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(review) Tomasz Stolarczyk and Justyna Baron (eds.), *Osada kultury pól popielnicowych w Grzybianach koło Legnicy* [*Settlement of the Urnfield culture at Grzybiany by Legnica*], Legnica-Wrocław: Muzeum Miedzi w Legnicy 2014; 601 pp.

The review covers the publication “Settlement of the Urnfield culture at Grzybiany by Legnica“, edited by Tomasz Stolarczyk, Justyna Baron issued in 2014. The volume contains a presentation of the artefacts produced by excavations in 1959-1962, 1970-1973, 1977-1980 and 2010-2011 at the settlement of the Urnfield culture in Grzybiany by Legnica. The publication is a result of a two-year project run in 2013-2014 by the Copper Museum in Legnica entitled “Grzybiany. The lake settlement from the Bronze and Iron Age” in the framework of the programme “The Cultural Heritage”, priority “Protection of the archaeological monuments” and financial support by the Ministry of Culture and National Heritage. The project was realised in cooperation with the Institute of Archaeology, Wrocław University, the Faculty of Foundry Engineering, AGH University of Science and Technology in Kraków and the Association of Alumni of the AGH University of Science and Technology in Kraków. The final version of the book is a result of the cooperation of archaeologists, foundry specialists and other professionals involved in the project at various stages.

The volume has 603 pages and contains 23 chapters (including the Introduction, Final Conclusions and the list of the authors) of which 20 are thematic chapters by various authors. Each chapter is accompanied by numerous pictures, photographs, charts, tables, diagrams referring to analysed issues and followed by an English summary. A cd is added to each copy and contains errata (pages 573 and 577), photographs of lithic, ceramics, bone, antler and metal artefacts presented in the book. There are some additional data on the disc such as the characteristics and catalogue of pottery: three tables, one contains data from seasons 1970-1973, 1977-1980 (526 pages), another for seasons 1959-1962 (60 pages) and the last for seasons 2010-2011 (29 pages). One table contains a list of identified vessel forms (175 pages).

The introduction contains information on the first discoveries on the site, excavation seasons, scientific teams involved, unearthened area and finds and specialist analysis. This

part is completed with photographs, both archival and contemporary, taken in course of the excavations. It was also noted, the results had never been fully published. That changed after 2010, when both the Institute of Archaeology, Wrocław University and the Copper Museum in Legnica began to revisit the site and starting excavations again. The promising results became an incentive to obtain materials from older excavations from 1970s' and 1980s' stored in the Institute of Archaeology and Ethnology, Polish Academy of Sciences in Warszawa. In 2012 the complete collection, including documentation, was transferred to the Museum in Legnica. The next stage was the financial support of the Ministry of Culture and National Heritage, project Cultural Heritage, priority Protection of Archaeological Monuments and which finally resulted in the publication.

The first report is authored by Mirosław Masoj, Karina Apolinarska, Mirosław Furmanek, Małgorzata Malkiewicz, Daria Noskowiak, Adam Szykiewicz, Leszek Żygadło and refers to "Paleoenvironment of the Grzybiany area and the Koskowickie Lake". After presenting the location, topographical and geomorphological properties of the discussed area, the authors analyse palinological sequences based on materials sampled from two drills (61 samples in total). The results are the basis to reconstruct the main stages of environmental development and its chronology. The correlation of the pollen spectra and absolute chronology (measured for selected samples of the deposits) provided different results. Malacological analyses were also conducted allowing the identification of molluscs from the Pleistocene and Holocene lake deposits and the palaeoclimate to be characterised. All of the data obtained supports the information the lake gradually drained in the course of its most recent history.

Paweł Rajski and Tomasz Stolarczyk are the authors of the next report entitled "Location and settlement context of Grzybiany 3 site". Based on archival maps (from the second half of 18 century, and ca. 1830 and 1900) they reconstructed the main elements of the landscape and hydrographic network. An interesting procedure was a comparison of the modern orthophotomap and a map from 1830 showing one of the drained lakes of Legnica lakeland. The authors discuss fluctuations in the water level and reconstruct the hypothetical size of the settlement, which probably reached the modern terrace edge which was akin to a shoreline in the Bronze Age (running along 120 m a.s.l. contour line). The rising water level resulted in the inundation of part of the settlement constructions and then the accumulation of lake settlements, followed by the gradual regression of the lake shore line. Summing up, the authors agree that similar deposits are observed commonly in other lakes of the lakeland.

