



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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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 Poznan 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



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

5500 BC-1966 AD



Treasures of Time:

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Heritage regained: results of rescue excavations in the Land of Cracow

Danuta Minta-Tworzowska

Abstract

This article provides a broader picture of the archaeological heritage of the Cracow (Kraków) Land that has been discovered through archaeological research as part of the project 'Archaeological excavations conducted during the construction of the S-7 expressway, section Moczydło–Szczepanowice–Widoma–Zastów–Cracow (sections B and D)'. This research has been carried out since 2015 by a consortium consisting of: the University of Wrocław, the Adam Mickiewicz University in Poznań, and the 'Archeologia Silesiae' Science Foundation. This paper examines settlement processes at Mogiła 56, an important site for this region previously investigated in the 1960s. The recent research conducted in the Land of Cracow has yielded many traces of settlement represented by features and numerous artefacts in complex contexts. This new evidence contributes to a better understanding of the relationship between changes in the landscape and settlement processes in the prehistory of the Land of Cracow.

Keywords: archaeology of the Land of Cracow, archaeological heritage, settlement processes, Mogiła, site 56.

Heritage regained

The motto 'heritage regained' has become a hallmark of the recent publications of the Adam Mickiewicz University in Poznań as the outcome of rescue excavations carried out ahead of the construction of national roads and motorways since 2009. Two monographs were published summarising the results of the research conducted in the Gniezno and Rawicz Lands (Minta-Tworzowska, 2013; Minta-Tworzowska & Chrapek-Wawrzyniak, 2018). In addition, a several-volume publication appeared as a result of research carried out within the dry detention basin in Racibórz Dolny as part of a separate series established by the Academic Publishing House of the Polish Academy of Sciences, the University of Wrocław, and AMU (Bobrowski, Gediga, Minta-Tworzowska & Piekalski, 2014a, 2014b, 2014c, 2014d). AMU participated in each of these projects and research was coordinated by Danuta Minta-Tworzowska.

Why heritage? In Jan Pruszyński's (2001, p. 50) words (summing up the spirit of various legal acts), heritage is 'a collection of immovable and movable objects together with the related spiritual values, historical and moral phenomena considered worthy of legal protection for the benefit of society and its development and transmission to future generations, for their intelligible and accepted historical, patriotic, religious, scientific and artistic values, which are important for the identity and continuity of political, social and cultural development, proving the truths and commemorating historical events, cultivating a sense of beauty and civilisational unity'.

Heritage understood in this way also includes the specific type, archaeological heritage. This terminology clearly refers to the Polish Act of 1962 on the Protection of Cultural Property and on Museums, in which the term 'cultural property' was introduced; to the Act of 2003 (as amended) on the Protection and Care of Monuments; and, in particular, to the European Convention for the Protection of the Archaeological Heritage (London, 1969; then revised at La Valletta in 1992). The term 'heritage' carries not only material, but also spiritual content and therefore its meaning in academic discourse and in public perception is far clearer than that of the term 'monument'.

This article only gives an overview of the aforementioned heritage of the Cracow region and includes only some of the remains unearthed during the archaeological excavations performed as part of the ongoing project 'Archaeological excavations conducted during the construction of the S-7 expressway, section Moczydło–Szczepanowice–Widoma–Zastów–Cracow (sections B and D)'.

Both the ongoing and earlier researches conducted under the auspices of the Adam Mickiewicz University (AMU) are part of a twenty-year government programme of rescue excavations along expressways and motorways funded by the State Treasury represented by the General Directorate for National Roads and Motorways – in this case the Cracow Branch.

This research is conducted by a consortium consisting of: the University of Wrocław (Leader), the Adam Mickiewicz University in Poznań (Partner), 'Archeologia Silesiae' Science Foundation (Partner), and the Institute of Archaeology and Ethnology of the Polish Academy of Sciences (Subcontractor). The University of Wrocław is represented by Jerzy Piekalski and Mirosław Masojć, and the AMU by Danuta Minta-Tworzowska and Igor Kołoszuk (in his stead, Iga Fabiszak from June 1, 2020 to April 13, 2021). The contract for conducting excavation works was signed on December 15, 2015 and, from that moment on, AMU has been implementing excavation works within two parts of the planned construction of the S-7 expressway: No. 2 – Section B and No. 4 – Section D.

Due to the variety of results of the archaeological research, the large amount of material related to various archaeological taxonomic units (i.e. archaeological cultures), and the huge area of the investigated sites, the author of this work has decided to present one site in a more detailed way and just mention the others. Had this publication been compiled at a later date, taken place at the end of the year, the author could have referred in more detail and more fully

to some spectacular discoveries made at other archaeological sites explored over an even larger area than the one selected for presentation in this work. Although the research itself has resulted in many valuable and unique discoveries, from an archaeological point of view it is more important to examine the daily lives of the prehistoric humans. All in all, this project has revealed the specificity of the prehistory of the Cracow Land and its richness compared to neighbouring regions.

The fundamental research questions asked by an archaeologist, whether for academic or rescue excavations, concern (1) the chronology of stratigraphic systems and sites, (2) the structure of buildings or the arrangement of graves, and (3) the belonging of artefacts to archaeological units. The extent of large-area studies also provides a good starting point for research into both settlement and the prehistoric and early medieval landscape of the study region.

The Consortium conducts research within two of the sections of the road construction project: D and B. In section D (part 4), the work carried out by the AMU uncovered the following archaeological sites: Krzesławice 39, Krzesławice 41, and Zesławice 63. Thorough archaeological investigation and analysis at an additional two sites from this section – Kraków Nowa Huta-Mogiła 56 (Minta-Tworzowska, 2019), and a small area associated with the site Krzesławice 42 (Kołoszuk, Rosińska & Skolasiński, 2017) – has been completed. Of these two, the author has selected one to discuss in more detail: Kraków Nowa Huta-Mogiła 56 (Minta-Tworzowska, 2019). In section B, AMU research focused on the archaeological sites of Szczepanowice 16, Wielki Dół 3, Zagaje Smrokowskie 10, and Smroków 4.

Studies on settlement in the region of Kraków Nowa Huta-Mogiła, site 56 (AZP 102-57/25)

The site Kraków Nowa Huta-Mogiła 56 is located on the top and slope of the floodplain terrace on the left bank of the Dłubnia River, between the riverbed and Wanda Mound. This area lies on the border of two mesoregions: the Proszowice Plateau and the Vistula Lowlands (Solon et al., 2018). Its parent material is loess mixed with slightly sandy fractions arranged horizontally (Figure 1).

The geomorphological features of the site were specified thanks to the preparation of a morphological soil profile for the nearby area. It contained formations showing connections with the Odranian and the Wartanian stages of the Middle Polish Glaciations and the period of the Baltic glaciation, as a result of which fertile brown soils were formed (Godłowska, 1976, p. 81). This site is a fragment of and at the periphery of a larger settlement complex located near the base of Wanda Mound consisting additionally of sites 54, 55, 55A. These latter sites were first studied in the 1950s and 1960s. Site 56 itself (not counting an episode with a gas pipeline), was analysed in the years between 2010 and 2015 (PAK Jaszewska). As these sites together form a single settlement complex, it is necessary and vital to discuss them as a single whole.

