



Human Palaeontology and Prehistory

An interesting rock from Krapina

*Une pierre intéressante du site de Krapina*

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ABSTRACT

Symbolic items are seldom associated with Neandertals and, when they are, many paleoanthropologists consider them to be Neandertal imitations from modern *Homo sapiens*. At the Croatian site of Krapina dated to MIS 5e or about 130,000 years ago, among many items, a split limestone rock was excavated by Dragutin Gorjanović-Kramberger between 1899–1905. This brownish rock reveals many dark dendritic forms in cross- and longitudinal section. Of more than 1000 lithic items at Krapina, none resemble this specimen and we propose it was collected and not further processed by the Neandertals because of its aesthetic attributes. Along with other examples from sites in western and central Europe and the recent discovery of eight modified white-tailed eagle talons from Krapina, this unique item suggests that Neandertals were capable, on their own, of incorporating symbolic objects into their culture.

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R É S U M É

Les éléments symboliques sont rarement associés à des restes de Néanderthaliens. Quand ils le sont, beaucoup de paléoanthropologues considèrent qu'ils résultent d'un phénomène d'acculturation des Néanderthaliens par les Hommes anatomiquement modernes. En Croatie, sur le site de Krapina, correspondant au stade isotopique 5e, autour de 130 000 ans, une pierre fissurée, en calcaire, a été retrouvée par Dragutin Gorjanović-Kramberger entre 1899 et 1905. Cette pierre brune présente, dans ses sections transversale et longitudinale, un grand nombre de formes dendritiques sombres. Parmi les 1000 artefacts lithiques provenant de Krapina, aucun ne ressemble à cette pièce. Nous proposons que celle-ci, en raison de son esthétisme, a été collectée et traitée à minima par les Néanderthaliens. Cet objet unique, en complément des exemples des autres sites d'Europe occidentale et orientale et de la découverte récente de huit serres d'aigle à queue blanche modifiés trouvés dans le site de Krapina, suggère que les Néanderthaliens étaient capables, de façon indépendante, d'incorporer des éléments symboliques dans leur culture.

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1. Introduction

The Krapina Neandertal site was excavated by Gorjanović-Kramberger and his assistant Osterman between 1899 and 1905. Shortly afterward, the rock shelter was completely emptied of all sandy sediments (Radovčić, 1988), so that today nothing remains of the site, but an eroding cliff face. Fortunately, Gorjanović-Kramberger and his crew were careful, systematic excavators. Over the excavation seasons, they saved over 900 human remains, several 1000 faunal remains and more than 1000 Mousterian stone tools. His crew excavated in recognized stratigraphic levels and for many of the discoveries, they marked the level of discovery on the items. The site was originally divided into nine stratigraphic levels, but today, the two top levels are generally lumped together (Radovčić, 1988; Fig. 1). Beaver remains dominated the lowest level and it is generally thought that the nearby Krapinica stream deposited some of the fluvial sediments in these layers. However, Gorjanović-Kramberger (1901) reported stone tools from this level and Miracle (2006) argues for a human involvement in the concentration of beaver remains, based on cut marks and lack of evidence for rolling or other evidence of stream action on the bones. In addition, the number of Mousterian stone tools with provenience from this level is comparable to other levels (Simek, 1991) confirming Neandertal site usage through the complete Krapina stratigraphic sequence.

Tools, cores and debitage are found in all levels (Simek and Smith, 1997) and in various levels Gorjanović-Kramberger (1913, 1918) found hearths and numerous burned bones. There are a number of stone tools and a hearth in the top level, which is dominated by cave

bear remains. Most of the Neandertal remains derive from level 4, which Gorjanović-Kramberger labeled the *Homo* zone, but fragmentary human fossils are scattered in most levels. There has been considerable debate about the mode of deposition of the human remains, with some arguing that the fragmentation relates to cannibalism (Gorjanović-Kramberger, 1899; Ullrich, 1989), while another explanation for the bones is defleshing and secondary burial (Russell, 1987a, 1987b), subsequently disrupted by cave bear denning. Presence of hearths, processed animal remains and a large number of tools suggest that the site was from time to time occupied by Neandertals. Whatever the process of deposition, of either bodies or tools, it is clear from Gorjanović-Kramberger's excavations that only Neandertals lived in the cave and left their remains, stone tools and debitage, fire hearths and other signs of occupation.

