



ADAM MICKIEWICZ
UNIVERSITY
POZNAŃ



Treasures of Time

Research of the Faculty of Archaeology
of Adam Mickiewicz University in Poznań



Location of the main research areas.
Numbering, compare the table of Contents.



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Mirosław, Greater Poland Voivodeship, site 37. Part of the burial equipment.
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ISBN 978-83-946591-9-6

DOI: 10.14746/WA.2021.1.978-83-946591-9-6

The Volume is available online at the Adam Mickiewicz University Repository (AMUR):
<https://repozytorium.amu.edu.pl/>

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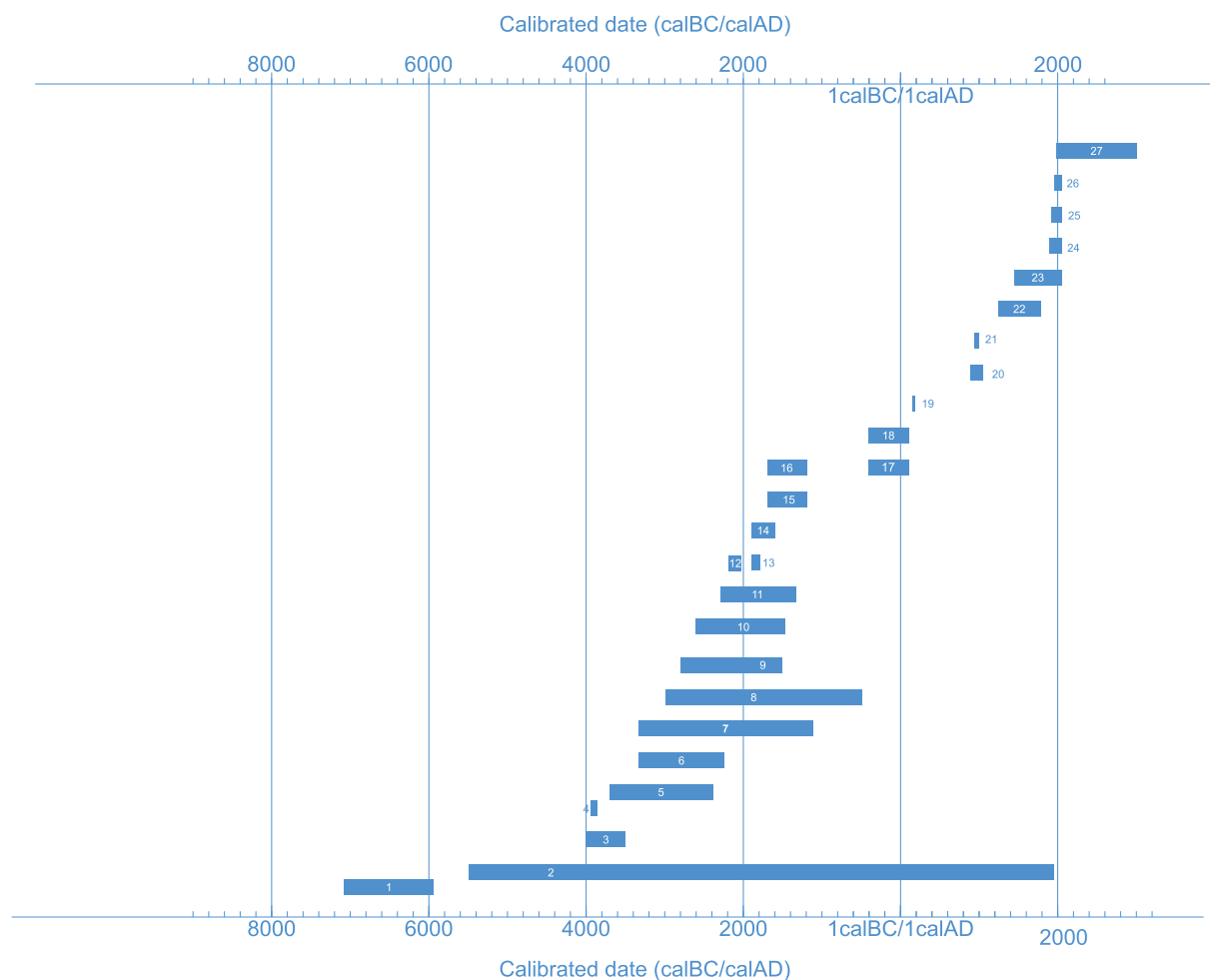
Treasures of Time: Research of the Faculty of Archaeology of Adam Mickiewicz University in Poznań

Introduction

In 2019, archaeology at the Adam Mickiewicz University in Poznań celebrated its honourable 100th anniversary! The establishment of archaeology at this university was associated with the strong influence of the authority of Prof. Józef Kostrzewski and a succession of eminent scholars, many of whom we today call Masters.

The year 2019 was a real breakthrough. We started the second century of existence within the Alma Mater Posnaniensis with a new structural independence and quality that the academic archaeology of Poznań had not yet known for its one hundred years of existence. This change, the formation of the first Polish Faculty of Archaeology, has opened new chances and possibilities of which we are now taking advantage.

6



Calibrated date
(calBC/calAD)



Prof. Józef Kostrzewski
(1885-1969)

7

Currently, the Faculty of Archaeology of Adam Mickiewicz University is formed by a number of teams, each with their own leaders. In the majority of cases, these teams are united by interdisciplinarity, which integrates within selected projects the experience of many so-called 'auxiliary' sciences of archaeology. This trend is paralleled by the development of specialised laboratories armed with the latest equipment in the Faculty of Archaeology.

This publication presents the current scientific interests creatively developed by such teams at the Faculty of Archaeology of Adam Mickiewicz University. The research of these teams covers vast areas in time and space, summing up at least the last 9,000 years of prehistory. The following articles, arranged in chronological order, allow us to explore the prehistory of various areas.

The adventure begins around 7100 BC, in the Neolithic settlement of Çatalhöyük located in Turkey. Then, we move on to the loess uplands near Krakow, where the first farmers from the south of Europe had just arrived (5500 BC). A little later (4000-3500 BC), and a little farther north, in the area of Greater Poland, some of the first megalithic constructions in this part of the world were built. Around the same time, about 800 km to the southeast, a settlement

of the Trypillia culture remains in the phase of development (3950 BC). The end of the Stone Age in Poland was described in the history of Late Neolithic communities on a hill in the center of Kujawy region (3700-2400 BC). Farther east, in the forest-steppe area of Ukraine, significant cultural and social changes resulted in the formation of the Yamnaya culture (3350-2250 BC), beginning the Bronze Age.

Intense elements of this era can be traced in the area of southern Europe in the Greek Anthemous Valley (3350-1150 BC), in Attica (3000-500 BC) on the plains of the Hungarian Lowlands (2600-1450 BC) and to the Upper Dniester Valley, where numerous burial mounds were formed (2800-1500 BC). A similar chronological range is presented in the articles devoted to a unique site in Bruszczewo, Greater Poland (2300-1350 BC), which not only accumulates valuable metal artefacts, but is also the subject of interest of an interdisciplinary team focused on reconstructing its environmental context.

The next text take us far to the east, to the area of Iraqi Kurdistan, where we can appreciate the importance of Mesopotamian influences in shaping the picture of the Early Bronze Age (2200-2150 BC).

Subsequent texts describe the discoveries of Poznań scientists in Syria (1906-1787 BC) and in Greater Poland (1900-1600 BC). These two distant points describe various aspects of life in contemporary communities in the Middle and Early Bronze Age.

The characteristic archaeological materials of the later centuries of the Bronze Age (1800-1200 BC) reveal an intensification of military conflicts and migration processes (1700-1200 BC). The turn of the eras is illustrated in this volume by texts on the interpretation of representations on ancient Greek and Roman sculpture (400 BC-100 AD), as well as the cultural situation in the Polish lands (400 BC-100 AD).

We are introduced to the new era by an article on the funerary customs of communities from the Polish lowlands describing discoveries at the site of Mirosław (160-175 AD). Moments of the formation of elements of Polish statehood are referred to in texts describing towns at Grzybowo (919-1050 AD) and Poznań in the early Middle Ages (950-1000 AD).

