RESULTS OF GEOARCHAEOLOGICAL STUDY OF ARCHAEOLOGICAL SITE AT BUKOWA GÓRA (SILESIAN UPLAND, POLAND) – MEGALITH, EARLY MEDIEVAL STONE-EARTH BARROWS, MEDIEVAL MINES

DOI: https://doi.org/10.18509/GBP2639k
UDC: 550.8:902.2(438)"653"

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ABSTRACT

Multicultural archaeological site at hill Bukowa Góra (365.5 m a.s.l.) is located at Dąbrowa Górnicza–Ujejsce on an isolated hill with steep slopes, part of the Middle Triassic Step on Silesian Upland, southern Poland. Geological, geomorphological, sedimentological, geophysical, geochemical archaeoastronomy research, archaeological excavation, radiocarbon and luminescence datings were done. Three areas can be distinguished within the site. The lowest-lying area contains preserved traces of Early Medieval mining (pinga, warpie, adits) of zinc and lead ore with a silver admixture from ore-bearing dolomites. The second area, located on the plateau, is an extensive barrow cemetery, clearly visible in the LiDAR image and in the field. There are Early Middle Ages (8^{th}-12^{th} centuries AD) stone-earth barrow. The third area with stone structures of megaliths is located on the culmination of the hill, which is surrounded by a stone circle with a radius of 53–56 m. The age of the megalithic structures is unknown and controversial, both in light of the artifacts found and luminescence dating.

Keywords: geoarchaeology, megalith, Early Medieval, mining, barrow cemetery, Bukowa Góra, southern Poland

INTRODUCTION

The differences in megalith density across Europe are astonishing and incomprehensible. Over 10,000 megaliths have been recorded in Denmark and northern Germany, approximately 550 in Sweden, 53 in the Netherlands (Drenthe province), and only 17 in Poland [1]. In the monumental publication Megaliths of the World [2], Poland appears marginally (four times). According to one of many scientific theories, debated for decades, the megalithic tradition spread across Europe along the coasts [3]. Chronological

stratification is taken into account, as well as a kind of recycling of stone blocks [3]. However, very old archaeological sites (Göbekli Tepe and others), dating back several thousand years, with structures that can be broadly defined as megalithic, appear in Turkey far from the coast.
Probably due to the insufficient state of research, we observe a significantly smaller number of archaeological sites in Poland associated with megalithic traditions e.g. tombs from Wietrzychowice, Sarnów, Gaj Stolarski (Kujawy mounds), Polish pyramids etc. [4], [5], [6], [7].

STUDY AREA

The study area is located in the Silesian Upland on the border with the Kraków-Częstochowa Upland. The cuesta of Middle Triassic Step is composed of Lower and Middle Triassic limestones, marls, and dolomites, dipping isoclinally 3-8° NE and locally overlain by Mesozoic rocks. Its relief is dominated by hills, hummocks, and plateaus with undulating or flat surfaces (Fig. 1). From the Dąbrowa Basin (from the W, N, and NE), it forms a strongly fragmented by active (Czarna and Biała Przemsza rivers) and dead gorges and "stepped" structural front with a relative height of 40-130 m, on the foreground of which rise the “witness hill” (erosional remnants) e.g. Bukowa Góra. The NW-SE-oriented Ząbkowice Garb (Hump), eastward of Czarna Przemsza gorge, is approximately 6 km wide. In the central part, fragments of the Palaeogene peneplain (384-370 m a.s.l.) have been preserved, but these have been eroded into rounded spurs and intervalley hills, lowered in the northern part to an altitude of 365-340 m a.s.l. The slopes of the hills, with the exception of Bukowa Góra (365.5 m a.s.l.), are generally slight. On the plateau surfaces and steep denudation slopes of the Garb, there are mostly only rubble-clay weathered covers, while the erosion depressions are filled with the Quaternary sands, in which karst sinkholes are reproduced (around Trzebiesławice). Poor drainage results in numerous marshes and wetlands in the valleys, for example in the Trzebyczka Valley southward of Bukowa Góra [8], [9].

