BIŚNIK CAVE: A RECONSTRUCTION OF THE SITE’S OCCUPATION IN THE CONTEXT OF ENVIRONMENTAL CHANGES

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Abstract

Biśnik Cave lends itself remarkably well to interdisciplinary research, and sedimentological and paleozoological studies in particular. This is due mainly to its spectacular stratigraphy, which consists of Pliocene and Middle and Upper Pleistocene formations and contains large amounts of well-preserved animal bones.

INTRODUCTION

The investigation of Biśnik Cave commenced in 1991, after being commissioned by the managers of the Jurassic Landscape Parks (Zarząd Zespółu Jurańskich Parków Krajobrazowych, Dąbrowa Górnicza), who also financed the project until 1996. From 1997 to 1999, the research project then entitled ‘Biśnik Cave: Its occupational phases in the context of environmental changes’ (PB 846/H01/97/13), was financed by the Scientific Research Committee (Komitet Badań Naukowych). As a member of the Institute of Archaeology and Ethnology of Nicholas Copernicus University (Toruń), I directed the project with the co-operation of T. Madeyska (Institute of Geological Sciences of Polish Academy of Sciences, Warsaw; sedimentology), and T. Wiszniovska (Institute of Zoology of the University of Wrocław; paleozoology). Geomorphological research was conducted by T. Madeyska and J. Miroslaw-Grabowska, while K. Stefaniak and P. Socha were in charge of zoological investigations (Cyrek, 1994, 1997a, 1997b, 1998, 1999, 2002; Madeyska and Miroslaw-Grabowska, 2001).

Biśnik is a solitary limestone rock (Fig. 1) situated 405 m above sea level at the bottom of the now dry Dolina Wodąća, located in the region of Niegowonicko-Smolenskie Hills, in the southern part of the Częstochowska Uplands (Fig. 2). The archaeological site includes the interior of a tripartite cave as well as the area outside its entrance, which is surrounded by rocky walls from three sides and shaded by a massive rock projection from the top. The site entrance, which faces northwest, is situated about 7 m above the valley floor.

Although the total site area measured about 100 m² before the investigation, by the ninth research season the site area increased to about 200 m², primarily because the main cave area expanded as the excavation trench became deeper (Fig. 3). So far, an area of 154 m² has been examined, with the depth of the explored sediments ranging from 150 to 750 cm. Trenches were dug in different parts of the rocky formation: in the main cave, under the projecting rock in front of the cave entrance, and in the so-called side shelter – a passage connecting the main cave with a second cave. The Biśnik cave site features a complex and diverse stratigraphy, with natural layers yielding archaeological objects. Fifteen out of 18 sedimentary units identified at the site contained pot-
Fig. 1. The view of BiśniK Rock from the west

Fig. 2. Niegowonicko-Smoleńskie Range (acc. to J. Miroslaw-Grabowska, 1998). B – the BiśniK Cave, G – geological crossection line
Fig. 3. The Bišnik Cave. The cave and shelters' maps with excavations from particular research seasons (acc. o A. Polonius, 1991). s – the sondaging trench. Thicker lines show the profiles (from a to h) presented on other figures.
Fig. 4. The Bišnik Cave. The S profile of VII/m section. 1–5 (profile a from Fig. 3), (acc. to T. Madeyska’s drawing). 1a - sandy Holocene humic soil, 1b - loess mixed with sand, 2 - fown unstructural loess, 3 - medium grained sand, 4 - loess with sand united by iron compound, 5 - laminated sand with precipitations of limestone carbonate, 6 - unstructural sand, 7 - laminated sand, 8 - sand with dusty clay, 9 - grey and brown sandy clay, 10 - yellow and brown sandy clay with rubble, 11 - grey and brown sandy clay with rubble, 11a - grey and brown sandy clay, 12 - grey and green sandy clay, 13 - light brown dusty clay with rubble, 14 - grey and yellow dusty clay with rubble, 15 - yellow and brown dusty clay with rubble, 16 - light grey dusty clay with rubble, 17 - light grey dusty clay with sand and rubble, 18 - green and brown and grey and brown dusty clay with rubble, 19 - green and grey dusty clay with rubble, 20 - ginger residual clay
tery and flint or bone artifacts. The identification of cultural assemblages was based not only on stratigraphy, but also on other criteria, such as a logical planigraphic connection between the finds, the finds' technological, typological, and stylistic uniformity, and the preservation of the artifacts. The trench located under the projecting rock has revealed three major sedimentary series (Mirosław-Grabowska, 1998), which were recorded in the southern profile of the stratigraphical base (Fig. 4).