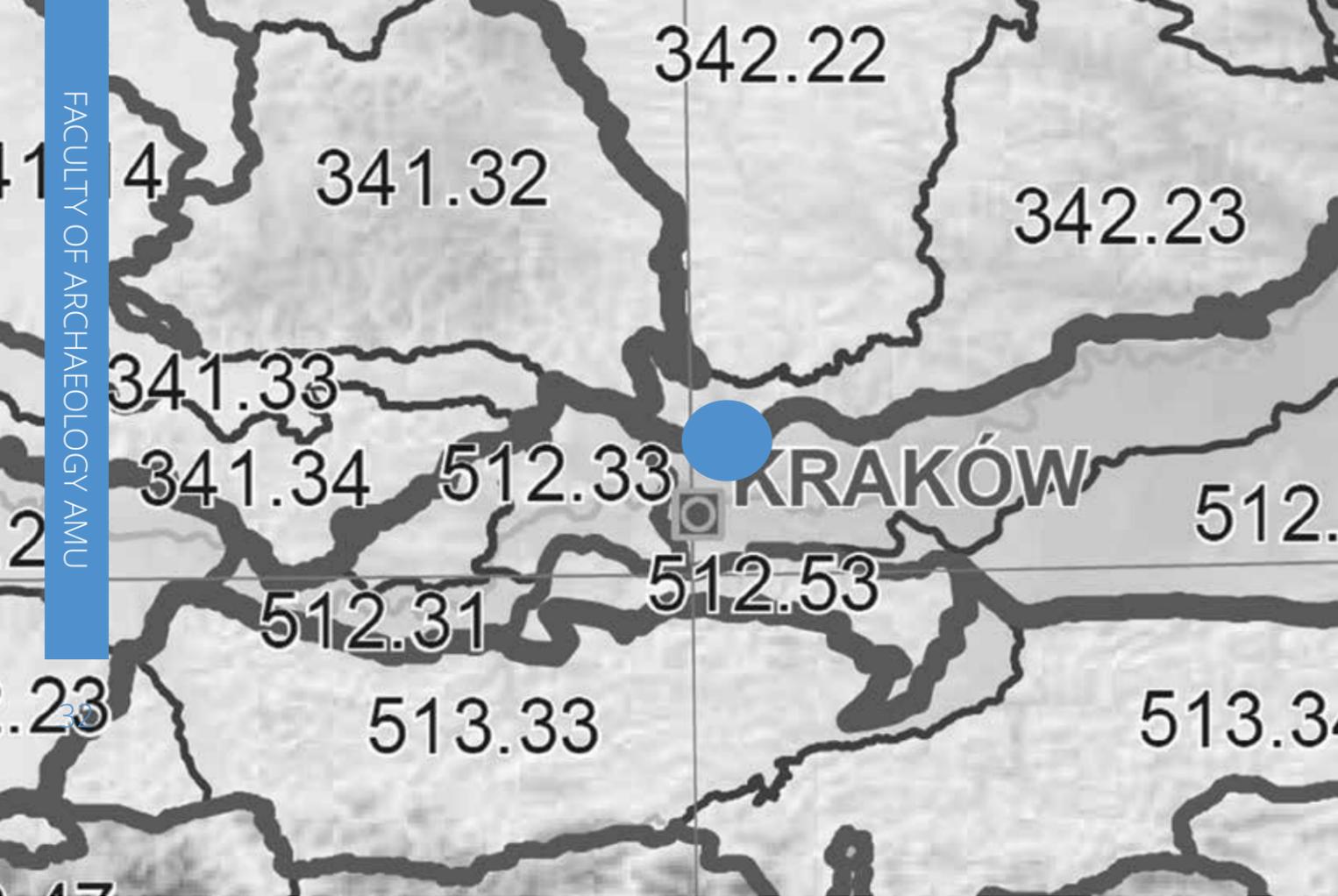


Figure 1. Location of Kraków Nowa Huta-Mogiła 56 on a geomorphological map (after: Solon et al., 2018).

Importantly – the highest part of the site was seriously damaged during construction works carried out at Ujastek Mogiński Street in the 1960s. Variations in absolute elevation recorded in this place amounted to 10.5 m. The investigations of Nowa Huta-Mogiła 56 were limited to the south and south-east by the range of the investment project, and to the east and north-east by a gas pipeline running along an NW-SE axis, beyond which were the areas partially explored during an earlier stage of construction of the S-7 expressway (site Mogiła 55; surveyed by A. Leciejewska and P. Wolanin), as well as a belt of tall trees (within plot 35/3). The latter temporarily precluded the possibility of exploration of the northern part of the site (Minta-Tworzowska, 2019, p. 5). The periphery of the settlement together with other sites were investigated within the framework of rescue excavations connected with the Nowa Huta ‘integrated works’ and its housing estates.

Despite the difficulties in observation and methodology related to the expansion of the city and its infrastructure, stratigraphic disturbances, and other factors, 104 archaeological

features assigned to 9 chronological horizons were discovered and examined during the research (Table 1).

Phase	Pit	Inhumation grave	Pit / Inhumation grave	Ditch / Lynchet	Residential building	Hearth	Clay pit	Unspecified	Total
Linear Pottery culture	1	-	-	-	-	-	-	-	1
Lengyel culture (Samborzec-Opatów group)	4	1	-	-	-	1	-	-	6
Malice culture	10	-	-	-	1	-	1	-	12
Baden culture	10	-	-	-	-	-	-	-	10
Trzciniec culture	24	-	2	-	-	-	-	-	26
Trzciniec / Lusatian culture	2	-	-	-	-	-	-	2	4
Lusatian culture	10	-	-	1	-	-	-	-	11
Bronze Age	8	-	-	-	-	-	-	3	11
Early Modern period	6	-	-	6	-	-	-	-	11
Unspecified	8	-	-	-	-	-	-	2	10
Total	85	1	2	6	1	1	1	7	104

Table 1. Kraków Nowa Huta-Mogiła, site 56. Archaeological feature.

The part of the site investigated in 2016-2018 was as is presented by Figure 2. In other words, the research conducted at the site Mogiła 56 resulted in the discovery of the periphery of a village and features were uncovered representing all phases of its development. The spatial forms which deserve attention include numerous ditches, one of which has already been referred to as delineating the Early Bronze Age settlement. It seems likely that the said ditches mark, so to speak, the natural ‘border’ of the settlement.

History of research

The earliest records of Mogiła village (nowadays being a part of Nowa Huta district of Kraków) date back to the 13th century, when it was a village associated with a Cistercian monastery founded in 1218. In 1222, the Bishop of Cracow – Iwo Odrowąż, presented the Cistercians with the village and founded the monastery already being in existence. The first mention of the name of the village was discovered in a document from 1291, ‘*Clara tumba, quod vulgariter Mogyla appellatur*’ (after Sulimierski et al., 1885, p. 586), whereas, the village exact description comes from ‘*The Geographical Dictionary of the Kingdom of Poland and other Slavic Countries*’ (Sulimierski et al., 1885, p. 586). Over the centuries, the village was devastated by frequent invasions – first by the Mongols in 1241 and 1287, and then by the Swedes in 1656. In 1769 and 1772, the Russian army made them pay tribute, threatening to otherwise destroy the monastery lands, and during the partitions part of the Cistercian property was confiscated (Banaszak & Wawrzyniak, 2018). Although the character of Mogiła was strongly associated with the monastery, it was not very different from other villages otherwise, i.e. it had fields, mills, and ponds. The village changed only in 1949, with the start of construction of the Nowa Huta integrated works and the estates for the builders and then the workers of the Nowa Huta steel plant (Banaszak & Wawrzyniak, 2018).

Historical sources also contain the information that, as early the 17th century, the area around Wanda Mound was called *'Pod Mogiłcze'* and was part of the Mogiła rural municipality (Lempart, 2012; Dzieszyński & Franczyk, 2006). The main trade route from Cracow to Lublin ran through the presented site and the now non-existent fragment of Bardosa Street (Figure 3).



Figure 2. The part of Kraków Nowa Huta-Mogiła 56 explored in the years 2016-2018. Scale 1:10,000.



Figure 3. Kraków Nowa Huta-Mogiła 56, fragment of the map showing the vicinity of Wanda Mound in 1833 (after: www.nhmz.pl).

The first traces of settlement located in the vicinity of Wanda Mound were recorded in 1908 by M. Wawrzeński and W. Demetrykiewicz. However, later in 1912, during repairs of the foundations of the tumulus structure, the same individuals did not find any archaeological material. Only a year later, in the course of the reconstruction works of the infrastructure of the Austrian fortifications located in that place, M. Drewko and L. Kozłowski discovered and investigated 16 Neolithic pits (Godłowska, 1976, p. 81; Rachwaniec, 1985, p. 89). Further rescue excavations in the area of the mound were undertaken in connection with the construction of a tramway line and metallurgical integrated works in 1962. Unfortunately, no material and only some modest descriptive documentation has been preserved from that last mentioned excavations. Richer sources were provided by the far larger-scale excavations carried out in 1963-1966 by A. Kogus, R. Zając, and R. Hachulska-Ledwos on behalf of the Nowa Huta branch of the Archaeological Museum in Cracow. The excavations covered an area of 460 ares (1 are = 10 m x 10 m unit), during which the area east of Wanda Mound and in its closest vicinity was designated as Mogiła 55 (for technical reasons, it was additionally divided into sections: 55, 55A, 55B and 55C) and the surrounding zone, investigated only within the control trenches, was numbered 53 (Figure 2, 4, 5, 6, 7; Rachwaniec, 1985, pp. 89-90; Bober, 1993, pp. 7-8).