Later parts of the Middle Ages are described by sacral monuments located also in the area of the contemporary city of Poznań: the Collegiate Church of St Mary Magdalene (1263-1802 AD) and the still extant Church of the Blessed Virgin Mary on Ostrów Tumski, founded around 1431 AD in the immediate vicinity of the previously described early medieval site of the 'origin' of the city of Poznań.

The final texts of the volume do not refer directly to a particular period of prehistory, but present the history of Polish archaeological research on the Iberian Peninsula, the contemporary perception of prehistoric art by the inhabitants of present-day Canada and Siberia, and the development of methodological thought among Poznań archaeologists.

The volume closes with a text describing one of the many perspectives currently faced by the staff of the Faculty of Archaeology of Adam Mickiewicz University in Poznań: the new ArchaeoMicroLab.

We look to the future with great hope that the Staff of the Faculty will provide ideas for many more volumes of Treasures of Time. We trust that this set of articles will present archaeology at the Adam Mickiewicz University in Poznań in its new structure as a Faculty and show its potential. We would thus like to encourage you to get acquainted with our Poznań perspective on archaeological studies, and to reflect on ways of exploring the past.

Andrzej Michałowski

Danuta Żurkiewicz



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**3700-2400 BC**

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DOI 10.14746/WA.2021.6.978-83-946591-9-6

Late Neolithic Hilltop Communities in Central Kujawy

Aleksander Koško, Marzena Szmyt

Abstract

The article presents the history and the most important results of archaeological research on the so-called Prokopiak's Mount at Opatowice in the Kujawy region. Archaeologists from the Adam Mickiewicz University conducted surveys and excavations there for several years - from 1983 to 1998. Remains of settlements and graves discovered on the hill come mainly from the 4th and 3rd mill. BC and represent several units of the archaeological taxonomy: the Funnel Beaker culture, the Globular Amphora culture, the Corded Ware culture, the Neman culture, and the Proto-Bronze group. Since 2006, a special series of monographs of individual sites has been published. To date, five volumes have been published, and more are being prepared. Thanks to meticulous investigations as well as comprehensive and multifaceted scientific analyzes, the Prokopiak's Mount at Opatowice is one of the best-recognized micro-regions of Late Neolithic settlement in Kujawy and is a reference point for extensive comparative research. This applies, for example, to the local scale of absolute chronology, various components of material culture, forms of settlements and camps, ceremonial and funeral practices, as well as economic activities.

Keywords: Late Neolithic, Kujawy region, 4th and 3rd millennium BC, settlement practices, funeral practices

Introduction

Climbing a vast elevation, rising from the surrounding plain 3 km southeast of Radziejów in 1983, we were aware that we followed in the footsteps of the late Dr. Lidia Gabałówna. It is to her that archaeological literature owes the introduction of the names of Radziejów – a quaint little town cresting the highest hill of the Radziejów Hills – and Opatowice – a village of over a dozen farms and a single shop. Actually, in the latter case, her interest

was attracted by an elevation covered by fields and sand pits belonging mostly to the Prokopiak family (cf. Gabałówna, 1962). One of us (A. K.) participated in rescue excavations in 1969 in which a team headed by Gabałówna explored a grain pit, published after ten years (Grygiel, 1979). Our wandering across the fields in 1983 was part of the work on the Archaeological Record of Poland. With early-spring crops rising at that time, one could easily notice rich clusters of archaeological material, mostly Neolithic, on the ground surface. In many smaller and larger pits left by sand excavation we found pottery while in some and in the walls of a huge, industrially exploited borrow pit, archaeological features could be noticed. We realized that it was the last moment for rescue investigations. As it turned out, in terms of field work, they lasted 16 years – from 1983 to 1998. It took several more years to prepare materials for processing, and finally 2006 saw the publication of the first volume in a series dedicated to sources from Prokopiak's Mount in Opatowice. So far, in the series, monographs of five sites have appeared (Koško & Szmyt, 2006, 2007a, 2007b, 2014, 2015), while several more are being prepared. It is possible now to share several conclusions made when summing up a stage in the investigations and concerning the natural and cultural peculiarity of the Mount, a general description of results obtained, and their evaluation against the background of the current archaeological research in Poland¹.

1. Natural and cultural processes of archaeological record formation on Prokopiak's Mount

The name of 'Radziejów Hills' designates a chain of moraine elevations rising from the NW to the SE above a monotonously flat plain in the central part of the Kujawy Plateau in the vicinity of the town of Radziejów. The highest absolute altitude (127.3 m a.s.l.) is found on a centrally situated Radziejów Hill, the second highest section is located on the west fringe (in the village of Chelmce), while the third (117 m a.s.l.) is found in Opatowice (Figure 1).

The Radziejów Hills are an end moraine built by the oscillating ice-cap margin ca. 18.200 BP (Nowaczyk, 2006). They were formed of sands, gravels and the boulder clay that has turned into sand, with the sediments showing glacetectonic deformations. The surface of Prokopiak's Mount that was studied in detail, was repeatedly re-modelled by wind that caused eolian cover sands to develop and take the form of a terrain folding of a relative height of up to 2 metres. The processes were interrupted after vegetation spread over the area, triggering the onset of soil formation. Later, from the second half of the 6th mill. BC the terrain owed its shape chiefly to human activity. The advance of man brought about the destruction of vegetation by fire, which is evidenced by charcoals in the fossil humus. Then sand was moved by wind in the west of the Mount and eolian cover sands were accumulated in its north and east parts. Discovered on the Mount, successive fossil soil layers show that this process repeated itself many times over. As a result, there was preserved a sequence of alternating levels of fossil humus and eolian cover sands on the Mount (Figure 2). The rise of the strata of the latter kind was brought about, in principle, by anthropogenic deforestation.

¹ This article is a shortened and revised version of our previous publication (Koško, Szmyt, 2018).



Figure 1. Opatowice – Prokopiak's Mount, Kujawy-Pomerania voivodeship. A – location map; B – aerial photo 2004 (Photo: W. Rączkowski); C – view from the west (Photo: M. Szmyt).



Figure 2. Opatowice – Prokopiak's Mount, Kujawy-Pomerania province. Examples of local stratigraphy (Photo: M. Szmyt).

These basic characteristics of the abiotic environment to a large extent predetermined its primeval vegetation. And so, poor sandy habitats on the Mount top, with a low groundwater level, must have been occupied by pine coniferous forests or possibly – which is less likely – pine-oak mixed forests. In turn, richer habitats, located on the plain directly surrounding the Mount, were covered by deciduous forests, having several forms (Makohonienko et al., 2006, pp. 81-83). Dominating in the landscape of the plain, fertile Kujawy black soils were probably overgrown by thinned forests resembling today's ash-elm carrs, but with a lesser share of the ash and elm and a substantial portion of the oak and herbaceous plants (Makohonienko, 2008, p. 367). More humid habitats were occupied by alder or alder-ash carrs.

These natural environment characteristics clearly set apart Prokopiak's Mount from its surroundings and made it a peculiar ecological isolate. For in the heart of a flat plain, covered with heavy clayey and very fertile soils, there rose a sandy elevation overgrown with completely different vegetation, with its peak reaching 20 m above the neighbouring lands. It is no surprise that it attracted the attention of humans, who appeared there beginning with the 6th mill. BC. Even if they put up their settlements some distance away from the Mount, they came to it, leaving behind many traces and frequently causing fires. These, in turn, triggered eolian processes. The same consequences were brought about by the damage to vegetation caused by those groups of humans who lived on the Mount for longer or shorter periods. The traces of such activities have survived on the Mount thanks to the accumulation of successive eolian layers and humus levels. Hence, the stratigraphy of Prokopiak's Mount records biocultural series and could serve as an archive with respect to local human activities (Koško & Szmyt, 2006, p. 25; Szmyt, 2013, p. 127).