In the next chapter, Krzysztof Demidziuk discusses "Archaeological research of the Grzybiany area before 1945". Based on archival research we are able to learn about discoveries and research before 1945. The fortifications at the Koskowice Lake were known to German archaeologist since 1938. Although no excavations were initiated, the site was mentioned in the professional literature, and later discoveries in 1959 were considered a re-discovery. The report is accompanied with a list of archaeological sites from the

Grzybiany area, their locations on a topographic map, hand-drawn maps and archival correspondence on the subject.

The following report is entitled “History of the archaeological research and site stratigraphy at Grzybiany 3” by Tomasz Stolarczyk. This is the most comprehensive chapter, covering 148 pages. The author divided the results of the surface survey and the excavations into four stages: before 1945 (discussed in the previous chapter by K. Demidziuk), research 1959-1962, 1970-1980 and excavations in 2010 and 2011 carried out to verify the previous observations on the site’s stratigraphy. The chapter is illustrated with largely previously unpublished field documentation, archival photos, drawings, and charts prepared under the project “Grzybiany. Lake settlement from the Bronze and Iron Age”. The author presents the history of particular research stages, including information on the scholars and institutions involved, events (exhibitions, conferences), methods of research and selected artefacts. Each stage is completed with information from the local press, archival photos and drawings of particular trenches. The publications issued at the various stages of the research are mentioned as well. The publication of archival documentation (scanned field drawings with some modern comments, keys added) allows the presentation of both the original documentation and new data obtained during the recent studies. However, in some cases (mostly in pictures containing much information), the data (e.g. referring to the levels) overlaps, making them blurry and hard to understand. Also, the figure 80 caption is repeated. These remarks, however, must be considered as marginal compared to the enormous effort expended in collecting and ordering the data gathered over the years and presenting it for a wider audience.

Subsequent parts of the volume contain artefact studies produced by excavations. A report on “Ceramic ware from the Lusatian culture at Grzybiany” by Tomasz Żur opens the section. The author notes that it was impossible to give an exact number of pottery shards obtained in course of 14 campaigns (1959-2011). However, the body of evidence contains 97,231 shards, 39 complete vessels and 25 specimens reconstructed or known from the field documentation, which make the collection a considerable one. A distribution of ceramics in the site area was presented, accompanied with a map, charts and tables. In this case, the number of analysed objects amounts to 78,351 pieces, as the fragments obtained in 1959-1962 cannot be precisely connected with individual trenches. The author argues there were three zones of intense ceramic deposition which may correspond with the intense use of these locations. One of them overlaps with an area where the casting of moulds occurred. He also notices one of the zones with a high number of ceramics (including complete or reconstructed vessels) occurred in the southern part of the promontory where the remains of a platform and breakwater had survived. In older papers, this situation has already been considered as supporting evidence of some cult remains in this part (Bukowski 1982, 18). Subsequently, technological analyses based on the macroscopic observations was discussed, this part is illustrated with photographs and charts presenting the selected technological properties of the pottery. The author classifies the collection

based on formal categories worked out for pottery manufacturing in the Lusatian culture in central Silesia (Gediga 1967, 27-126) but containing his own modifications as well. The later ones result from the site chronology reaching beyond the Bronze Age and the high degree of fragmentation of the collection discussed. In subsequent paragraphs he analyses the decoration of 3,360 so-called “pottery units” amounting to 25,6% of all vessels. The decoration was divided into five main groups and then eight basic types. Within them, another division covering various motifs and patterns was made. The author also argues that some of them may be considered symbolic for the former society.

In the next chapter “Non-vessel ceramics from the Lusatian culture settlement at Grzybiany, site 3” Katarzyna Sielicka presents perforated ware, rattles, spindle-whorls and loom weights, ceramic discs, models of bracelets, plastic figurines and other unidentified ceramic objects. A detailed study of the mostly reconstructed perforated vessels improves our knowledge of these types of artefacts known from only 22 specimens. According to the author, the most probable usage of such vessels was in diary production, but this must be proven by detailed analysis and ethnographic studies. This, however, is hard to verify as the author does not bring any reference. On page 305, where a bracelet model and a bird figurine are presented, the author refers incorrectly to objects in plate 4.