The excavations yielded remains of settlements of Linear Pottery, Lengyel (Wyciąże-Złotniki and Samborzec-Opatów groups), Malice, Baden (formerly known as the Radial Decorated Pottery culture), Trzciniec, and Lusatian cultures, as well as some remnants related to the Corded Ware, Przeworsk, and Early Medieval cultures (Bober, 1993, p. 7; Godłowska, 1976, p. 81; Rachwaniec, 1985, p. 89). Unfortunately, although the material has been the subject of numerous publications and analyses (i.a. Hachulska-Ledwos, 1967; Rachwaniec, 1985; Kaczanowska, 1996; Bober, 1993, 1994; Górski, 1993, 1994), it has never been presented in a monograph.

In 2008, E. Dworaczyński carried out a surface survey at the site Mogiła 56 as part of the work preceding the currently implemented investment project, but no material was recorded then. It is worth noting, however, that the eastern part of Mogiła 56 coincided not only with the range of the research carried out at site 55 in 2011, but also with that carried out within the site in the 1960s.

The area was again covered by archaeological rescue excavations in 2010-2011 before the construction of the S-7 expressway junction Rybitwy – Ptaszyckiego / Igołomska. The archaeologists working on behalf of the Archaeological and Conservation Laboratory of Alina Jaszewska, MA, Zielona Góra, carried out further excavations at Mogiła 55 and examined a large area of the adjacent site 54. They recorded a number of relics related to the Neolithic (Malice and Baden cultures), Bronze Age (Trzciniec and Lusatian cultures), Roman, Early Medieval, and Early Modern periods (Leciejewska & Wolanin, 2011). In the course of work at site 55, a total of 31.46 ha were excavated. In addition, a fragment of site Mogiła 56 (4 ares of Kraków-Mogiła 54 located within Bardosa Street) was excavated. Mogiła 56 was delineated as a separate site in 1957 by S. Buratyński during the construction of the gas pipeline now

Figure 4. Kraków Nowa Huta-Mogiła 56, excavation works at the foot of Wanda Mound in 1963 (Photo: Archives of MAK).



Figure 6. Kraków Nowa Huta-Mogiła 56, excavation works at the foot of Wanda Mound in 1963 (Photo: Archives of MAK).

Figure 5. Kraków Nowa Huta-Mogiła 56, excavation works at the foot of Wanda Mound in 1963 (Photo: Archives of MAK).



Figure 7. Kraków Nowa Huta-Mogiła 56, excavation works at the foot of Wanda Mound 1963 (Photo: Archives of MAK).

running parallel to Ujastek Mogilski street based on fragments of medieval pottery discovered within the cut line (Buratyński, 1970, p. 253). As part of the research conducted by the Archaeological Conservation Laboratory PAK, run by Alina Jaszewska, MA, the work also covered a fragment of site Mogiła 56 i.e. a total of 4 ares of Kraków-Mogiła 54 located within Bardosa Street (Jaszewska, 2018). At Kraków-Mogiła 54, among 681 recorded features, 45 belonged to the Neolithic period, including 41 dated with archaeological sources. 5 features represented the Linear Pottery culture, 6 features represented the Lengyel culture, 20 features (including 5 without archaeological finds) represented the Samborzec–Opatów group of the Lengyel culture, 4 features represented the Pleszów–Modlnica group of the Lengyel culture, 4 features represented the Malice culture, and 6 features represented the Baden culture (the Radial Decorated Pottery culture). 20 features were ascribed to the settlement of the Trzciniec culture in the Early Bronze Age, 43 features to the settlement of the Lusatian culture (including 3 without archaeological sources), 5 features to the Przeworsk culture, 3 features to the early medieval settlement, 12 features to the late medieval settlements, and 205 features to the early modern period, including 10 without archaeological sources. In total, an area of 216.13 ares were excavated, including 4 ares on the north side of Bardosa Street i.e. where site Mogiła 56 is located. With regards to Mogiła 56, features associated with the Lengyel and Trzciniec cultures were documented (Jaszewska, 2018).

In 2014 and 2015 in the area of the sites Nowa Huta-Mogiła 51, 53, 55, 62, 62A, and 62B, full-scale, rescue excavations were carried out in connection with the construction project ‘*Sieć ciepła 2xDn 600*’. The work was carried out by a team of archaeologists associated with the Archaeological Museum in Cracow (pers. comm. Ms. Justyna Rodak¹). The study area of Mogiła 53 and 55 covered 23.43 ares and 149 features dug in the ground were recorded during the excavation works. Two features were classified as Neolithic, three as belonging to the Malice culture, and five related to the Baden culture. The Bronze Age was represented by three features – one was ascribed to the Trzciniec culture, and fifteen features represented the Lusatian culture. One feature was classified as a La Tène Pit, five as prehistoric features, and thirteen were related to the Early Modern period. The research showed an increase in the range of the site towards the west.

Other prehistoric features were discovered at Mogiła 51, 62, 62A and 62B within an area of 5.24 ares. These included three features from the times of the Malice culture, two features classified as Neolithic, one identified as a general prehistoric feature, and two features belonging to the Lusatian culture.

In summary, previous excavation work conducted in the vicinity of Wanda Mound had already revealed the existence of unusually intensive settlement, lasting at least from the Neolithic up to the present day, in all sites belonging to “*Kraków Nowa Huta Mogiła*” (53, 54, 55 and 56) before the rescue operations described in this paper commenced (Figure 8).

Analyses of archaeological materials: transformations of settlements

In terms of chronology, the rescue excavations at Mogiła 56 site provided very rich material, especially from the Neolithic period as well as from the Bronze Age and, in some part, from the early modern period (Figure 9).

The oldest manifestations of the presence of human groups at Mogiła 56 revealed by the research are from the Neolithic period. 29 Neolithic features were recorded, of which one feature was associated with the people of the Linear Pottery culture, six were classified as belonging to the Samborzec–Opatów group of the Lengyel culture, twelve were assigned to the Malice culture, and ten to the Baden culture. All remains from these features were catalogued (Fabiszak & Krueger, 2019). The following fragments of pottery were ascribed to these units: Linear Pottery culture – six small fragments, Samborzec–Opatów group of the Lengyel culture – 369 fragments (101 fragments remained after vessel refitting, with the remainder of the fragments forming seven almost completely preserved vessels), and Malice culture – 602 fragments (406 fragments of pottery remained after the conservation of the material).

All sherds were analysed, regardless of their state of preservation. After vessel refitting, the types of vessels represented in the Samborzec–Opatów group and Malice assemblages were determined. The settlement situation may be outlined as follows: the existence of the Samborzec–Opatów group (Fabiszak, 2019) manifested itself in the finds of single features

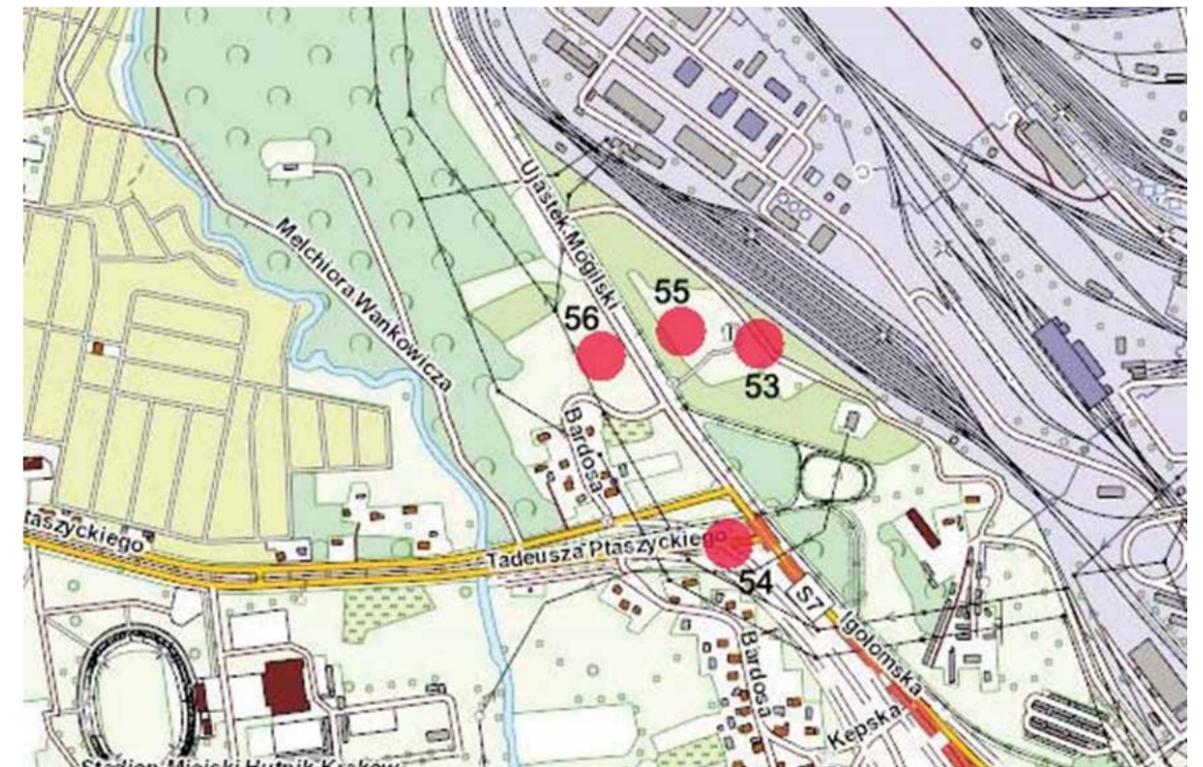


Figure 8. Kraków Nowa Huta-Mogiła 56, approximate location of sites 53, 54, 55, and 56.