UPPER LITHOSTRATIGRAPHIC UNITS

The topmost sedimentary series, no. III (layers 1–4), is composed of medium-grained sands, clayey sands, dusty and sandy clays, Vistulian loess and angular limestone rubble. The lower part of this series (layers 2–4) was formed in the cool climate of the Plenivistulian II. The upper part (layers 1a–1b) which consists of Holocene humic soil, revealed a medieval rubbish pit. The same stratigraphic level yielded fragments of Przeworsk culture pottery dating to the late Roman period (assemblage I). The bottom of layer 1a and the top of layer 1b produced Late Neolithic and Early Bronze Age finds, which were classified jointly as assemblage II. The clayey sand layer (layer 4) inside the cave, as well as the inside of the side and upper shelters, contained a few scattered Upper Paleolithic flint artifacts. The chronostratigraphic location of these finds allows us to associate them tentatively with the Jerzmanowician or Szeletian cultures. In the same layer, a paleozoological investigation revealed traces of periglacial fauna, which is characteristic of Pleistocene tundra.

LOWER LITHOSTRATIGRAPHIC UNITS

The lower sedimentary series, no. II, encompasses three sandy layers (5 to 7), which are composed of layered, fine-grained sands (clayey in places), and containing no rubble. These aquatic sands were accumulated in the cool and moist climate of the early Vistulian.

The top of sedimentary series II (Fig. 5) yielded an interesting feature in the southeast part of the area under the projecting rock. An irregular semicircle of rubble surrounded a gray filling of loess and sand, which contained large amounts of bone and flint artifacts. A number of vital clues suggest that this feature represents the remains of a habitation structure, which could have been either a roofless wind-screen or a kind of shelter joined to the cave entrance and functioning as a cave extension (Fig. 6). The flint artifacts recovered from the feature itself and from its immediate vicinity were labelled as assemblage F1. Assemblage F1 displays close formal affinities with assemblages of the so-called ‘Ciemna’ type (Kozłowski and Kozłowski, 1977:70–74), mainly because of the presence of ‘Prądnik’ knives and the so-called prądnickie (Krukowski, 1939–1948) or paraprądniki (Kowalski, 1969); an absence of handaxes; the concurrence of the predominant Levalloisian technique with the discoidal nucleus technique; and a high percentage of bifacial forms. Moreover, the assemblage conforms to the typological spectrum of the Micoquian-Prądnik culture according to W. Chmielowski (1975: 64–91) (Figs 7–9).

A stratigraphically earlier, though culturally similar assemblage (classified as F2) was discovered on the border of the aforementioned layered sands (layer 7) and the underlying cave clays (layers 8 and 9). The artifacts were deposited in an interesting planigraphic arrangement, which featured a hearth and several artifact concentrations (Fig. 10). Among the most unique finds were the upper part of a giant deer skull as well as three worked fragments of deer antler (Fig. 11) that had been fashioned into axes. The smallest axe, made of red deer antler Cervus elaphus), bore macroscopic usage marks characteristic of a bat and hatchet (Fig. 12).

A niche situated inside the cave yielded 155 bone and antler fragments, all concentrated within an area of about 5 m². Such a concentration of bones, which suggests purposeful human activity, may be interpreted in the entire context of the cultural level F2 as a storage site for animal carcasses. An absence of well-developed ‘Prądnik’ knives in this assemblage may be due to the fact that F2 represents an older cultural phase than F1 and predates assemblages of the ‘Ciemna’ type. Thus, Biśnik Cave seems to be an example of a stratigraphically distinguishable section of a development sequence of the Micoquian-Prądnik tradition, with two phases divided by a hiatus.
LOWERMOST LITHOSTRATIGRAPHIC UNITS

On proceeding deeper into the Bišnik Cave stratigraphic sequence, one reaches the oldest sedimentary series (I), which encompasses layers 8 to 20. The thickest series, measuring from two to five meters, comprises a complex of variously colored dusty clays with different types of rubble. Sedimentological analyses, correlated with paleozoological and archaeological findings, indicate that the layers had accumulated inside the cave, where oscillations in temperature and humidity were limited. Layer 20, which consists of residual loam, is of Tertiary origin. The remaining layers must have accumulated during the Oder and Warthe glaciations, and in the earlier part of the Visulian glaciation. Those cold phases were divided by the warmer period of the Eemian interglacial, which corresponds to layers 12 and 13.