Gorjanović-Kramberger (1906) argued the sediments at Krapina were deposited over a fairly short, warm time period, based on levels of sedimentation. Miracle (2011) confirmed this showing that male cave bears (*Ursus spelaeus*) are consistently small compared to glacial cave bears and that their size does not vary over time at the site. Miracle's results support Gorjanović-Kramberger's earlier assertions and Miracle argues that the site is restricted to the interglacial MIS 5e. ESR and uranium series dates are consistent with this, indicating an age of about 130,000 years (Rink et al., 1995). Gorjanović-Kramberger identified all the human remains from all levels as *Homo primigenius* (1906), now attributed to *Homo sapiens neanderthalensis*. Subsequent work on metrics and morphology of the fragmentary human remains from the site (Smith, 1976, 1997; Wolpoff, 1979) confirms this, so whatever

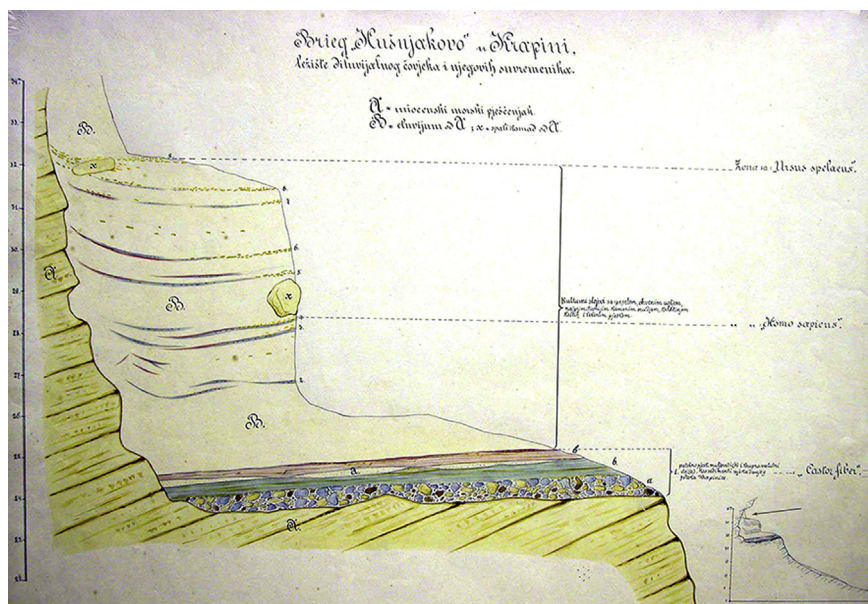


Fig. 1. Gorjanović-Kramberger's stratigraphic profile of Krapina showing the numbered levels. Eventually, the top two levels were collapsed into one. Tools are found throughout the levels as are Neandertal fossils; most of the human remains are from level 4.

Fig. 1. Profil stratigraphique du site de Krapina par Gorjanović-Kramberger, montrant les niveaux numérotés. Les deux niveaux supérieurs ont été regroupés en un seul. Les outils ont été retrouvés dans les niveaux contenant des restes fossiles de Néandertaliens ; la plupart des restes provenant du niveau 4.

paleocultural evidence that exists at the site must be attributed solely to Neandertals. The Krapina 1 (A skull) once considered a modern *sapiens* (Škerlj, 1958) has been identified as a Neandertal (Minugh et al., 2000), so there are no specimens from the site other than Neandertals.

2. The rock

The specimen is a brownish, flat piece of micritic limestone (mudstone) bearing an array of dendritic forms. The brownish color comes from the surface patina, whereas a fresh break exposes the original greyish color of the rock. The rock is maximally 91.9 mm long, maximally 66.1 mm wide, with a maximum thickness of 16.9 mm and minimum thickness of 3.1 mm (Fig. 2a, b). Malez (1970) reviewed many of the lithics from Krapina, but does not mention nor illustrate the rock. It was inventoried as 144.305 by Simek in 1984–1985, who, other than the catalog number, did not mention anything special about the rock (Simek, 1991; Simek and Smith, 1997). No other published accounts (e.g., Zupanič, 1970) provide details about the rock, probably because it is minimally modified split rock.