2. Opatowice Mount as a subject of long-lasting and comprehensive investigation

The long-term project of investigation of Prokopiak's Mount in Opatowice was part of the Kujawy Research Programme implemented from the late 1960s (Szmyt, 2013, pp. 24-26). In short, the programme involved the study of several spatial units that were chosen as representative test areas for wider parts of the Kujawy region. The test areas were then subjected to detailed, comprehensive and multi-disciplinary investigations (Cofa-Broniewska, 1989, pp. 14-15).

Prokopiak's Mount has become one of the most important test areas in Kujawy. While defining its cognitive value (Koško & Szmyt, 1993, 2018), some assumptions have been made: first of all, the Mount (together with the hill in Radziejów) was unique when considered in the regional ecological and cultural contexts; second, it could have had a high cultural value for the Late Neolithic human groups. The third assumption holds that Mount stratigraphy could serve as a 'calendar' of human activities in this part of the region.

The first assumption had its roots in the location of the Opatowice elevation in the regional ecological and cultural context of the Kujawy Plateau. Beginning with the 6th mill. BC, i.e. from the emergence of the first agrarians, the Plateau witnessed exceptionally numerous and rich settlement phases and episodes at various times. It can be said that the Mount stood at the centre of functionally diverse processes of settling fertile soils. So, potentially, it could have preserved the traces of successive stages of Kujawy Plateau settlement.

The second assumption resulted from the statement that the Mount stood out against the regional natural landscape. One of its consequences could be the special position of the Mount which could have acquired a high cultural value during the Neolithic. Taking a broader view, it was assumed that at least in the Late Neolithic, Prokopiak's Mount could have been one of the contact centres within Kujawy – a place where inter-group meetings were held from time to time during which functionally complex rites were performed. This assumption would be supported by an accumulation of ritual features on the Mount.

The third assumption took into consideration the special character of stratigraphy of the Mount which led to the preservation of a sequence of alternating levels of fossil humus and eolian cover sands. Together with related radiocarbon chronology, it could serve as a calendar of sorts in respect to local settlement processes.

Relying on these assumptions, it was decided to make Prokopiak's Mount a test area for the investigation of the Late Neolithic in Kujawy. Since then, owing to its uniqueness, the Mount had been treated as an exceptional natural and cultural complex, which became important for the study of the early agrarian settlement on the Kujawy Plateau, chiefly for the 4th and 3rd mill. BC. If one takes into account the significance of this central part of Kujawy for the study of these times in a supra-regional dimension, the position of Prokopiak's Mount makes it one of the most important site complexes in terms of information potential on the Central European Plain.

Because of the above assessment, the major objective of the comprehensive research programme was to present all the prehistoric bio-cultural information, recorded on the whole Mount, in a systemic way. In this way, it was planned, it would be possible to explore the local (micro-spatial) sequence of natural and cultural changes in their entirety. As a consequence, field research was concerned with excavating most of the sites. The schedule of field work covered about ten years and allowed for the varied gravity of threat to sites and their informative value, which was assessed pursuant to detailed repeated surface surveys.

The programme was implemented between 1985 and 1998 (Figure 3). Different exploration forms covered 24 sites (Figure 4) and yielded an extremely rich set of archaeological and natural sources, for the most part referring to the Late Neolithic and the beginnings of the Bronze Age. A special accumulation of data concerns the 4th and 3rd mill. BC. After some years thanks to scientific grants funding by Polish science agencies (Committee for Scientific Research and National Science Centre) the artefacts and ecofacts, collected in the course of the excavation, have been systematically analyzed. A series of multi-aspect analyses of biocultural sources was completed. Studies in the areas of geomorphology, palaeopedology, archaeozoology, palaeobotany, palynology, petrography, archaeometry and others have been either carried out or made up for and prepared for publication. So far, five volumes have been published devoted to Prokopiak's Mount in Opatowice which bring detailed studies of sources from sites Opatowice 1, 3, 33, 36 and 42 (Koško & Szmyt, 2006, 2007a, 2007b, 2014, 2015). Separately, a broader discussion of issues related to the Late Neolithic in Kujawy and on Prokopiak's Mount was published (Szmyt, 2013).



Figure 3. Opatowice – Prokopiak’s Mount, Kujawy-Pomerania province. A, B – excavation in destroyed parts of the Mount; C, D – selected features from sites Opatowice 36 and Opatowice 35 (Photo: M. Szmyt).

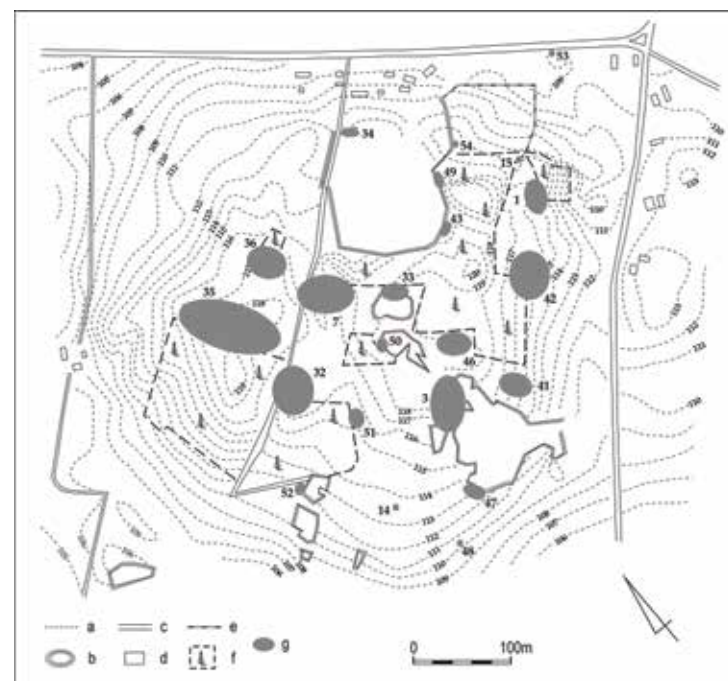


Figure 4. Opatowice – Prokopiak’s Mount, Kujawy-Pomerania province. Location of archaeological sites. Key: a – contour lines; b – modern borrow pits; c – roads; d – buildings; e – fences; f – woods; g – archaeological sites

3. Brief presentation of most important results

The main idea of the programme was to make Prokopiak’s Mount a place where the methods of archaeology and natural sciences would fuse. Three areas of collaboration can be considered the most significant: (1) construction of a local radiocarbon scale that would serve as one of the reference line of a regional (Kujawy) absolute chronology of the Neolithic and Bronze Age, (2) determination of the state of the natural environment and the extent of anthropogenic transformations of the primeval landscape in the investigated part of Kujawy, and (3) identification of the aspects of everyday life and rituals of Opatowice settlers as shown by artefacts and ecofacts.

3.1. Local radiocarbon scale: towards micro-history

The Opatowice programme has produced until now 100 radiocarbon measurements so far. Samples sent to laboratories contained charcoal, bones, wood tar, organic residues from pottery surface as well as organic components of the ceramic body.

Out of the 100 measurements that we have now, a vast majority falls on the 4th and 3rd mill. BC, or to be more precise, fit into the period of 3700-2300 BC, while the other measurements are older and coincide with the period of 5300-3700 BC. Most of the measurements can be logically related to the settlement of the Mount or adjacent areas. Only two measurements cannot be accepted and explained, relying on currently available archaeological knowledge (e.g. Goslar et al., 2013).