Layers 8, 9, 10 and 11 have yielded flint artifacts which share typological and technical characteristics and display a similar state of preservation, i.e., smooth edges and dorsal surfaces. The floor of layer 9 has revealed a hearth (Fig. 13) and flint-working site.

Assemblage D is noteworthy because of the concurrence of the Levalloisian and discoidal nucleus techniques, the presence of a Mousterian point, varied sidescrapers, denticulates, atypical awls, and above all because of the predominance of microlithic forms with abrupt retouch all around the edges, and often with inverse and denticulated retouch. On the whole, assemblage D represents Middle Paleolithic industry and displays close affinities with the so-called "Taubachien" (after Valoch, 1988:76–79). Assemblages of this type belong to the final phase of the Eemian interglacial and the beginning of the Visulian (Brörup). It should be noted that both sidescrapers and backed knives comprise a high percentage of bifacial forms.

Assemblages retrieved from layers 12 and 13 (assemblages A1 and A2) seem to display similar typological characteristics, and their cultural unity is further indicated by their stratigraphic location. Therefore, these assemblages are likely to represent two phases of habitation by groups be-
Fig. 6. The Bišnik Cave. Planigraphy of F1 assemblage object (roofless wind-screen). 1 – flint artefacts (semi-product), 2 – flint core, 3 – bone and deer antlers fragments, 4 – bones, 5 – burnt bone fragments, I–VI – the places of collecting samples for chemical analysis

Artifacts found in layers 14 and 15 are also similar as regards their typology and style. The general features of these assemblages are the predominance of the Levalloisian technique and the concurrence of Clactonian flakes. The presence of occasional microlithic handaxes, single pebble tools, Levalloisian points, blades with retouched edges (including backed blades), Blattspitzen with sub-parallel retouch (after Bosinski, 1967, pl. VII), microlithic retouched forms (denticulates and encoches, ‘Balver’ type) and sidescrapers...
Fig. 7. The Bišnik Cave. Assemblage Fl. 1–4 – asymmetric backed knives
Fig. 8. The Bišnik Cave. Assemblage F1. 1–3 – asymmetric backed knives
Fig. 9. The Bišnik Cave. Assemblage F2. Asymmetric backed knife made of chocolate flint
Fig. 10. The Bišnik Cave. Planigraphy of F2 assemblage. 1 – the line of rock wall route on a level of assemblage F2 occurrence, 2 – bones, 3 – flint retouched tools, 4 – cores, 5 – chips, 6 – flakes, 7 – blades, 8 – horn artefacts.
Fig. 11. The Bišnik Cave. The find of a skull and axes made of a giant deer antlers (assemblage F2)

Fig. 12. The Bišnik Cave. The hatchet – the hammer from a red deer antlers with traces of intense usage (assemblage F2)
made of thick and thin flakes, as well as backed knives, enables us to classify this assemblage as belonging to the late Acheulian cultural tradition with Levalloisian and Clactonian elements (Collins, 1969). As regards the Bišnik assemblage A3, it can be dated stratigraphically to the Warthe glaciation (Figs 15, 16).

An even older assemblages of artifacts (assemblages A5 and A6), was discovered inside the cave in the layer of dusty clay with rubble (layer 18). The noteworthy feature of this assemblage is the presence of the Levalloisian technique and the predominance of blade implements. Stratigraphically datable to the Oder glaciation, the assemblage seems to display typological and technical affinities with Pickary-type material (Morawski, 1992: 170; Kozłowski and Kozłowski, 1977: 151–152). Animal bone and tooth samples, taken from layer 18, were dated by the fission-track method to ca. 260,000 B.C. (Hereman and Gorka, 2000) (Figs 17–24).

The results of sedimentological, geomorphological, paleozoological, and archaeological investigations provided the basis for the reconstruction of the habitation history in Bišnik Cave.