¹ The author would like to warmly thank Ms. Rodak for her generous sharing of information.

of an economic character, as well as a hearth and (probably) a grave. Unfortunately, not even fragments of human remains were preserved in the lattermost feature, which can be related to its shallowness and the high level of destruction of its upper levels as a result of post-depositional processes. However, a typical set of grave goods was preserved, containing whole vessels including hollow-pedestal beakers, a bowl, and a cup.

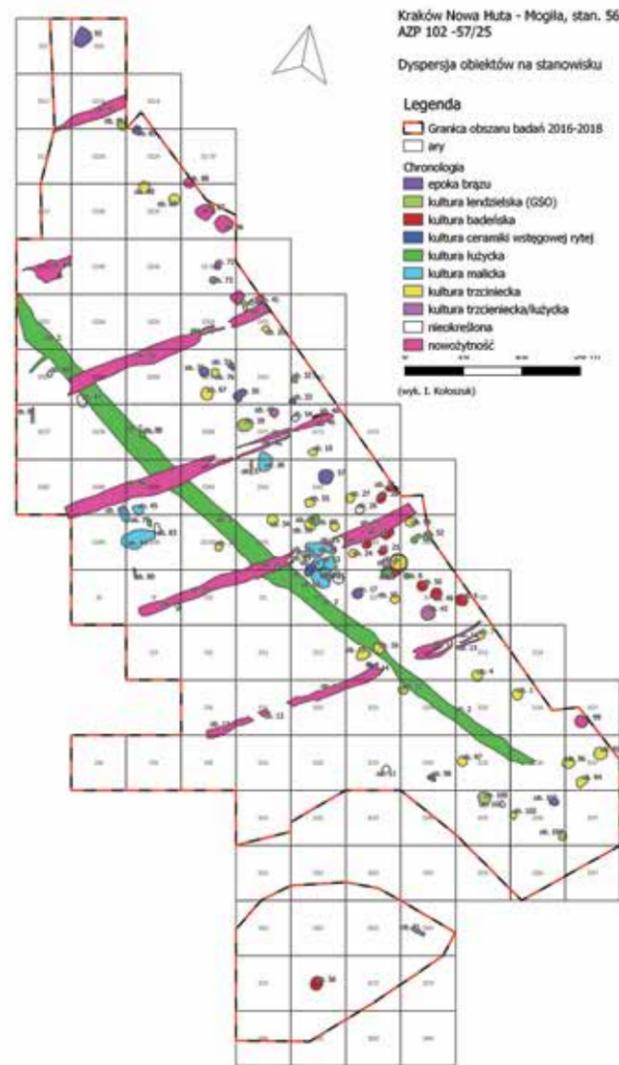


Figure 9. The part of Kraków Nowa Huta-Mogiła 56
Distribution of artefacts within the area excavated in the years 2016-2018.

During the following Malice culture population occupation of Mogiła 56, the intensity of settlement increased (Fabiszak, 2019). This phase was represented by a compact cluster of features of an economic character, one residential building (no. 66), and a clay pit. In addition to pottery, stone tools were also recovered from features belonging to this period. The settlement of this culture preferentially developed on loess soils. The pottery bears features very similar to that made by the Samborzec–Opatów group, and the only special form recorded during the archaeological investigations was a goblet-shaped vessel.

Other traces of settlement from the Neolithic are connected with the population of the Baden culture or the Radial Decorated Pottery culture (Figure 10; Krueger, 2019). Manifestations of the Baden culture in Lesser Poland have been quite well investigated, especially in its western part. Lesser Poland is considered to be the northernmost zone of the Baden settlements from its centre in the Carpathians. The influences of the Transcarpathian patterns are visible in the processes of adaptation and acculturation, referred to as 'Badenisation' of other culture groups. The heyday of settlement is associated with the Classic and Late Classic phases and includes sites located on the left bank of the Vistula River. Baden settlements were primarily located on chernozem and brown soils formed on loess. The latest period of the Baden culture, referred to as the Epibaden horizon, is represented by Bošáca-type materials, known predominantly from cave sites. Signs of activity left by populations using Baden material were recorded at Mogiła 56. 10 features, including 8 homogeneous features, were recorded. All of the pits were characterised by a circular shape, multi-layered fill, and relatively abundant archaeological material. The objects showed stratigraphic coherence. The analysis of the pottery was multidimensional and included: morphology, technology, stylistics, and function in conjunction with chronological determinations. An interesting observation was made that thin-walled pottery prevailed over thick-walled pottery and it was determined that the assemblage of pottery from Mogiła 56 was associated with the late phase of the Baden culture.



Figure 10. The part of Kraków Nowa Huta-Mogiła 56
Hollow-pedestal beakers of the Samborzec-Opatów group from feature 36 (Photo: M. Gembicki).

The spatial analyses that have been carried out are very important for understanding the development of the site as a whole. They make it possible to capture transformations in the organization of space, construction of the houses, and the location of economic features in that space. The following relationships were noted during the spatial analysis of Mogiła 56: the features related to the settlement of the Samborzec-Opatów group were recorded in various zones of the site. Compact remnants of the population of the Malice Culture were recorded only in the central part of the site. A separate, compact spatial cluster was formed by features attributed to the Baden culture (Bober, 1993, 1994) (excluding Ft. 56).

The analysed materials from the site Kraków-Nowa Huta-Mogiła 56 fit into the already investigated issues of the Neolithic in Lesser Poland as presented in literature. In particular, the settlement features of the Samborzec-Opatów group and the burial site of the population of the Samborzec-Opatów group seem to be compelling. Five of them were the settlement features and one was. The latter included the most interesting assemblage of pottery with two hollow-pedestal beakers – Figure 11. They were standard grave goods of that time, deposited in the typical manner (Kaczanowska & Kozłowski, 2006, p. 32).

In general, the Neolithic material from Mogiła 56 shows great similarities to the inventories from Pleszów 17 and Kraków Nowa Huta-Mogiła 54 and 59. There is a high probability that, in a broader context, the materials from the site discussed herein coincide chronologically with corresponding materials from the neighbouring sites and may prove the existence of a large, long occupation in this area, first used by the population of the Linear Pottery culture, then by the Samborzec-Opatów group, and finally by the community of the Malice culture (cf. Grabowska & Zastawny, 2014).

The materials obtained from Nowa Huta-Mogiła 56 contribute to the issue of the connections and genesis of the Samborzec-Opatów group and the Malice Culture. There are interesting stylistic connections between the pottery assemblages from Pleszów and Mogiła 54 and 56. The syncretic nature of this group, reflected in the pottery inventories, has long posed many interpretative difficulties. Frequent cases of similarities noted in the 'Samborzec' and 'Malice' materials are also visible at Mogiła 56. On the other hand, more and more frequent finds which contradict the validity of the hitherto existing pottery determinations resulted in the emergence of a hypothesis that the Samborzec-Opatów group was the earliest phase of the Malice Culture (Ścibor-Michalak, 1996, p. 46).

After the Neolithic, there were significant transformations in the spatial organisation of settlements and the abandonment of the earlier behaviours connected with the funerary rites. At Mogiła 56 a new epoch – the Bronze Age – started with the settlement of the population of the Trzciniec culture and mainly, the settlement of the population of the Lusatian culture (Górski, 2019). These Bronze Age occupations can be broken into three (Trzciniec: Early-Classic, Post-Classic, Late) and two (Lusatian: early I and early II) phases, respectively.