Currently, 59 measurements concern five fully processed sites, have well described cultural contexts and have been subjected to a critical analysis (Table 1). Most (41 dates) provide evidence for the multiple exploitation of the Mount by the Late Neolithic communities of the Funnel Beaker culture related to phases IIIB, IIIB-C, IIIC, IVB, VB and VC according to the Kujawy periodization (Koško, 1981). The second largest group of dates is comprised of 13 measurements, coming from contexts left by the communities of the Globular Amphora culture of phases IIb and IIIa (Szmyt, 1996, 2013). Five measurements refer to the Middle Neolithic. A shortcoming, no doubt, is the absence of any dates corresponding to other stages of Mount exploitation, recorded as the remains of the Corded Ware culture and the Proto-Bronze Age, which have been discovered, for instance, at Opatowice 1 and 33 (Koško & Szmyt, 2006, p. 288; Czebreszuk & Szmyt, 2007).

| Neolithic Stages | Cultural qualification | Opatowice 1 | Opatowice 3 | Opatowice 33 | Opatowice 36 | Opatowice 42 | Total |
|------------------|----------------------------|-------------|-------------|--------------|--------------|--------------|-------|
| Early Neolithic | Linear Pottery culture? | - | - | 1 | - | - | 1 |
| Middle Neolithic | Late Band Pottery culture? | - | 1 | 1 | 1 | - | 3 |
| | Funnel Beaker culture? | - | - | - | - | 1 | 1 |
| Late Neolithic | Funnel Beaker culture | 13 | 9 | 7 | 3 | 9 | 41 |
| | Globular Amphora culture | 2 | 4 | 1 | 6 | - | 13 |
| Total | | 15 | 14 | 10 | 10 | 10 | 59 |

Table 1. Opatowice, sites 1, 3, 33, 36 and 42. Contexts of radiocarbon datings. Foll. Koško & Szmyt, 2018.

In conclusion, we believe that a major merit of the radiocarbon dates from Opatowice is their credibility based on the systematic enlargement of the set and its continuous verification by referring them to the ever more detailed deposition contexts of bio-archaeological sources (Figure 5).

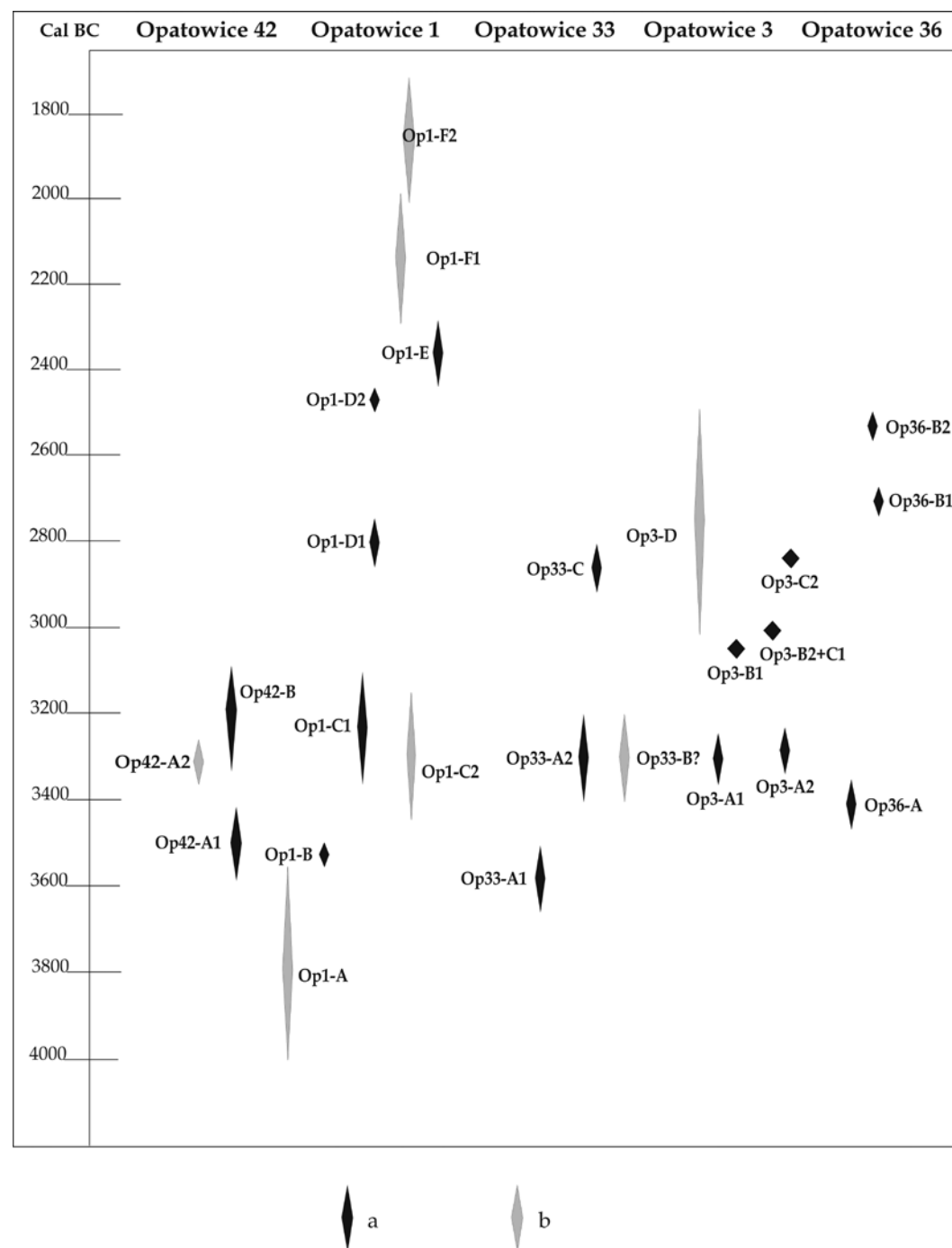


Figure 5. Opatowice – Prokopiak's Mount, Kujawy-Pomerania province. Absolute chronology of settlement phases in five published sites. Foll. Koško & Szmyt, 2015. Key: a – detailed chronology based on the radiocarbon determinations; b – general chronology established for the Kujawy region

3.2. Natural landscape and stages of its transformation

Kujawy is an exceptionally difficult region for the study of the dynamics and extent of primeval landscape changes (cf. Wiśniewski, 1983, pp. 434-435). For a number of reasons, even very large research projects undertaken in respect of this region do not produce fully satisfactory results. In spite of this fact, the Opatowice programme devoted much effort to the study of both abiotic determinants of the local environment and its biological characteristics.

As far as the first of the above-named aspects is concerned, most effort was devoted to the exploration of the lithology and stratification of Prokopiak's Mount (Nowaczyk, 2006; Hildebrandt-Radke, 2014).

In turn, the study of biological characteristics initially concentrated on the search for places that could supply palynological data, reflecting vegetation cover changes in this Kujawy fragment where Prokopiak's Mount stands. After many attempts, promising results were brought by investigations on palynological site Nasiłowo II, located about 4 km south of Prokopiak's Mount (Makohonienko et al., 2006, pp. 83-84). A core was extracted there the detailed examinations of which have continued to this day, although preliminary results were presented a few years ago (Makohonienko, 2008).

In the palynological sequence of Nasiłowo, five local pollen levels were identified: the oldest (*Pinus-Betula*) corresponds to the early Holocene, the second (*Quercus-Ulmus*) is dated to 5000-4200 BC, the third (*Artemisia*) to 4200-3400 BC, the fourth (*Plantago*) to 3400-1500 BC and the last (*Carpinus*) began ca. 1500 BC. The pollen levels testify to gradual changes in the vegetation and the transformation of the primeval landscape caused by natural factors and a human impact, exceptionally strong in the third and fourth levels.

Several phases of anthropopressure were distinguished (Makohonienko, 2008, pp. 360-366). The oldest phase A (5000-4400 BC), witnessed the opening of the landscape and the appearance of the first cereal grains. At the end, in the period of 4400-4200 BC, forests regenerated and the share of human activity indicators fell. In the next phase (B), dated to 4200-3850 BC, the share of synanthropic plants rises to reach 5.3 per cent, whereas the share of tree pollen falls. This phase encompasses fire traces and ends with the first elm-pollen drop. The third phase (C) with two sub-phases (C1 and C2) was put at 3850-2900 BC and was found to have witnessed a high share of human activity indicators, especially synanthropic plants, as well as cereals (*Cerealia*). Herbaceous plant pollen makes up 38.8-40.5 per cent, while the share of trees falls sharply. The highest degree of a human impact is observed in the period of 3400-2900 BC (sub-phase C2). Around 3150 BC, the second elm drop is noticeable. The next phase (D) can be dated to 2900-1450 BC. The human activity indicators (mainly synanthropic components) continue to have a high share but it is clearly lower than in phase C. In the successive phases – E (1450-850 BC) and F (after 850 BC), the share of anthropopressure indicators is lower.