Tomasz Stolarczyk is the author of the next chapter entitled “Ceramic seals – magic objects or casting tools” in which he presents the current state of art on these rare artefacts and makes some comments about their chronology and functions. He moves their chronology from Ha D as suggested by Z. Bukowski (1988) to Ha C. He agrees with the later one that some seals might have been a kind of pattern used in the manufacturing of casting moulds, something which is supported by defectoscopic pictures of one of the moulds. A new opinion in this case is a possibility of using these objects in pottery production, as suggested by a print fitting one of the seals and observed on ceramics.

A small collection of flint artefacts (17 pieces) was discussed by Bernadeta Kufel-Diakowska. She classified them in terms of their technological properties and dynamics of manufacturing, while their functions was identified based on the use-wear traces observed under microscopes (stereoscopic and metallographic ones). Technological and metrical data is typical for flint assemblages dated to the Bronze and early Iron Age. On page 325 in a reference to a retouched blade, number 7 in table 1 is added incorrectly, because the artefact discussed can be found in table 2.

Marcin Diakowski and Joanna Zych are the authors of “Archaeozoological analysis of bone material from Grzybiany site”. A collection of 11,485 samples of animal material contained the remains of vertebrates including mammals, birds, reptiles and fish and invertebrates represented by molluscs. Species identification was done basing on macroscopic observations and comparative analysis, allowing the identification of 48% of the animal remains. Measurable remains of vertebrates were the subject of osteological analysis, sex was identified where possible. The authors notice the clear domination of domestic animal (cattle, followed by horse and pig) over wild animals. Some traces of thermal processing

and butchering activities support the idea that most of the remains are post-consumption waste deposited in the site area. Among the collection, tools made of red deer antler and domestic cattle rib were identified, they were analysed in the next chapter.

Studies of bone and antler artefacts are presented by Marcin Diakowski (“Bone and antler artefacts. Studies on technology and analysis of functions”). He discusses an analysis of 75 objects made of bone, antler and horn. Raw material analyses, studies on typology, technology and functions were presented. Apart from macroscopic observations, some objects were analysed under microscopes (stereoscopic and metallographic ones). A classification was based on dividing the collection into three groups: half-products, waste and finished objects. Such a division differs from the most commonly applied method, where quasi functional categories are introduced like weapons, tools etc. This, as the author argues, might suggest a possible function at the very outset of a study. Technological analysis enabled the identification of both manufacturing modes including the working techniques and tools used. In this stage the author used his own experience in the field of experiments to comply with various features. Subsequently, operational chains were presented for each group of artefacts identified. Based on macro- and microscopic use-wear traces and morphometrical properties, the functions of artefacts were specified. In this case, the author again recalls the experiments both his own ones and those known from the literature. Concluding, he argues that bone and antler artefacts played an important role in the every-day life of the Grzybiany site in all stages of its settlement. He also notes that the inhabitants used both simple tools and more complex ones whose production required much effort, complicated techniques and multistage processing.

The next paper discusses lithic artefacts and its author is Ewa Lisowska. In total, 190 lithic objects were analysed, of which 55 can be called artefacts. The most numerous are hand stones – 20 such items enlarge a collection known from the area of Silesia (40 objects so far). The analysed materials were two stone hatchets, a fragment of a mace, an axe, four whetstones, a piece of a grindstone, net weight, spindle-whorl, pendant, nine smoothers and three pads. In the identification of the origin of the raw materials, the author used results of microscopic analyses by Piotr Gunia, published in the same volume. Concluding, the author argues the village inhabitants mostly used the easy accessible raw materials occurring in the vicinity of the site. Again, poor interest in local, raw materials originating from the Sudety mountains seems to be a rule in case of the Lusatian culture sites in Silesia.

Piotr Gunia, in the chapter “Characteristics of petrographic properties of lithic artefacts from the Lusatian culture site at Grzybiany” presents the results of the analysis of lithic artefacts which complements the archaeological report well. He obtained data on the type and origin of rocks used and, in some cases, was able to point a location where the material was extracted. In total, 55 artefacts were analysed with the use of macroscopic and microscopic observations. The latter were made with the use of a petrographic microscope.