The split rock shows some irregular surfaces, but no cortex is present. Both faces are smooth and the edges are

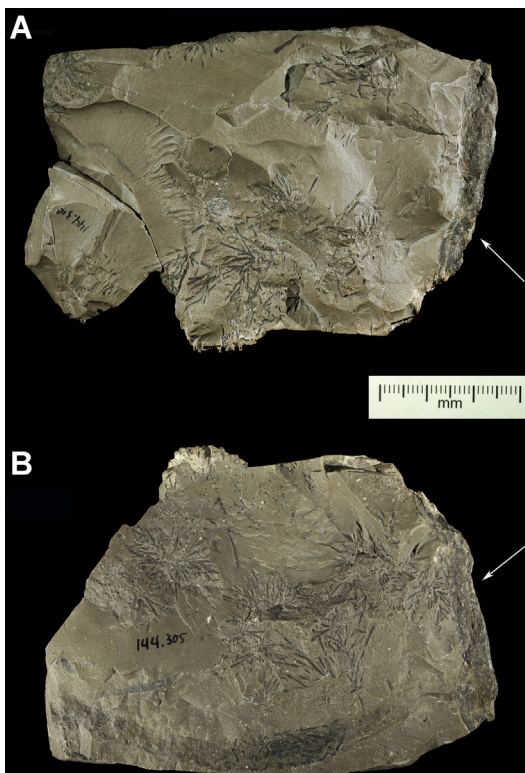


Fig. 2. “Clam-shell” view of Side A and B showing black dendrites against the background of the brown mudstone. The flake, only shown re-attached on Side A, is the result of a post-excavation fracture of the specimen. Arrows point to large inclusion visible on Sides A and B.

Fig. 2. Coquillages vus du côté A et du côté B présentant des dendrites sur le fond de mudstone brune. L'éclat montrant seulement un ré-attachement sur le côté A est le résultat d'une fracturation post-fouille. Les flèches indiquent une large inclusion visible sur les côtés A et B.

unmodified. We could find no striking platform or other areas of preparation on the rock's edge. From this, we assume the cobble was not broken apart by a Neandertal, but was picked up in its present condition. For the rock, we arbitrarily assigned a Side A and Side B (Fig. 2a, b) and use these to describe the specimen, but we attach no special significance to the designations other than for description. Both sides exhibit dendritic-forms, as well as in the margins. Some post-excavation damage occurs on the surface and can be seen as white microfractures in Fig. 2a, b. These appear as very small dots or fractures, which must have occurred when the tool was stored with other rocks in the collections after excavation. Other artifacts from the site show similar damage.

We found a small, triangular flake (144.310), which attaches to the rock in the area of a conchoidal fracture (Fig. 2a), measuring ~30 mm by ~22 mm. The break is sharp and on Side A, there are dendritic forms that span the break. On Side A, other pieces have broken away from the rock, but this piece is the only remnant of the fracture on the rock. From the freshness of the break, the fracture appears to have happened well after the specimen was deposited in the sediments, probably during transport or storage after discovered by the Krapina excavators.

Gorjanović-Kramberger or his assistant Osterman wrote the level number where the specimen was found on many of the materials they discovered, especially the Neandertal bones and the nonhuman fauna. For the most part, only the level on the retouched tools (Simek, 1991; Simek and Smith, 1997) was recorded and not all tools have a penciled designation. Consequently, the stratigraphic level for this split rock was not recorded and we can find no reference for it in any published sources. The only clue to its origin is some reddish-brown limonite staining at the apex of the specimen (Fig. 3). A few human specimens, incomplete crania Krapina 3 and 6 and some postcranial remains, have this staining and most come from level 4 (Gorjanović-Kramberger, 1901; Radovčić et al., 1988). According to Miracle (2006), beaver remains from level 1 also show this red staining. In level 4, it is generally thought the limonite-stained items were close to the cave wall, where water leached into the sediments (Frayer et al., 2006). Assuming the limonite staining is the same, it would place the artifact in either level 1 or level 4. For now, this is the best stratigraphic location we can give to the item. Despite the lack of attribution by Gorjanović-Kramberger, the specimen is certainly not a natural occurrence at the site. Because the

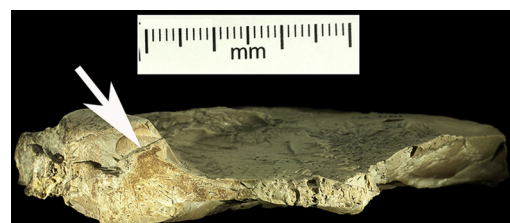


Fig. 3. Arrow indicates edge of the rock with the reddish-brown limonite staining.