It must be emphasized that throughout almost all of its 250,000 years of occupation, the cave was surrounded by a strongly diversified natural environment, with stretches of steppe, tundra, forest, marshy grounds, and aquatic areas. Geological and hydrological research (Miroslaw-Grabowska, 1998, and Tyc, 2001 respectively) indicates that for long periods the cave entrance was adjacent to a riverbank or a lakeshore. This fact, coupled with its proximity to varied ecological niches, rendered the cave a particularly attractive habitation site. As a result, the cave boasts a number of habitation phases: ten in the Middle Paleolithic, one in the Upper Paleolithic and at least five in the period from the Neolithic to the Middle Ages. As far as the multi-phased Middle Paleolithic habitation is concerned, Bišnik Cave re-
Fig. 14. The Bišník Cave. Assemblage A1; 1 – a core form, 2 – microlithic handax, 3 – natural backed knife. Assemblage A2; 4 – clactonian flake inversely retouched, 5 – natural backed blade knife.

minds one of such ‘Neanderthal’ sites as Arcy-sur-Cure and Combe Grenal (Leroi-Gourhan, 1988), but it is most reminiscent of the Moravian Kúlna Cave (Valoch, 1988). All these sites seem to demonstrate that successive generations of Neanderthals were strongly attached to places that were especially suitable for habitation.

The investigations of Bišník Cave have yet to be completed. It is necessary to continue both the excavation of sediments, especially in the side cave, as well as contract a specialist to analyze any tools or imported raw materials found in these sediments. It must be stressed that Bišník is the oldest cave site in Poland, and the third oldest Pol-
Fig. 15. The Bišnik Cave, Assemblage A3: 1 – discoidal core, 2 – retouched blade/flake, 3 – flake discoidal core, 4, 8 – denticulated inversely retouched forms, 5 – a transverse protruberant sidescraper from levallois flake, 6, 7 – levallois retouched flakes
Fig. 16. The Bišnik Cave. Assemblage A3: 1 - a knife-like form, 2 - a notched inversely retouched tool, 3 - levallois inversely retouched flake, 4 - bifacial knife with a back, 5 - a form with the clactonian encoches
Fig. 17. The Bišnik Cave. Assemblage A5; 1 – a knife-like form with a preparation back, 2 – the levallois point with retouched edges, 3–5 – retouched blades, shortened at the top, 4, 6, 7 – retouched flakes
Fig. 18. The Bišnik Cave. Assemblage A5; 1 – a blade denticulated and inversely retouched, with a pseudo-scraper on the top, 2 – limestone blade
Fig. 19. The Bišnik Cave. Assemblage A6; 1 – a levallois point, inversely and denticulately retouched, 2 – a levallois flake, inversely and denticulately retouched, 3 – truncated, protruberant piece from bifacially shortened blade, retouched on edges, 4 – bifacial broken flake inversely retouched, 5 – levallois flake round, inversely and denticulately retouched
Fig. 20. The Bišnik Cave. Assemblage A6: 1 – microlithic pseudo-endscraper, 2 – levallois point, 3 – bifacially broken flake, 4–6 – resharpening spalls, 7, 8 – levallois notched flakes
Fig. 21. The Bišnik Cave. Assemblage A6; 1 – a flake broken off from a top of a bifacial tool, 2 – convergent, protruberant sidescraper, 3 – oblique truncated piece with retouche on edges, 4–7 – the notched-denticulated forms, inversely retouched, 8 – micro-perforator, 9 – a chip, 10 – bone artefact
Fig. 22. The Bišnik Cave. Assemblage A6; a wedge tool from a piece of a long bone
Fig. 23. The Bišnik Cave. Assemblage A6; the fragment of deer antlers with a drilled hole.
ish archaeological site in general, predated only by the Lower Paleolithic sites at Trzebnica and Rusko (Burdakiewicz, 1992, 1994). The importance of Biśnik Cave derives from the presence on the site of one of the oldest habitation structures ever discovered in Poland, the unique discovery of the traces of Middle Paleolithic deer antler industry, the discovery in the stratigraphic sequence of sixteen cultural levels, and the opportunity to correlate sedimentological, paleozoological (Cyrek, 2002), and archaeological findings. All this is extremely significant for the paleography of the Middle and Upper Pleistocene in central Europe. 

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REFERENCES


Bisnik Cave


KOWALSKI S. 1969. Zagadnienie przejścia od paleolitu średniego do górnego w Polsce południowej w aspekcie elementów postępu technicznego, Światowit, 30, 5–21.