The next part is by Agata Sady who presents “Plant remains from the settlement at Grzybiany”. In her report, she precisely presents the methods applied on samples which

provided in total over 250,000 plant remains. The objective of her study was to present the character of the plant collection against the changing environmental background. In this part, nearly all of the data on plant remains obtained between 1959 and 2011 can be found. In total, over 500 various samples (i.e. pits fills, lake deposits, burnt seeds, pots fills, charcoals, wood pieces, pottery shards with plant prints, daub lumps and coprolites) were analysed. The author argues that the most important results coming from the data are significant transformations noticed in the late Bronze and early Iron Ages. In this time, a farming structures and strategies undergone a reorganisation. Grzybiany is a first site proving a domination of common wheat over emmer, with these conclusions being presented in the 1980s' but never being published by Klichowska.

Katarzyna Sielicka analyses 142 metal items (including 51 bronze, 83 iron, 1 tin and 7 unknown metal objects) and presents the results in the chapter "Metal artefacts from the Lusatian culture settlement at Grzybiany). She also verifies the former information on the chronology and context of the artefacts already published. The author presents selected items within distinguished formal groups including data on the context, function, chronology, provenance and possible analogies of the find. Chemical analyses helpful in provenance study were recalled as well. The author argues even such a small collection can represent well the site chronology and some activities of its inhabitants (presuming some of the objects might have been produced at the site – this refers mostly to bronze items). Others are considered to be unique or inspired by external influences (e.g. pin with a disc and a loop, zoomorphic pendant, fibula of the Wojszyce type) and thus confirming supra-regional contacts.

In the next chapter entitled "Bronze working workshop from the site of Grzybiany – introduction", Tomasz Stolarczyk analyses the role of the Legnica region in the development of prehistoric metalwork. He presents a location and items discovered within a bronze-working workshop known from the site. In former literature, this part of the settlement was called the "working place" where ca. 2000 pieces of clay moulds, crucibles, nozzles and other similar objects were found. Many of them were lumps composed of metal core surrounded with non-metallic layers, of which some might have been production waste. In the same part, a question of possible access to a local raw material was discussed, based mostly on copper ore distribution in the Kaczawa Foothills and archaeological finds from Legnica region. It must be noted that such a hypothesis has never been directly confirmed in the archaeological evidence.

Aldona Grabacz-Klempka and Stanisław Rządkosz are the authors of the chapter "Characteristics of a chemical composition and structure of metal artefacts from the Lusatian culture settlement at Grzybiany". To achieve the results both optical and scanning microscopy were applied together with analysis of chemical composition with the use of macro and micro field x-ray fluorescence. Defectoscopic analyses allowed the investigation of the character and composition of so-called "lumps" (mentioned by T. Stolarczyk in the previous chapter). An important result was extracting a metal core from 12 lumps. After analysing 52 items, some groups were distinguished of which selected objects were

discussed. In terms of chemical composition, copper alloys prevailed. The bronzes vary in inclusion content – this can indirectly indicate their various provenance or technological processes. The authors also managed to match some of the bracelets and ceramic moulds. They also paid attention to the connection between analysing metals and alloys and investigating the moulds and other remains of the metalworking workshop. These two types of analyses make the study on the production of moulds, alloys and casts complete.

The same authors prepared the next chapter entitled “Analysis of casting in the Bronze and early Iron Age based on casting moulds from the Lusatian culture settlement at Grzybiany”. The paper discusses the abundant data available on casting, mostly bracelets and necklaces. Macro and microscopic analyses were done to identify the chemical composition accompanied with defectoscopic tests. A digital reconstruction of wax models and casting simulations were performed as well. The digital modelling enabled moulds to be matched to finished products and, supplemented with radioscopic images, this resulted in a complete picture of the tested objects being obtained, including reconstructed parts. In later paragraphs the authors the present state of art on prehistoric technology referring to the casting moulds from Grzybiany. The remarks were followed by some comments regarding the moulds themselves – they are single-use, not durable moulds made of clay with sand temper, grog and sometimes organic materials (e.g. straw). Concluding, the authors state in terms of moulds’ shapes and sizes of hollows, the moulds display recurrent properties which confirm some strict technical rules in the metalworking performed at the site. They also indicate a direct connection between mould producing location and the metalworking workshop as this is proven by matches (finished object and mould sizes).

Justyna Baron, in her report on “Amber lumps and a glass bead” presents a bead made of the substance known as glassy faience and three lumps of amber. The latter do not display any working traces, they come from a layer II representing the second settlement stage i.e. 7-mid. 6th c. BC. The glass bead, made of non-transparent blue paste comes from layer III connected with the oldest settlement stage i.e. 8-6th c. BC. This corresponds well with a chronology of beads from group I.I by T. Purowski who dates them to Ha C and Ha D1 periods (Purowski 2013, 30-31).