Fig. 3. La flèche indique le bord de la roche présentant une coloration de limonite rouge-brune.

shelter is an erosional space from sandstone cliff, sediments were all sandy, so the rock could not have originated in the cave. Like all other lithics, it must have been transported there by Neandertals (Zupanič, 1970). Other than the attached flake, there are no other examples of this type of limestone, micritic mudstone in the Krapina collection, in fact, most of the lithics are volcanic in origin (Zupanič, 1970).

We have no way of knowing if there were other rocks of this type in the shelter or if there was collection bias by the excavators. We do know that Gorjanović-Kramberger systematically saved the Neandertal human remains from the site, collecting everything from tooth germs to bone fragments to more complete pieces (Radovčić, 1988; Radovčić et al., 1988). From Simek and Smith (1997), we know that a total of 1191 lithic artifacts were collected of which 784 were unmodified flakes. These make up almost 2/3 of the total lithic sample (65.8%), suggesting that excavators were careful about including the variety of stone artifacts they encountered. We cannot know if other stones resembling Krapina 144.305 were in the Krapina deposits, but if they were, it is unlikely they would have been missed by Gorjanović-Kramberger and his excavators.

As shown in Fig. 4, there are numerous dendritic structures exposed in cross-section and for some in longitudinal view. These are all black forms, resembling remnants of

fossil algae either in branching patterns or starbursts, or burrowing type of ichnofossils (resembling *Chondrites intricatus*, c.f. Uchman and Wetzel, 1999), appearing on both sides of the specimen. They have a 3D expression and are especially distinctive and shiny when the piece is wet, the black contrasting with the brownish surface. On Side B, there is a long, curved black “stem” traversing the entire face with a concentration of dendritic forms in the midpoint (Fig. 2b). Its straight length (74.5 mm) and breadth (ranging from 4.9 to 7.1 mm) is limited to Side B. On the left, there is a vertical, black vein, running up the border 56.3 mm in length, at least 6.5 mm in breadth, intercalated with calcite. The thickness (height) is ranging from 6.3 to 13.1 mm. Unlike the black “stem”, this vein is fully expressed on Sides A and B (Fig. 2a,b).

In Krapina rock 144.305, the dendritic forms, “stem” and veins are visually appealing and have an aesthetic quality, often appreciated by today’s rock hunters. No one would ever suggest that Neandertals knew the source and the meaning of the dendritic forms in rock, but there is no reason to think they would not recognize their distinctiveness and the visual appeal of them. Presumably, they considered the rock unusual and worthy of keeping.

Unlike most of the other lithics from Krapina, 144.305 bears minimal signs of manipulation other than the presence of a flake which was removed more recently, based on the differences in coloration and the surface patina. The rock was not reduced, the margins of the rock have not been retouched, and there is no use wear on any its edges. This rock seems to have been collected by the Neandertals and curated solely because of its unique attributes.

3. Discussion and conclusion

Zupanič (1970) has described the types of rocks used by the Krapina Neandertals, sectioning some for describing internal details. She does not mention 144.305, but does state that “the man of Krapina used the raw material from the close vicinity of his habitat. Quantities of useful material were available in the Krapina alluvial deposits close to the Krapina locality. . . [and]. . . no specimen was determined that could not have been taken from the Krapinica alluvial deposits” (p. 140). Later, Simek (1991) argued that most of the lithic material derived from the Krapinica stream, where Neandertals collected cobbles and brought them to the shelter for core reduction. A similar opinion was reached by Simek and Smith (1997), who noted a few exotics in the collection, but that the majority came from the environs around the rockshelter. We suspect that the rock derived from the area close to the site near Đurmanec, a few kilometers north of Krapina, where there are known outcrops of biopelmicritic grey limestones with calcite veins of Middle Triassic age (Dedić et al., 2014; Šimunić and Šimunić, 1997). It was either collected there or was transported to the Krapina region by the Krapinica stream. Erosion in both areas over the past 130,000 years has likely removed the source of the rock, making it difficult to pinpoint exactly where the Neandertals acquired it. But, while a unique rock in the collection, there is no reason to suspect it came from outside the immediate region.