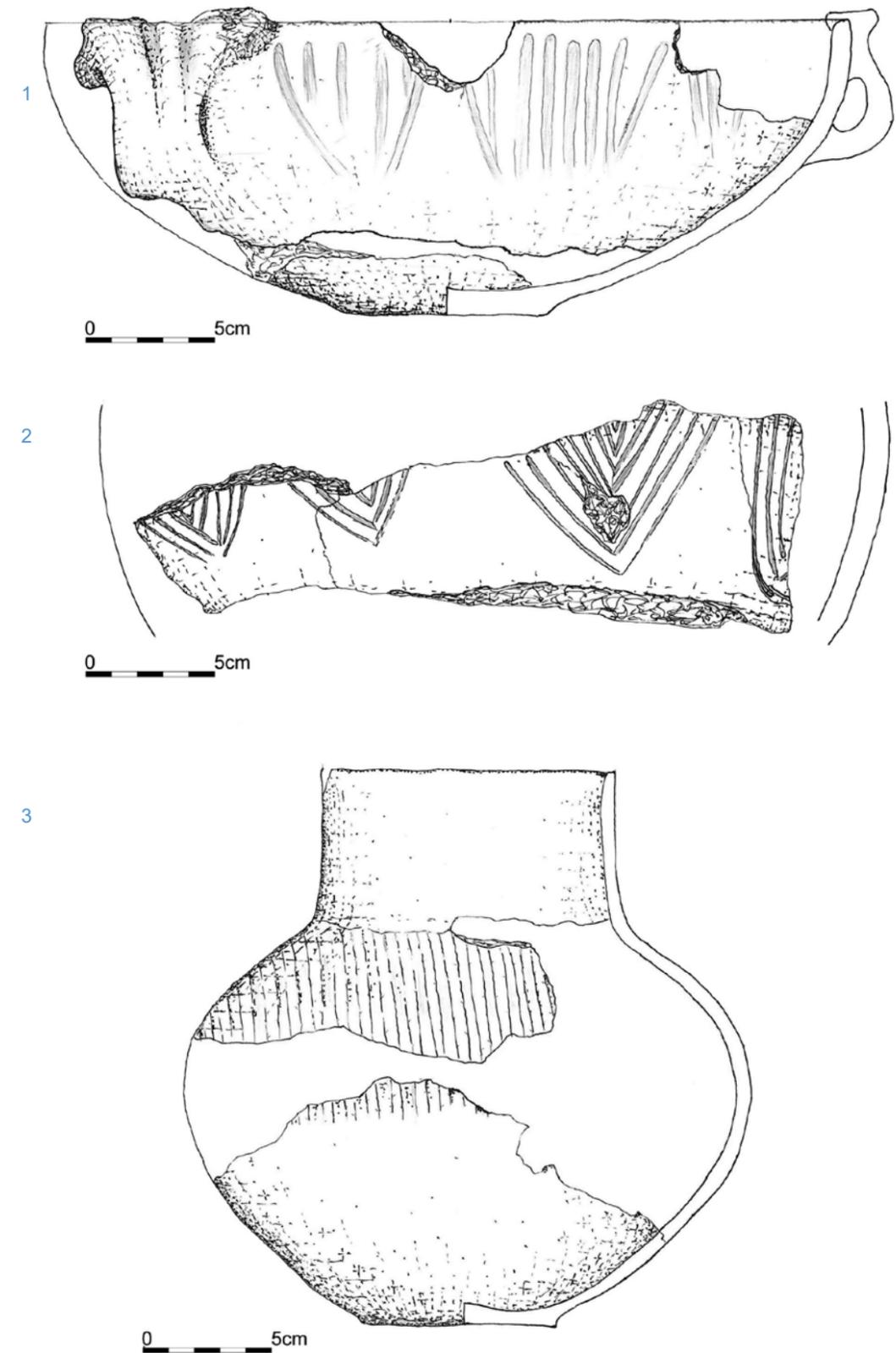


Figure 11. The part of Kraków Nowa Huta-Mogiła 56
Selected pottery: the Baden culture, Ft. 56 (1, 3), Ft. 22 (2) (Drawing by I. Fabiszak).

From the perspective provided by the remains dated to the Bronze Age, Mogiła 56 was a continuation of the site marked as 55 that was the periphery of the multiphase settlement from that period. Site 55 was studied extensively in the years 1963-1966 by a team from the Nowa Huta branch of the Archaeological Museum in Cracow (Buratyński, 1970). Although the materials from the Bronze Age were published (Rachwaniec, 1985; Górski, 1993, 1994), it was concluded that the catalogue required verification. As a result, it was re-published in the mid-1980s (Cf. Górski, 1993, pp. 55-56).

The majority of the material recorded at the site Mogiła 56 represented the Trzciniec culture (TC) and the early stage of the Lusatian culture (LC). The continuation of the occupation between the TC and LC and the change in the system of settlement organization and material culture were thus confirmed (Górski, 1992, 1997, 2002). According to J. Górski, the change was a result of the influence of groups representing the Urnfield type of culture, which settled down in the area near Cracow at the beginning of the Middle Bronze Age (Gedl, 1967, 1982; Rydzewski, 1991). Eight construction phases relating to the end of the Early through the Middle Bronze Age were identified at Mogiła 56 (Górski, 1994, pp. 92-102). Only a few small fragments of vessels were assigned to the younger development phases of the LC (Górski, 1994, pp. 92-102). Features were ascribed to the Bronze Age based on the pottery found in their fill: 26 to TC, eleven to LC, and four to either the TC or LC. In most cases, the features were settlement pits. However, one interesting feature was a ditch (Ft. 2) of considerable length, over one hundred meters, ascribed to LC. The chronological data of the objects was established on the basis of the pottery found in the fills. In four cases, its poor state of preservation did not allow for assigning the pits to any of the distinguished cultures.

A preliminary analysis of the artefacts obtained from site Mogiła 56, which had the Trzciniec and Lusatian features, shows that they did not differ from those discovered during the excavations carried out at the neighbouring sites (cf. Rachwaniec, 1985; Górski, 1993, 1994). That is why the previously developed typology of the vessels and the system of their technological description common for the TC and the LC were used.

Materials related to the TC were discovered in 26 features. The 26 TC settlement pits were classified as economic activity type. As in the case of the neighbouring site, Mogiła 55, no post-holes or other structures which might have fulfilled a residential function were recorded. An analysis of the fragments of daub found at sites 51 and 52 leads to the conclusion that pits served a storage function with walls reinforced using wattle daubed with clay. These storage facilities / 'cellars' were likely indispensable elements of houses and their surroundings. In addition, three pits contained human remains, including one with full skeletons of two adult individuals (Ft. 34). Both were articulated burials. Similar discoveries made within the settlement context were known from the neighbouring site 55 and – especially – from the area of Western Lesser Poland. The second pit contained only a fragment of human bone and a complete skeleton of horse (Ft. 95). The third pit (Ft.1) yielded a fragment of human femoral bone and a part of the occiput. In the area of Nowa Huta, two more settlements with graves were discovered. A single TC burial may be associated with a small village located in the area of Nowa Huta-Pleszów (Site 17) (Górski, 1995) and one collective burial was recorded at Cło, site 65 (Górski & Wróbel, 2000). The spatial analysis made it possible to distinguish the

following time intervals for the Trzciniec phases: the Early Classic phase (two independent farms), the Post-Classic phase (large distances between the buildings), and the Late phase².

The LC settlement was represented by 11 features, 10 of which were classified as economic pits. The pits were located in the most elevated spots of the settlement. The final feature was a long ditch (Ft. 2). This north-west and south-east aligned feature was, unfortunately, not fully exposed – its northern end was located outside the area covered by the construction project. Worse still, the last section of the ditch was destroyed during the construction of the integrated works. At the exposure level, generally, the feature had a clear outline and an irregular, elongated shape, and its fill revealed some indeterminate, bronze objects. Within the 125 m surveyed length, its width ranged from 1.16 m to 4.26 m. Ditches are an inseparable element of settlements characteristic of the LC, particularly in western Lesser Poland. One ditch of unspecified purpose, associated with the oldest phase of settlement, was found in Wieliczka (Fraś & Reguła, 2001). A similarly dated ditch, separating a settlement from a cemetery, was discovered in Targowisko, Wieliczka district (Konieczny, 2014, p. 113). A palisade, built on a circular plan, which was discovered in Kraków-Bieżanów, should be associated with the Early Iron Age (Przybyła, 2017, p. 382). The youngest phase of the defensive complexes of the LC in western Lesser Poland is marked by fortified settlements in Kraków-Tyniec and in Biskupice, Wieliczka district, which were dated to the turn of the Hallstatt and the La Tene periods (Gedl, 1982, pp. 27-29). The fortified settlement, existing at least from the end of the Bronze Age into the Hallstatt period in Witów, Proszowice district, seems truly unique (Gawlik & Godlewski, 2010, p. 333). The spatial analysis for the LC showed two main phases: phase I and phase II.