In the part entitled “Violence at the settlement of Grzybiany: anthropological analyses of bone remains”, Agata Hałuszko investigated fragments of human bones and two fragments of animal bones. Apart from sex and age, some pathologies were determined as well and the author discusses the possible interpretations of the human remains unearthed in the settlements in detail. She argues that comminuted fracture-dislocations observed on a mandible fragment (inv. no. 19/72) prove the use of violence, ending with an execution. They support the opinion of a fight and withstand. Concluding, the author notes that not all of the human bones should be hastily considered to be offerings of cannibal behaviour, as most of the traces observed on the bones suggest violence.

The last part refers to “Chronology and site settlement stages”. Justyna Baron suggests that both the chronology and settlement stages are not easy to identify owing to complicated

stratigraphic situation noted by all archaeologists dealing with this site. The general dating to the late Bronze and early Iron Age was determined based on the selected properties of artefacts such as pottery or metal objects, completed and compared with radiocarbon chronology. Observations of the stratigraphic situation in trenches from seasons 2010 and 2011 were mostly done to compare them with previous results known both from the publications and field data. It must be noted here that the remarks on the chronology done since 1950s' corresponds well with the new survey. In this chapter, the brief characteristics of each distinguished settlement layer were presented. One can find information as to what type of archaeological evidence including constructions, pits etc. was produced by each layer together with the basis for their dating. The initial settlement traces are connected with the early stages of Urnfield cultures (or even late Tumuli cultures), while the first stable settlement was established here as late as in the 9/8th c. BC, as already noticed by Z. Bukowski (1985, 231). Data about second and third settlement stage varies slightly when compared to earlier opinions by Z. Bukowski. Basing on artefact properties, the chronology of the second stage can be moved to Ha C or even HB3. The last settlement phase, basing on the metal artefacts, can be dated to Ha D. Translating the data to an absolute chronology, samples from the second layer can be dated to 2nd half of 6 and 5th c. BC, and data from the third layer cover wide timespan between mid. 8 to late 5th c. BC. Any precise dating, the author argues, cannot be recalled as the layers are open contexts and the material can be easily displayed.

The reviewed volume is a result of group work carried out on the abundant and diverse evidence from the site of Grzybiany. This huge effort contributed to gathering information produced by 14 campaigns and analysing various streams of data – from traditional archaeological studies to specialist analyses - and must be appreciated here. Undoubtedly, all of the authors displayed great commitment to the volume, which made the information on the Grzybiany settlement complete.

The site itself is unique due to its well preserved organic remains such as wooden constructions or archaeobotanical remains, bronzeworking places or the large collection of pottery shards (including seals). Its convenient environment with high humidity resulted in the preservation of wood and botanic remains to a good degree and forms the basis for detailed analysis. The authors fully used the uniqueness of the site and the proper project design, assuming the use of a combination of archaeological and non-archaeological data, must also be noted here as they complete, complement and correct each other. Malacologic analysis or studies on archival maps can be good examples of such procedure as both were applied to define the original shape and transformations of the lake at which the settlement was set. The chemical analyses enabled the archaeologists to discuss the possible provenance of the metal artefacts, while petrographic investigations enabled the same for lithic objects. The collection of pottery is one of the largest assemblages produced by a settlement in Lower Silesia. Its analysis, also in their stratigraphic context, and comparing the data with radiocarbon chronology, was the basis for the dating of the site. Other objects

obtained in the course of the excavations and were investigated within the project with the use of specialist analysis (pottery, lithic and flint artefacts, bone and antler objects, human and animal bone remains).

The monograph of the Grzybiany settlement also contains abundant data on metalwork, and the studies were possible thanks to the co-operation with the Faculty of Foundry Engineering at the Stanisław Staszic University of Mining and Metallurgy in Kraków. This resulted in studies on the metal alloys, casting moulds and other objects from the metalwork place which improves our knowledge on the technology of mould production and the character of alloys in the late Bronze Age and early Iron Age.

All the data published in the volume gives us full information on the community living at the Grzybiany site on the cusp of the Iron Age – its impact on the environment, farming strategies etc. and which significantly enriches our knowledge of the past in the Legnica region.

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