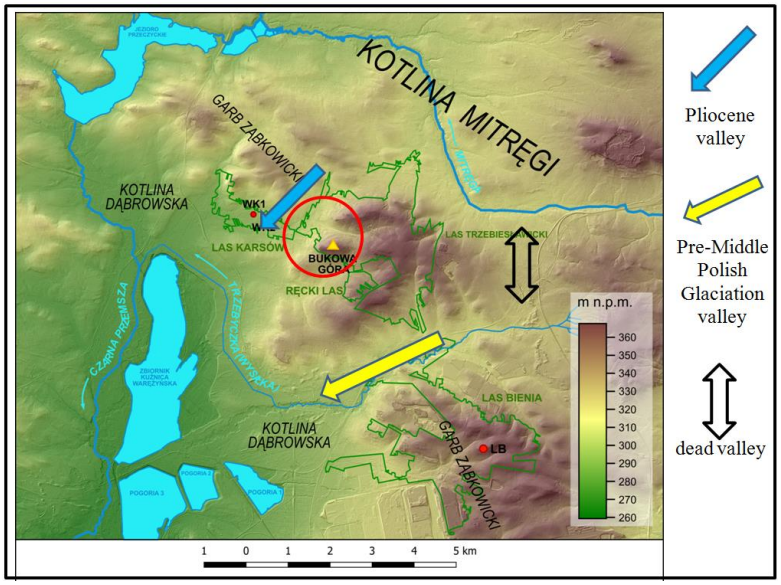


Figure 1. Location of Bukowa Góra archaeological site and Early Medieval barrow fields at Wojkowice Kościelne/Karsów (WK1, 2) and Las Bienia (LB) on DEM of Ząbkowice Garb (Hump) and Dąbrowa Basin [10, supplemented]

RESULTS

Multicultural archaeological site no. 18 at Bukowa Góra (365.5 m a.s.l.) is located in Dąbrowa Górnicza–Ujejsce on an isolated hill with steep slopes, part of the Middle Triassic Step. It was originally identified as associated with Early Medieval, Medieval, and modern ore mining. Three areas can be distinguished within the site (Fig. 2).

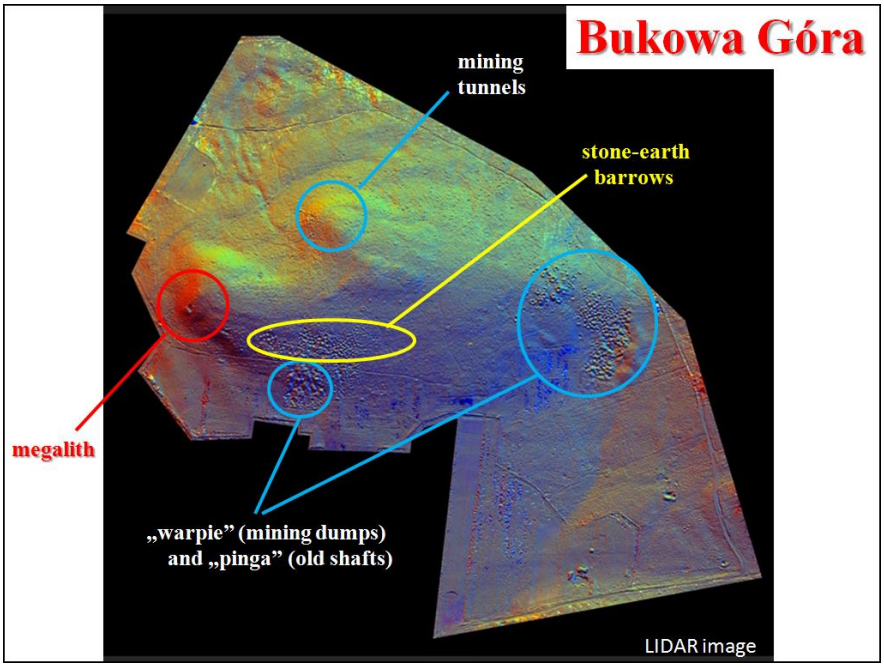


Figure 2. LiDAR image of Bukowa Góra site

The lowest-lying area contains preserved traces of mining (pinga, warpie, adits) of zinc and lead ore with a silver admixture from ore-bearing dolomites (Fig. 3). Mining pits surround the hill, and the beginnings of mining date back to the 11th–12th centuries, as evidenced by artifacts discovered in the area, including Early Medieval lead weights [11, 12]. Mining work was not carried out on the top of the hill because the Diplopora dolomite there does not contain metal ores.