A specific feature of the TC and LC settlements within the area of Nowa Huta is that both units form mixed cultural assemblages. They are known primarily from the settlement at site 55, but also from Pleszów 49 (Górski, 1997, pp. 29-31). A second ditch in the same settlement cluster, stretching along the bend of the floodplain, belonging to LC was identified at Mogiła 55. It separates the residential zone of sites 56 and 55 from the floodplain valley. At this point, the reader's attention should be drawn to the lack of objects of the LC within a several-metre-wide strip stretching along the ditch on its eastern side. This may be due to the fact that the soil obtained from the fill of the ditch was probably used to build a rampart as additional reinforcement. As in the case of the TC village, also in the times of the LC, the investigated zone is peripheral to the main village at site 55. Presumably, the other recorded features represented a single homestead, which was similar to the structures recorded at site 55. The ditch, which is probably a relic of unspecified settlement fortifications of the early stage of the LC, was a truly compelling discovery.

The site also yielded traces of settlement from the early modern Period (Kołoszuk & Fabiszak, 2019). The analysed archaeological objects and historical materials were classified during fieldwork as modern. Twelve features were identified, which can be grouped into two basic categories. Features 13, 93, 84, 35, 46, and 25 are shallow, irregular ditches, which are most probably the remains of ridges (lynchets) between smaller fields. Features 41, 42, 86, 87, 88, and 99, on the other hand, are pits with quite specific characteristics. These modern remains were fills from archaeological works carried out between 1963 and 1966. The methodological novelty in the case of the presented settlement was the use of GIS methods on modern

² The relative dating of the TC materials from Nowa Huta-Mogiła, site 56, was based on their comparison with the chronological system developed for the settlement at the neighbouring site 55 (Górski, 1993, 1994).

features. Two types of excavation plans were correlated in the GIS environment: the ones from 1963-1966 with the plans of the currently conducted research. It should be noted, however, that the field documentation standards operative in the early 1960s did not assume that any research would be carried out based on the National Geographic Coordinate System. Instead, they were based on the available, hypsometric maps. In order to correlate the two plans, an altimetric map of the area of Nowa Huta from the period before the construction of the Nowa Huta integrated works was acquired from the National Archives in Cracow. Using the section presenting Wanda Mound and the adjacent areas, the plan was correlated with the map of the distribution of archaeological sites discovered in the 1960s using characteristic topographic points.

In the next stage, the plan was georeferenced with the contemporary orthophotomap using QGIS tools. A contemporary plan of the location of the features at Mogiła 56 was plotted on this basemap. The resultant summary indicated some cases of re-exposure of the previously excavated features, confirming the hypothesis that features 86, 87, and 88 were backfills or negatives of the previously excavated pits; most probably, they correspond to several features explored in the 1960s. However, operating within the convention of requirements related to the scientific elaboration of the research results, a decision was made to systematically describe the characteristics of the explored archaeological features and the materials deposited in them. The nature of the features made it possible to introduce an idea of a specific form of research work in this part of the site. In addition, the use of GIS helped to match the layout of parallel lines with the lynchets separating individual fields, presented on a 19th century map.

All of the aforementioned conclusions were possible thanks to the use of GIS, suggesting the importance of incorporating this spatial analysis on a wider scale in archaeological research, especially when it is necessary to refer to the archival results of works conducted in the directly adjacent areas. They are a source of reflection on what remains of the archaeologist's fieldwork and how the methodological requirements change the view on these issues.

The following specialised analyses were carried out for site Mogiła 56:

a) an analysis of human skeletal remains (Rychtarska, 2019). Two human skeletons were recorded in feature 34. One of the buried individuals had a microlithic flint arrowhead stuck in the left elbow joint, which probably caused the left forearm to be shorter than the right. However, the poor state of preservation of the bone material precluded the possibility to perform more detailed analyses. In addition, the site also yielded single human bones, unearthed in features 95 and 1.

b) an analysis of flint and obsidian materials (Gruzdź & Pyżewicz, 2019). This analysis was carried out in terms of raw materials and typo-technology. The main focus was put on the analysis of the materials from the individual features representing the Malice, Baden, Trzciniec, and Lusatian cultures. The occurrence of stone tools in the settlement area is noteworthy (Figure 12). The analysed flint materials were largely associated with the Neolithic communities. Fragments of obsidian, the traces of use of the punch technique, and characteristic endscrapers can be connected with the Danubian groups identified with the Linear Pottery

culture or the Malice culture. In addition, some polished tools (flakes) suggest that some of the structures may have been in use during the middle stages of Neolithisation or the Early Bronze Age. A double-sided sickle and semi-finished biface may be included in the latter period. Several massive burins indicate a previously unrecognized probable episodic settlement of Late Palaeolithic groups at the site.

c) an analysis of animal bone remains (Moszycka, 2019). A wealth of faunal material was obtained during the research conducted at Mogiła 56 from the features associated with the settlement of the Lengyel, Malice, Baden, Lusatian, and Trzciniec cultures, as well as from the cultural layers. A total of 1,129 animal bone fragments were analysed. Anatomical, species, and taphonomic assessments were made. The discovery of a complete horse skeleton is noteworthy (Ft. 95, Figure 13). The rest of the bones belong to cattle and small ruminants.



Figure 12. The part of Kraków Nowa Huta-Mogiła 56. Selected stone artefacts of the Trzciniec culture from features 1 (1), 59 (2), 7 (3), and 16 (4).

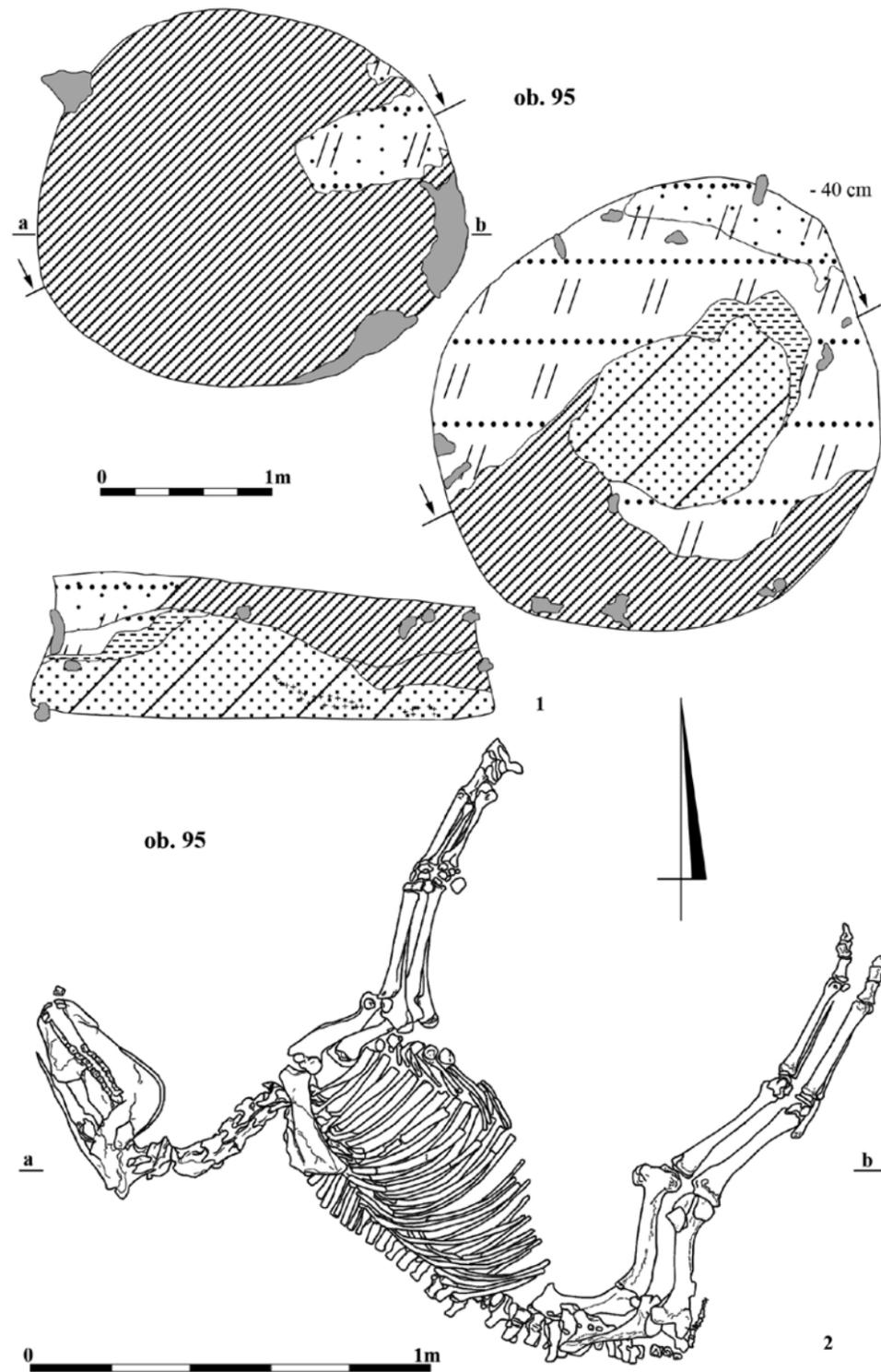


Figure 13. The part of Kraków Nowa Huta-Mogiła 56 Preserved skeleton of horse, Ft. 95.