In conclusion, the palynological evidence of human activity corresponds in principle to the results of settlement investigations on Prokopiak's Mount. However, further investigations are focused on making the relationship between both forms of recording human activity on a local scale far more precise.

3.3. Daily and ritual life on the Mount

By no means is it possible in a short article to present the detailed results of investigations and analyses included in the five volumes published so far. Moreover, it must be kept in mind that at most only a half of the sources, coming from the sites on Prokopiak’s Mount, have been fully processed (Table 2).

| Site | Number of finds | | | | | | Other finds |
|--------------|-----------------|-------|-------|-------|--------------|------------------|---|
| | Pottery | Flint | Stone | Daub | Animal bones | Charcoal samples | |
| Opatowice 1 | 7 939 | 381 | 205 | 951 | 527 | 36 | amber, clay and bone artefacts soil and stone samples plant impressions pottery dyes remains animal deposit |
| Opatowice 3 | 22 325 | 576 | 209 | 3 871 | 1495 | 42 | clay and bone artefacts soil and stone samples plant impressions wood tar remains remains of pottery dyes copper lump animal deposits |
| Opatowice 33 | 5 308 | 277 | 111 | 33 | 37 | 39 | clay artefact soil and stone samples plant impressions wood tar remains remains of pottery dyes |
| Opatowice 36 | 30 273 | 1 431 | 31 | 2 655 | 400 | 132 | clay artefacts soil and stone samples plant impressions animal deposits |
| Opatowice 42 | 34 632 | 473 | 389 | 208 | 117 | 30 | clay artefacts soil and stone samples plant impressions wood tar remains remains of pottery dyes animal deposits |
| Total | 100 477 | 3 138 | 945 | 7 718 | 2 576 | 279 | |

Table 2. Opatowice, sites 1, 3, 33, 36 and 42. Basic quantitative data.
Foll. Koško & Szmyt, 2018

In a concise summary, we wish to draw attention to several selected questions, concerning some aspects of daily and ritual life of Opatowice settlers as illustrated by archaeological and bio-archaeological sources.

In the first place, field investigations on the Mount and ensuing detailed analyses of all categories of sources, including typological, taxonomic, spatial, stratigraphic, chronometric and functional, exposed a complex and multiphase history of the sites. On each of them, a number of traces of use in the form of functionally varied either settlement phases or episodes were identified (Table 3). By a settlement phase, we mean such a use of space which involved the introduction of infrastructure in the form of any over- or underground structures into the landscape. A settlement episode, in turn, is a penetration of space, i.e. a transient presence of the people evidenced solely by smaller or larger clusters of movable finds (usually pottery or flints) that cannot be related to any elements of settlement infrastructure. On the five sites processed so far, from 5 to 11 episodes (designated by lowercase letters following the site call number,

e.g. Op1-a) and from 3 to 9 settlement phases (designated by uppercase letters following the site call number, e.g. Op1-A) were identified. Interestingly enough, all the settlement phases fall on the Late Neolithic and fit between 3700 BC and 2400 BC, while the chronology of settlement episodes is much broader, covering the period from the 6th mill. BC to the modern times. The rich history of space use resulted in a highly dynamic deposition and post-deposition processes which in turn modified (or even obliterated) the natural stratification of the Mount described above. This makes the spatial and functional identification of particular settlement phases much more difficult. If one considers, too, the degree of Mount destruction (Koško et al., 2006), it is obvious why some of the questions posed cannot be answered for the time being.

| Site | Excavated area (sq. m) | Number of features | Number of ¹⁴ C dates | Number and acronyms of identified settlement phases and episodes | |
|--------------|------------------------|--------------------|---------------------------------|--|-------------------------|
| | | | | phases | episodes |
| Opatowice 1 | 302,50 | 59 | 15 | 9 (Op1-A – Op1-F2) | 5 (Op1-a – Op1-e) |
| Opatowice 3 | 445,00 | 113 | 14 | 6 (Op3-A – Op3-D) | 8 (Op3-a – Op3-h) |
| Opatowice 33 | 285,50 | 85 | 10 | 6 (Op33-A – Op33-F) | 7 (Op33-a – Op33-g) |
| Opatowice 36 | 730,75 | 205 | 10 | 3 (Op36-A – Op36-C) | 10 (Op36-a – Op36-j) |
| Opatowice 42 | 570,50 | 103 | 10 | 3 (Op42-A – Op42-B2) | 11 (Op42-a – Op42-k) |
| Total | 2334,25 | 565 | 59 | | |

Table 3. Opatowice, sites 1, 3, 33, 36 and 42. Basic quantitative results.
Foll. Koško & Szmyt, 2018

In the course of individual settlement phases, the Mount saw settlements and camps as well as places of rituals, including cemeteries. The settlements were either seasonal or periodic. As a rule, they were small, consisting most of the time of a single farm-homestead. It comprised a dwelling structure (house, hut) and functionally related economic and, sometimes, ritual features. In each case, detailed exploration concerned various aspects of the production, distribution and consumption of a number of goods (such as food, containers, tools, weapons, textiles) and manners of waste disposal as well as connections to the outside world. These were traced by the presence of raw materials or products of a foreign (i.e. extra-Kujawy) provenance. Below, short descriptions of three settlements and a funeral place are given by way of example.

Opatowice site 42, settlement Op42-B (foll. Koško & Szmyt, 2007b). It was erected in 3350-3100 BC in the form of a single-house settlement of people linked to the Funnel Beaker culture, phase IVB/VB (Figure 6). In the time it was used, continuing the same spatial formula, the construction of the house changed (it was re-modelled), which justifies distinguishing two construction phases: an older one (Op42-B1), for which a diagnostic role is played by a dwelling structure of about 35 sq. m, and a younger one (Op42-B2), which is identified by a dwelling structure of about 90 sq. m. As seen in the pottery scatter, in both construction phases the settlement range covered at least 900-1000 sq. m. The ground plan of the building in phase Op42-B1 was polygonal and its longer axis ran from the south-east to north-west. To the house, several cellars were connected. The younger building (Op42-B2) was located in part

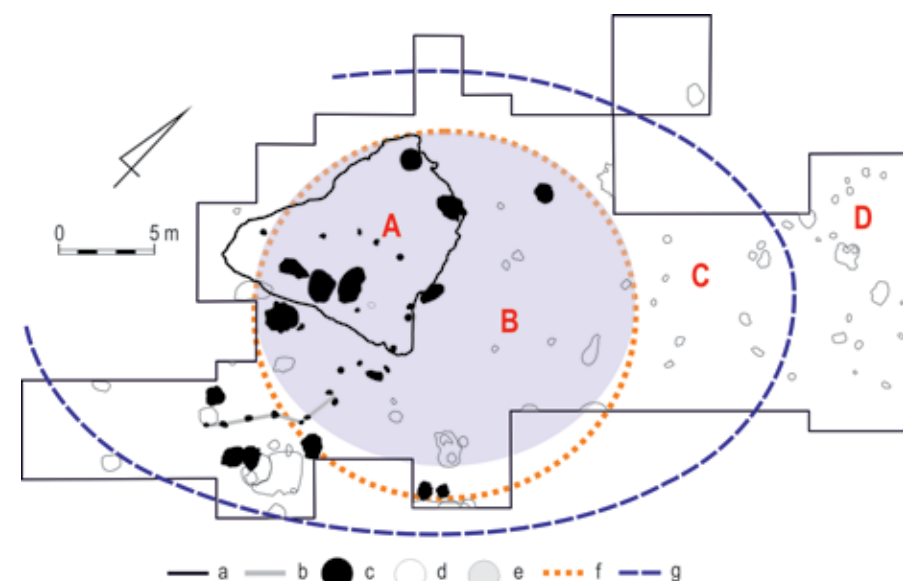


Figure 6. Opatowice, site 42, Kujawy-Pomerania province. Main settlement phase Op42-B (Funnel Beaker culture). Foll. Koško, Szmyt 2007a, simplified.

in the place of the older building. Its ground plan was trapezoid and covered about 90 sq. m. Inside the younger structure, there was a great number of finds, mostly pottery. A vast majority of them were concentrated in the eastern half of the structure. On its useable level, there were very many potsherds, a significant portion of the spindle whorls and stone and flint products, and débitage. Integral elements of the structure were two pits, which must have served as cellars. Along the eastern wall of the younger house a courtyard stretched which can be defined as an area where household chores concentrated and, consequently, a large number of movable finds accumulated. Useless inorganic waste, resulting from accidental destruction of wares or tools, or originating from different industries (e.g. stone or flint working), was usually left in place. There are no signs of taking such materials outside the house or the courtyard. Quite the contrary, it is these zones of the settlement that were the principal dump of inorganic waste, which, as a result, was an integral component of the useable level (dirt floor) of the house and the courtyard surface. The farmyard was an area where activities less 'organizationally cumulated' were carried out. The space is characterized by a gradual thinning of finds. It is there that most of the storage pits were located.