Figure 3. Small „warpie" (mining dumps) and „pinga" (old shafts) (photo T. Kalicki)

The second area, located on the plateau, is an extensive barrow cemetery, clearly visible in the LiDAR image and in the field [13, 14] (Fig. 4).

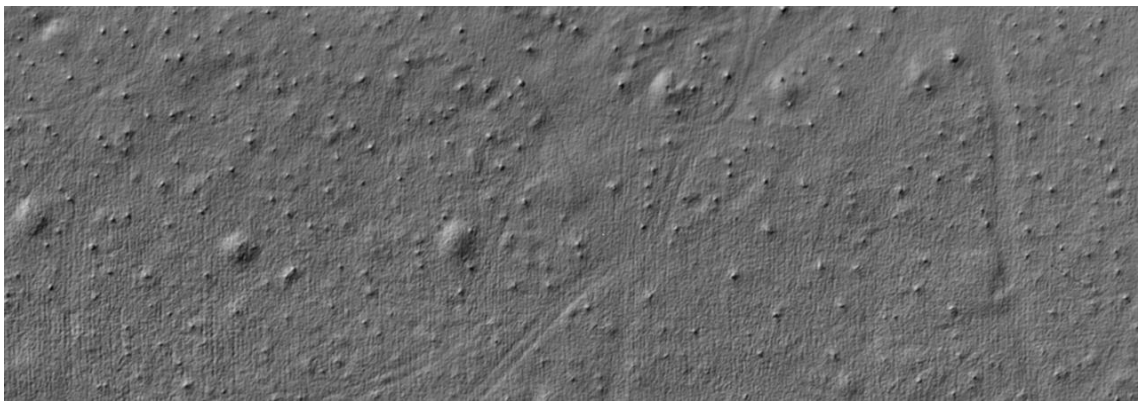


Figure 4. A barrow cemetery in a LiDAR image

Rock-earth barrows, circular mounds, are topped with stone steles often oriented N–S (Fig. 5). There are also graves covered with large stone slabs, many of which are topped with triangular steles [14]. An increase of phosphorus content have been found in the soil [15].



Figure 5. Rock-earth barrow (upper) with stone stele oriented N-S at the top (lower, photo T. Kalicki)

Detailed research covered a barrow (approximately 70% of the surface) with three vertical stele – object 2/2020. It is a stone box covered with earth. The bottom of the grave was half-filled with reddish clay (Fig. 6). A limestone stele, broken into three pieces and inverted, was discovered here. It likely originally stood upright and was topped with a face (Fig. 7). The limestone from which it was made does not occur naturally on the hill, so it must have been intentionally made, transported to the summit, and placed in the stone box anthropogenically.



Figure 6. Object 2/2022. The interior of a stone box with a light and reddish bottom (photo D. Rozmus)



Figure 7. The top of a broken limestone stele ("man head") from a stone box in object 2/2022 (photo D. Rozmus)

Radiocarbon dates from the barrows date to the Early Middle Ages (8th-12th centuries AD), although one of the dates falls on the second century AD [16], while the TL dating of 11.5±1.7 ka (KIE-989) indicates that they were built on Late Glacial weathering cover.

The third area with stone structures is located on the culmination of the hill, which is surrounded by a circle with a radius of 53–56 m (Fig. 8) formed by large boulders placed vertically on the slope (Fig. 9).

