered in this region, although the considerable percentage of retouched tools (*c.* 20%) in materials dated to phase IIa is conspicuous. The results of a use-wear analysis indicated a considerable number of tools used in processing animal materials (*e.g.*, carcasses, hide) and production of artefacts made of bone and antler. At the same time, tools used in harvesting and processing vegetal raw materials were much less frequent. This fact visibly corresponds to results of very scarce traceological analyses conducted on siliceous materials discovered at other LBK sites in the drainage basin of the Upper Vistula (*cf.*, Małecka-Kukawka 2008; Szeliga and Pyżewicz 2018). In this context, it should be stressed that the range of the conducted analyses is incomparably more comprehensive than any other study of LBK inventories from the loess uplands spreading north of the Carpathian and Sudeten mountains.

The three final chapters of a section entitled 'Prehistoric materials' were dedicated to analysing various bioarchaeological remains discovered during the exploration of the LBK features as well as from samples taken from their fills. An analysis of 'Plant remains' (authors: Maria Lityńska-Zajac and Magdalena Moskal-del Hoyo) confirmed the most important role of emmer wheat (*Triticum dicoccon*), with a considerably lesser significance of einkorn (*T. monococcum*) and, since phase IIa, barley (*Hordeum vulgare*). The obtained data indicate that the inhabitants of the settlement probably cultivated pea and flax, but also harvested such wild growing plants as apple trees, hazel, goose-foot, brome and knot-grass. The cultivation of emmer wheat appears to be confirmed by the results of an analysis conducted on modest palynological data taken from a profile of one of the discovered LBK features. Nevertheless, the taxonomic structure of pollens present in this material clearly indicates that its character was not homogeneous (the chapter 'Analysis of palynological profile' by Agnieszka Wacnik). Very scarce 'Faunal remains' (author: Jarosław Wilczyński), represented by only 33 fragments of charred bones discovered in five LBK features, were separately discussed. It was possible to identify farmed species typical for the LBK (*i.e.*, cattle, ovicaprid and pig), despite the fact that the osteological materials were charred and considerably fragmented. On some bones, there were traces formed during processing animal carcasses.

The subsequent, third section of the monograph (authors: Andreas Kotula, Joanna Jędrzyk, Robert Kenig and Tomasz Oberc) discusses a multi-faceted spatial analysis of different finds made within the settlement – including ceramic materials as well as siliceous, lithic and obsidian artefacts – conducted with the use of GIS tools. The analysis includes the results of traceological examinations, which makes it possible to suggest that in the vicinities of particular households there were zones where different materials were processed. Spatial distribution of various palaeobotanical materials was also examined, which made it possible to determine the greatest concentration zones of preserved remains of cultivated plants (including crops) and wild vegetal species within the settlement.

The monograph's fourth part (authors: Tomasz Oberc and Joanna Jędrzyk) focuses on analyses of the area exploited by the inhabitants of the settlement. First, the basic and maximum productive area were determined – together with indicating the places of exploiting resources and performing various farming activities. These analyses took into account the morphology of the discussed area and the local river network. A visual field analysis made it possible to reconstruct the maximum field of view from the settlement. What is more, examining the degree of insolation – which was determined for the area of the main exploitation around the settlement – indicated that the most insolated territories were located east of the site. This makes it possible to assume that the inhabitants of the settlement most intensely exploited the local slopes (especially their higher parts) when cultivating crops. Next, the entire local network of LBK settlements within the Wiśnicz Foothills was examined. The obtained results confirm the assumption that settlements were established in the zones of brown earth formed on loess, at a short distance from the watercourses. This fact clearly corresponds to settlement preferences attributed to the LBK population within the drainage basin of the Upper Vistula (*cf.*, Czekaj-Zastawny 2008). Visual fields from all the LBK settlements in the region were also analysed, which made it possible to reconstruct the network of mutual visibility between them, which indicates the existence of a centralised settlement system.

The subsequent part of the monograph discusses the chronology of the colonisation of the site in Gwoździec (authors: Agnieszka Czekaj-Zastawny and Tomasz Oberc). First, it presents considerations on the relative chronology of the settlement, based on an analysis of the styles of vessel ornamentation. Next, data concerning the absolute chronology were discussed based on 30 radiocarbon dates. Bayesian modelling allowed the authors to reach the conclusion that the site in Gwoździec should be considered as a generally one-phase settlement – which means that it was developed continuously (without hiatuses between particular stylistic phases), and vessels representing new styles replaced directly older pottery, or even vessels made in different styles were used at the same time. The overall chronological framework of the settlement was determined to last from *c.* 5300 BC and *c.* 5160 BC.