The settlement inhabitants ate meat of domesticated animals, mainly cattle with a smaller share of sheep/goat. The use of plants is evidenced by a large series of plant impressions, charcoals and vegetable raw material processing indexes. The major crop was cereals, mainly wheat in its four varieties: einkorn (*Triticum monococcum*), emmer (*Triticum dicoccon*), spelt (*Triticum cf. spelta*) and bread wheat (*Triticum cf. aestivum*). The most popular wood raw material was pine *Pinus sp.*, used for construction and most likely burned for heat as well. Its remains account for over 95 per cent of charcoals on the site. Hardwood was only sporadically used for – in the case of oak wood – specialized manufacturing or – in the case of birch wood and bark – producing wood tar. In the pottery from settlement Op42-B, the signs of local craft can be seen in the application of 'wood-tar glaze' onto the outer surface of vessels. Exceptionally many instances of this practice were recorded on this site (on 380 shards) within

the eastern part of the younger house and on the adjacent farmyard. Vessels, mostly pots, were covered with a layer of birch-wood tar about 1 mm thick. For the manufacturing of tools, local erratic flint was mostly used, while southern raw materials: chocolate, Volhynian and Jurassic flint were far less often used for this purpose. Tell-tale flakes of Jurassic flint are evidence that axes made of this material were re-utilized on the site. Fibre processing is confirmed by spindle bobs of which 30 were found in the house and its surroundings. It is not possible to determine what kind of weaving raw materials were used, but it is quite possible that sheep wool could have been utilized as the presence of this species of domesticated mammals was confirmed by the bone material from settlement Op42-B.

Opatowice site 3, settlement Op3-B2+C1 (foll. Koško & Szmyt, 2014). Among the discussed settlement forms, a 'defensive' settlement, unique on the Lowland, stands out at site Opatowice 3 (Figure 7). It is composed of a ditch and an accompanying embankment, and

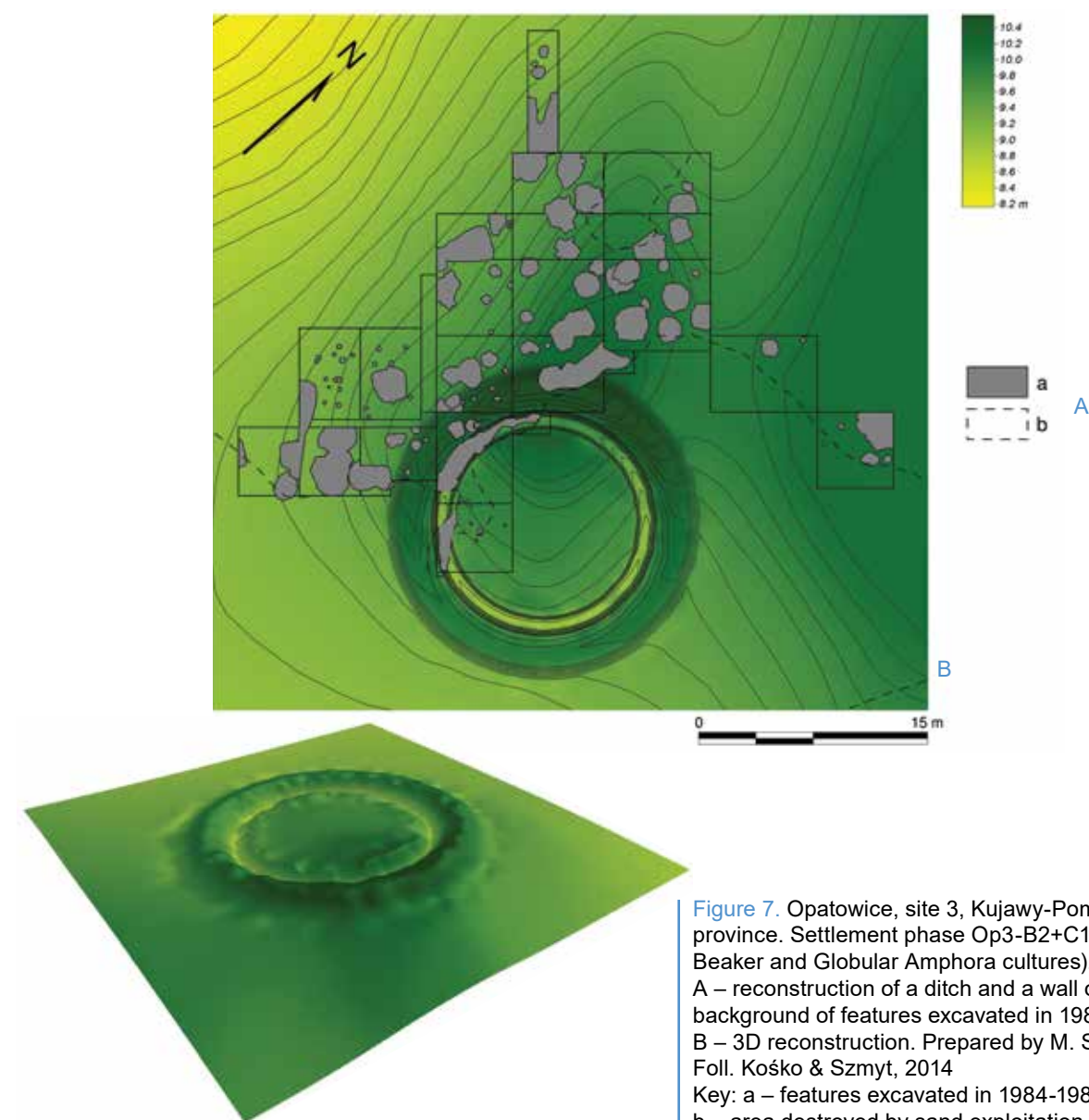


Figure 7. Opatowice, site 3, Kujawy-Pomerania province. Settlement phase Op3-B2+C1 (Funnel Beaker and Globular Amphora cultures). A – reconstruction of a ditch and a wall on background of features excavated in 1984-1988; B – 3D reconstruction. Prepared by M. Stróżyk. Foll. Koško & Szmyt, 2014. Key: a – features excavated in 1984-1988; b – area destroyed by sand exploitation

was located at the south-western edge of Prokopiak's Mount, in the area that has been badly devastated through the extraction of sand. The ditch was dug out to a width of 1.0 to 1.5 m and a depth of 0.7 m, delineating a circle with a hypothetical diameter of about 15 m. In the ditch fill, postholes were identified, testifying to the existence of a palisade. The remains of the embankment were documented along the external, western side of the ditch. In the ditch fill, a rich material was found, composed of sources belonging to the Funnel Beaker culture of phase VB and the Globular Amphora culture of phase IIb. A detailed planigraphic and stratigraphic analysis of the ditch fill revealed at all levels the co-occurrence of Funnel Beaker and Globular Amphora ceramic ware. Together with a chronometric analysis, this provides thus a basis for a hypothesis about the cohabitation of both communities using the 'fortifications'. The AMS radiocarbon measurements allow one to set this period to 3014-2990 BC. Due to the very poor state of preservation of the feature, it is difficult to specify its function (defensive? ritual? other?).