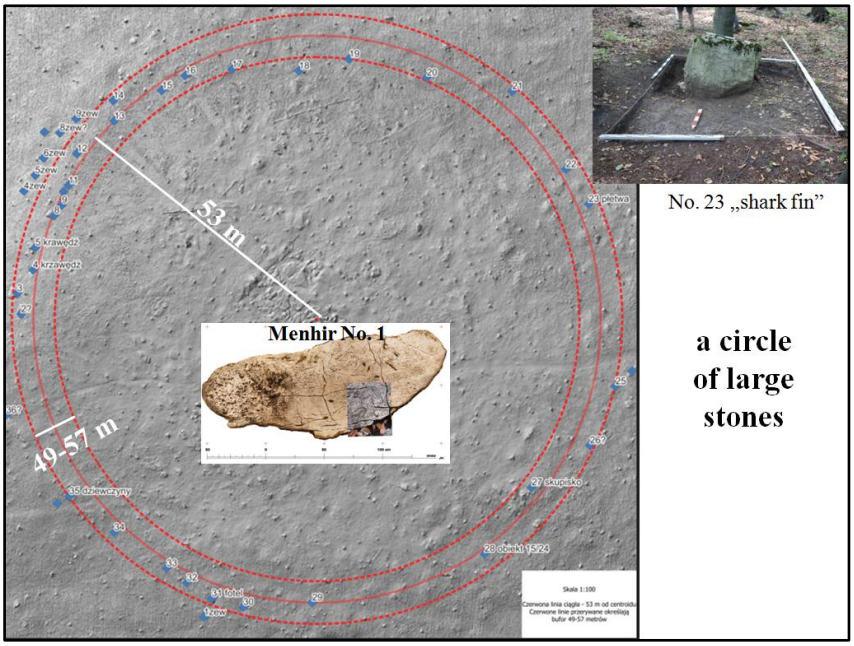


Figure 8. Stone circle around the summit of the Bukowa Góra with numbering of stone blocks



Figure 9. Vertically placed stones (No. 5 and 8) on the slope forming a circle around the summit of the Bukowa Góra: you can see the support of the triangular rock (above the arrow on right photo)

Steles, both overturned and standing, as well as worked blocks and rock structures on the summit occur. These are mostly Diplopora dolomites, but there are also large fragments of limestone that must have been transported here [13], [14], [17], [18], [19]. The results of archaeoastronomical studies (M. Rodziewicz, M. Nuckowski et al.) indicate an intentional arrangement and orientation of the steles (Fig. 10).

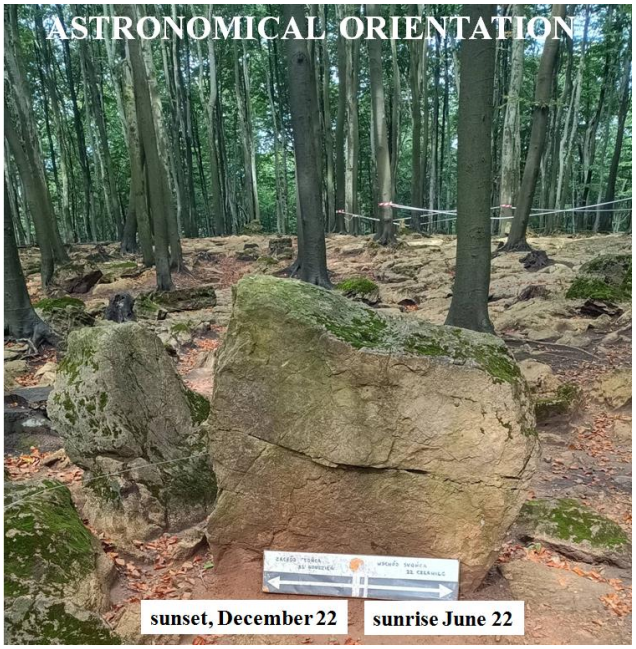


Figure 10. Stele with astronomical orientation (photo T. Kalicki)

The steles and rock blocks on the summit of Bukowa Góra were anthropogenically placed. This is evidenced by structures excavated in more than a dozen surveys beneath the Diplopore dolomite blocks, including traces of postholes, foundation pits (sometimes multi-stage) for embedding the steles and blocks, and sandy bedding (Fig. 11) between the blocks and the weathered rock [13], [14], [17], [18], [19].