d) In addition, an analysis of stone monuments (Krueger, 2019) and daub (Kołozuk, 2019) were carried out. They provided information about the selection of stone raw materials and the methods of preparation of daub masses used for construction purposes. The analysis of the daub helped to detect significant differences in the composition of the daub from the Neolithic and the Bronze Age, as well as to identify the features which functioned as storage pits with plastered walls.

Concluding Remarks on Mogiła 56

The results of the research at Mogiła 56 in the area covered by the construction project provided new information on prehistoric and modern settlements. An undeniable value of this study is the spatial correlation of the results of the archaeological excavations at sites 55 and 55a conducted in the 1960s and the present-day excavations at site 56. Using the available spatial information, the older plans were georeferenced, resulting in a composite plan of the sites showing a multiphase, extensive settlement. It served as the basis for further analyses, allowing the development of a broader picture of the immediate vicinity of the study settlement. As a result, it was argued that Mogiła 56 is only a periphery of an extensive multicultural site. Moreover, this case shows that an investigation of a settlement which is limited to such a small section and performed in isolation from the wider context, could lead to drawing only partial or even erroneous conclusions. The materials obtained from Mogiła 56, as well as from the much better explored sites and investigated by the authors of the present study, could be used for broader settlement or landscape studies. Importantly though, the latter require using more advanced technologies, which is not the current focus of the rescue excavations.

Investigations carried out at the other sites

Site	Investigated area
Szczepanowice 16 (AZP 97-57/112)	10.14 ares
Krzestawice 42 (AZP 102-57/17)	33.34 ares
Krzestawice 41	
Wielki Dół 3 AZP (97-57/174)	11.75 ares
Zagaje Smrokowskie 10 (AZP 98-57/70)	247.23 ares
Smroków 4 AZP (97-57/145)	The total area of the site in the area which overlaps the planned S-7 expressway was initially estimated at 4.6 hectares. However, in total, the excavations covered a large area of 1020.8 ares.

Table 2. Investigations carried out at the other sites.



Figure 14. Zesławice 63.
Grave with preserved sword (Ft. A33).

The sites which are currently under investigation include Krzesławice 39 and Zesławice 63. In the scope of part 2 – Section B, archaeological works have been completed at Szczepanowice 16, Wielki Dół 3, Smroków 4, and Zagaje Smrokowskie 10 (Table 2). The materials obtained from the last two sites (the largest in both sections) are currently at the stage of study and specialist analyses, therefore they are only mentioned. The research in Smroków and Zagaje Smrokowskie has already yielded extremely rich and numerous material (being currently under study), the importance of which cannot be overestimated. The ongoing excavation works include sites Krzesławice 39 and Zesławice 63. In the course of excavations at Zesławice 63, conducted by Iga Faliszak, a grave was discovered in which an early medieval sword was found. This artefact has already undergone conservation procedures. This find is extremely rare in funerary contexts in southern Poland (Figures 14 and 15). This discovery, like many others, requires a separate study and, therefore, this thread is abandoned in this point.



Figure 15. Zesławice 63.
Sword from grave A33
after conservation
procedures.

Selected artefacts discovered at the aforementioned sites:

1) Szczepanowice 16. Only one artefact was discovered at this site classified as belonging to group VI (after: O. Almgren) (Figure 16). The fibula was analysed using a Bruker Tracer III SD handheld X-ray fluorescence spectrometer. The results indicate that the artefact was made of a silver and copper alloy (Krueger, 2017). A fragment of a WWII trench was another, significant discovery made at the site.



Figure 16. Szczepanowice 16.
Fibula made of a silver and copper alloy,
classified as group VI (after: O. Almgren)

2) Krzesławice 42 – from the material recorded at the site, only some specimens were selected (Figure 17).

3) Krzesławice 41. At this site, rich with archaeological material, the following (*inter alia*) were discovered: hatchets made of serpentine – Fts. 311, 293 and 206; some amount of rare, raw material – obsidian (Ft. 230), a fragment of amber (Ft. 200), a clay spindle whorl (Ft. 208), and a clay spool (Ft. 206; Figure 18). Other finds included serpentinite axes (Fts. 311; 293 and 206; Figure 19). On the other hand, the Bronze Age settlement was represented by an economic activity pit with two fragments of a bronze wire which, presumably, belonged to a spiral bracelet. Both fragments were subjected to metallurgical analysis using the Bruker Tracer III SD handheld X-ray fluorescence spectrometer. The analysed samples were composed of 54% copper and about 38% tin, as well as a trace amount of zinc, iron, and arsenic (Koloszuk 2017, p. 23). Simple ornaments made of wire of this type were typical from the beginning of the Bronze Age. However, their highest accumulation is associated with the settlement of the Lusatian culture (Blajer, 1990, p. 23).



Figure 17. Krzesławice 42.
Selected monuments.