The subsequent part (by Agnieszka Czekaj-Zastawny, Magdalena Bochnia, Oliver E. Craig, Fiona England, Joanna Jędrzyk, Robert Kenig, Andreas Kotula, Bernadeta Kufel-Diakowska, Agnieszka Kukulka, Maria Lityńska-Zajac, Alexandre Lucquin, Magdalena Moskal-del Hoyo, Tomasz Oberc, Anna Rauba-Bukowska, Harry Robson and Jarosław Wilczyński) presents a reconstruction of the functioning and spatial development of the LBK settlement based on the totality of the data obtained during the research (the results of the detailed analyses conducted on them were presented in the previous parts of the book). The radiocarbon data and the stylistics of vessel ornamentation made it possible to distinguish four subsequent phases of the settlement, represented by four separate households (phases 1-3) and the concentration of farming pits (phase 4). Based on their distribution, it was established that there had been different settlement zones during the development

of the settlement: the eastern (phases 1 and 4) and the western part of the site (phases 2-3). An analysis of the dispersion of the archaeological finds, supported by specialist examinations, made it possible to reconstruct the system of using house surroundings during the development of the settlement by the identification of zones linked with different economic activities performed near the households in different phases. The most complete data in this regard (and, at the same time, certain differences) were obtained for phases 1 and 3. As to the earliest phase (House I), the traces of backyard farming were concentrated in the eastern part of the household, and phase 3 (House III) is indicated by remains that were evenly distributed around the house. Next, the authors focused on questions concerning the economy of the settlement. The basis of these considerations – taking into account the entire period of the development of the discussed settlement – were all the collected archaeological and environmental data together with the results of specialist analyses performed with their use (*e.g.*, use-wear analysis and organic residue analysis). These pieces of information clearly confirm the conjecture that the economy of the settlement was always multi-faceted and based on growing cereals (wheat, barley) and animal husbandry (cattle, ovicaprids, pigs). At the same time, the inhabitants of the settlement were focused on intense exploitation of various natural resources (gathering wild-growing plants and hunting). This fact probably means that the diet of this population was varied – based on plant and meat products – and rich in nutrients, which was probably enriched with such products as honey. This fact is clearly indicated by the organic residue analysis. In this context, we should stress that the analysed vessels from Gwoździec were the first artefacts of this type in which lipids of unspecified freshwater animals were detected, which indicates that they were processed as food. These findings considerably complement very modest data obtained at other sites in the drainage basin of the Upper Vistula, which prove that LBK societies hunted fish, terrapins and beavers as well as collected mussels (*cf.*, for example, Nadachowski and Wolsan 1999, 238; Makowicz-Poliszot 2008, 256-257; Szeliga *et al.* 2023, fig. 10, Tab. 3-4).

The next chapter (by Marta Korczyńska and Joanna Jędrzyk) discusses the latest archaeological discoveries dated to the Early Bronze Age. These materials, associated with the Pleszów group of the Mierzanowice culture, are represented by only three pottery sherds having no archaeological context. Despite the somewhat modest number of these artefacts and the fact that they are loose finds, they triggered an extended discussion on the character and potential scale of the colonisation of the Wiśnicz Foothills by the communities of the Mierzanowice culture at the beginning of the 2<sup>nd</sup> millennium BC. This is the final chapter of the monograph, which is followed by brief 'Conclusions', a bibliography, a summary in English and an alphabetic list of all the authors. The book is complemented with a CD containing a digital catalogue listing the discussed features, figures with photographs and colour illustrations presenting the features as well as an abundant group of illustrations presenting the archaeological materials and the overall plan of the site.

The discussed publication is another monograph presenting LBK materials discovered during archaeological excavations in the drainage basin of the Upper Vistula published in recent years – after Samborzec, Modlniczka, Brzezcie, Targowisko and Zwiężczyca (Kulczycka-Leciejewiczowa 2008; Czekał-Zastawny and Przybyła 2012; Czekał-Zastawny 2014; Dębiec 2014; Zastawny ed. 2014). What makes it stand out from previous, enormously important and valuable works is the incomparably greater scale of the conducted specialist analyses and, as a result, a great number and variety of the obtained data. They are the base of a complex reconstruction allowing us learn about the history of the settlement in Gwoździec, methods of its internal management, and the scale of the exploitation of its surroundings at the end of the 6<sup>th</sup> millennium BC. They also made it possible to determine the economic principles of the existence of its inhabitants, including obtaining, processing and using various raw materials. Still, the results of the interdisciplinary research are of greater than just a local or even regional importance. They provide us with many new and immensely important pieces of information on the origin, spread, chronology, development and geographical distribution of the earliest LBK settlements, not only in south-eastern Poland, but also across other territories of Central and Central-Eastern Europe. The presented monograph opens a completely new chapter in the discussion of these topics, undoubtedly playing a role of the most important reference point for further research on the Early Neolithic and the neolithisation of old upland loess territories – in the drainage basin of the Upper Vistula as well as across the entire northern foreland of the Carpathians.

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