Opatowice site 36, settlement Op36-B (foll. Koško & Szmyt, 2015). This single-homestead settlement of people is related to the Globular Amphora culture, phase IIIa. Its history includes two construction phases called Op36-B1 and Op36-B2 (Figure 8). The settlement was established in the 28th century BC, and a house erected on a rectangular plan (ca. 35 sq. m) was its dominant architectural feature. The building was aligned on an east-west axis and slightly sunken into the ground; its floor was made of clay. The processing of organic raw materials focused inside the house, while around it there were relics of other activities (including pits, cellars, fireplaces, and sand extraction pits). A ritual feature containing the body of a cow was located in the immediate vicinity of the house. In total, the central part of the settlement extended over an area of approximately 250 sq. m. In the described form, settlement Op36-B1 could have lasted at least 40 years (2730-2690 BC). It is possible that in terms of both spatial organization and the material culture characteristics it continued in the form of settlement Op36-B2. At the latest by the 26th century BC, the then residents partially changed the inhabited space by sacralizing the north-eastern edge by placing there two animal deposits containing parts of bovine carcasses. This was probably not a one-time event, but rather a repeated action that happened twice between 2570-2510 BC. At the same time, the house did not alter much.

The everyday life of the residents of settlement Op36-B was reconstructed in a few aspects. And so, their food economy was based on animals and plants. Cattle was used, which is reflected not only in skeletal remains, but also as traces of processed milk preserved in the form of lipids on the walls of clay vessels. Cereals and legumes were also utilized (including emmer wheat), which is confirmed by impressions identified on pottery. For manufacturing tools mainly mineral raw materials were used, predominantly flint. Locally available erratic flint was of particular importance. It was supplemented to a small extent by banded flint imported from the south, from which mostly axes were made. Tools (polishing plates, grinders, axes) were also made of erratic rocks. Clay was processed and turned into clay body for pottery manufacture by the addition of two basic tempers: chunks of igneous rocks and sand, occasionally also organic material. The firing of vessels was performed mostly at none too

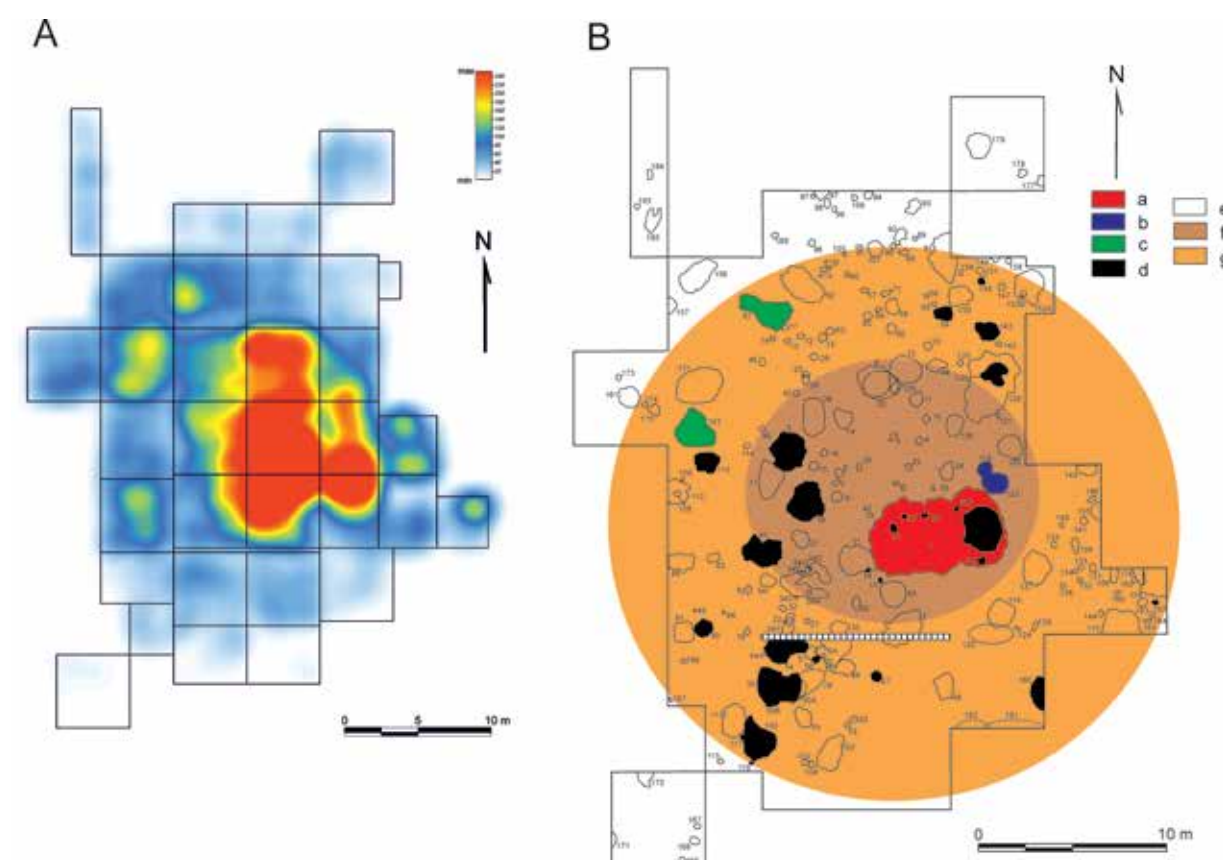


Figure 8. Op36-B Opatowice, site 36, Kujawy-Pomerania province. Main settlement phase Op36-B (Globular Amphora culture). A – results of kernel density analysis of pottery distribution; B – spatial organization. Foll. Koško & Szmyt, 2015, modified
Key: a – house; b – cattle deposit of phase Op36-B1;
c – cattle deposits of phase Op36-B2;
d – features of phase Op36-B1 or Op36-B2;
e – other features, not connected to the Op36-B;
f – concentration of pottery;
g – range of settlement Op36-B

high temperature (approx. 700 °C). Coniferous wood (mainly pine), most easily available on the Mount, was used as the primary building material and fuel. Deciduous wood was used only occasionally. Imprints on pottery attest that fibrous materials in the form of braided cords probably made of phloem were used. Additionally, traces of the use of plain weave were identified.

Opatowice site 1, funeral place (foll. Czebreszuk & Szmyt, 2007). At the end of the 3rd mill. BC, in the eastern part of the Mount, at the Opatowice 1 site, graves began to be placed. Three of them were discovered during excavations (Figure 9A). Unfortunately, the remains of the deceased have not survived, but the items placed next to their bodies have survived to our times in good condition. One of the graves was object no. 58: oval, 170 x 106 cm in size and