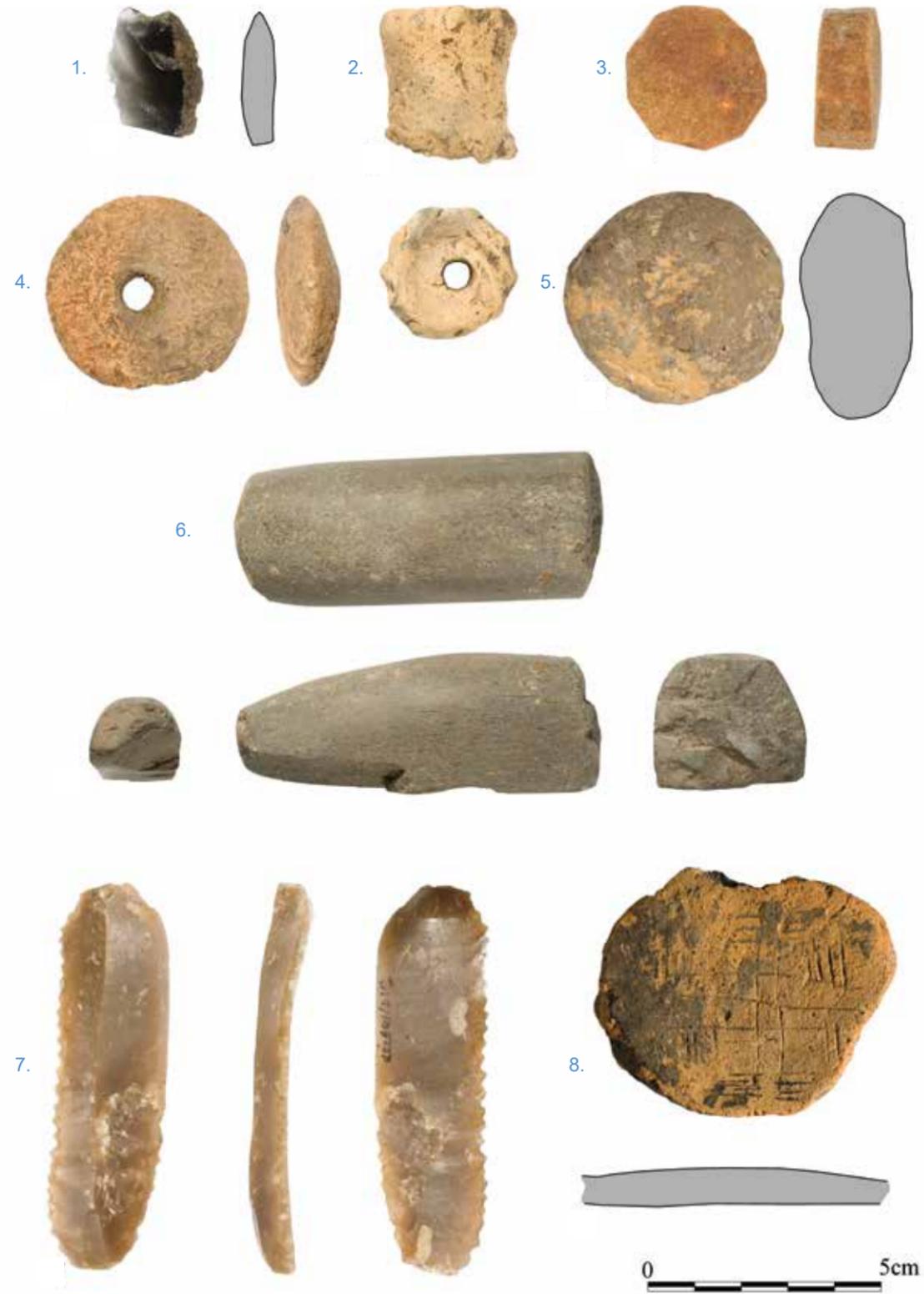
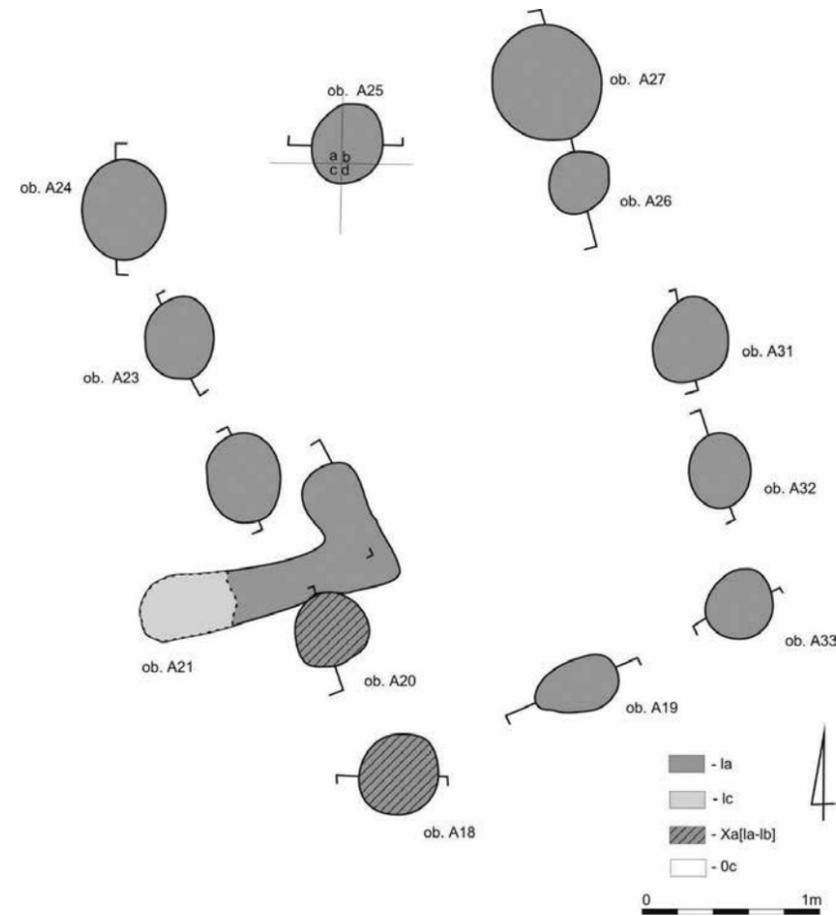


Figure 18. Krzesławice 41. 1. obsidian from Ft. 230; 2. clay spool from Ft. 206; 3. amber from Ft. 200; 4. spindle whorl from Ft. 208; 5. clay spindle whorl (?) from Ft. 196; 6. whetstone from Ft. 170; 7. flint denticulate tool from Ft. 251; 8. pottery with decoration from Ft. 178.



Figure 19. Krzesławice 41. 1. hatchet made of serpentinite from Ft. 311; 2. hatchet prob. made of serpentinite from Ft. 293; 3. hatchet made of serpentinite from Ft. 206.

4) Zagaje Smrokowskie 10. They constitute a significant and quite thoroughly investigated archaeological site. In terms of chronology, the oldest traces of habitation should be associated with a Neolithic settlement and, in particular, with the Lengyel culture (over 200 features). The other datable archaeological objects are related to the Malice culture, the Funnel Beaker culture, the Mierzanowice culture, the Lusatian culture, and the early modern period. Among the features the following were recorded: pits, post holes, ditches, and residential buildings (Figure 20). Another find included two inhumation burials. The excavations yielded 11,486 fragments of pottery; 2,982 flint artefacts; 1,191 fragments of daub; 2,917 fragments of animal bones; 190 stone artefacts (an axe, polishing stones, grinding stones, and fragments of querns); everyday objects made of clay, e.g. fragments of spindle whorls or loom weights; and metal objects (e.g. a copper twist). Also, over a dozen shell fragments were recorded, four of which were elements of pendants (Figure 21).



1. Zagaje Smrokowskie, stan. 10. Ozdoba z muszli z ob. A170
2-5 Smroków, stan. 4.
Przędziki gliniane z ob. R1 (2, 5) i H50 (3)
oraz fragment ozdoby z muszli z ob. R1

Figure 20. Zagaje Smrokowskie 10.
Exemplary system of post holes (residential building).

Figure 21. Zagaje Smrokowskie 10. 1- shell ornament from (Ft. A170);
Smroków 4: 2-5 clay whorls (Fts R1 and H50); and fragment of shell ornament (Ft. R1).



56

Figure 22. Smroków 4. Pottery from a grave representing the CW culture in the moment of excavation (Photo: I. Fabiszak).

5) Smroków 4 is one of the most complex and also spectacular sites investigated by the AMU Team. 611 features were studied at the site. In total, 81 features were classified as representations of the Neolithic period (Lengyel, Malice, Funnel Beaker, and Corded Ware cultures). Among the objects from the Early Neolithic, five features of the Funnel Beaker Culture and eleven features related to the people of the Corded Ware culture. Seven features were dated to the Early Bronze Age. Nine features were classified as of the Mierzanowice culture, the same number relate to the Lusatian culture, and seventeen features were identified as belonging to the Trzciniec culture. The next traces of settlement (28 features) were related to the Early Middle Ages, and the same number of features were attributed to Early Modern times. Also, 26 structures were associated with the World War II and the construction of military fortifications – trenches.

The site is complex not only because of the occurrence of features typical of settlement (houses – 24, pits – 357, post holes – 11, and ditches – 26), but also because of graves. Among the discovered burials are inhumation graves (47), one grave without human remains, and cremation burials (21). For example, eleven graves of the Corded Ware culture population

were recorded, located in different clusters. They included single burials equipped with one vessel only, and very richly furnished ones with the deceased placed in niche pits in pairs. Sets of well-preserved pottery with fragments of animal bones inside some of them were found in this place (Figure 22).

The finds related to this culture also include beads made of bone, tools made of bone and stone, and, in particular, bronze ornaments (Figure 23). Other finds included clay spindle whorls (Ft. R1 and H50) and shell ornaments from Ft. S10 (c.f. Figure 21 and Figure 24).

It is also important to note that the analysed site yielded some artefacts from the Early Middle Ages – they were material from the cemetery located on a flat hill in the central part of the site. It can be strongly assumed that it represented the Alt Käbelich type, which is a truly unique find, especially for the areas of southern Poland. The high importance of the site makes it deserve a separate article or even a monograph.

Conclusions

In two parts of the planned construction of the S-7 expressway, No. 2 – section B and No. 4 – section D, a total of 1,409.19 ares were excavated (section D – 119.27 ares; section B – 1,289.92 ares), and the investigation is still in progress (one of the sites – Zesławice 63, is likely to be excavated on a further area of about 1 ha). Numerous traces of settlements represented by features and artefacts made by prehistoric people and attributed to many archaeological cultures, as well as numerous materials were recorded during the research. Undoubtedly, the large-area type of investigations will allow for a multidimensional analysis of the features and a description of their mutual relations in the coming years. The obtained sources will contribute to a better recognition of settlement processes and landscape changes as well as a better, archaeology-based understanding of life and death in the prehistory in the Cracow area.



Figure 23. Smroków 4. Bronze ornaments of the population representing the Mierzanowice culture after conservation procedures.

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Figure 24. Smroków 4.
Shell ornaments (Ft. S10).



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