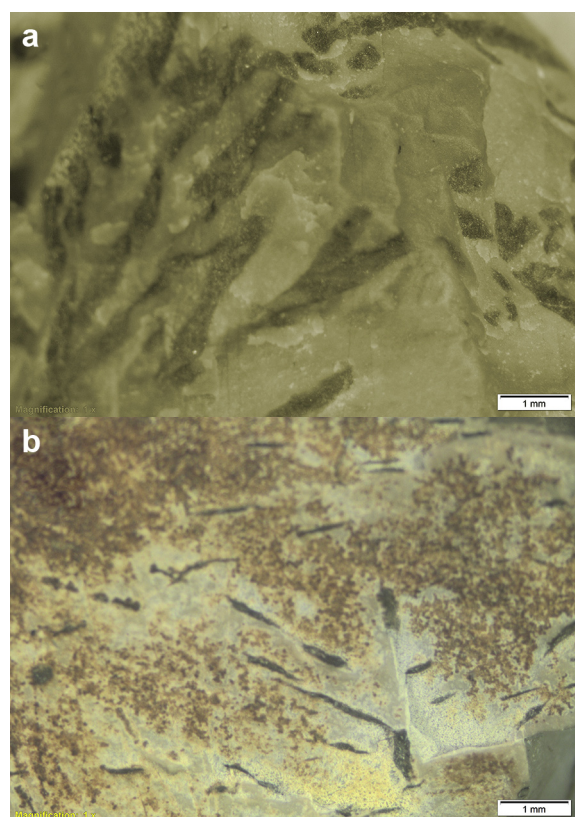


Fig. 4. (a) A microscopic view of some dendritic forms from Side A; (b) microscopic image of the limonite stains as shown in Fig. 3.

Fig. 4. Vue au microscope de quelques formes dendritiques du côté A ; (b) image au microscope des taches de limonite illustrées sur la Fig. 3.

Representations of art are few in the Mousterian, limited to some objects from late Neandertal sites, like Grotte de Renne, Arcy-sur-Cure (Caron et al., 2011), an abstract, carved representation in a cave floor at Gibraltar (Rodríguez-Vidal et al., 2014), a painted image in Cantabria (Pike et al., 2012), two interconnected rocks possibly resembling a Neandertal face (Marquet and Lorblanchet, 2003), along with a series of other items, which likely bear symbolic meaning (Bednarik, 2003; Otte, 2015; Soressi and d'Enrico, 2007; Zilhão et al., 2010). There is also considerable evidence that Neandertals exploited birds for their feathers (Finlayson et al., 2012; Peresani et al., 2011) and their talons (Morin and Laroulandie, 2012; Romandino et al., 2014). In their review of symbolic behaviors between 160 kyr–40 kyr ago, Langley et al. (2008) found evidence from 49 Neandertal sites where some kind of symbolic activity was preserved, but these consisted mainly of the use of colorants, burials and a few modified artifacts. They did not include curiosities collected by Neandertals, but in any event, these are rare. Lorblanchet depicts a few objects from sites in western and central Europe, which seem to have been saved by Neandertals (or earlier groups) as “curiosities” including a gastropod and piece of coral from Grotte du Renne, Arcy-sur-Cure (Lorblanchet, 1999). Cârciumaru et al. (2014) report an ochered geode from Cioarei cave (Romania), which is unique at the site and seems to have been collected as a special item. Like the Krapina specimen, the geode is unique among more than the thousand lithics from Cioarei cave. But, non-utilitarian lithic objects are known in other pre-Upper Paleolithic contexts (Moncel et al., 2012), as well as fossils from distant outcrops (Lhomme and Freneix, 1993; Peresani et al., 2013). While we do not know their meaning, the fact that they were collected and curated suggests they had some non-utilitarian, symbolic connotation.

For Krapina 144.305, there is much missing information, – details about the “paleohistory” of the rock, when and why it was carried into the cave, even certainty as from what level it derives. But, there is no doubt it is from the site. It was an object worthy of saving, both for a Neandertal ~130,000 years ago and for Gorjanović-Kramberger at the turn of the 20th century. Other evidence from the site shows that Neandertals were collecting and stringing together white-tailed eagle talons and modifying an eagle phalanx (Radovčić et al., 2015), – testimony to their often unappreciated sophistication (contra Chase and Dibble, 1987; Klein, 2009; Mellars, 2010; Tattersall, 2013). The Krapina Neandertals could not have mimicked this behavior from modern *Homo sapiens*, as some have suggested for later sites (Higham et al., 2010, 2014; Mellars, 1989, 2005) since moderns were not in the area until tens of millennia later. This specimen adds to the growing body of evidence that Neandertals collected non-utilitarian objects. From this and other evidence, we contend they had a curiosity and symbolic-like capacities typical of modern humans.

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