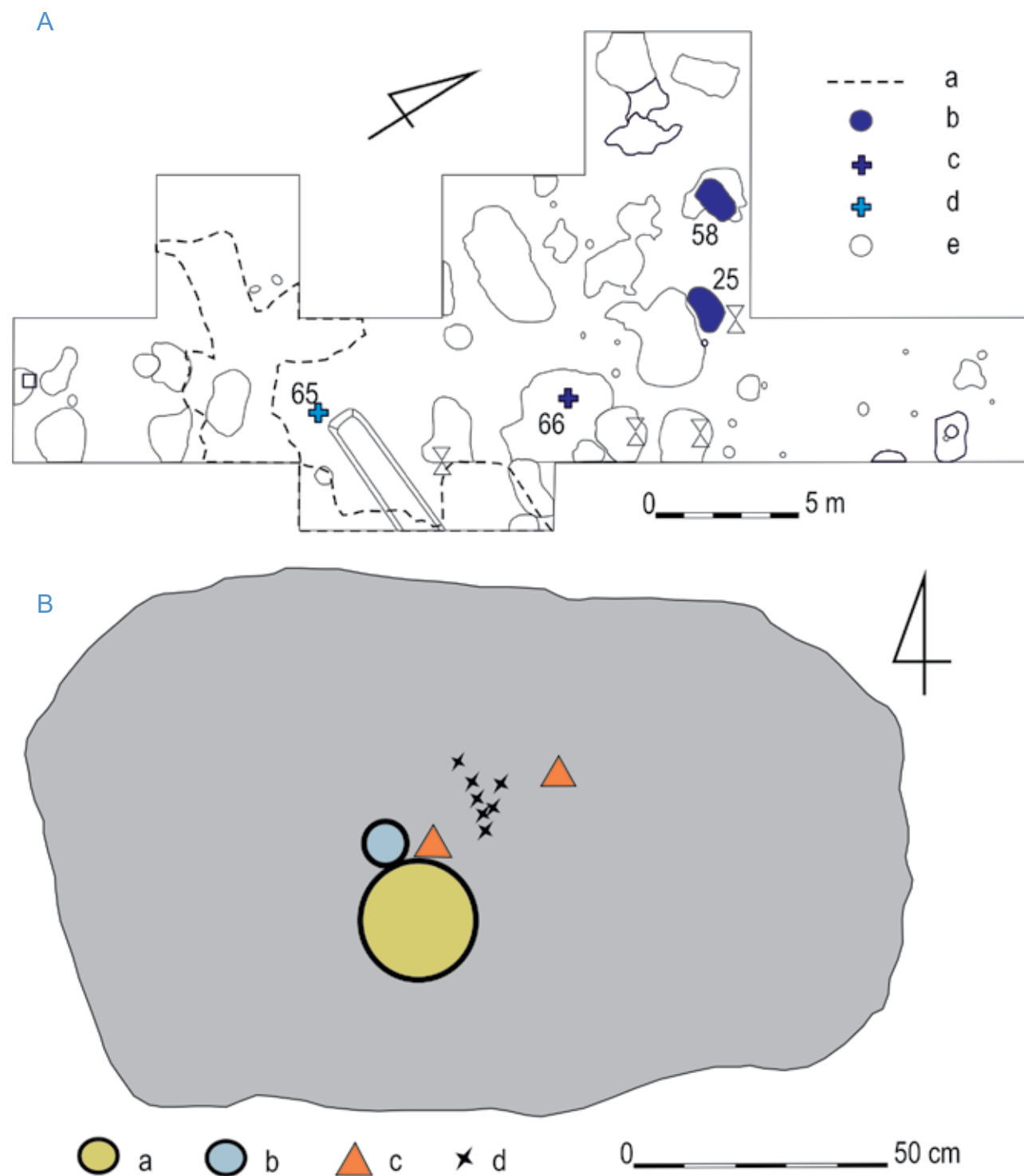


Figure 9. Opatowice, site 1, Kujawy-Pomerania province. A – location of graves dated to the Proto-Bronze Age and Early Bronze Age; B – grave 58. Foll. Czebreszuk & Szmyt, 2007, modified
 Key: A. a – range of modern destruction; a – Proto-Bronze graves (features 25 and 58);
 c – possible Proto-Bronze grave (feature 66); d – possible Early Bronze grave (feature 65);
 e – other features;
 B. a – a bowl with flint flakes and raw amber lumps inside; b – a pot;
 c – amber artefacts (a bead and a pendant); h – human (?) fine bones.

61 cm in depth (Figure 9B). In its central part there were two vessels: a bowl and a pot. The bowl contained 22 small pieces of flint, five amber lumps and a fragment of a pot placed next to it. The set of flint objects contained only flakes of the erratic Baltic raw material, including at least 4 flakes of a polished ax. Five flakes were previously used: two in the production of ceramics and the other two for scraping plants. There were also five small amber lumps in the bowl, which due to their size were not suitable for processing, although two of them had been previously processed. Two amber products were placed under the vessels: a bead and a rectangular pendant with a hole in the center. The



amber pendant (Figure 10) is unique, and similar items are few and come from eastern Germany and France. These analogies are related to one of the most important European cultural traditions at the end of the 3rd mill. BC – Bell Beakers. It connected societies living in vast areas of Europe, from Portugal and Spain in the west to Poland, Slovakia and Hungary in the east, and from the British Isles and Denmark in the north to Italy in the south. They were involved in the network of far-reaching cultural ties, in which the inhabitants of Kujawy of that time also participated.

Figure 10. Opatowice, site 1, Kujawy-Pomerania province. Amber pendant from feature 58 (Photo: K. Zisopulu-Bleja).

4. Looking back years later: evaluation of the Opatowice programme against the background of the current archaeological research

The years that have passed since the end of the field part of the Opatowice programme witnessed other types of investigations, mainly broad-area and linear ones that sought to rescue relics of prehistory prior to the launching of vast rescue projects in Poland (cf. Szmyt, 2013, pp. 28-30). These investigations yielded great amounts of data on prehistoric settlement in Kujawy and elsewhere in Poland. In the context of all these new sources, thought ought to be given to whether the Opatowice programme is still topical; in particular, its objectives and assumptions should be weighed and reconsidered. A stimulus for such an assessment comes from the experience gained in the first stage of analytical work.

At first glance, all the archaeological sites on Prokopiak's Mount fit into the category of sandy sites, admittedly dominant on the Polish Lowland, but unrewarding in exploration due to the poor state of preservation of organic materials and the high comminution of pottery. Actually, this opinion is not justified, as geomorphologic data show. The stratigraphy of the Mount and the fact that the local fields had not been intensively cultivated helped preserve numerous

prehistoric sources, including organic ones. It is true, however, that the amount of the latter is considerably smaller than on sites located on clay soils.

The results of analyses made so far have vindicated the decision to chart in detail movable finds despite its costly and time-consuming consequences. The documentation that has been amassed is slowly being digitalized not only for the purpose of storage but also to subject it to the state-of-the-art methods of analysis (e.g. analyses using the kernel density algorithm – Figure 8) producing high-precision results (e.g. Stróżyk & Szmyt, 2015). This makes up, in part, for the destruction brought to some sites by sand extraction. Unfortunately, in some instances the destruction was so extensive that the interpretation of research results is made very difficult.

The verification of the informative potential of stratigraphy preserved on the Mount, both in its vertical and horizontal dimensions, has proven successful. The combination of stratigraphic findings, detailed taxonomic studies of pottery and the numerous series of radiocarbon dates helps to place a date on successive settlement phases and episodes with ever greater accuracy – their great number being yet another factor responsible for a more complicated research, a consequence of the great complexity of post-deposition processes. To disentangle this complexity, it is necessary to be very exact in one's observations and diligent in documenting field investigations, as well as highly critical in analyzing radiocarbon dates.

The time devoted to excavations and the thoroughness of exploration in Opatowice favourably set the programme apart from broad-area rescue investigations, dominating in the archaeology of Poland and Kujawy since the 1990s. Despite efforts by the academic community to maintain the appropriate level of research methodology, the standards of explorations have been declining ever more noticeably for several years under the pressure of institutions coordinating construction projects. What makes matters worse is the fact that linear construction projects (roads, motorways and pipelines) have crisscrossed the Kujawy Plateau, i.e. a key region for the whole of the Lowland (Szmyt, 2013, Figure 1.5). Sites located on clay soils (especially on Kujawy black soils) hold well-preserved organic sources, the quick exploration of which is not feasible. The time factor limits not only the methodology of research but also the accuracy of field observations. Another restriction concerns the space set aside for investigations. As a result, investigations along planned gas pipelines focus on narrow strips of land, the relationship of which to the remaining portions of sites is not known. On the other hand, the advantages of rescue investigations include the fact that they covered extensive areas and among them places that had not attracted earlier any special interest of archaeologists (e.g. Koško (Ed.), 2000; Bednarczyk & Koško (Eds.), 2004; Szmyt (Ed.), 2016). Moreover, it has become a standard procedure to include natural scientists in research teams. Finally, a significant portion of archaeological sources is processed and published within several years from their discovery.

All things considered, the high opinion of Prokopiak's Mount as a testing ground for the study of Late Neolithic settlement holds fast. The assumptions and objectives of the Opatowice programme continue to be topical and find many analogies in the directions in which European archaeology develops today.

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ISBN 978-83-946591-9-6