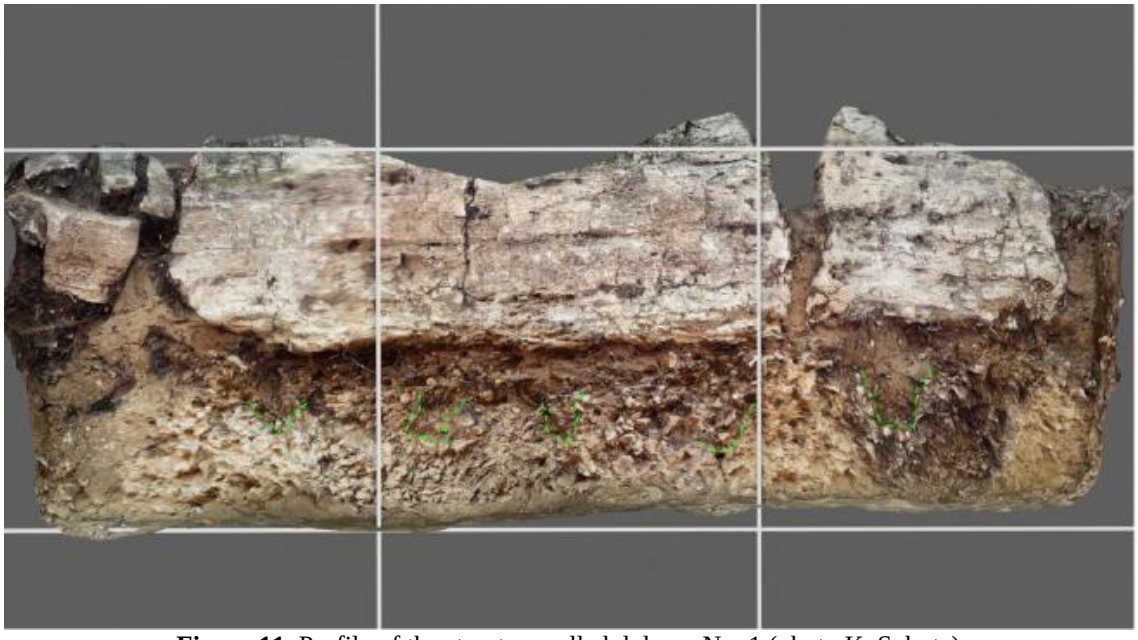


Figure 11. Profile of the structure called dolmen No. 1 (photo K. Sobota).
Visible sandy layer between the boulders and the weathered rocks

At least two features resemble dolmen structures [17]. The survey at dolmen No. 1/2022 revealed multi-stage excavations creating chambers perfectly matched to the stone blocks covering them. The distinct postholes found may be traces of wooden structures (megaxylons) preceding the construction phase associated with laying the stone blocks.

On one of the stones, now lying flat and surrounded by a stone enclosure, regularly arranged, small, circular depressions called cup marks (or cup and ring marks) were found (Fig. 12). These are Prehistoric artistic markings (?) known from megalithic sites in Europe, North America and Australia.



Figure 12. Two lines of small cup marks on the surface of a flat stone with a rock enclosure

Round, worked stones with a diameter of approximately 83 cm were also found at the top of the hill (Fig. 13), which corresponds to a megalithic yard [20]. The rock is not suitable for making millstones.



Figure 13. Round stones with a diameter of approximately 83 cm (megalithic yard)

The results of geophysical research showed at least two large barrow structures with separate chambers, ditches and traces of hearths at the summit [21].

The age of the megalithic structures on the Bukowa Góra elevation is unknown and controversial, both in light of the artifacts found and luminescence dating. The only artifact recovered from the site so far, from the spoil heap next to feature no. 4, is a flint arrowhead, most likely from the Early Bronze Age. During field exploration in arable fields at the foot of the Bokowa Góra within a 4-km radius, flint artifacts associated with various periods of the Stone Age were found [17]. However, these cannot constitute a basis for dating the megaliths.

Luminescence datings show that the blocks rest on Young Pleniglacial weathering cover. This is indicated by the 25.1(18) ka (GdTL-4622) date from the Gliwice Laboratory [22],

[23] and a series of TL datings from the Kielce Laboratory [24]: 23.0±3.4 ka (KIE-988), 21.8±3.3 ka (KIE-986), 18.5±2.8 ka (KIE-987), 17.7±2.6 ka (KIE-984), and 17.0±2.6 ka (KIE-985). Younger luminescence datings were obtained from under the stone blocks of object 4/2022 - 6.52(41) ka (GdTL-4621) and from under block No. 8 (see Fig. 9), which is part of the circle around the summit of Bukowa Góra and supported by a stone wedge - 3.56(26) ka (GdTL-5469).

CONCLUSION

The presented example of stone structures from Bukowa Góra demonstrates the need to intensify interdisciplinary research on Prehistoric megalithic structures in Poland. The term "megalithic" should be used here in a broader sense than that adopted in archaeology.

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